



# RF & Microwave

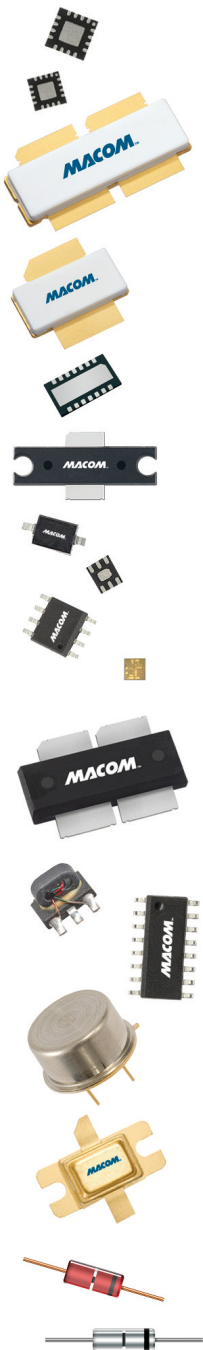
Product  
Selection  
Guide

**MACOM**<sup>TM</sup>  
*Partners from RF to Light*

[www.macom.com](http://www.macom.com)

MACOM's **2018 RF & Microwave Product Selection Guide** features our catalog of 5,000+ products, which include integrated circuits (ICs), multi-chip modules (MCMs), power pallets and transistors, MMICs, diodes, amplifiers, switches and switch limiters, passive and active components and complete subsystems. Inside are detailed product specifications designed to help engineers quickly evaluate and select the right products to differentiate their designs. Our selection guide includes application diagrams and key technologies to further assist you in your selection process.

Additional product information can be found on our website at [www.macom.com](http://www.macom.com). Contact our worldwide sales offices, authorized representatives, and industry-leading distributors to request samples, test boards and application support. All contacts are listed on our website at: <http://www.macom.com/contact>



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# Why MACOM?



## Partners from RF to Light

MACOM Technology Solutions Holdings, Inc. (MACOM) supplies key enabling technologies for the Cloud Connected Apps Economy and Modern Networked Battlefield. Recognized for its broad catalog portfolio of technologies and products, MACOM provides high-performance analog RF, microwave, millimeterwave, and lightwave semiconductor products for diverse applications ranging from high speed optical, satellite communications, wired and wireless infrastructure networks, to military and civil radar systems. A pillar of the semiconductor industry, we thrive on more than 65 years of solving our customers' most complex problems as their trusted partner for solutions from RF to Light.

Headquartered in Lowell, Massachusetts, MACOM is certified to the ISO9001 international quality standard and ISO14001 environmental management standard. MACOM has design centers and sales offices throughout North America, Europe, and Asia

## RF to Light Capabilities

MACOM offers end-to-end customer solutions and support, from proprietary process technologies to high-quality customer service. MACOM can produce and process semiconductor materials, design and manufacture complex devices, and combine these devices into multifunction components. We offer dual-use technologies that enable us to service commercial and aerospace and defense markets. We have unique technologies and capabilities to create innovative design solutions, including:

- > Si, GaAs, AlGaAs, InGaAs, InP, GaN-on-Si, SiPh, SiGe, SAEFT™, and RF CMOS IC products
- > Unique processes: HMIC™, GMIC™, and AlGaAs
- > In-house design, fabrication, assembly, and screening capabilities
- > Foundry service
- > Build-to-print turnkey assembly capabilities
- > Multiple design and sales locations to provide global coverage
- > Wide spectrum coverage across RF, microwave, and millimeterwave frequencies
- > One of the broadest selections of standard and custom products in the industry

### Commercial, Industrial and Military Products

This guide features our catalog of 5,000+ products. We work with you, engineer-to-engineer, to provide custom products to meet your unique application-specific requirements. If you cannot find a product that meets your needs in this guide, please contact us and we will work together to develop or recommend an appropriate solution. Our team of product managers and engineers is available to support all product and design needs, and offer the experience and attention to detail that ensure success.

### Quality and Reliability

MACOM is committed to delivering high-quality products and services that meet our customers' and internal operations' needs in terms of delivery, reliability, performance and value. Process controls are implemented to ensure that tasks are performed properly the first time, so that products and services meet established, agreed-to requirements. It is the personal responsibility of every MACOM employee to ensure quality, customer satisfaction, continual improvement, maintenance of our quality management system and compliance with customer and regulatory requirements.

### Design and Manufacturing Facilities

MACOM has multiple design centers, Si, GaAs, and InP fabrication, manufacturing, assembly and test, and operational facilities throughout North America, Europe, and Asia.

#### How to Purchase



#### Sales Representatives and Distribution Partners

Find solutions for your most complex applications today! You can purchase MACOM products online, direct through our sales offices, and through one of our many distribution and sales representative partners.

Visit our website at <http://www.macom.com/purchases> to see a list of our industry-leading distributors and to get additional information about ordering samples and product.

To see inventory availability from MACOM and our Distributors click on the Order tab on your selected product page at [www.macom.com](http://www.macom.com)

**MACOM produces custom products and modifications to standard products to meet your specific requirements.**

**Please contact us with your specifications if you cannot find a standard product for your application. See the back cover of this catalog for contact information.**

**Or visit us at [www.macom.com](http://www.macom.com) for more information.**

## Aluminium Gallium Arsenide (AlGaAs)

Band gap engineering has been used to produce novel semiconductor structures in the microwave industry for over two decades. These band gap principles have been applied to the development of MACOM's AlGaAs technology, resulting in a significant advancement in the RF performance of PIN diodes.

*Key applications include industrial, scientific and medical, test and measurement, wireless backhaul, aerospace and defense.*

## Gallium Arsenide (GaAs)

For over three decades, MACOM has been the world leader in the advancement of GaAs technology, producing state-of-the-art, high performance discrete devices; control components; mixed signal processing and converters; driver amplifiers; CATV amplifiers; LNAs; and power amplifiers as single purpose and multi-function MMICs.

*Key applications include industrial, scientific and medical, CATV and wired broadband, wireless backhaul, aerospace and defense, satellite communication.*

## Gallium Nitride (GaN)

Having taken a leadership role, MACOM is driving the commercialization of GaN into mainstream applications. Offering the RF and microwave industry a broad portfolio of GaN-on-Si products spanning a wide range of package options for pulsed and continuous wave applications, we have firmly established ourselves as leaders across all GaN end market applications.

*Key applications include RF Energy, industrial, scientific and medical, civic and military radar, communications.*

## Heterolithic Microwave Integrated Circuit (HMIC™)

Developed at MACOM, this process joins two different materials—glass and silicon—into a single monolithic structure. This technology integrates the best properties of each material and therefore allows monolithic circuit solutions that reduce both size and cost.

*Key applications include CATV and wired broadband, wireless backhaul, industrial, scientific and medical, test and measurement, chip and wire high frequency microwave applications.*



## Indium Phosphide (InP)

MACOM has assumed a key position in the market as a premier supplier of both photonic devices such as lasers, and optoelectronics products such as high speed modulator drivers, based on InP technology. *Key applications include laser diodes for silicon photonics, data and metro markets, modulator drivers for 100G and 400G coherent networks, metro networks, and data centers.*

### SAEFT™

MACOM's patented Self Aligning Etched Technology (SAEFT™) allows self-alignment of a laser either in edge-emitting or surface-emitting format to a silicon PIC, forming a Laser-PIC (L-PIC™). *Key applications include base stations, FTTx/PON, wireless fronthaul/backhaul, cloud data centers, metro, and long haul.*

## Silicon (Si)

Leveraging our deep understanding of silicon technology, MACOM offers a broad portfolio of product offerings ranging from PIN and varactor tuning diodes to multi-hundred watt silicon power MOSFETs. *Key applications include aerospace and defense, industrial, scientific and medical, test and measurement, CATV and wired broadband, wireless networking.*

## Silicon Germanium (SiGe)

Building upon a long history in designing integrated circuits and subsystems for radar and mmW markets, MACOM leads the way in applying SiGe BiCMOS technology to both commercial and military needs. We see SiGe as a high value, differentiating technology which we will continue to leverage in MACOM's core product segments. *Key applications include high-speed optical network transceivers, base stations, wired broadband communications, high speed cross-point switches.*

## Silicon Photonics (SiPh)

MACOM is focused on integrated silicon microphotronics. These technologies enable high performance optics with low power in small form factors. Silicon microphotronics in particular brings the benefits of high-density, low-cost and performance scalability, similar to silicon CMOS chip manufacturing. *Key applications include 100G/400G datacom, telecom-metro and long-haul applications, functional passive optical elements including AWGs, optical filters, couplers, and splitters.*

**MACOM produces and processes semiconductor materials, and offers unique technologies and capabilities to create innovative design solutions to solve our customers' most complex challenges.**

**For more in-depth information, visit [www.macom.com/technologies](http://www.macom.com/technologies)**

## MACOM Markets and Applications



### Wireless Networking and Communication

- > Wireless Network Infrastructure
- > Wireless Backhaul
- > Wireless LAN (WiFi)
- > SatCom/VSAT
- > 5G Communications



### Optical Networking

- > FTTx/PON
- > Wireless Fronthaul
- > Cloud Data Center
- > Network Security
- > Longhaul & Metro



### Industrial, Scientific and Medical

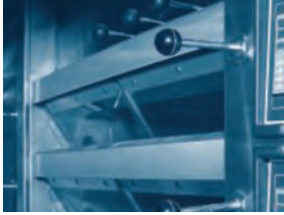
- > Industrial
- > Test and Measurement
- > Healthcare



### Wired Broadband

- > CATV DOCSIS 3.1
- > Customer Premises





### RF Energy

- > Automotive Ignition
- > Industrial Cooking
- > Industrial Drying
- > Medical Tumor Ablation
- > Plasma Street Lighting



### Broadcast Video

- > Cameras
- > Distribution Amplifiers
- > Format Conversion
- > Monitors
- > Routers and Switches



### Surveillance

- > Cameras
- > DVRs



### Aerospace & Defense

- > Communication
- > EW
- > Radar
- > MACOM in Active Antennas
- > Build-to-Specification
- > Space & Hi-Rel



### Enterprise Solutions

- > Backplane Connectivity
- > Packet Switchers and Routers
- > Storage Area Networks
- > Transport Networks/OTN

Recognized for our broad portfolio of technologies and products, MACOM serves a range of diverse markets and thrives on more than 60 years of solving our customers' most complex problems. MACOM is a true partner for applications from RF to Light.

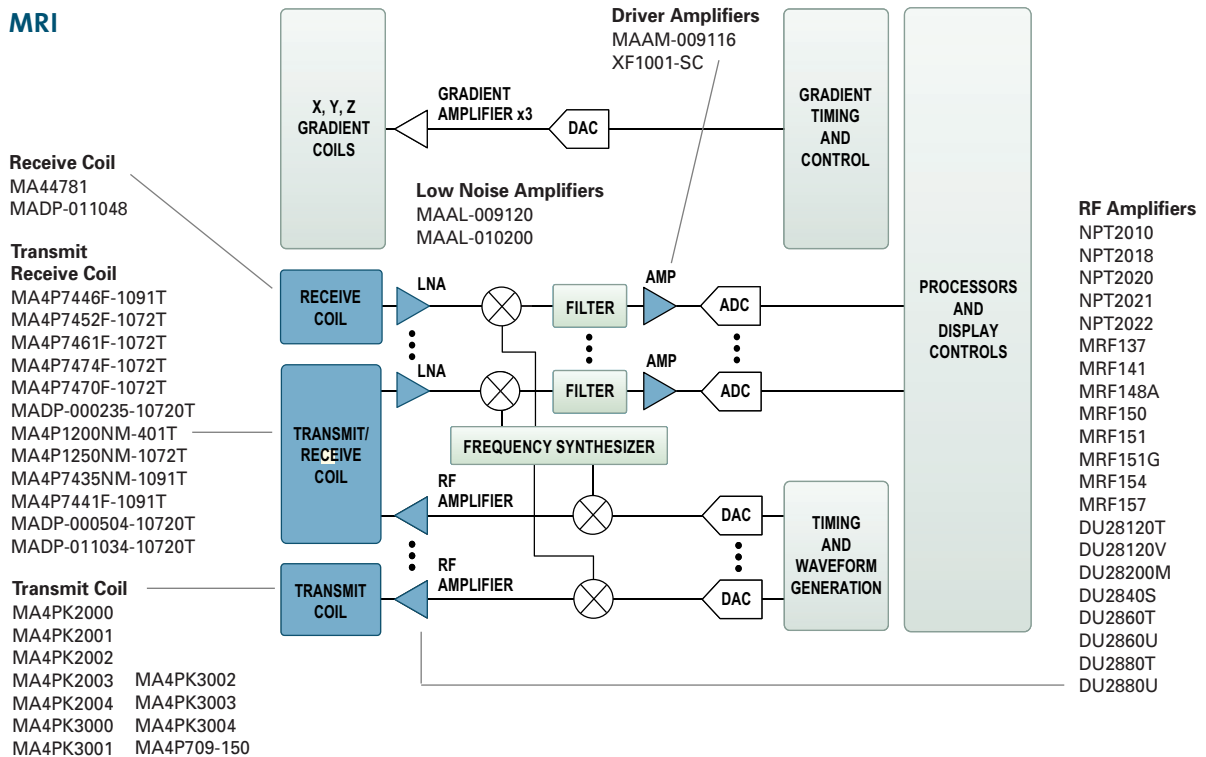
For more in-depth information, visit [www.macom.com/applications](http://www.macom.com/applications)

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*Partners from RF to Light*

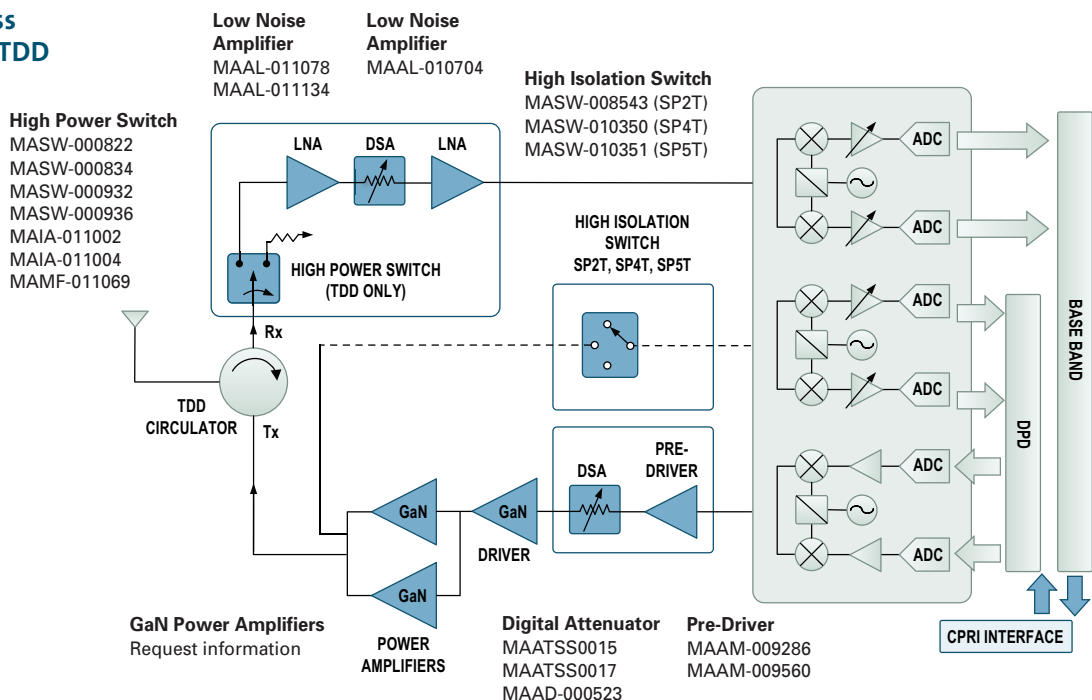
# Application Block Diagrams

MACOM provides the fundamental building blocks to enable your diverse and complex applications. Our broad portfolio of products supports a wide variety of applications ranging from RF to Light. For a complete list of application block diagrams covering High-speed Networking, Aerospace and Defense, and Multi-market, please visit: [www.macom.com](http://www.macom.com)

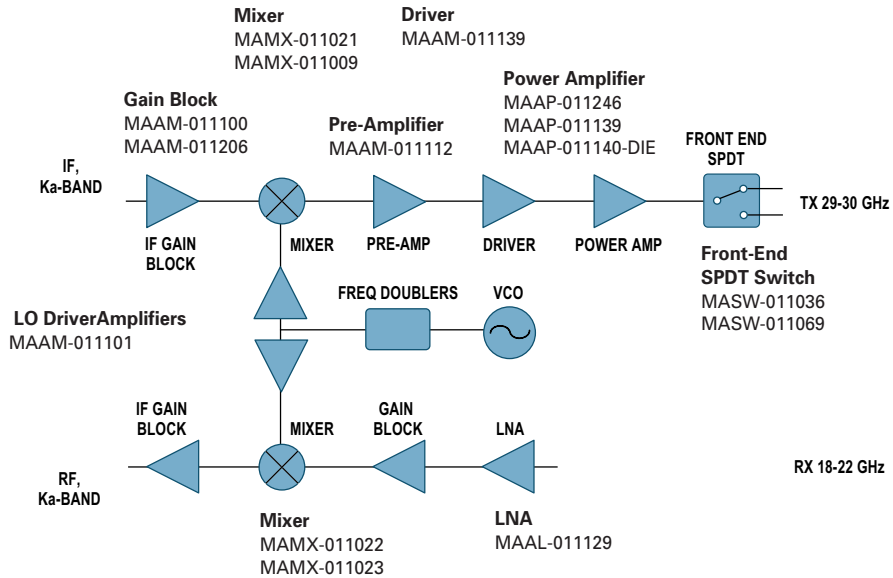
## MRI



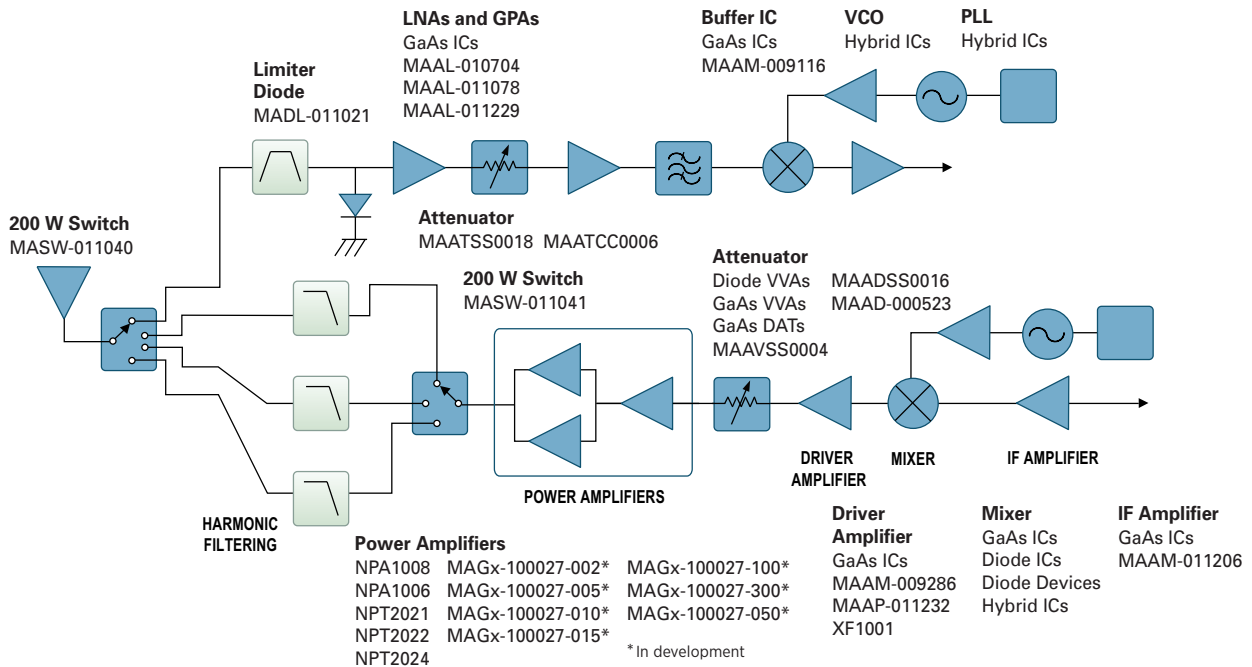
## Wireless Access TDD



## Ka-Band SATCOM



## Land Mobile Radio





### MACOM RF Power Products

#### Next generation high power semiconductor technology

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MACOM offers a broad range of RF power transistor products—bare die/discrete devices, modules, and pallets designed to operate from 1 MHz to 6 GHz. Our high power transistors are ideal for communications, avionics, radar, and industrial, scientific, and medical applications. MACOM's product portfolio provides both standard and custom solutions using bipolar, MOSFET, and Gallium Nitride (GaN) technologies.



#### GaN-on-Si

- > Discrete transistors and integrated amplifiers utilizing a 0.5 micron HEMT process
- > Includes a broad range of RF power transistor products as discrete devices and modules
- > Designed to operate from 1 MHz to 6 GHz
- > Excellent RF performance, power, gain, gain flatness, efficiency, and ruggedness

#### Hybrid Amplifiers

- > Optimized for commercial air traffic control and military radar applications
- > New surface mount technology (SMT) laminate packaged modules
- > Supports standard surface mount assembly for high-volume manufacturing
- > Improves assembly yield and lowers component count
- > Available for the S-, L- and avionics bands

#### Bipolar

- > Discrete devices, modules, and pallets from 1 MHz to 3.5 GHz
- > For civil avionics, communications, networks, radar, and industrial, scientific, and medical applications
- > All gold metallization fabrication processes ensure high performance and long term reliability

#### MOSFET

- > TMOS and DMOS RF power MOSFET transistor products as discrete devices from 1 MHz to 1.0 GHz
- > All gold metallization fabrication processes ensures high performance and long term reliability

#### Silicon Bipolar Pallets

- > Designed for applications from 1 GHz to 3.5 GHz
- > Ideal for civil avionics, radar, industrial, scientific and medical applications
- > Gold metallization fabrication processes ensure high performance and long term reliability

**RF Energy / RF Power Transistors GaN-on-Si: CW**

Part Number	Min Freq (MHz)	Max Freq (MHz)	Operating Voltage (V)	Output Power Psat (W)	Gain (dB)	Efficiency (%)	Test Freq (MHz)	Package
MAGx-100027-002*	10	2700	50	2	16	68	2000	6 x 3 mm PDFN-14
MAGx-100027-005*	10	2700	50	5	16	68	2000	6 x 3 mm PDFN-14
MAGx-100027-010*	10	2700	50	10	16	70	2000	6 x 3 mm PDFN-14
MAGx-100027-015*	10	2700	50	15	16	70	2000	6 x 3 mm PDFN-14
MAGe-100809-500*	896	928	50	500	19	75	915	AC-780S-4
MAGe-100809-600*	896	928	50	600	19	75	915	AC <sup>2</sup> -780S-2
MAGe-100809-1K0*	896	928	50	1000	19	75	915	AC <sup>2</sup> -1280S-2
MAGe-102425-050*	2400	2500	50	50	17	70	2450	TO-272S-2
MAGe-102425-100*	2400	2500	50	100	17	70	2450	TO-272S-2
MAGe-102425-200*	2400	2500	50	200	17	70	2450	TO-272S-4
MAGe-102425-300*	2400	2500	50	300	16	70	2450	AC <sup>2</sup> -780S-2

\* In development

**Aerospace & Defense Power Transistors, Pallets, and Modules GaN-on-Si**

Part Number	Min Freq (MHz)	Max Freq (MHz)	Operating Voltage (V)	Output Power Psat (W)	Gain (dB)	Efficiency (%)	Test Freq (MHz)	Package
MAGx-100027-002*	10	2700	50	2	16	68	2000	6 x 3 mm PDFN-14
MAGx-100027-005*	10	2700	50	5	16	68	2000	6 x 3 mm PDFN-14
MAGx-100027-010*	10	2700	50	10	16	70	2000	6 x 3 mm PDFN-14
MAGx-100027-015*	10	2700	50	15	16	70	2000	6 x 3 mm PDFN-14
MAGx-100027-050*	10	2700	50	50	17	70	2000	TO-272S-2
MAGx-100914-125*	900	1400	50	125	17	>71	1400	AC-400B-2/AC-400S-2
MAGx-100914-250*	900	1400	50	250	17	>68	1400	AC-400B-2/AC-400S-2
MAGx-100912-500*	900	1215	50	500	>16	>69	1215	AC-780B-2/AC-780S-2
MAGx-101214-500*	1200	1400	50	500	>15.5	>69	1400	AC-780B-2/AC-780S-2
MAGx-103135-145*	3100	3500	50	145	14	55	3500	AC-360B-2/AC-360S-2
MAGx-102731-180*	2700	3100	50	180	15	55	3100	AC-360B-2/AC-360S-2
MAPG-102729-400*	2700	2900	50	400	15	57	2900	Pallet
MAMG-102933-030*	2900	3300	32	30	20.5	51	3300	7 x 7 mm PQFN-28
MAMG-102733-085*	2700	3300	50	85	25	50	3300	14 x 24 mm SMT
MAMG-103135-085*	3100	3500	50	85	25	50	3500	14 x 24 mm SMT
MAMG-100227-010*	225	2600	28	14	12	45	2600	14 x 18 mm

\* In development

**Multipurpose / RF Power Transistors GaN-on-Si: CW and Pulsed**

Part Number	Min Freq (MHz)	Max Freq (MHz)	Operating Voltage (V)	Output Power Psat (W)	Gain (dB)	Efficiency (%)	Test Freq (MHz)	Package
NPA1003QA	20	1500	28	7	15	>40	1000	4 x 4 mm QFN-16
NPA1006	20	1000	28	12.5	14	>45	900	6 x 5 mm DFN-8
NPA1007	30	2500	28	10	10	>50	2000	6 x 5 mm DFN-8
NPA1008	20	2700	28	5	12	>45	1900	4 x 4 mm PQFN-24
NPTB00004A	1	6000	28	5	17	>50	2500	SOIC-8NE
NPT2018	1	3500	50	12.5	17.5	>50	2500	6 x 3 mm PDFN-14
NPT2021	1	2500	50	4	17	>55	2500	TO-272
NPT2022	1	2000	50	50	20	>60	900	TO-272
NPT2024	1	2700	50	200	22	65	900	TO-272-4

Multipurpose / RF Power Transistors GaN-on-Si: CW and Pulsed (continued)

Part Number	Min Freq (MHz)	Max Freq (MHz)	Operating Voltage (V)	Output Power Psat (W)	Gain (dB)	Efficiency (%)	Test Freq (MHz)	Package
NPTB00025B	1	4000	28	25	13	>50	3000	AC360B-2
MAGx-011086	1	6000	28	4	9	>50	5800	4 x 4 mm QFN-24
NPT1004	1	4000	28	45	14	>55 PEP	2500	SOIC-8NE
NPT25015	1	3000	28	23	14	>60 PEP	2500	SOIC-8NE
NPT35015	1	3800	28	18	11	>48 PEP	3500	SOIC-8NE
NPT2020	1	3500	50	45	14	>60	3500	AC360B-2
NPT2010	1	2200	50	100	17	>65	2100	AC360B-2
NPT1012B	1	4000	28	25	13	>50	3000	AC360B-2
NPT1015B	1	3500	28	45	13.5	>60	3000	AC360B-2
NPT25100	1	2700	28	90	16	>60	3000	AC780B-2
MAGx-100027-002*	10	2700	50	2	16	68	2000	6 x 3 mm PDFN-14
MAGx-100027-005*	10	2700	50	5	16	68	2000	6 x 3 mm PDFN-14
MAGx-100027-010*	10	2700	50	10	16	70	2000	6 x 3 mm PDFN-14
MAGx-100027-015*	10	2700	50	15	16	70	2000	6 x 3 mm PDFN-14
MAGx-100027-050*	1	2700	50	50	17	65	2700	TO-272S-2
MAGx-100027-100*	1	2700	50	100	17	65	2700	TO-272S-2
MAGx-100027-300*	1	2700	50	300	16	63	2700	TO-272S-4

\* In development

RF Power Transistors: Silicon Bipolar

Part Number	Min Freq (MHz)	Max Freq (MHz)	Pout (W)	Gain (dB)	Efficiency (%)	Package Type
MRF421	1	30	100	10	40	Flange Ceramic
MRF428	2	30	150	13	45	Flange Ceramic
MRF429	2	60	150	13	45	Flange Ceramic
MRF422	2	30	150	10	40	Flange Ceramic
MRF426	2	30	25	22	35	Flange Ceramic
MRF454	2	30	80	12	50	Flange Ceramic
MRF455	2	30	60	13	55	Flange Ceramic
MRF448	2	30	250	12	45	Flange Ceramic
MRF141G	5	175	300	12	50	Flange Ceramic
MRF316	30	200	80	10	55	Flange Ceramic
MRF314	30	200	30	10	50	Flange Ceramic
MRF317	30	200	100	9	55	Flange Ceramic
MRF313	100	400	1	15	45	Flange Ceramic
MRF393	100	500	100	9.5	55	Flange Ceramic
MRF392	100	400	125	10	55	Flange Ceramic
MRF587	100	500	—	13	—	Flange Ceramic
MRF321	150	400	10	12	50	Flange Ceramic
MRF323	150	400	20	10	50	Flange Ceramic
2N6439	225	400	60	7.8	55	Flange Ceramic
MRF327	225	400	80	7.3	50	Flange Ceramic
MAPR-000912-500S00	960	1215	500	9	45	Flange Ceramic
MAPRST0912-50	960	1215	50	9.1	40	Flange Ceramic
MAPRST0912-350	960	1215	350	9.4	45	Flange Ceramic
MRF1004MB	960	1215	4	10	40	Flange Ceramic
MRF10031	960	1215	30	9	40	Flange Ceramic
MRF10005	960	1215	5	8.5	45	Flange Ceramic
MRF10120	960	1215	120	8	50	Flange Ceramic



RF Power Transistors: Silicon Bipolar (continued)

Part Number	Min Freq (MHz)	Max Freq (MHz)	Pout (W)	Gain (dB)	Efficiency (%)	Package Type
MRF1000MB	960	1215	0.7	10	—	Flange Ceramic
MRF1150MB	960	1215	150	7.8	35	Flange Ceramic
MRF1090MB	960	1215	90	8.4	35	Flange Ceramic
MAPR-001090-350S00	1025	1150	350	9	45	Flange Ceramic
MAPR-001011-850S00	1025	1150	850	7.8	42	Flange Ceramic
MRF10150	1025	1150	150	9.5	40	Flange Ceramic
MRF10350	1025	1150	350	8.5	40	Flange Ceramic
MRF10502	1025	1150	500	8.5	40	Flange Ceramic
MAPRST1030-1KS	1030	1030	1000	8	45	Flange Ceramic
PH1090-700B	1030	1090	700	7.5	50	Flange Ceramic
PH1090-15L	1030	1090	15	9	40	Flange Ceramic
PH1090-550S	1030	1090	550	7.4	55	Flange Ceramic
PH1090-175L	1030	1090	175	8.3	55	Flange Ceramic
PH1090-350L	1030	1090	350	8	55	Flange Ceramic
PH1090-75L	1030	1090	75	9	45	Flange Ceramic
PH1214-300M	1200	1400	300	8.75	50	Flange Ceramic
PH1214-25L	1200	1400	25	9.5	50	Flange Ceramic
PH1214-55EL	1200	1400	55	6.6	50	Flange Ceramic
PH1214-12M	1200	1400	12	9	45	Flange Ceramic
PH1214-25M	1200	1400	25	9.5	50	Flange Ceramic
PH1214-110M	1200	1400	110	7.4	50	Flange Ceramic
PH1214-80M	1200	1400	80	7.5	50	Flange Ceramic
PH1214-100EL	1200	1400	100	6	52	Flange Ceramic
PH1214-6M	1200	1400	6	7	45	Flange Ceramic
PH1214-220M	1200	1400	220	7.4	50	Flange Ceramic
PH1214-40M	1200	1400	40	8.5	50	Flange Ceramic
MRF16006	1600	1640	6	7.4	40	Flange Ceramic
PH1617-2	1600	1700	2	10	35	Flange Ceramic
PH2226-50M	2200	2600	50	8	45	Flange Ceramic
PH2226-110M	2200	2600	110	8	40	Flange Ceramic
MAPR-002729-170M00	2700	2900	170	9	45	Flange Ceramic
PH2729-65M	2700	2900	65	8.5	40	Flange Ceramic
PH2729-130M	2700	2900	130	7.5	40	Flange Ceramic
PH2729-8.5M	2700	2900	8.5	8.1	35	Flange Ceramic
PH2729-25M	2700	2900	25	9.2	45	Flange Ceramic
PH2731-5M	2700	3100	5	7	30	Flange Ceramic
PH2729-110M	2700	2900	110	6.8	35	Flange Ceramic
PH2731-20M	2700	3100	20	8.2	45	Flange Ceramic
PH2731-75L	2700	3100	75	7	40	Flange Ceramic
PH2856-160	2856	2856	160	7.5	40	Flange Ceramic
PH2931-20M	2900	3100	20	8.2	45	Flange Ceramic
PH3134-30S	3100	3400	30	7.5	35	Flange Ceramic
PH3134-55L	3100	3400	55	7.5	35	Flange Ceramic
PH3134-20L	3100	3400	20	7.5	35	Flange Ceramic
PH3134-25M	3100	3400	25	7.5	35	Flange Ceramic

Detailed specifications can be found quickly on our website at [macom.com](http://macom.com) by typing the part number into the search box. All specifications are subject to change.

## RF Power Transistors: Silicon Bipolar (continued)

Part Number	Min Freq (MHz)	Max Freq (MHz)	Pout (W)	Gain (dB)	Efficiency (%)	Package Type
PH3135-65M	3100	3500	65	7.5	35	Flange Ceramic
PH3134-10M	3100	3400	10	8	35	Flange Ceramic
PH3135-25S	3100	3500	25	7.5	35	Flange Ceramic
PH3135-5M	3100	3500	5	8.5	30	Flange Ceramic
PH3135-90S	3100	3500	90	7.5	35	Flange Ceramic
PH3134-65M	3100	3400	65	7.5	35	Flange Ceramic
PH3135-20M	3100	3500	20	7.5	35	Flange Ceramic

## RF Power Transistors: MOSFET

Part Number	Min Freq (MHz)	Max Freq (MHz)	Pout (W)	Gain (dB)	Efficiency (%)	Package Type
PH3135-65M	3100	3500	65	7.5	35	Flange Ceramic
PH3134-10M	3100	3400	10	8	35	Flange Ceramic
PH3135-25S	3100	3500	25	7.5	35	Flange Ceramic
PH3135-5M	3100	3500	5	8.5	30	Flange Ceramic
PH3135-90S	3100	3500	90	7.5	35	Flange Ceramic
PH3134-65M	3100	3400	65	7.5	35	Flange Ceramic
PH3135-20M	3100	3500	20	7.5	35	Flange Ceramic
MRF175LU	5	400	100	10	55	Flange Ceramic
MRF140	5	150	150	15	40	Flange Ceramic
MRF175GU	5	400	150	12	55	Flange Ceramic
MRF141	5	175	150	18	40	Flange Ceramic
MRF173CQ	5	175	80	13	60	Flange Ceramic
MRF136Y	5	400	30	14	54	Flange Ceramic
MRF148A	5	175	30	18	40	Flange Ceramic
MRF158	5	500	2	16	55	Flange Ceramic
MRF174	5	200	125	9	50	Flange Ceramic
MRF175GV	5	225	200	14	65	Flange Ceramic
MRF177	5	400	100	12	60	Flange Ceramic
MRF173	5	175	80	11	60	Flange Ceramic
MRF166C	5	500	20	13.5	50	Flange Ceramic
MRF166W	5	500	40	14	50	Flange Ceramic
MRF134	5	400	5	11	50	Flange Ceramic
MRF177	5	400	100	12	60	Flange Ceramic
MRF173	5	175	80	11	60	Flange Ceramic
MRF166C	5	500	20	13.5	50	Flange Ceramic
MRF166W	5	500	40	14	50	Flange Ceramic
MRF134	5	400	5	11	50	Flange Ceramic
MRF151	5	175	150	13	40	Flange Ceramic
MRF137	5	400	30	13	60	Flange Ceramic
MRF150	5	150	150	17	45	Flange Ceramic
MRF275G	5	500	150	10	50	Flange Ceramic
MRF160	5	500	4	16	55	Flange Ceramic
MRF154	5	80	600	17	45	Flange Ceramic
MRF275L	5	500	100	8.8	55	Flange Ceramic
MRF151G	5	175	300	14	50	Flange Ceramic
MRF157	5	80	600	21	45	Flange Ceramic
MRF136	5	400	15	16	60	Flange Ceramic
DU2880V	30	175	80	13	60	Flange Ceramic

## RF Power Transistors: MOSFET (continued)

Part Number	Min Freq (MHz)	Max Freq (MHz)	Pout (W)	Gain (dB)	Efficiency (%)	Package Type
DU2860T	30	175	60	13	60	Flange Ceramic
DU28120T	30	175	120	13	60	Flange Ceramic
DU2880U	30	175	80	13	60	Flange Ceramic
DU1215S	30	175	15	9.5	60	Flange Ceramic
DU2810S	30	175	10	13	55	Flange Ceramic
DU2880T	30	175	80	13	60	Flange Ceramic
DU28120V	30	175	120	13	60	Flange Ceramic
DU2805S	30	175	5	11	55	Flange Ceramic
DU2820S	30	175	20	13	60	Flange Ceramic
DU28200M	30	175	200	13	55	Flange Ceramic
DU2860U	30	175	60	13	60	Flange Ceramic
DU2840S	30	175	40	13	60	Flange Ceramic
MRF171A	100	200	45	17	60	Flange Ceramic
UF28100H	100	500	100	10	50	Flange Ceramic
UF2815B	100	500	15	10	50	Flange Ceramic
UF2805B	100	500	5	10	50	Flange Ceramic
UF2840P	100	500	40	10	50	Flange Ceramic
UF2820P	100	500	20	10	50	Flange Ceramic
UF2810P	100	500	10	10	50	Flange Ceramic
UF28100V	100	500	100	10	50	Flange Ceramic
UF28100M	100	500	100	10	50	Flange Ceramic
UF2840G	100	500	40	10	50	Flange Ceramic
UF28150J	100	500	150	8	55	Flange Ceramic
LF2805A	500	1000	5	10	50	Flange Ceramic

## RF Power: Silicon Bipolar Pallets

Part Number	Min Freq (MHz)	Max Freq (MHz)	Pout (W)	Gain (dB)	Efficiency (%)	Package Type
PHA2729-300M	2700	2900	300	7.5	36	Pallet
PHA2731-140L	2700	3100	140	7	35	Pallet
PHA3135-130M	3100	3500	130	7.4	35	Pallet



## MACOM Amplifiers

For voice, data and point-to-point applications for A&D and commercial markets

MACOM designs, manufactures, and supports a wide variety of amplifiers for RF, microwave, and millimeter-wave applications. Our products cover frequency ranges from 40 KHz to 90 GHz. We use a variety of semiconductor processes such as GaAs MESFET for linearity, pHEMT for power and low noise, and HBT for linearity and high gain. Additionally, our 50 to 1100 MHz cable band amplifiers exhibit best-in-class composite linearity performance. MACOM amplifiers are used in a variety of commercial and aerospace and defense applications.



### Active Splitters

- > Available in 2, 3, 4, 5, 6, and 8-way splits,
- > Designed for today's advanced CATV, FTTx, and direct broadcast satellite (DBS) subscriber equipment
- > Used in high definition flat screen TVs, set top boxes (STBs), embedded multi media terminal adapter (eMTAs), cable modems, and PCTV cards
- > Surface mount PDFN and PQFN plastic packages

### Amplifier Gain Blocks

- > Frequencies from DC to 45 GHz
- > 50  $\Omega$  and 75  $\Omega$  applications include: networks, commercial, and aerospace and defense
- > Plastic packaging and bare die

### Linear and Power Amplifiers

- > 40 KHz to 90 GHz frequencies for both linear and saturated applications including: network infrastructure, radar, test and measurement, and communication systems
- > Many of the power amplifiers include an on-chip temperature-compensated detector

### Low Noise Amplifiers

- > Frequencies from 20 MHz to 86 GHz
- > For network infrastructure, radar, and communication systems
- > Available in a variety of packages

### CATV Amplifiers

- > Single-ended and Push-Pull 75  $\Omega$  broadband amplifiers cover head-end, HFC infrastructure nodes, network, and drop amplifiers
- > Flat gain response, low distortion, and high linearity
- > Offered in small, plastic leaded and leadless packages

### Hybrid Amplifiers

- Gain Block
- Low Noise Amplifiers
- Limiting Amplifiers
- > 10 kHz to 6 GHz
- > Unconditionally stable with excellent cascading capability
- > Designed using thin film technology
- > Hermetically sealed and screened up to space level, these amplifiers are perfect for military applications

## Active Splitters

Part Number	Min Freq (MHz)	Max Freq (MHz)	Splits (#)	Gain (dB)	Noise Figure (dB)	CSO (dBc)	CTB (dBc)	Bias Current/ Voltage (mA)/(V)	Package
MAAM-009450	50	1100	3	3.5	3.8	-65	-65	100 / 5	3 mm PQFN-12
MAAM-007239	50	1100	3	6	4.5	-65	-77	125 / 5	3 mm PQFN-16
MAAM-008818	50	1100	2	3.2	3.4	-60	-63	120 / 5	2 mm PDFN-8
MAAM-008819	50	1100	3	2.6	3.8	-60	-63	120 / 5	2 mm PDFN-8
MAAM-008820	50	1100	4	3	3.8	-62	-70	120 / 5	3 mm PQFN-12
MAAM-008821	50	1100	5	3.5	3.8	-60	-70	120 / 5	3 mm PQFN-12
MAAM-008822	50	1100	3	4.5	4	-60	-63	120 / 5	2 mm PDFN-8
MAAM-008970	950	2150	2	4.8	5	—	—	60 / 5	3 mm PQFN-12
MAAM-007805	50	1100	2	8.5	4	-60	-75	100 / 5	3 mm PQFN-12
MAAM-009451	50	1100	3	3	3.5	-55	-67	90 / 3	2 mm PDFN-8
MAAM-009452	50	1100	4	2.5	3.5	-56	-65	96 / 3.3	3 mm PQFN-12
MAAM-009778	50	1100	4	2.5	4.5	-60	-65	100 / 5	3 mm PQFN-12
MAAM-009779	50	1100	5	1.5	3.9	-60	-65	110 / 5	3 mm PQFN-12
MAAM-009811	50	1100	2	2.4	4.5	-55	-65	90 / 3	2 mm PDFN-8
MAAM-009879	50	1100	2	3.5	3.8	-60	-65	100 / 5	3 mm PQFN-12
MAAM-010237	50	1100	8	1.9	4.4	-50	-65	190 / 5	4 mm PQFN-24
MAAM-010263	50	1100	6	2	4.8	-55	-65	190 / 5	4 mm PQFN-24

## Amplifier Gain Block

Part Number	Description	Min Freq (MHz)	Max Freq (MHz)	Gain (dB)	Output P1dB (dBm)	OIP3 (dBm)	Bias Current (mA)	Package
MAAM02350	Wideband Amplifier	200	3000	17	14	24	65	Die
MAAM28000	Wideband Amplifier	2000	8000	17	14	24	60	Die
XB1007-BD	Buffer Amplifier	4000	11000	23.5	20	30	130	Die
XB1008-BD	Buffer Amplifier	10000	21000	18	20	30	130	Die
XB1004-BD	Buffer Amplifier	16000	30000	21	19	29	100	Die
XB1006-BD	Buffer Amplifier	18000	38000	21	15	25	25	Die
XB1005-BD	Buffer Amplifier	35000	45000	23	16	26	50	Die
MAAM-008198-00A162	Cascadable, Hi Eff	10	1200	13	6	18	15	TO-8
MAAMSS0045	Hi Dyn Rge	1400	2000	14	16	29	45	SOIC-8EP
MAAM02350-A2	Wideband Amplifier	200	3000	18	14	24	65	CR-3
MAAM-009286	Driver Amplifier	250	4000	15.5	27	42	155	SOT-89
MAAM-009560	Driver Amplifier	250	4000	15	29	42	225	SOT-89
XF1001-SC	Packaged HFET	0	6000	15.5	30	46.5	300	SOT-89
MAAM28000-A1	Wideband Amplifier	2000	8000	17	14	24	70	CR-3
MAAM28000-A1G	Wideband Amplifier	2000	8000	17	14	24	70	CR-10
XB1007-QT	Buffer Amplifier	4000	11000	23	19	31	100	3 mm PQFN-16
CMM0511-QT	Driver Amplifier	5000	14000	20	11	22	90	3 mm PQFN-16
MAAM-011101	Wideband Amplifier	4000	20000	16	19	30	45	1.5 x 1.2 mm TDFN-6
XB1008-QT	Buffer Amplifier	10000	21000	17	18	32	100	3 mm PQFN-16
MAAM-011132	Driver Amplifier	17700	23600	23	21	33	180	4 mm PQFN-16
MAAM-011112	Buffer Amplifier	20000	37000	24	18	30	335	3 mm PQFN-16
MAAM-011109	Wideband Amplifier	100	40000	13	18	22	170	5 mm LGA-9
XB1014-QT	Buffer Amplifier	37000	40000	21	20	30.5	63	3 mm PQFN-16
MAAM-010513	Driver Amplifier	40500	43500	23	23	32	400	5 mm LGA-12

## Power Amplifiers

Part Number	Description	Min Freq (MHz)	Max Freq (MHz)	Gain (dB)	OIP3 (dBm)	Package
MAAM26100	GaAs MMIC Power Amplifier	2000	6500	19	39	Die
XPI035-BD	Linear Power Amplifier	5900	9500	26	39	Die
MAAP-011199	Power Amplifier	8000	10000	12	—	Die
MAAM71100	Power, GaAs MMIC	7000	11000	18	38	Die
MAAP-015030	13 W Power Amplifier	8500	11750	25	—	Die
XPI013-BD	Power Amplifier	17000	26000	20	—	Die
MAAP-011139-DIE	4 W Power Amplifier	29000	31000	24	42	Die
MAAP-015036	Power Amplifier	8500	10500	17	-	Die
MAAP-011140-DIE	6 W Ka-band Power Amplifier	28000	30000	25	46	Die
MAAP-015016-DIE	4 W Ka-band Power Amplifier	32000	38000	18	—	Die
XPI018-BD	Power Amplifier	37000	42000	26	34	Die
MAAP-011232	Power Amplifier	100	3000	23	40	3 mm PQFN-16
MAAP-010168	10 W Power Amplifier	500	3000	24	—	Ceramic Flanged-10
MAAP-010171	8 W Power Amplifier	2500	3500	27.3	—	5 mm PQFN-20
MAAP-011027	8 W Power Amplifier	5200	5900	20	—	5 mm PQFN-20
MAAM26100-B1	Power Amplifier	2000	6000	19	39	CR-2
MAAM26100-P1	Power Amplifier	2000	6000	20	40	CR-15
MAAP-010169	10 W Power Amplifier	2000	6000	18	—	Ceramic Flanged-10
XPI039-QJ	2.5 W Power Amplifier	5600	7100	17	48	6 mm QFN-24
MAAP-011161	4 W Power Amplifier	7100	7900	22	46.5	7 mm SMT
MAAP-011193	4 W Power Amplifier	7700	8500	20	46.5	7 mm SMT
XPI035-QH	0.5 W Power Amplifier	5900	9500	26	39	4 mm PQFN-24
MAAP-008924	1.2 W Power Amplifier	10000	13300	21	42	5 mm PQFN-20
MAAP-010150	10-15.35 GHz Power Amplifier	10000	15350	27	42	7 mm QFN-48
MAAP-011202	2.5 W Power Amplifier	12700	15400	30	41	5 mm QFN-24
MAAP-010517	3 W Power Amplifier	14400	15400	24.5	41	5 mm PQFN-24
XPI042-QT	0.5 W Power Amplifier	12000	16000	21	38	3 mm PQFN-16
XPI043-QH	1.5 W Power Amplifier	12000	16000	21.5	41	4 mm PQFN-24
MAAP-011145	2 W Power Amplifier	17650	19750	26	43	7 mm Cavity
MAAP-011139	4 W Power Amplifier	28500	31000	23	36	5 mm AQFN-32
MAAP-011170	Power Amplifier	37000	40000	27	38	7mm 16-lead SMD
XPI031-QK	38 GHz Power Amplifier	37000	40000	25	35.5	7 mm LGA-28
XPI080-QU	38 GHz Power Amplifier	37000	40000	25	38	7 mm LGA-16
MAAP-010512	42 GHz Power Amplifier	40500	43500	22	38.4	7 mm LGA-16

## Linear Amplifiers

Part Number	Description	Min Freq (MHz)	Max Freq (MHz)	Gain (dB)	OIP3 (dBm)	Package
MAAP-015035	12 W Power Amplifier	8500	11500	36	—	Die
MAAP-015024	8 W Power Amplifier	14500	17500	21	27	Die
XPI019-BD	Power Amplifier	17000	24000	18	36	Die
XPI027-BD	Power Amplifier	27000	31000	21	43	Die
XPI026-BD	Power Amplifier	27000	32000	21	40	Die
XPI003-BD	Power Amplifier	27000	35000	15	34	Die
XPI017-BD	Power Amplifier	30000	36000	16	33	Die
MAAP-011106	Power Amplifier	71000	86000	20	30	Die
MAAM-011167	Medium Power Amplifier	71000	86000	18	27	Die

## Linear Amplifiers (continued)

Part Number	Description	Min Freq (MHz)	Max Freq (MHz)	Gain (dB)	OIP3 (dBm)	Package
MAAM-011117	Broadband, Low Distortion	50	2700	16	35	2 mm PDFN-8
MAAP-011022	7 W Pulsed High Power Amplifier	2700	3000	23	—	6 mm PQFN-28
XPI044-QL	Power Amplifier Module	4000	5900	18.5	47	7 mm SMD-28
XPI050-QJ	2.5 W Power Amplifier	7100	8500	15.5	47	6 mm QFN-24
MAAP-011198	2 W Ka-band Power Amplifier	29000	31000	24.5	37	5 mm QFN-32
MAAM-011139	Driver Amplifier	27500	33400	21	32	4 mm QFN-24
MAAP-010516	4 W Power Amplifier	32000	38000	18	—	5 mm PQFN-24

## Low Noise Amplifiers

Part Number	Min Freq (MHz)	Max Freq (MHz)	Gain (dB)	Noise Figure (dB)	OIP3 (dBm)	Output P1dB (dBm)	Bias Voltage (V)	Bias Current (mA)	Package
MAAM37000	3500	7000	17	1.8	24	14	4	75	Die
MAAM71200	7500	12000	16.5	2.3	22	12	4	40	Die
XLI002-BD	20000	36000	23	2.6	16	4	5	85	Die
XLI010-BD	20000	38000	17	3	—	—	4	45	Die
XLI000-BD	20000	40000	20	2	16	9	3	35	Die
MAIA-011022	40	400	2	0.85	36	22	3	70	5 mm HQFN-32
MAAL-008624	400	500	21	0.9	28	17	5	60	SOIC-8
MAAL-008091	800	1000	15	1.2	30	17	5	60	SOIC-8
MAAL-011136	45	1218	20	1.2	32	17.5	5	50	SOT-89 Plastic Pkg
MAALSS0042	1500	1600	27	1.2	13	1	5	20	SOIC-8
MAAL-010705	500	1600	19	0.5	32	19	4	60	2 mm PDFN-8
MAALSS0048	1400	2000	17	1.6	13	1	3	7	SOT-26
MAAL-007304	500	3000	25.5	0.7	19	7	3	12	SOT-26
MAAL-009120	70	3000	11	1.4	35	18	3	80	SOT-363
MAAL-010200	70	3000	11	1.4	36	17	3	77	SOT-89
MAAL-009053	800	3000	11	1.4	35	18	3	80	SOT-363
MAAL-010570	100	3500	16	0.75	34	18.8	5	15	SOT-363
MAAL-010704	100	3500	19.5	0.9	31.5	18	3	60	SOT-363
MAAL-010706	1400	4000	17.5	0.6	34.5	19	4	60	2 mm PDFN-8
MAAL-011078	700	6000	23	0.35	33	17.5	3	50	2 mm PDFN-8
MAAM37000-AIG	3500	7000	17	2.2	25	14	4	75	Ceramic Gull Wing-8
MAAM37000-A1	3500	7000	17	2.2	25	14	4	75	Ceramic-8
XL1007-QT	3500	8000	12	2	25	8	3	40	3 mm QFN-16
MAAM71200-H1	7500	12000	15.5	2.7	21	11	4	40	Leadless Ceramic
MAAL-010528	8000	12000	20.2	1.6	26	14	4	60	3 mm PQFN
MAAL-011130	2000	18000	19	1.4	21	16	3	80	2 mm PQFN-8
MAAL-011129	18000	31500	23	2.5	25	16	3	80	2 mm PQFN-8
XLI010-QT	20000	38000	17	3	—	6	4	45	3 mm QFN-16
MAAL-011111	22000	38000	19	2.5	—	5	3	55	3 mm QFN-16

## Variable Gain Amplifiers

Part Number	Description	Min Freq (MHz)	Max Freq (MHz)	Gain (dB)	OIP3 (dBm)	Bias Current/Voltage (mA/V)	Package
MAAM-011122	Differential CATV Variable Gain Amplifier	5	300	37.5	42	280/8	7 mm PQFN-48
MAAM-010399	Differential Variable Gain Amplifier	50	1100	28	48	900/6	5 x 7 mm PQFN-40
MAAM-009320	Variable Gain Amplifier with Analog Control	400	2700	25.5	42	231/3.5	4 mm PQFN-24
MAAM-011100	Ultra Small Broadband Variable Gain Amplifier	500	20000	12	25	70/+5-.5	1.5 x 1.2 mm TDFN-6

## CATV Amplifiers

Part Number	Description	Min Freq (MHz)	Max Freq (MHz)	Gain (dB)	OIP3 (dBm)	Bias Current (mA)	Bias Voltage (V)	Noise Figure (dB)	Package
MAAM-011184	CATV Return Path Single-Ended Amplifier	5	300	21	43	95	5	2.5	MSOP 8-EP
MAAM-011185	CATV Return Path Differential Amplifier	5	300	21.2	43	290	5	3.1	3 mm PQFN-16
MAAM-011156	Amplifier, CATV Return Path Differential	5	300	19	44	210	8	7	3 mm PQFN-16
MAAM-011168	Differential CATV Variable Gain	5	300	40	44	290	8	2.6	7 mm PQFN-48
MAAM-011186	Differential CATV Variable Gain Amplifier	5	300	39	42	280	8	3	7 mm PQFN-48
MAAMSS0044	Low Noise, Low Distortion Amplifier	50	1000	12.2	42	225	5	3.3	4 mm PQFN-20
MAAM-010144	Push Pull CATV Amplifier	50	1000	20.5	43	325	8	4.2	TSSOP-16
MAAMSS0067	Low Noise, Low Distortion Amplifier	50	1000	12.2	32	190	5	3.3	4 mm PQFN-20
MAAM-009100	Broadband CATV Amplifier	50	1000	14.3	34	105	5	3	SOT-89
MAAM-009455	CATV Push Pull Amplifier	50	1000	20.5	43	325	8	4.2	4 mm PQFN-20
MAAM-007724	Low Noise, Low Distortion Amplifier	50	1005	12.2	32	190	5	3.3	4 mm PQFN-20
MAAM-010373	Broadband CATV Amplifier	50	1100	22	40	148	8	1.66	SOT-89
MAAM-009633	Broadband CATV Amplifier	50	1200	17	37	120	8	1.9	SOT-89
MAAMSS0060	Low Noise, Low Distortion Amplifier	50	1200	17	37	120	8	1.8	SOT-89
MAAMSS0041	Low Noise, Low Distortion Amplifier	50	1200	15	36	100	8	2.7	SOT-89
MAAMSS0042	Low Noise, Low Distortion Amplifier	50	1200	15	38	110	5	3	SOT-89
MAAM-010355	CATV Power Doubler Push Pull Amplifier	45	1200	23.5	46	440	24	4.5	TSSOP-16
MAAM-011169	CATV 75 $\Omega$ Push Pull Amplifier	45	1200	25	54	480	12	4.4	5x7 mm PQFN40
MAAM-011177	Push Pull CATV Amplifier	45	1200	26	43	265	24	4.0	TSSOP-16
MAAM-011191	CATV Power Doubler Push Pull Amplifier	45	1200	26	46	440	24	4.5	TSSOP-16
MAAM-011182	75 $\Omega$ , 8 V RF Amplifier	45	1218	18	38	130	8	2.7	2 mm PDFN-8
MAAM-011240	75 $\Omega$ , Differential RF Amplifier	5	1218	17	44	290	5	1.7	SOIC-8EP
MAAM-011251	75 $\Omega$ , High Linearity, Low Noise CATV Amplifier	5	1218	15	37	100	5	1.9	SOT-89
MAAM-011258	75 $\Omega$ , High Linearity, Low Noise CATV Amplifier	5	1218	15	37	100	5	2.2	SOT-89
MAAM-011250	75 $\Omega$ , Differential RF Amplifier	5	2018	15	44	290	25	1.7	SOIC-8EP
MAAL-011119	Satellite TV Amplifier	900	2200	10.5	32	80	2.5	1.5	SOT-363
MAAL-009053	Satellite TV Amplifier	800	3000	11	35	80	3	1.4	SOT-363
MAAL-011139	Low Noise Amplifier	5	4000	21	34	85	5	1	SOT-89

## Distributed Amplifiers

Part Number	Min Freq (MHz)	Max Freq (MHz)	Gain (dB)	Gain Flatness (dB)	Noise Figure (dB)	OIP3 (dBm)	Output P1dB (dBm)	Package
XD1008-BD	0	40000	15	0.8	4.5	27	22	Die
MAAM-015023-DIE	18000	40000	26	0.5	6	30	21	Die
XD1001-BD	18000	50000	17	1	5	24	15	Die
MAAM-011109	100	40000	13	18	3/5	22	18	5 mm LGA-9

## FTTx Amplifiers

Part Number	Description	Min Freq (MHz)	Max Freq (MHz)	Gain (dB)	OIP3 (dBm)	Bias Current (mA)	Bias Voltage (V)	Noise Figure (dB)	Package
MAAM-007796	Low Noise FTTx Amplifier	50	1000	21	35	160	5	3.8	4 mm PQFN-20
MAAM-007807	CATV and 2nd Stage FTTx Amp	50	1000	9	35	60	5	3.8	SOT-89
MAAM-008863	FTTx RF Amplifier	50	1000	37	—	220	5	4.8	4 mm PQFN-24
MAAM-010239	Low Noise FTTx Amplifier	50	1000	30	35	215	5	3.5	4 mm PQFN-20
MAAM-010333	Optical Node RF Amplifier	50	1200	33	—	260	5	—	4 mm PQFN-24



## Hybrid Amplifiers: Gain Blocks

Part Number	Description	Min Freq (MHz)	Max Freq (MHz)	Gain (dB)	OIP3 (dBm)	Package
CA181 ♦	Cascadable	10	250	16.5	35	Connectorized
SMA181	Cascadable	10	250	16.5	35	SMT
EA54	Cascadable, High Gain	5	250	27	16	TO-5
A75-2	Cascadable	5	250	21	19	TO-8
A181	Cascadable	10	250	16.5	35	TO-8
CA79	(non-RoHS) Cascadable	5	300	14	38	Connectorized
A79	Cascadable	5	300	14	38	TO-8
SMA79	Cascadable	5	300	14	38	SMT
A56	Cascadable, High Gain	5	400	26	27	TO-8
SMA87	Cascadable	10	400	14	33	SMT
A87	Cascadable	10	400	14	33	TO-8
CA87 ♦	Cascadable	10	400	14	33	Connectorized
EA2	Cascadable	5	400	13.5	21	TO-5
AMC-146-SMA ♦	Cascadable, High Linearity	10	500	21	35	Connectorized
AMC-151-SMA ♦	Cascadable, High Dynamic Range	5	500	12	36	Connectorized
MAAM-007502-SPA512	Cascadable, Medium Power	10	500	18	40	SMTO-8
SMRA89	Cascadable, High Gain	5	500	26.5	35	SMT
SMA74-2	Cascadable, High Efficiency	5	500	26	10	SMT
SMPA511	Cascadable, Medium Power	10	500	12.7	40	SMT
A5	Cascadable Amplifier	5	500	14.8	22	TO-8
PA511	Cascadable, Medium Power	10	500	12.7	40	TO-8
EA54-2	Cascadable, High Gain	5	500	29.5	20	TO-5
A57	Cascadable	10	500	14.7	28	TO-8
SMA57	Cascadable	10	500	14.7	28	SMT
SMA513	Cascadable	10	500	20	30	SMT
A55	Cascadable	10	500	14.7	24	TO-8
RA89-1	Cascadable, High Gain	10	500	30	36	TO-8B
A74-2	Cascadable, High Efficiency	5	500	26	10	TO-8
SMRA89-1	Cascadable, High Gain	10	500	30	36	SMT
A72	Cascadable, High Efficiency	5	500	15	26	TO-8
SMA72	Cascadable, High Efficiency	5	500	15	26	SMT
A77	Cascadable	5	500	16.5	30	TO-8
PA512	Cascadable, Medium Power	10	500	18	40	TO-8
CRA89-1 ♦	Cascadable, High Gain	10	500	30	36	Connectorized
A88	Cascadable	5	500	18.7	30	TO-8
SMA77	Cascadable	5	500	16.5	30	SMT
SMA88	Cascadable	5	500	18.7	30	SMT
RA89	Cascadable, High Gain	5	500	26.5	35	TO-8B
CRA89 ♦	Cascadable, High Gain	5	500	26.5	35	Connectorized
SMA54	Cascadable	5	500	15.5	21	SMT
CA77 ♦	Cascadable	5	500	16.5	30	Connectorized
MAAM-007502-CPA512 ♦	Cascadable, Medium Power	10	500	18	40	Connectorized
A54	Cascadable	5	500	15.5	21	TO-8
MAAM-008200-000A83	Cascadable, High Efficiency	10	500	30	10	TO-8
A513	Cascadable	10	500	20	30	TO-8
A5-5	Cascadable	5	500	15.5	21	TO-8
A5-6	Cascadable	6	600	15.5	21	TO-8
SMA77-1	Cascadable	5	600	16	30	SMT
A77-1	Cascadable	5	600	16	30	TO-8

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## Hybrid Amplifiers: Gain Blocks (continued)

Part Number	Description	Min Freq (MHz)	Max Freq (MHz)	Gain (dB)	OIP3 (dBm)	Package
SMA5-6	Cascadable	6	600	16	21	SMT
CA77-1 ♦	Cascadable	5	600	16	30	Connectorized
A59-1	Cascadable, High Dynamic Range	10	700	10.5	36	TO-8
SMA59-1	Cascadable, High Dynamic Range	10	700	10.5	36	SMT
SMA89	Cascadable	100	800	22	30	SMT
A89	Cascadable	50	800	22	30	TO-8
A11-2	Cascadable	5	1000	16	10	TO-8
AMC-145-SMA ♦	Cascadable	10	1000	10.7	32	Connectorized
AMC-184-SMA ♦	Cascadable	5	1000	20	20	Connectorized
CA17 ♦	Cascadable	10	1000	12	27	Connectorized
CA1021 ♦	Cascadable, High Gain	10	1000	26	26	Connectorized
CRA69 ♦	Cascadable, High Gain	10	1000	25	34	Connectorized
CRA66 ♦	Cascadable, High Gain	10	1000	37	30	Connectorized
CA66-1	Cascadable, High Gain	10	1000	27.5	28	Connectorized
SMA1021	Cascadable, High Gain	10	1000	26	26	SMT
RA66	Cascadable, High Gain	10	1000	37	30	TO-8B
SMRA69	Cascadable, High Gain	10	1000	25	34	SMT
SMA17	Cascadable	10	1000	12	27	SMT
A17	Cascadable Amplifier	10	1000	12	27	TO-8
A66-1	Cascadable, High Gain	10	1000	27.5	28	TO-8
SMA66-1	Cascadable, High Gain	10	1000	27.5	28	SMT
RA69	Cascadable, High Gain	10	1000	25	34	TO-8B
A19-1	Cascadable Amplifier	10	1000	11.5	35	TO-8
SMA19-1	Cascadable	10	1000	11.5	35	SMT
CA19-1 ♦	Cascadable	10	1000	11.5	35	Connectorized
AMC-180-SMA ♦	Cascadable	5	1000	9.7	28	Connectorized
AMC-155-SMA ♦	Cascadable, High Dynamic Range	300	1000	12.3	30	Connectorized
SMRA66	Cascadable, High Gain	10	1000	37	30	SMT
A1021	Cascadable, High Gain	10	1000	26	26	TO-8
CA66 ♦	Cascadable	10	1200	23.5	28	Connectorized
CA64 ♦	Cascadable, High Gain	10	1200	26	20	Connectorized
SMA66	Cascadable	10	1200	23.5	28	SMT
SMA64	Cascadable, High Gain	10	1200	26	20	SMT
A64	Cascadable, High Gain	10	1200	26	20	TO-8
A66	Cascadable	10	1200	23.5	28	TO-8
SMA28	Cascadable	10	1500	11	29	SMT
CA26 ♦	Cascadable	10	1500	20.5	27	Connectorized
CA24 ♦	Cascadable	5	1500	20	21	Connectorized
SMA29-1	Cascadable	10	1500	9	32	SMT
A26	Cascadable Amplifier	10	1500	20.5	27	TO-8
A29-1	Cascadable	10	1500	9	32	TO-8
A28	Cascadable	10	1500	11	29	TO-8
A25	Cascadable Amplifier	5	1500	10	21	TO-8
A24	Cascadable	5	1500	20	21	TO-8
SMA26	Cascadable	10	1500	20.5	27	SMT
SMA24	Cascadable	5	1500	20	21	SMT
A27	Cascadable	5	1500	8.5	28	TO-8
CA28 ♦	Cascadable	10	1500	11	29	Connectorized

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## Hybrid Amplifiers: Gain Blocks (continued)

Part Number	Description	Min Freq (MHz)	Max Freq (MHz)	Gain (dB)	OIP3 (dBm)	Package
SMA27	Cascadable	5	1500	8.5	28	SMT
CA29-1 ♦	Cascadable	10	1500	9	32	Connectorized
CRA36 ♦	Cascadable, High Gain	100	2000	24	22	Connectorized
SMA36	Cascadable	100	2000	16.5	23	SMT
SMPA2010	Cascadable, Medium Power	200	2000	10	33	SMT
A38	Cascadable	10	2000	9.5	30	TO-8
CA38 ♦	Cascadable	10	2000	9.5	30	Connectorized
SMA39	Cascadable	10	2000	7.5	34	SMT
RA36	Cascadable, High Gain	100	2000	24	22	TO-8
SMA35	Cascadable	10	2000	10	21	SMT
A39	Cascadable	10	2000	7.5	34	TO-8
SMA38	Cascadable	10	2000	9.5	30	SMT
A34	Cascadable	100	2000	16	18	TO-8
A36	Cascadable	100	2000	16.5	23	TO-8
SMA37	Cascadable	10	2000	10	28	SMT
SMRA36	Cascadable, High Gain	100	2000	24	22	SMT
A37	Cascadable	10	2000	10	28	TO-8
SMA34	Cascadable	100	2000	16	18	SMT
A35	Cascadable	10	2000	10	21	TO-8
CA35 ♦	Cascadable	10	2000	10	21	Connectorized
CA36-1 ♦	Cascadable	100	2300	16.2	23	Connectorized
A36-1	Cascadable	100	2300	16.2	23	TO-8
SMA36-1	Cascadable	100	2300	16.2	23	SMT
A33-1	Cascadable	2	2400	9	19	TO-8
SMA33-1	Cascadable	2	2400	9	19	SMT
A35-1	Cascadable	2	2400	9	23	TO-8
CA33-1 ♦	Cascadable	2	2400	9	19	Connectorized
SMA35-1	Cascadable	2	2400	9	23	SMT
CA3010 ♦	Cascadable	0	2500	9.5	35	Connectorized
MAAM-007947-CA3602 ♦	Cascadable	100	2600	15	30	Connectorized
A36-2	Cascadable	100	2600	15	30	TO-8
SMA36-2	Cascadable	100	2600	15	30	SMT
SMPA38-2	Cascadable, Medium Power	200	2600	8.5	33	SMT
PA38-2	Cascadable, Medium Power	200	2600	8.5	33	TO-8
SMA43	Cascadable	100	3200	11.5	21	SMT
A43	Cascadable	100	3200	11.5	21	TO-8
CPA48 ♦	Cascadable, Medium Power	1000	4000	16	34	Connectorized
RA46	Cascadable, High Gain	1000	4000	25.5	30	TO-8B
SMPA48	Cascadable, Medium Power	1000	4000	16	34	SMT
PA48	Cascadable, Medium Power	1000	4000	16	34	TO-8B
SMRA46	Cascadable, High Gain	1000	4000	25.5	30	SMT
SMRA62	Cascadable, High Gain	2000	6000	16	28	SMT
RA62	Cascadable, High Gain	2000	6000	16	28	TO-8B
AM42-0040	Power, VSAT MMIC	5900	6400	30	42	R380/CR15
AM42-0039	Power, C-Band VSAT	5900	7100	33	45	CR15
AM42-0007	Power, GaAs MMIC	14000	14500	22	41	R380/CR15
AM42-0002	Power, VSAT MMIC	14000	14500	22	39	R380 / CR15

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## Hybrid Amplifiers: Low Noise Amplifiers

Part Number	Description	Min Freq (MHz)	Max Freq (MHz)	Gain (dB)	Noise Figure (mA)	OIP3 (dBm)	Package
AMC-162-SMA ◆	Cascadable, Low Noise, Hi Dyn Rge	10	100	12.5	1.5	30	Connectorized
AMS-162-PIN ◆	Cascadable, High Dynamic Range	10	100	12.5	1.5	30	TO-8
AM-162-PIN ◆	Cascadable, High Dynamic Range	10	100	12.5	1.1	32	TO-8
A101	Cascadable, High Linearity	5	100	17	3	36	TO-8
SMA101	Cascadable, High Linearity	5	100	17	3	36	SMT
MAAM-007844-OCA801 ◆	Cascadable	10	200	27.3	2	28	Connectorized
SMA80-1	Cascadable	10	200	27.3	2	28	SMT
A80-1	Cascadable	10	200	27.3	2	28	TO-8
A71	Cascadable Amplifier	5	200	18	2.1	10	TO-8
SMA70-1	Cascadable, High Dynamic Range	10	250	8	1.8	28	SMT
CA83-1 ◆	Cascadable	10	250	35.5	2.5	9	Connectorized
A82-1	Cascadable	20	250	19	2.8	26	TO-8
SMA70	Cascadable, High Dynamic Range	10	250	8	1.6	24	SMT
SMA82-1	Cascadable	20	250	19	2.8	26	SMT
CA82 ◆	Cascadable	20	250	25	2.8	31	Connectorized
A70-1	Cascadable, High Dynamic Range	10	250	8	1.8	28	TO-8
CA231 ◆	Cascadable, High Gain	10	250	26	1.7	22	Connectorized
SMA82	Cascadable	20	250	25	2.8	31	SMT
SMA81-1	Cascadable	20	250	25	2.5	27	SMT
SMA81	Cascadable	20	250	24.5	2.6	28	Ceramic SMTO-8
A231	Cascadable, High Gain	10	250	26	1.7	22	TO-8
A70	Cascadable, High Dynamic Range	10	250	8	1.6	24	TO-8
A81-1	Cascadable	20	250	25	2.5	27	TO-8
A70-3	Cascadable, High Dynamic Range	20	250	8	2.8	40	TO-8
SMA83-1	Cascadable	10	250	35.5	2.5	9	SMT
A82	Cascadable	20	250	25	2.8	31	TO-8
SMA231	Cascadable, High Gain	10	250	26	1.7	22	SMT
A81	Cascadable	20	250	25.5	3	28	TO-8
CA70-2 ◆	Cascadable, High Dynamic Range	10	250	8	2.2	38	Connectorized
A74-1	Cascadable, High Gain	5	250	31	4.5	21	TO-8
A70-2	Cascadable, High Dynamic Range	10	250	8	2.2	38	TO-8
AMC-119-SMA ◆	Cascadable, High Linearity	30	250	8	2.5	35	Connectorized
A83-1	Cascadable	10	250	35.5	2.5	9	TO-8
CA78 ◆	Cascadable	5	300	14	3.5	35	Connectorized
SMA87-2	Cascadable	10	300	16	2.9	24	SMT
A78	Cascadable	5	300	14	3.5	35	TO-8
A87-2	Cascadable	10	300	16	2.9	24	TO-8
SMA78	Cascadable	5	300	14	3.5	35	SMT
SMA70-2	Cascadable, High Dynamic Range	10	300	8	2.2	38	Ceramic SMTO-8
SMA70-3	Cascadable, High Dynamic Range	15	300	8	2.8	40	Ceramic SMTO-8
PAW1027 ◆	Ultra Linear Power, Multi Carrier	35	350	38.5	3.7	43	SOT115J
EA1	Cascadable	5	400	14	4.3	13	TO-5
CA87-1 ◆	Cascadable	10	400	16	3.4	31	Connectorized
SMA411	Cascadable	10	400	15.8	3	24	SMT
SMA87-1	Cascadable	10	400	16	3.4	31	SMT
A87-1	Cascadable	10	400	16	3.4	31	TO-8
MAAM-008199-000A51	Cascadable	10	400	15	2.7	10	TO-8
A411	Cascadable	10	400	15.8	3	24	TO-8
CA511 ◆	Cascadable	10	500	17	3.4	33	Connectorized
MAAM-007272-SMA514	Cascadable, High Gain	5	500	28	4	32	SMTO-8
MAAM-007272-OCA515 ◆	Cascadable, High Gain	5	500	27.5	3.5	33	Connectorized
CA74 ◆	Cascadable, High Gain	5	500	30	3	20	Connectorized

## Hybrid Amplifiers: Low Noise Amplifiers (continued)

Part Number	Description	Min Freq (MHz)	Max Freq (MHz)	Gain (dB)	Noise Figure (mA)	OIP3 (dBm)	Package
AMC-147-SMA ◆	Cascadable, High Linearity	5	500	17	3.4	33	Connectorized
AMC-143-SMA ◆	Cascadable	5	500	15.8	2.5	20	Connectorized
AM-131-PIN	Cascadable, Low Noise, High Linearity	5	500	11.5	4	34	TO-8
AMC-123-SMA ◆	Cascadable, Low Noise, High Linearity	5	500	10	5.5	30	Connectorized
MAAM-007272-SMA515	Cascadable, High Gain	5	500	27.5	3.5	33	SMT0-8
A515	Cascadable, High Gain	5	500	27.5	3.5	33	TO-8
CA81-2 ◆	Cascadable	20	500	24.5	3	28	Connectorized
CA75 ◆	Cascadable	5	500	21	2.1	21	Connectorized
CA76 ◆	Cascadable, High Gain	5	500	28	3	28	Connectorized
PAW1027-1 ◆	Ultra Linear Power, Multi Carrier	35	500	38	4.2	43	SOT115J
A76	Cascadable, High Gain	5	500	28	3	28	TO-8
CA531 ◆	Cascadable	10	500	31.7	2	14	Connectorized
CA180 ◆	Cascadable	10	500	16.5	3.4	33	Connectorized
SMA59	Cascadable, High Dynamic Range	5	500	11.5	4.3	36	SMT
SMA81-2	Cascadable	20	500	24.5	3	28	SMT
SMA75-3	Cascadable	10	500	20.5	1.7	16	SMT
A75-3	Cascadable	10	500	20.5	1.7	16	TO-8
SMA75	Cascadable	5	500	21	2.1	21	SMT
SMA74	Cascadable, High Gain	5	500	30	3	20	SMT
SMA531	Cascadable	10	500	31.7	2	14	SMT
SMA58	Cascadable	5	500	11.5	4	34	SMT
EA53-2	Cascadable	5	500	19	3.6	24	TO-5
SMA73	Cascadable, High Gain	5	500	32	3.5	15	SMT
A74	Cascadable, High Gain	5	500	30	3	20	TO-8
A58	Cascadable	5	500	11.5	4	34	TO-8
SMA1	Cascadable	5	500	16	2.4	11	SMT
A1	Cascadable Amplifier	5	500	16	2.4	11	TO-8
A73	Cascadable, High Gain	5	500	32	3.5	15	TO-8
SMA76	Cascadable, High Gain	5	500	28	3	28	SMT
A75	Cascadable Amplifier	5	500	21	2.1	21	TO-8
SMA76-1	Cascadable, High Efficiency	5	500	27.5	3	26	SMT
A59	Cascadable, High Dynamic Range	5	500	11.5	4.3	36	TO-8
A531	Cascadable	10	500	31.7	2	14	TO-8
A76-1	Cascadable, High Efficiency	5	500	27.5	3	26	TO-8
SMA53	Cascadable	10	500	15	3	16	SMT
A81-2	Cascadable	20	500	24.5	3	28	TO-8
MAAM-008317-CA7503 ◆	Cascadable	10	500	20.5	1.7	16	Connectorized
SMA180	Cascadable	10	500	16.5	3.4	33	SMT
MAAM-007272-OCA514	Cascadable, High Gain	5	500	28	4	32	Connectorized
A53	Cascadable	10	500	15	3	16	TO-8
A514	Cascadable, High Gain	5	500	28	4	32	TO-8
A511	Cascadable Amplifier	10	500	17	3.4	33	TO-8
A180	Cascadable	10	500	16.5	3.4	33	TO-8
A80	Cascadable	20	500	29	2.5	27	TO-8
A81-3	Cascadable	20	500	17	4	20	TO-8
SMA80	Cascadable	10	550	29	2.3	27	Ceramic SMT0-8
AM-160-PIN ◆	Cascadable, Low Noise	100	600	28.2	1.6	30	TO-8
AM-191-PIN ◆	Cascadable	100	600	23.5	2.5	32	TO-8
SMA67-1	Cascadable, High Efficiency	10	600	15	3.7	30	SMT

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## Hybrid Amplifiers: Low Noise Amplifiers (continued)

Part Number	Description	Min Freq (MHz)	Max Freq (MHz)	Gain (dB)	Noise Figure (mA)	OIP3 (dBm)	Package
SMA611	Cascadable, Low Noise, Low Volt	5	700	15	3.2	24	SMT
CA67-1 ♦	Cascadable, High Efficiency	10	600	15	3.7	30	Connectorized
A67-1	Cascadable, High Efficiency	10	600	15	3.7	30	TO-8
A611	Cascadable, Low Noise, Low Volt	5	700	15	3.2	24	TO-8
A67	Cascadable, High Efficiency	10	800	14	4	30	TO-8
SMA67	Cascadable, High Efficiency	10	800	14	4	30	SMT
AMC-176-SMA ♦	Cascadable	5	1000	13.2	4	27	Connectorized
CA66-3 ♦	Cascadable, High Efficiency	10	1000	26	3	13	Connectorized
A11	Cascadable Amplifier	5	1000	14.7	3.1	10	TO-8
SMA66-3	Cascadable, High Efficiency	10	1000	26	3	13	SMT
SMA1031	Cascadable, High Gain	10	1000	28.5	2.7	22	SMT
A12	Cascadable Amplifier	10	1000	16	2.8	22	TO-8
A66-3	Cascadable, High Efficiency	10	1000	26	3	13	TO-8
A1031	Cascadable, High Gain	10	1000	28.5	2.7	22	TO-8
A18-1	Cascadable, High Dynamic Range	10	1000	14.7	3.8	30	TO-8
SMA11-2	Cascadable	5	1000	16	2.5	10	SMT
CA18-1 ♦	Cascadable, High Dynamic Range	10	1000	14.7	3.8	30	Connectorized
SMA18-1	Cascadable, High Dynamic Range	10	1000	14.7	3.8	30	SMT
SMA63	Cascadable	5	1000	16	3	15	SMT
AMC-182-SMA ♦	Cascadable, High Gain	5	1000	28.2	3.5	20	Connectorized
A63	Cascadable	5	1000	16	3	15	TO-8
SMA12	Cascadable	10	1000	16	2.8	22	SMT
MAAM-008198-SMA162	Cascadable, High Efficiency	10	1200	13	3.5	18	SMT0-8
SMA1211	Cascadable, Low Volt	10	1200	14	2.8	20	SMT
CA12 ♦	Cascadable, Low Volt	10	1200	14	2.8	20	Connectorized
CA1212 ♦	Cascadable, Low Volt	100	1200	14	1.8	29	Connectorized
A1212	Cascadable Amplifier	100	1200	14	1.8	29	TO-8
SMA1212	Cascadable, Low Volt	100	1200	14	1.8	29	SMT
MAAM-008198-OCA162	Cascadable, High Efficiency	10	1200	13	3.5	18	Connectorized
A1211	Cascadable Amplifier	10	1200	14	2.8	20	TO-8
CA28-2 ♦	Cascadable, High Efficiency	10	1500	14	3.5	24	Connectorized
A28-2	Cascadable, High Efficiency	10	1500	14	3.5	24	TO-8
A25-1	Cascadable	2	1500	13.5	3	22	TO-8
SMA28-2	Cascadable, High Efficiency	10	1500	14	3.5	24	SMT
SMA25-1	Cascadable	2	1500	13.5	3	22	SMT
CA25-1 ♦	Cascadable	2	1500	13.5	3	22	Connectorized
AM-153-PIN ♦	Cascadable, Low Noise	300	1800	12.4	2.5	17	TO-8
PA38	Cascadable, Medium Power	200	2000	10	4	34	TO-8
CA32 ♦	Cascadable, Hi Linearity	100	2000	13	2.1	32	Connectorized
SMA32	Cascadable, Hi Linearity	100	2000	13	2.1	32	SMT
SMA32-1	Cascadable, Low Noise, Low Volt	100	2000	11.5	2.5	25	SMT
A32-1	Cascadable, Low Noise, Low Volt	100	2000	11.5	2.5	25	TO-8
A32	Cascadable, Hi Linearity	100	2000	13	2.1	32	TO-8
CPA38 ♦	Cascadable, Medium Power	200	2000	10	4	34	Connectorized
CA32-1 ♦	Cascadable, Low Noise, Low Volt	100	2000	11.5	2.5	25	Connectorized
SMA31-1	Cascadable	10	2000	11.5	3.5	9	SMT

Note: Part numbers are RoHS compliant ♦ indicates non-RoHS compliant  
 Detailed specifications can be found quickly on our website at [macom.com](http://macom.com) by typing the part number into the search box.  
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## Hybrid Amplifiers: Low Noise Amplifiers (continued)

Part Number	Description	Min Freq (MHz)	Max Freq (MHz)	Gain (dB)	Noise Figure (mA)	OIP3 (dBm)	Package
A33	Cascadable	10	2000	9.5	4.5	15	TO-8
A31-1	Cascadable Amplifier	10	2000	11.5	3.5	9	TO-8
SMPA38	Cascadable, Medium Power	200	2000	10	4	34	SMT
MAAM-007501-0A2002	Cascadable	20	2700	11.5	2.5	40	TO-8
MAAM-007501-CA2002	Cascadable	20	2700	11.5	2.5	40	Connectorized
MAAM-007501-SA2002	Cascadable	20	2700	11.5	2.5	40	SMTO-8
CA4011 ♦	Cascadable, Low Noise, Low Volt	1000	4000	15.5	2	29	Connectorized
CA45-1 ♦	Cascadable	1000	4000	17.5	4	26	Connectorized
SMA45	Cascadable	1000	4000	17.5	4	29	SMT
CA45 ♦	Cascadable	1000	4000	17.5	4	29	Connectorized
A45-1	Cascadable	1000	4000	17.5	4	26	TO-8
SMA4012	Cascadable, Low Noise, Low Volt	1000	4000	18	3.5	26	SMT
A4012	Cascadable, Low Noise, Low Volt	1000	4000	18	3.5	26	TO-8
A4011	Cascadable, Low Noise, Low Volt	1000	4000	15.5	2	29	TO-8
SMA45-1	Cascadable	1000	4000	17.5	4	26	SMT
SMA4011	Cascadable, Low Noise, Low Volt	1000	4000	15.5	2	29	SMT
A45	Cascadable	1000	4000	17.5	4	29	TO-8
A61	Cascadable, Low Noise, Low Volt	2000	6000	7.5	3.2	25	TO-8
A6011	Cascadable, Low Noise, Low Volt	2000	6000	14.8	1.5	30	TO-8
SMA61	Cascadable, Low Noise, Low Volt	2000	6000	7.5	3.2	25	SMT
CA6011 ♦	Cascadable, Low Noise, Low Volt	2000	6000	14.8	1.5	30	Connectorized
SMA6011	Cascadable, Low Noise, Low Volt	1500	6000	14.8	1.5	30	Ceramic SMTO-8

## Hybrid Amplifiers: Limiting Amplifiers

Part Number	Description	Min Freq (MHz)	Max Freq (MHz)	Gain (dBm)	Package
CAL7 ♦	Cascadable, Limiting Amplifier	50	500	13	SMA
LA7	Cascadable, Limiting Amplifier	50	500	12.5	TO-8
AL7	Cascadable, Limiting Amplifier	50	500	13	TO-8
SMLA7	Cascadable, Limiting Amplifier	50	500	12.5	Ceramic SMTO-8
CLA7 ♦	Cascadable, Limiting Amplifier	50	500	12.5	SMA
SMAL7	Cascadable, Limiting Amplifier	20	550	13	Ceramic SMTO-8
SMLA17	Cascadable, Limiting Amplifier	10	1000	11.5	Ceramic SMTO-8
CLA17 ♦	Cascadable, Limiting Amplifier	10	1000	11.5	SMA
LA17	Cascadable, Limiting Amplifier	10	1000	11.5	TO-8
SML1	Cascadable, Signal Limiter	5	3000	—	Ceramic SMTO-8
L1	Cascadable, Signal Limiter	5	3000	—	TO-8
SMLA45	Cascadable, Limiting Amplifier	1000	4000	11.5	Ceramic SMTO-8
CL42 ♦	Cascadable, Signal Limiter	50	4000	—	SMA
CLA45-1 ♦	Cascadable, Limiting Amplifier	1000	4000	14	SMA
LA45-1	Cascadable, Limiting Amplifier	1000	4000	14	TO-8
LA45	Cascadable, Limiting Amplifier	1000	4000	11.5	TO-8
L42	Cascadable, Signal Limiter	50	4000	—	TO-8
SML42	Cascadable, Signal Limiter	50	4000	—	SMT
SMLA45-1	Cascadable, Limiting Amplifier	800	4200	14	Ceramic SMTO-8

Note: Part numbers are RoHS compliant ♦ indicates non-RoHS compliant  
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## MACOM Diodes

### For microwave circuit applications from 1 MHz to 80 GHz

MACOM designs, manufactures, and supports one of the widest variety of PIN, Schottky, Varactor, and Multiplier diodes in the industry for microwave circuit applications from 1 MHz to 80 GHz. Our diodes are manufactured in die, SURMOUNT™, plastic, and ceramic packaging for a variety of circuit configurations providing high performance.



#### Varactor Tuning Diodes

- > GaAs constant gamma series for higher frequency and high Q applications
- > Plastic packaged silicon varactor diodes for surface mount applications, including VCOs, tunable filters, and phase shifters

- > Kilovolt series for high peak voltage HF and VHF applications
- > HIPAX non-magnetic series for high average power MRI HF and VHF applications

#### Multiplier Step Recovery Diodes

- > Flip chip series for higher frequency millimeterwave applications
- > Plastic packaged series for microwave frequency surface mount applications
- > Ceramic packaged series for high power waveguide and coaxial applications

#### PIN Limiter Diodes

- > Die series for chip and wire high frequency microwave applications
- > Ceramic packaged series for waveguide, coaxial, and surface mount applications

#### PIN Switch and Attenuator Diodes

- > CERMACHIP® series for microwave frequency applications
- > Plastic series for cost effective, surface mount applications
- > AlGaAs series for low loss, high isolation millimeterwave frequency applications
- > GaAs and silicon flip chip series for surface mount millimeterwave applications
- > SURMOUNT™ chipstyle diodes for surface mount high performance applications
- > HIPAX series for high average power surface mount UHF applications

#### Schottky Mixer and Detector Diodes

- > Broadband and high power switch circuits: silicon and GaAs PIN switch diodes
- > Analog attenuator circuits: silicon PIN attenuator diodes
- > High power limiter circuits: silicon PIN limiter diodes
- > Detector and mixer circuits: GaAs and silicon Schottky diodes
- > Multiplier circuits: GaAs and silicon Schottky diodes
- > Filter and VCO circuits: GaAs and silicon varactor diodes



Varactor Tuning Diodes

Part Number	Gamma	Total Capacitance (pF)	Quality Factor @ 50 MHz, Min	Breakdown Voltage (V)	Package
MAVR-045436-0287FT	0.5	4.7	1800	30	ODS-287
MAVR-045438-0287FT	0.5	6.8	1600	30	ODS-287
MAVR-045441-0287FT	0.5	12	1200	30	ODS-287
MAVR-045441-0287AT	0.5	12	1200	30	ODS-287
MAVR-045438-0287AT	0.5	6.8	1600	30	ODS-287
MAVR-045440-0287FT	0.5	10	1300	30	ODS-287
MA46603-134	0.5	0.6	6500	30	ODS-134 Die
MAVR-045446-0287AT	0.5	33	750	30	ODS-287
MAVR-045436-0287AT	0.5	4.7	1800	30	ODS-287
MAVR-045440-0287AT	0.5	10	1300	30	ODS-287
MA46600-134	0.5	0.3	8000	30	ODS-134 Die
MA46603-276	0.5	0.6	6500	30	ODS-276
1N5139	0.5	6.8	350	65	DO-7
1N5139A	0.5	6.8	350	65	DO-7
1N5140	0.5	10	300	65	DO-7
1N5140A	0.5	10	300	65	DO-7
1N5141	0.5	12	300	65	DO-7
1N5141A	0.5	12	300	65	DO-7
1N5142	0.5	15	250	65	DO-7
1N5142A	0.5	15	250	65	DO-7
1N5143	0.5	18	250	65	DO-7
1N5143A	0.5	18	250	65	DO-7
1N5144	0.5	22	200	65	DO-7
1N5144A	0.5	22	200	65	DO-7
1N5145	0.5	27	200	65	DO-7
1N5145A	0.5	27	200	65	DO-7
1N5146	0.5	33	200	65	DO-7
1N5146A	0.5	33	200	65	DO-7
1N5147	0.5	39	200	65	DO-7
1N5147A	0.5	39	200	65	DO-7
1N5148	0.5	47	200	65	DO-7
1N5148A	0.5	47	200	65	DO-7
1N5441	0.5	6.8	450	30	DO-7
1N5442A	0.5	8.2	450	30	DO-7
1N5443	0.5	10	400	30	DO-7
1N5444	0.5	12	400	30	DO-7
1N5445	0.5	15	400	30	DO-7
1N5446	0.5	18	350	30	DO-7
1N5447	0.5	20	350	30	DO-7
1N5448	0.5	22	350	30	DO-7
1N5449	0.5	27	350	30	DO-7
1N5450	0.5	33	350	30	DO-7
1N5451	0.5	39	300	30	DO-7
1N5452	0.5	47	250	30	DO-7
1N5453	0.5	56	200	30	DO-7
1N5454	0.5	68	175	30	DO-7
1N5455	0.5	82	175	30	DO-7
1N5456	0.5	120	175	30	DO-7
1N5461	0.5	6.8	600	30	DO-7
1N5462	0.5	8.2	600	30	DO-7

Detailed specifications can be found quickly on our website at [macom.com](http://macom.com) by typing the part number into the search box. All specifications are subject to change.

## Varactor Tuning Diodes (continued)

Part Number	Gamma	Total Capacitance (pF)	Quality Factor @ 50 MHz, Min	Breakdown Voltage (V)	Package
1N5463	0.5	10	550	30	DO-7
1N5464	0.5	12	550	30	DO-7
1N5465	0.5	15	550	30	DO-7
1N5466	0.5	18	500	30	DO-7
1N5467	0.5	20	500	30	DO-7
1N5468	0.5	22	500	30	DO-7
1N5469	0.5	27	500	30	DO-7
1N5470	0.5	33	500	30	DO-7
1N5471	0.5	39	450	30	DO-7
1N5472	0.5	47	400	30	DO-7
1N5473	0.5	56	300	30	DO-7
1N5474	0.5	68	250	30	DO-7
1N5475	0.5	82	225	30	DO-7
1N5476	0.5	100	200	30	DO-7
1N5681	0.5	6.8	600	45	DO-7
1N5682	0.5	8.2	600	45	DO-7
1N5683	0.5	10	550	45	DO-7
1N5684	0.5	12	550	45	DO-7
1N5685	0.5	15	550	45	DO-7
1N5686	0.5	18	500	45	DO-7
1N5687	0.5	22	500	45	DO-7
1N5688	0.5	27	500	45	DO-7
1N5689	0.5	33	500	45	DO-7
1N5690	0.5	39	450	45	DO-7
1N5691	0.5	47	400	45	DO-7
1N5692	0.5	56	300	45	DO-7
1N5693	0.5	68	250	45	DO-7
1N5694	0.5	82	225	45	DO-7
1N5695	0.5	100	200	45	DO-7
1N5696	0.5	6.8	450	65	DO-7
1N5697	0.5	8.2	450	65	DO-7
1N5698	0.5	10	400	65	DO-7
1N5699	0.5	12	400	65	DO-7
1N5700	0.5	15	400	65	DO-7
1N5701	0.5	18	375	65	DO-7
1N5702	0.5	22	375	65	DO-7
1N5703	0.5	27	350	65	DO-7
1N5704	0.5	33	350	65	DO-7
1N5705	0.5	39	325	65	DO-7
1N5706	0.5	47	300	65	DO-7
1N5707	0.5	56	225	65	DO-7
1N5708	0.5	68	175	65	DO-7
1N5709	0.5	82	150	65	DO-7
MAVR-045436-12790T	0.5	4.7	1800	30	ODS-1279
MGV050-18	0.5	0.3	4000	22	C01A
MGV050-18-0805-2	0.5	0.3	4000	22	0805-2
MGV050-18-E28 / 28X	0.5	0.3	4000	22	E28 /28X
MGV050-18-H20	0.5	0.3	4000	22	H20
MGV050-20	0.5	0.55	4000	22	C01A
MGV050-20-0805-2	0.5	0.55	4000	22	0805-2
MGV050-20-E28 / 28X	0.5	0.55	4000	22	E28 /28X



Varactor Tuning Diodes (continued)

Part Number	Gamma	Total Capacitance (pF)	Quality Factor @ 50 MHz, Min	Breakdown Voltage (V)	Package
MGV050-20-H20	0.5	0.55	4000	22	H20
MGV050-22	0.5	1	3000	22	C01A
MGV050-22-0805-2	0.5	1	3000	22	0805-2
MGV050-22-E28 / 28X	0.5	1	3000	22	E28 /28X
MGV050-22-H20	0.5	1	3000	22	H20
MGV050-24	0.5	1.5	3000	22	C01A
MGV050-24-0805-2	0.5	1.5	3000	22	0805-2
MGV050-24-E28 / 28X	0.5	1.5	3000	22	E28 /28X
MGV050-24-H20	0.5	1.5	3000	22	H20
MGV050-26	0.5	2	3000	22	C01A
MGV050-26-0805-2	0.5	2	3000	22	0805-2
MGV050-26-E28 / 28X	0.5	2	3000	22	E28 /28X
MGV050-26-H20	0.5	2	3000	22	H20
MSV1400-08-001	—	1.8	2900	30	Plastic
MSV1400-09-001	—	2.2	2800	30	Plastic
MSV1400-10-001	—	2.7	2600	30	Plastic
MSV1400-108-004	—	1.8	2900	30	Plastic
MSV1400-109-004	—	2.2	2800	30	Plastic
MSV1400-11-001	—	3.3	2500	30	Plastic
MSV1400-110-004	—	2.7	2600	30	Plastic
MSV1400-111-004	—	3.3	2500	30	Plastic
MSV1400-113-004	—	3.9	2400	30	Plastic
MSV1400-114-004	—	4.7	2200	30	Plastic
MSV1400-115-004	—	5.6	2100	30	Plastic
MSV1400-116-004	—	6.8	2000	30	Plastic
MSV1400-117-004	—	8.2	1800	30	Plastic
MSV1400-13-001	—	3.9	2400	30	Plastic
MSV1400-14-001	—	4.7	2200	30	Plastic
MSV1400-15-001	—	5.6	2100	30	Plastic
MSV1400-16-001	—	6.8	2000	30	Plastic
MSV1400-17-001	—	8.2	1800	30	Plastic
MSV1400-19-001	—	10	1600	30	Plastic
MSV1400-20-001	—	12	1500	30	Plastic
MSV1400-21-001	—	15	1200	30	Plastic
MTV4030-01	0.5	0.4	5000	30	Multiple
MTV4030-02	0.5	0.6	5000	30	Multiple
MTV4030-03	0.5	0.8	4800	30	Multiple
MTV4030-04	0.5	1	4800	30	Multiple
MTV4030-05	0.5	1.2	4600	30	Multiple
MTV4030-06	0.5	1.4	4400	30	Multiple
MTV4030-07	0.5	1.6	4400	30	Multiple
MTV4030-08	0.5	1.8	4200	30	Multiple
MTV4030-09	0.5	2.2	4000	30	Multiple
MTV4030-10	0.5	2.7	3800	30	Multiple
MTV4030-11	0.5	3.3	3600	30	Multiple
MTV4030-12	0.5	3.6	3400	30	Multiple
MTV4030-13	0.5	3.9	3400	30	Multiple
MTV4030-14	0.5	4.7	3200	30	Multiple
MTV4030-15	0.5	5.6	3000	30	Multiple
MTV4030-16	0.5	6.8	2800	30	Multiple

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## Varactor Tuning Diodes (continued)

Part Number	Gamma	Total Capacitance (pF)	Quality Factor @ 50 MHz, Min	Breakdown Voltage (V)	Package
MTV4030-17	0.5	8.2	2600	30	Multiple
MTV4030-18	0.5	10	2400	30	Multiple
MTV4030-19	0.5	12	2200	30	Multiple
MTV4030-20	0.5	15	2000	30	Multiple
MTV4030-21	0.5	18	1800	30	Multiple
MTV4030-22	0.5	22	1600	30	Multiple
MTV4030-23	0.5	27	1400	30	Multiple
MTV4030-24	0.5	33	1400	30	Multiple
MTV4030-25	0.5	39	1200	30	Multiple
MTV4030-26	0.5	47	1000	30	Multiple
MTV4045-01	0.5	0.4	3000	45	Multiple
MTV4045-02	0.5	0.6	3000	45	Multiple
MTV4045-03	0.5	0.8	2800	45	Multiple
MTV4045-04	0.5	1	2800	45	Multiple
MTV4045-05	0.5	1.2	2600	45	Multiple
MTV4045-06	0.5	1.4	2400	45	Multiple
MTV4045-07	0.5	1.6	2400	45	Multiple
MTV4045-08	0.5	1.8	2300	45	Multiple
MTV4045-09	0.5	2.2	2200	45	Multiple
MTV4045-10	0.5	2.7	2200	45	Multiple
MTV4045-11	0.5	3.3	2100	45	Multiple
MTV4045-12	0.5	3.6	2000	45	Multiple
MTV4045-13	0.5	3.9	2000	45	Multiple
MTV4045-14	0.5	4.7	2000	45	Multiple
MTV4045-15	0.5	5.6	1900	45	Multiple
MTV4045-16	0.5	6.8	1800	45	Multiple
MTV4045-17	0.5	8.2	1700	45	Multiple
MTV4045-18	0.5	10	1600	45	Multiple
MTV4045-19	0.5	12	1500	45	Multiple
MTV4045-20	0.5	15	1400	45	Multiple
MTV4045-21	0.5	18	1300	45	Multiple
MTV4045-22	0.5	22	1200	45	Multiple
MTV4060-01	0.5	0.8	2100	60	Multiple
MTV4060-02	0.5	1	2100	60	Multiple
MTV4060-03	0.5	1.2	2100	60	Multiple
MTV4060-04	0.5	1.4	2000	60	Multiple
MTV4060-05	0.5	1.6	2000	60	Multiple
MTV4060-06	0.5	1.8	2000	60	Multiple
MTV4060-07	0.5	2.2	2000	60	Multiple
MTV4060-08	0.5	2.7	1900	60	Multiple
MTV4060-09	0.5	3.3	1800	60	Multiple
MTV4060-10	0.5	3.6	1700	60	Multiple
MTV4060-11	0.5	3.9	1700	60	Multiple
MTV4060-12	0.5	4.7	1600	60	Multiple
MTV4060-13	0.5	5.6	1500	60	Multiple
MTV4060-14	0.5	6.8	1400	60	Multiple
MTV4060-15	0.5	8.2	1300	60	Multiple
MTV4060-16	0.5	10	1200	60	Multiple
MTV4060-17	0.5	12	1100	60	Multiple
MTV4060-18	0.5	15	1000	60	Multiple

## Varactor Tuning Diodes (continued)

Part Number	Gamma	Total Capacitance (pF)	Quality Factor @ 50 MHz, Min	Breakdown Voltage (V)	Package
MV1620	0.5	6.8	300	20	DO-7
MV1622	0.5	8.2	300	20	DO-7
MV1624	0.5	10	300	20	DO-7
MV1626	0.5	12	300	20	DO-7
MV1628	0.5	15	250	20	DO-7
MV1630	0.5	18	250	20	DO-7
MV1632	0.5	20	250	20	DO-7
MV1634	0.5	22	250	20	DO-7
MV1636	0.5	27	200	20	DO-7
MV1638	0.5	33	200	20	DO-7
MV1640	0.5	39	200	20	DO-7
MV1642	0.5	47	200	20	DO-7
MV1644	0.5	56	150	20	DO-7
MV1646	0.5	68	150	20	DO-7
MV1648	0.5	82	150	20	DO-7
MV1650	0.5	100	150	20	DO-7
MV1652	0.5	120	250	20	DO-7
MV1654	0.5	150	250	20	DO-7
MV1656	0.5	180	200	20	DO-7
MV1658	0.5	200	200	20	DO-7
MV1660	0.5	220	200	20	DO-7
MV1662	0.5	250	150	15	DO-7
MV1664	0.5	270	100	15	DO-7
MV1666	0.5	330	100	15	DO-7
MV2115	0.5	—	100	30	TO-92
MV830	0.5	15	30	30	Glass Axial Leaded
MV831	0.5	18	25	30	Glass Axial Leaded
MV832	0.5	22	25	30	Glass Axial Leaded
MV833	0.5	27	25	30	Glass Axial Leaded
MV834	0.5	33	20	30	Glass Axial Leaded
MV835	0.5	39	20	30	Glass Axial Leaded
MV836	0.5	47	15	30	Glass Axial Leaded
MV837	0.5	56	15	30	Glass Axial Leaded
MV838	0.5	68	15	30	Glass Axial Leaded
MV839	0.5	82	10	30	Glass Axial Leaded
MV840	0.5	100	10	30	Glass Axial Leaded
SMV2101	0.5	6.8	450	30	Plastic
SMV2102	0.5	8.2	450	30	Plastic
SMV2103	0.5	10	400	30	Plastic
SMV2104	0.5	12	400	30	Plastic
SMV2105	0.5	15	400	30	Plastic
SMV2106	0.5	18	350	30	Plastic
SMV2107	0.5	22	350	30	Plastic
SMV2108	0.5	27	300	30	Plastic
SMV2109	0.5	33	200	30	Plastic
SMV2110	0.5	39	150	30	Plastic
SMV2111	0.5	47	150	30	Plastic
SMV2112	0.5	56	150	30	Plastic
SMV2113	0.5	68	150	30	Plastic
SMV2114	0.5	82	100	30	Plastic
SMV2115	0.5	100	100	30	Plastic

Detailed specifications can be found quickly on our website at [macom.com](http://macom.com) by typing the part number into the search box. All specifications are subject to change.

## Varactor Tuning Diodes (continued)

Part Number	Gamma	Total Capacitance (pF)	Quality Factor @ 50 MHz, Min	Breakdown Voltage (V)	Package
MA46H071-1088	0.75	1	4500	20	ODS-1088
MA46H070-1056	0.75	0.6	4500	20	ODS-1056
MA46H072-1056	0.75	3	3000	20	ODS-1056
MA46H073-1056	0.75	5	2200	20	ODS-1056
MA46H071-1056	0.75	1	4500	20	ODS-1056
MGV075-08	0.75	0.3	4000	22	C01A
MGV075-09	0.75	0.4	4000	22	C01A
MGV075-10	0.75	0.5	3000	22	C01A
MGV075-11	0.75	0.7	3000	22	C01A
MGV075-12	0.75	0.8	3000	22	C01A
MGV075-13	0.75	1	3000	22	C01A
MGV075-14	0.75	1.2	3000	22	C01A
MGV075-15	0.75	1.5	3000	22	C01A
MGV075-16	0.75	1.8	3000	22	C01A
MGV075-17	0.75	2	3000	22	C01A
MAVR-011020-1411	0.9	0.025	3000	22	Pocket Tape and Gel Pack
MAVR-000250-0287AT	1	2.7	450	12	ODS-287
MAVR-000250-0287FT	1	2.7	450	12	ODS-287
MAVR-000250-11410T	1	2.7	450	12	ODS-1141
MAVR-000250-1146AT	1	2.7	450	12	ODS-1146
MAVR-000250-1146FT	1	2.7	450	12	ODS-1146
MAVR-000250-12790T	1	2.7	450	12	SC-79
MAVR-000120-14110G	1	0.35	3000	20	Flip Chip DIE
MAVR-000120-14110P	1	0.35	3000	20	Flip Chip DIE
MAVR-000403-0287AT	1	15	250	22	ODS-287
MAVR-000405-0287FT	1	22	175	22	ODS-287
MAVR-000407-0287FT	1	33	150	22	ODS-287
MAVR-011005-12790T	1	0.27	—	20	SC-79
MAVR-001340-11410T	1	9.2	600	12	ODS-1141
MAVR-000240-11410T	1	3.5	450	12	SOD323(2L)
MAVR-001320-1146FT	1	28.3	350	12	ODS-1146
MAVR-001350-1146FT	1	5.9	690	12	ODS-1146
MAVR-001330-1146FT	1	13.2	530	12	ODS-1146
MAVR-000146-12030W	1	0.06	15000	26	Flip Chip DIE
MAVR-001350-12790T	1	5.9	690	12	ODS-1279
MAVR-001230-12790T	1	4.7	1700	12	ODS-1279
MAVR-000350-11410T	1	6.2	400	12	ODS-1141
MAVR-000403-0287FT	1	15	250	22	ODS-287
MAVR-000340-11410T	1	9.5	350	12	ODS-1141
MAVR-001330-12790T	1	13.2	530	12	ODS-1279
MAVR-000404-0287FT	1	18	175	22	ODS-287
MAVR-001320-11410T	1	28.3	350	12	ODS-1141
MAVR-000407-0287AT	1	33	150	22	ODS-287
MAVR-001240-12790T	1	3.4	1200	12	ODS-1279
MAVR-000401-0287AT	1	10	250	22	ODS-287
MAVR-000230-11410T	1	5	400	12	ODS-1141
MAVR-000401-0287FT	1	10	250	22	ODS-287
MA4ST1231-1141T	1	4.7	1700	12	ODS-1141
MAVR-000409-0287FT	1	47	150	22	ODS-287
MAVR-001340-1146FT	1	9.2	600	12	ODS-1146

Varactor Tuning Diodes (continued)

Part Number	Gamma	Total Capacitance (pF)	Quality Factor @ 50 MHz, Min	Breakdown Voltage (V)	Package
MAVR-001330-11410T	1	13.2	530	12	ODS-1141
MAVR-000230-0287FT	1	5	400	12	ODS-287
MAVR-000120-12030W	1	0.35	3000	15	Flip Chip DIE
MA4ST1241-1141T	1	3.4	1200	12	ODS-1141
MAVR-001340-12790T	1	9.2	600	12	ODS-1279
MA46H146	1	0.06	15000	26	Flip Chip DIE
MA46452-134	1	1	3000	22	ODS-134 Die
MA46461-186	1	4.7	1500	22	ODS-186
MA46451-120	1	0.7	4000	22	ODS-120
MA46H120	1	0.35	3000	15	Flip Chip DIE
MAVR-000230-0287AT	1	5	400	12	ODS-287
MAVR-000240-0287AT	1	3.5	450	12	ODS-287
MAVR-000240-1146FT	1	3.5	450	12	ODS-1146
MAVR-000320-11410T	1	28	300	12	ODS-1141
MGV100-08	1	0.35	4000	22	CO1A
MGV100-09	1	0.45	4000	22	CO1A
MGV100-20	1	0.55	4000	22	CO1A
MGV100-21	1	0.65	4000	22	CO1A
MGV100-22	1	0.8	3000	22	CO1A
MGV100-23	1	1	3000	22	CO1A
MGV100-24	1	1.2	3000	22	CO1A
MGV100-25	1	1.5	3000	22	CO1A
MGV100-26	1	1.7	3000	22	CO1A
MGV100-27	1	2	3000	22	CO1A
MAVR-000202-12790T	1.25	3	2000	22	SC-79
MA46472-134	1.25	1	3000	22	ODS-134 Die
MA46480-134	1.25	3.8	2000	22	ODS-134 Die
MA46H200-1056	1.25	0.6	3000	22	ODS-1056
MA46474-134	1.25	1.5	3000	22	ODS-134 Die
MA46473-134	1.25	1.2	3000	22	ODS-134 Die
MA46475-134	1.25	1.8	3000	22	ODS-134 Die
MA46477-134	1.25	2.2	3000	22	ODS-134 Die
MA46483-186	1.25	6.8	1500	22	ODS-186
MA46473-186	1.25	1.2	3000	22	ODS-186
MA46485-120	1.25	10	1500	22	ODS-120
MA46585-1209	1.25	0.5	3000	18	ODS-1209 Die
MA46474-120	1.25	1.5	3000	22	ODS-120
MA46470-120	1.25	0.5	4000	22	ODS-120
MA46472-94	1.25	1	3000	22	ODS-94
MA46470-134	1.25	0.5	4000	22	ODS-134 Die
MA46H204-1088	1.25	10	1500	22	ODS-1088
MA46H202-1056	1.25	3	2000	22	ODS-1056
MA46477-186	1.25	2.2	3000	22	ODS-186
MA46H204-1056	1.25	10	1500	22	ODS-1056
MA46H201-1088	1.25	1	3000	22	ODS-1088
MA46H203-1088	1.25	5	1500	22	ODS-1088
MA46474-95	1.25	1.5	3000	22	ODS-95
MA46H203-1056	1.25	5	1500	22	ODS-1056
MA46H202-1088	1.25	3	2000	22	ODS-1088
MA46471-134	1.25	0.7	4000	22	ODS-134 Die



Varactor Tuning Diodes (continued)

Part Number	Gamma	Total Capacitance (pF)	Quality Factor @ 50 MHz, Min	Breakdown Voltage (V)	Package
MA46474-94	1.25	1.5	3000	22	ODS-94
MA46580-1209	1.25	0.5	3000	18	ODS-1209 Die
MA46H201-1056	1.25	1	3000	22	ODS-1056
MGV125-08	1.25	0.3	4000	22	C01A
MGV125-09	1.25	0.4	4000	22	C01A
MGV125-20	1.25	0.5	4000	22	C01A
MGV125-21	1.25	0.7	4000	22	C01A
MGV125-22	1.25	1	3000	22	C01A
MGV125-23	1.25	1.2	3000	22	C01A
MGV125-24	1.25	1.5	3000	22	C01A
MGV125-25	1.25	1.7	3000	22	C01A
MGV125-26	1.25	2	3000	22	C01A
MAVR-000080-0287AT	1.3	24.8	150	12	ODS-287
MAVR-000081-0287FT	1.3	10.1	300	12	ODS-287
MAVR-000080-0287FT	1.3	24.8	150	12	ODS-287
MAVR-000081-0287AT	1.3	10.1	300	12	ODS-287
MAVR-000083-0287FT	1.3	5	450	12	ODS-287
MAVR-000083-0287AT	1.3	5	450	12	ODS-287
MAVR-000079-0287FT	1.3	54.1	80	12	ODS-287
MAVR-000082-0287AT	1.3	7.3	350	12	ODS-287
MA46416-134	1.5	1.8	2500	18	ODS-134 Die
MA46418-30	1.5	2.7	1800	18	ODS-30
MA46H501-1056	1.5	1	2500	18	ODS-1056
MA46H504-1056	1.5	10	1200	18	ODS-1056
MA46413-120	1.5	1	2500	18	ODS-120
MA46H500-1056	1.5	0.6	2500	18	ODS-1056
MA46418-120	1.5	2.7	1800	18	ODS-120
MA46H503	1.5	5	1200	18	ODS-1056
MHV500-11	—	2.5	2600	22	Multiple
MHV501-11	—	3.1	2600	22	Multiple
MHV502-11	—	3.7	2600	22	Multiple
MHV503-11	—	4.7	2600	22	Multiple
MHV504-11	—	5.6	2600	22	Multiple
MHV505-11	—	6.8	2600	22	Multiple
MHV506-11	—	8.4	2600	22	Multiple
MHV507-11	—	10	2600	22	Multiple
MHV508-11	—	12	2600	22	Multiple
MHV509-11	—	14.6	2600	22	Multiple
MHV510-11	—	17.4	2600	22	Multiple
MHV511-11	—	21	2600	22	Multiple
MHV512-11	—	25.4	2600	22	Multiple
MHV513-11	—	31	2600	22	Multiple
MSV1200-04-001	—	11.5	400	12	Plastic
MSV1200-07-001	—	28	300	12	Plastic
MSV1200-104-004	—	2.9	400	12	Plastic
MSV1200-107-004	—	28	300	12	Plastic
MSV1202-03-001	—	20	300	12	Plastic
MSV1202-08-001	—	50	200	12	Plastic
MSV1202-12-001	—	112.5	125	12	Plastic

## Varactor Tuning Diodes (continued)

Part Number	Gamma	Total Capacitance (pF)	Quality Factor @ 50 MHz, Min	Breakdown Voltage (V)	Package
MSV1204-04-001	—	2.9	500	12	Plastic
MSV1204-05-001	—	5	500	12	Plastic
MSV1204-104-004	—	2.9	500	12	Plastic
MSV1204-105-004	—	5	500	12	Plastic
MSV1204-11-001	—	97.5	80	12	Plastic
MSV1204-12-001	—	46	150	12	Plastic
MSV1204-13-001	—	19.5	200	12	Plastic
MSV1204-14-001	—	15.25	300	12	Plastic
MSV1204-15-001	—	9.25	350	12	Plastic
MSV1204-199-004	—	12.5	250	12	Plastic
MSV1204-22-001	—	22.5	150	12	Plastic
MSV1204-23-001	—	11	200	12	Plastic
MSV1204-24-001	—	7	300	12	Plastic
MSV1204-25-001	—	4.9	350	12	Plastic
MSV1204-99-001	—	—	250	12	Plastic
SMV1401	—	550	200	12	Multiple
SMV1402	—	57	200	12	Multiple
SMV1403	—	175	200	12	Multiple
SMV1404	—	120	200	12	Multiple
SMV1405	—	250	200	12	Multiple
SMV1406	—	100	200	12	Multiple
SMV1407	—	63	200	12	Multiple
SMV1408	—	47	200	12	Multiple
SMV1409	—	33	200	12	Multiple
SMV1410	—	22	200	12	Multiple
SMV1411	—	15	200	12	Multiple
SMV1412	—	10	200	12	Multiple
SMV20411	—	100	80	12	Multiple
SMV20412	—	54	150	12	Multiple
SMV20413	—	22	200	12	Multiple
SMV20414	—	16	300	12	Multiple
SMV20415	—	11.3	350	12	Multiple
SMV20422	—	27	150	12	Multiple
SMV20423	—	13	200	12	Multiple
SMV20424	—	8	300	12	Multiple
SMV20425	—	5.6	350	12	Multiple
SMV30222	—	6	150	8	Multiple
SMV30223	—	12	120	8	Multiple
SMV30224	—	18	100	8	Multiple
SMV30225	—	24	95	8	Multiple
SMV30332	—	6.25	50	8	Plastic
SMV30333	—	12.5	35	8	Plastic

## Multiplier Step Recovery Diodes

Part Number	Junction Capacitance min (pF)	Junction Capacitance max (pF)	Reverse Voltage (V)	Lifetime (ns)	Tt (ps)	Package
MMDB35-B11	0.2	0.2	16	4	35	B11
MMDB45-B11	0.2	0.2	25	8	40	B11
MMDB30-0402	0.3	0.3	14	4	30	402
MMDB30-0805-2	0.3	0.3	14	4	30	0805-2
MMDB30-B11	0.3	0.3	14	4	30	B11
MMDB35-0402	0.2	0.3	16	4	35	402
MMDB35-0805-2	0.2	0.3	16	4	35	0805-2
MMDB35-E28 / 28X	0.3	0.3	16	4	35	E28 / 28X
MMDB45-0402	0.2	0.3	25	8	40	402
MMDB45-0805-2	0.2	0.3	25	8	40	0805-2
MMDB45-E28 / 28X	0.2	0.3	25	8	40	E28 / 28X
MMDB30-E28 / 28X	0.3	0.4	14	4	30	E28 / 28X
MSD700	0.2	0.4	15	8	60	CS11
MSD700-12	0.2	0.4	15	8	60	CS-12
MSD710	0.2	0.4	20	20	11	CS11
MSD720	0.2	0.4	30	30	17	CS11
MSD730	0.2	0.4	40	40	21	CS11
MSD701	0.4	0.6	15	8	60	CS11
MSD711	0.4	0.6	20	20	11	CS11
MSD721	0.4	0.6	30	30	17	CS11
MSD731	0.4	0.6	40	40	21	CS11
MSD702	0.6	0.8	15	8	60	CS11
MSD712	0.6	0.8	20	20	11	CS11
MSD722	0.6	0.8	30	30	17	CS11
MSD732	0.6	0.8	40	40	21	CS11
MSD703	0.8	1	15	8	60	CS11
MSD713	0.8	1	20	20	11	CS11
MSD723	0.8	1	30	30	17	CS11
MSD733	0.8	1	40	40	21	CS11
MAVR-044769-12790T	0.8	1.2	30	50	150	ODS-1279
MA144769-287T	0.8	1.2	30	50	150	ODS-287
MAVR-044769-0287FT	0.8	1.2	30	50	150	ODS-287
MSD704	1	1.4	15	8	60	CS11
MSD714	1	1.4	20	20	11	CS11
MSD724	1	1.4	30	30	17	CS11
MSD734	1	1.4	40	40	21	CS11
MSD705	1.4	2	15	8	60	CS11
MSD715	1.4	2	20	20	11	CS11
MSD725	1.4	2	30	30	17	CS11
MSD735	1.4	2	40	40	21	CS11
MSD706	2	3	15	8	60	CS11
MSD716	2	3	20	20	11	CS11
MSD726	2	3	30	30	17	CS11
MSD736	2	3	40	40	21	CS11
MAVR-044767-0287AT	3	4.5	30	500	600	ODS-287

**Multiplier Step Recovery Diodes (continued)**

Part Number	Junction Capacitance min (pF)	Junction Capacitance max (pF)	Reverse Voltage (V)	Lifetime (ns)	Tt (ps)	Package
MMD0151-A15	0.7	0.8	15	15	100	A15
MMD0153-A15	—	—	15	25	95	A15
MMD0803-A15	—	—	250	70	275	A15
MMD0815-A15	—	—	135	50	180	A15
MMD0825-A15	—	—	50	45	130	A15
MMD0833-A15	—	—	15	25	90	A15
MMD0840-A15	—	—	20	15	75	A15
MMD805-0805-2	—	—	100	60	250	0805-2
MMD805-28X	—	—	100	60	250	28X
MMD805-C12	2.5	3.5	100	60	250	—
MMD805-E25	—	—	100	60	250	E25
MMD805-E28	—	—	100	60	250	E28
MMD805-H20	—	—	100	60	250	H20
MMD805-T86	—	—	100	60	250	T86
MMD805-T89	—	—	100	60	250	T89
MMD810-28X	—	—	70	50	200	28X
MMD810-C12	1.5	2.5	70	50	200	—
MMD810-E28	—	—	70	50	200	E28
MMD810-H20	—	—	70	50	200	H20
MMD810-T86	—	—	70	50	200	T86
MMD810-T89	—	—	70	50	200	T89
MMD820-0805-2	—	—	60	40	80	0805-2
MMD820-28X	—	—	60	40	80	28X
MMD820-C12	1	1.7	60	40	80	—
MMD820-E28	—	—	60	40	80	E28
MMD820-H20	—	—	60	40	80	H20
MMD820-T86	—	—	60	40	80	T86
MMD830-0805-2	—	—	0	25	60	0805-2
MMD830-28X	—	—	0	25	60	28X
MMD830-C11	0.5	1	30	25	60	—
MMD830-E28	—	—	30	25	60	E28
MMD830-H20	—	—	30	25	60	H20
MMD830-T86	—	30	25	60	T86	
MMD832-0805-2	—	—	15	20	60	0805-2
MMD832-28X	—	—	5	20	60	28X
MMD832-C11	0.4	0.8	15	20	60	—
MMD832-E28	—	—	15	20	60	E28
MMD832-H20	—	—	15	20	60	H20
MMD832-T86	—	—	15	20	60	T86
MMD835-0805-2	—	—	20	15	50	0805-2
MMD835-28X	—	—	20	15	50	28X
MMD835-C11	0.3	0.7	20	15	60	—
MMD835-E28	—	—	20	15	50	E28
MMD835-H20	—	—	20	15	50	H20
MMD835-T86	—	—	20	15	50	T86
MMD837-28X	—	—	10	20	50	28X
MMD837-805-2	—	—	10	20	50	805-2

**Multiplier Step Recovery Diodes (continued)**

Part Number	Junction Capacitance min (pF)	Junction Capacitance max (pF)	Reverse Voltage (V)	Lifetime (ns)	Tt (ps)	Package
MMD837-C11	0.2	0.4	10	20	60	—
MMD837-E28	—	—	10	20	50	E28
MMD837-H27	—	—	10	20	50	H27
MMD837-T86	—	—	10	20	50	T86
MMD840-0805-2	—	—	15	15	50	0805-2
MMD840-28X	—	—	15	15	50	28X
MMD840-C11	0.2	0.4	15	15	60	—
MMD840-E28	—	—	15	15	50	E28
MMD840-H27	—	—	15	15	50	H27
MMD840-T86	—	—	15	15	50	T86
MMDB30-28X	—	—	4	14	30	28X
MMDB30-E28	—	—	4	14	30	E28
MMDB30-T86	—	—	4	14	30	0805-2
MMDB35-28X	—	—	4	16	35	28X
MMDB35-402	—	—	4	16	35	402
MMDB35-E28	—	—	4	16	35	E28
MMDB45-28X	—	—	8	25	45	28X
MMDB45-402	—	—	8	25	45	402
MMDB45-E28	—	—	8	25	45	E28
SMMD805-SOD323	2.5	3.5	100	60	250	SOD323
SMMD805-SOT23-0S	2.5	3.5	100	60	250	SOT23 (-0S, -1S)
SMMD805-SOT23-1S	2.5	3.5	100	60	250	SOT23 (-0S, -1S)
SMMD810-SOD323	1.5	2.5	70	50	200	SOD323
SMMD810-SOT23-0S	1.5	2.5	70	50	200	SOT23 (-0S, -1S)
SMMD810-SOT23-1S	1.5	2.5	70	50	200	SOT23 (-0S, -1S)
SMMD820-SOD323	1	1.7	60	40	110	SOD323
SMMD820-SOT23-0S	1	1.7	60	40	110	SOT23 (-0S, -1S)
SMMD820-SOT23-1S	1	1.7	60	40	110	SOT23 (-0S, -1S)
SMMD830-SOD323	0.5	1	30	25	90	SOD323
SMMD830-SOT23-0S	0.5	1	30	25	90	SOT23 (-0S, -1S)
SMMD830-SOT23-1S	0.5	1	30	25	90	SOT23 (-0S, -1S)
SMMD832-SOD323	0.4	0.8	20	20	85	SOD323
SMMD832-SOT23-0S	0.4	0.8	20	20	85	SOT23 (-0S, -1S)
SMMD832-SOT23-1S	0.4	0.8	20	20	85	SOT23 (-0S, -1S)
SMMD835-SOD323	0.3	0.7	15	20	80	SOD323
SMMD835-SOT23-0S	0.3	0.7	15	20	80	SOT23 (-0S, -1S)
SMMD835-SOT23-1S	0.3	0.7	15	20	80	SOT23 (-0S, -1S)
SMMD837-SOD323	0.2	0.4	12	20	75	SOD323
SMMD837-SOT23-0S	0.2	0.4	12	20	75	SOT23 (-0S, -1S)
SMMD837-SOT23-1S	0.2	0.4	12	20	75	SOT23 (-0S, -1S)
SMMD840-SOD323	0.2	0.4	10	15	70	SOD323
SMMD840-SOT23-0S	0.2	0.4	10	15	70	SOT23 (-0S, -1S)

## PIN Switch and Attenuator Diodes

Part Number	Min Freq (MHz)	Max Freq (MHz)	CW Power Dissipation (W)	Total Capacitance (pF)	Resistance (Ohm)	TI (ns)	Breakdown Voltage Min (V)	Package
MA4PH611	1	500	10	1	0.4	5000	1000	ODS-1091
MA4P1450NM-1091T	1	300	30	1.8	5	8000	50	ODS-1091
MADP-011048	5	400	51	3	0.5	200	100	4mm HQFN-8
MA4P1200NM-401T	5	500	5.5	1.2	0.5	8000	50	ODS-401
MA4P1250NM-1072T	5	500	18	0.8	0.5	8000	50	ODS-1072
MA4PK3004	DC	500	50	4	0.2	65000	3000	ODS-1075
MA4P607-212	1	500	37.5	1.3	0.4	12000	1000	ODS-212 Die
MA4P506-255	1	500	13.6	0.95	0.3	3000	500	ODS-255
MA4P606-36	1	500	20	0.99	0.7	4000	1000	ODS-36
MA4PK3001	DC	500	75	4	0.2	65000	3000	ODS-1084
MA4P607-43	1	500	25	2	0.4	5000	100	ODS-43
MA4P504-255	1	500	7.5	0.4	0.6	1000	500	ODS-255
MA4P606-258	1	500	20	0.98	0.7	4000	1000	ODS-258
MA4PK3000	DC	500	75	4	0.2	65000	3000	ODS-1073
MA4PK2001	DC	500	50	3.2	0.2	30000	2000	ODS-1082
MA4P505-255	1	500	10.7	0.55	0.5	2000	500	ODS-255
MA4PK3003	DC	500	50	4	0.2	65000	3000	ODS-1085
MA4P4002B-402	DC	500	12	2.2	0.5	20000	200	ODS-402
MA4PK3002	DC	500	75	4	0.2	65000	3000	ODS-1074
MA4P4006B-402	DC	500	12	2.2	0.5	20000	600	ODS-402
MA4P606-30	1	500	15	0.8	0.7	4000	1000	ODS-30
MA4PK2000	DC	500	50	3.2	0.2	30000	2000	ODS-1027
MA4PK2002	DC	500	50	3.2	0.2	30000	2000	ODS-1048
MA4PK2003	DC	500	37.5	3.2	0.2	30000	2000	ODS-1080
MA4PK2004	DC	500	37.5	3.2	0.2	30000	2000	ODS-1038
MA4P604-255	1	500	15	0.6	1	3000	1000	ODS-255
MA4P709-150	DC	500	75	3.3	0.3	10000	1500	ODS-150
MA4P4301B-402	DC	500	10	2	1	15000	100	ODS-402
MA4P1200-401T	5	500	5.5	1.2	0.5	8000	50	ODS-401
MA4P4001B-402	DC	500	12	2.2	0.5	20000	100	ODS-402
MA4P607-296	1	500	25	2.35	0.4	5000	1000	ODS-296
MA4P4302B-402	DC	500	10	2	1	15000	200	ODS-402
MA4P504-186	1	500	7.5	0.4	0.6	1000	500	ODS-186
MA4P504-30	1	500	7.5	0.4	0.6	1000	500	ODS-30
MA4P506-258	1	500	13.6	0.95	0.3	3000	500	ODS-258
MA4P506-30	1	500	13.6	0.95	0.3	3000	500	ODS-30
MA4P506-31	1	500	13.6	0.95	0.3	3000	500	ODS-31
MADP-000015-000030	1	500	15	0.55	0.4	2000	500	ODS-30
MSWSER-070-10	50	800	2	0.9	0.2	5500	500	3023
MSWSER-100-05	50	800	2	0.65	0.3	4000	500	3023
MA4P7435NM-1091T	DC	1000	50	2.5	0.2	14000	1100	ODS-1091
MA4P7002B-401T	1	1000	5	0.7	0.9	5000	200	ODS-401
MA4P7441F-1091T	DC	1000	30	2.2	0.5	18000	100	ODS-1091
MA4P7446F-1091T	DC	1000	25	2.2	0.5	19000	600	ODS-1091
MA4P1450-1091T	DC	1000	30	1.8	0.5	8000	50	ODS-1091
1N5719	1	1000	0.3	0.35	1.5	3000	100	ODS-54
MA4P4001F-1091T	DC	1000	7.5	2.2	0.5	20000	100	ODS-1091
MA4P4002F-1091T	DC	1000	7.5	2.2	0.5	20000	200	ODS-1091
MA47266-146	1	1000	0.5	1.5	0.6	4000	200	ODS-146



**PIN Switch and Attenuator Diodes (continued)**

Part Number	Min Freq (MHz)	Max Freq (MHz)	CW Power Dissipation (W)	Total Capacitance (pF)	Resistance (Ohm)	TI (ns)	Breakdown Voltage Min (V)	Package
MA4P606-4	1	1000	1	0.7	0.7	4000	1000	ODS-4
MA4P4301F-1091T	DC	1000	5	2	1	15000	100	ODS-1091
MA4P4006F-1091T	DC	1000	7.5	2.2	0.5	20000	600	ODS-1091
MA4PH239-1079T	DC	1000	1	0.8	6	2000	200	ODS-1079
MA47047-54	1	1000	0.3	0.3	1.5	1000	200	ODS-54
MA4P7102B-401T	1	1000	6	1	0.5	2500	200	ODS-401
MA4P7104B-401T	1	1000	6	1	0.5	2500	400	ODS-401
MA4P606-131	1	1000	15	0.6	0.7	4000	1000	ODS-131 Die
MA4P7101F-1072T	1	1000	11.5	1	0.5	2500	100	ODS-1072
MA44781	10	1000	1.7	1.5	0.8	200	60	ODS-1134
MA4PH237-1079T	1	1000	1	1.5	0.6	3000	200	ODS-1079
MA47208	1	1000	15	1.3	0.3	1300	1000	ODS-114
MA45471	10	1000	1.7	3.3		200	75	ODS-1134
MA4P7006B-401T	1	1000	5	0.7	0.9	5000	600	ODS-401
MA4P7101B-401	1	1000	6	1	0.5	2500	100	ODS-401
MA4PH238-1072T	DC	1000	1	0.5	6	2000	200	Ceramic SMT
MADP-000504-10720T	DC	1000	2.9	0.5	0.6	1000	500	ODS-1072
MADP-007417-10720T	DC	1000	12	0.7	0.8	6500	1000	ODS-1072
MEST2G-150-10-CM30	1	1000	3	1	0.2	3200	500	CM30
MSWSE-020-05	10	1000	0.5	0.62	0.3	600	250	503
MSWSE-020-10	10	1000	0.75	0.37	0.8	490	250	503
MSWSE-050-10	1	1000	2.5	0.53	0.4	3200	500	0805P
MADP-011034-10720T	10	1500	6	1	0.4	300	150	ODS-1072
MADP-000404-10720T	100	1500	7.5	0.6	0.7	100	250	ODS-1072
MADP-000488-13740W	100	1500	15	0.16	1.6	4000	900	ODS-1374 Die
MADP-000135-01340W	100	1500	50	0.15	1.2	440	200	ODS-134 Die
MADP-000235-10720T	DC	1500	7.5	1.2	0.5	300	35	ODS-1072
MADP-000234-10720T	DC	1500	3	1.7	0.3	3000	500	ODS-1072
MA4P7418-1072T	DC	1500	11.5	0.8	1.2	7000	1100	ODS-1072
MA4P7470F-1072T	DC	1500	12	0.7	0.8	6500	800	ODS-1072
MA4P7452F-1072T	DC	1500	10	0.7	0.9	9000	150	ODS-1072
MA4P7461F-1072T	DC	1500	8	1	0.5	6000	100	ODS-1072
MA4P7464F-1072T	DC	1500	7.5	0.8	0.5	4500	400	ODS-1072
MA4P505-1072T	DC	1500	15	0.7	0.5	2000	500	ODS-1072
MA4P7002F-1072T	DC	1500	10	0.7	0.9	5000	200	ODS-1072
MA4P504-1072T	DC	1500	7.5	0.55	0.6	1000	500	ODS-1072
MA4P7006F-1072T	DC	1500	10	0.7	0.9	5000	600	ODS-1072
MA4P7102F-1072T	DC	1500	11.5	1	0.5	2500	200	ODS-1072
MA4P7104F-1072T	DC	1500	11.5	1	0.5	2500	400	ODS-1072
MA4P506-1072T	DC	1500	15	1	0.3	3000	500	ODS-1072
MA4P7001F-1072T	DC	1500	10	0.7	0.9	5000	100	ODS-1072
MA4P1250-1072T	DC	1500	18	0.9	0.5	8000	50	ODS-1072
MA4PH235-1072T	1	1500	1	1.2	0.5	300	35	ODS-1072
MEST2G-050-80	1	1500	2.5	0.28	0.5	2200	500	2615
MADP-009989	30	1500	4	1.2	0.3	6500	75	SMT and Axial Lead
MADP-000208-13180W	30	1800	2.6	0.81	0.4	500	90	ODS-1318 SURMOUNT™
MADP-011037-13900T	50	2000	5	0.3	0.6	1000	400	3mm HQFN-16
MADP-000165-01340W	100	2000	50	0.06	2.5	200	200	ODS-134 Die

Detailed specifications can be found quickly on our website at [macom.com](http://macom.com) by typing the part number into the search box. All specifications are subject to change.

**PIN Switch and Attenuator Diodes (continued)**

Part Number	Min Freq (MHz)	Max Freq (MHz)	CW Power Dissipation (W)	Total Capacitance (pF)	Resistance (Ohm)	TI (ns)	Breakdown Voltage Min (V)	Package
MADP-042508-130600	50	2000	1.3	0.6	0.9	310	100	ODS-1306 Die
MADP-042505-130600	50	2000	1.3	0.6	0.8	210	80	ODS-1306 Die
MA4P404-258	5	2000	7.5	0.58	0.7	1000	250	ODS-258
MA4P404-30	5	2000	7.5	0.4	0.6	1000	250	ODS-30
MA4PH236-1072T	10	2000	1	0.5	3	1500	600	ODS-1072
MA47120-54T	DC	2000	0.25	1	0.5	3000	35	ODS-54
MA47123-139	DC	2000	0.25	0.5	3	1000	200	ODS-139
MA47600-54	DC	2000	0.25	0.3	6	2000	200	ODS-54
MA4P203-54	DC	2000	0.25	0.25	1.5	100	100	ODS-54
MA4P404-54	DC	2000	0.25	0.3	0.7	1000	250	ODS-54
MA4P504-4	DC	2000	0.25	0.35	0.6	1000	500	ODS-4
MA4P505-4	DC	2000	0.25	0.5	0.6	1000	500	ODS-4
MA4P506-4	DC	2000	0.25	0.85	0.3	2500	500	ODS-4
MA4PH151-139T	DC	2000	0.25	1.2	0.6	1000	100	ODS-139
MA4PH301	DC	2000	0.25	1.1	1	4000	200	ODS-146
MA4PH401-54T	DC	2000	0.25	0.3	1.5	1000	50	ODS-54
MEST2G-150-10-CM32	1	2000	150	0.5	0.5	3000	500	CM32
MSWSE-044-10	1	2000	40	0.3	0.5	1200	300	0805P
MA4P7433ST-1146T	25	2500	0.2	0.47	1.5	200	75	SC-70 (3L)
MADP-007448-0287DT	25	2500	0.3	0.37	2	400	100	SOT-23
MADP-007167-0287FT	1	2500	0.3	0.42	16	3000	200	SOT-23
MADP-007167-0287BT	1	2500	0.3	0.42	16	3000	200	SOT-23
MADP-007436-0287DT	25	2500	0.2	1.12	0.5	200	75	SOT-23
MADP-007433-0287DT	25	2500	0.3	0.42	1.5	200	75	SOT-23
MADP-007167-11410T	1	2500	0.2	0.42	16	3000	200	SOD-323 (2L)
MA4P7455CA-287T	5	2500	0.3	0.35	3	1000	100	SOT-23
MADP-007167-0287GT	1	2500	0.3	0.42	16	3000	200	SOT-24
MA4P7447ST-287T	15	2500	0.3	1.32	0.6	1000	100	SOT-25
MA4P7436CK-287T	25	2500	0.3	1.12	0.5	200	75	SOT-26
MA4P7455CA-1146T	5	2500	2	0.47	3	1000	100	SC70 (3L)
MADP-007448-12790T	25	2500	0.2	0.35	2	400	100	SC-79
MADP-007167-0287DT	1	2500	0.3	0.42	16	3000	200	SOT-23
MA4P7436ST-287T	25	2500	0.3	1.12	0.5	200	75	SOT-23
MA4P7447CA-287T	15	2500	0.3	1.32	0.6	1000	100	SOT-23
MADP-007448-0287BT	25	2500	0.3	0.37	2	400	100	SOT-23
MADP-007448-1146GT	25	2500	0.2	0.37	2	400	100	SC70 (3L)
MA4P7455-287T	5	2500	0.3	0.47	3	1000	100	SOT-23
MADP-007455-0287DT	5	2500	0.3	0.47	3	400	100	SOT-23
MA4P7455ST-287T	5	2500	0.3	0.47	3	1000	100	SOT-23
MA4P7436-1141T	25	2500	0.2	1.11	0.5	200	75	SOD-323 (2L)
MADP-007436-1146DT	25	2500	0.2	1.12	0.5	200	75	SOT-323
MA4P7433ST-287T	25	2500	0.3	0.47	1.5	200	75	SOT-23
MA4P7447-1141T	15	2500	0.2	1.31	0.6	1000	100	SOD-323 (2L)
MA4P7433CK-287T	25	2500	0.3	0.47	1.5	200	75	SOT-23
MA4P7433-287T	25	2500	0.3	0.47	1.5	200	75	SOT-23
MA4P7455CK-1146T	5	2500	0.2	0.47	3	1000	100	SC70 (3L)
MADP-007155-0287DT	15	2500	0.3	1.32	0.6	1000	100	SOT-23
MA4P7447-287T	15	2500	0.3	1.32	0.6	1000	100	SOT-23

## PIN Switch and Attenuator Diodes (continued)

Part Number	Min Freq (MHz)	Max Freq (MHz)	CW Power Dissipation (W)	Total Capacitance (pF)	Resistance (Ohm)	TI (ns)	Breakdown Voltage Min (V)	Package
MA4P7455CK-287T	5	2500	0.3	0.35	3	1000	100	SOT-23
MA4P7433-1141T	25	2500	0.2	0.46	1.5	200	75	SOD-323 (2L)
MA4P7436-287T	25	2500	0.3	1.12	0.5	200	75	SOT-23
MA4P7433CA-287T	25	2500	0.3	0.47	1.5	200	75	SOT-23
MA4P7447CK-287T	15	2500	0.3	1.32	0.6	1000	100	SOT-23
MA4P7436CK-1146T	25	2500	0.2	1.12	0.5	200	75	SC70 (3L)
MA4P604-258	1	2500	15	0.68	1	3000	1000	ODS-258
MA4P604-30	1	2500	15	0.5	1	3000	1000	ODS-30
MA4P7433CA-1146T	25	2500	0.2	0.47	1.5	200	75	SC-70 (3L)
MA4P7433CK-1146T	25	2500	0.2	0.47	1.5	200	75	SC-70 (3L)
MA4P7436-1146T	25	2500	0.2	1.12	0.5	200	75	SC-70 (3L)
MA4P7436CA-1146T	25	2500	0.2	1.12	0.5	200	75	SOT-323
MA4P7436CA-287T	25	2500	0.3	1.12	0.5	200	75	SOT-23
MA4P7436ST-1146T	25	2500	0.2	1.12	0.5	200	75	SC-70 (3L)
MA4P7455ST-1146T	5	2500	0.3	0.47	3	1000	100	SC-70 (3L)
MADP-007167-0287AT	1	2500	0.3	0.42	16	3000	200	SOT-23
MADP-007433-1146DT	25	2500	0.3	0.42	1.5	200	75	SC70 (3L)
MADP-007448-0287AT	25	2500	0.3	0.37	2	400	100	SOT-23
MADP-007448-0287FT	25	2500	0.3	0.37	2	400	100	SOT-23
MADP-007448-0287GT	25	2500	0.3	0.37	2	400	100	SOT-23
MADP-007448-11410T	25	2500	0.2	0.36	2	400	100	SOD-323 (2L)
MADP-007448-1146BT	25	2500	0.2	0.37	2	400	100	SC70 (3L)
MADP-007455-1146DT	5	2500	0.2	0.42	3	1000	100	SC70 (3L)
MADP-007448-1146DT	25	2500	—	0.25	2	—	100	SMT
MEST2G-050-45	1	2500	2.5	0.18	0.4	1200	500	2615
MSWSE-010-15	10	3000	0.75	0.21	0.8	500	200	503
MEST2G-100-20-CM33	1	2600	2.5	—	—	2000	500	CM33
MEST2G-160-10-CM33	1	1000	7.5	—	—	5000	500	CM33
MADP-010633-13920T	25	3000	6	0.4	0.6	1000	500	ODS-132
MADP-010631-13920T	25	3000	5	1	0.5	200	100	ODS-1392
MADP-010630-13920T	25	3000	2	0.35	1.5	200	100	ODS-1392
MA4SPS422	50	3000	1.8	0.34	3.1	10000	200	SURMOUNT™ Die
MSWSE-010-15S	1	3000	0.75	0.17	0.8	650	200	0402P
MSWSE-010-16S	1	3000	0.75	0.15	0.9	1000	250	0402P
MSWSE-040-10	1	3000	0.4	0.12	0.6	700	250	0805P
MSWSE-050-17	1	3000	0.4	0.2	0.7	2000	500	0805P
MADP-000506-014400	1	4000	10	0.7	0.3	100	500	ODS-144
MADP-007433-0287HT	25	4000	0.3	0.42	1.5	200	75	SOT-23
MADP-007433-12790T	25	4000	0.2	0.4	1.5	200	75	SC-79
MADP-042405-130600	50	4000	1.3	0.27	0.8	210	80	ODS-1306 Die
MADP-007436-12790T	25	4000	0.2	1.1	0.5	200	75	SC-79
MADP-007455-12790T	5	4000	0.2	0.45	3	1000	100	SC-79
MA4P505-36	1	4000	15	0.55	0.5	2000	500	ODS-36
MA4P303-186	20	4000	0.3	0.35	1.5	200	200	ODS-186
MA4P203-30	30	4000	5	0.35	1.5	100	100	ODS-30
MA4P203-1056	30	4000	0.3	0.35	1.5	100	100	ODS-1056
MA4P303-120	20	4000	5	0.35	1.5	200	200	ODS-120
MA4P202-276	50	4000	0.3	0.25	2.5	60	100	ODS-276
MA4P506-131	1	4000	13.6	0.7	0.3	3000	500	ODS-131 Die

**PIN Switch and Attenuator Diodes (continued)**

Part Number	Min Freq (MHz)	Max Freq (MHz)	CW Power Dissipation (W)	Total Capacitance (pF)	Resistance (Ohm)	TI (ns)	Breakdown Voltage Min (V)	Package
MA4P303-1088	20	4000	0.3	0.47	1.5	200	200	ODS-1088
MA4P202-120	50	4000	0.3	0.25	2.5	60	100	ODS-120
MA4P7455-1225	10	4000	—	0.47	1.4	1000	100	SOT-25
MADP-007167-0287HT	1	4000	0.3	0.42	16	3000	200	SOT-23
MADP-042408-130600	50	4000	1.5	0.36	0.6	380	100	ODS-1306 Die
MEST2G-025-10	1	4000	2	0.22	1.3	2000	200	CM32
MADP-007437-0287BT	5	5000	0.3	0.42	6	2000	200	SOT-23
MADP-007437-0287DT	5	5000	0.3	0.42	6	2000	200	SOT-23
MADP-007438-0287FT	5	5000	0.2	0.42	10	3000	200	SC70 (3L)
MADP-007438-0287DT	5	5000	0.3	0.42	10	3000	200	SC70 (3L)
MA4P7437-1141T	5	5000	0.2	0.46	6	2000	200	SOD-323 (2L)
MADP-007438-0287BT	5	5000	0.3	0.42	10	3000	200	SC70 (3L)
MA4P7437-287T	5	5000	0.3	0.47	6	2000	200	SOT-23
MADP-007437-0287FT	5	5000	0.3	0.42	6	2000	200	SOT-23
MA4P7455-1141T	5	5000	0.2	0.46	3	1000	100	SOD-323 (2L)
MA4P7438-287T	5	5000	0.2	0.47	10	3000	200	SC70 (3L)
MA4P7438-1141T	5	5000	0.2	0.46	10	3000	200	SOD-323 (2L)
MA4P7437CA-287T	5	5000	0.3	0.47	6	2000	200	SOT-23
MA4P7438CA-287T	5	5000	0.3	0.47	10	3000	200	SC70 (3L)
MADP-042308-130600	50	6000	1	0.14	1.3	280	100	ODS-1306 Die
MADP-008120-12790T	10	6000	0.2	0.15	2.5	200	100	SC-79
MADP-042305-130600	50	6000	1	0.14	1.3	180	80	ODS-1306 Die
MA4SPS421	50	6000	1.8	0.13	6.2	5000	200	SURMOUNT™ Die
MA4P505-131	1	6000	10.7	0.35	0.5	2000	500	ODS-131 Die
MADP-017015-1314	1	6000	5	0.32	0.7	1300	115	ODS-1314 Die
MADP-017025-1314	1	6000	5	0.23	1	2300	1335	ODS-1314 Die
MADP-030015-13140P	1	6000	11.5	0.78	0.5	1600	115	ODS-1314 Die
MADP-030025-1314	1	6000	11.5	0.5	0.7	2800	135	ODS-1314 Die
MEST2G-020-15	100	6000	1	0.08	1.2	50	100	2012
MSWSE-005-10S	10	6000	0.5	0.08	2	180	200	402
MSWSE-005-15	10	6000	0.4	0.11	2	180	200	503
MSWSH-020-30	10	6000	0.5	0.13	0.6	600	100	2012
MSWSH-040-30	1	6000	1	0.42	0.4	1100	500	2012
MSWSH-100-30	1	6000	2.5	0.4	0.4	3400	700	CM22
MA4P504-144	1	8000	7.5	0.4	0.6	1000	500	ODS-144
MA4P604-131	1	8000	15	0.3	1	3000	1000	ODS-131 Die
MA47222	1	8000	3.8	0.4	1.6	160	150	ODS-144
MA47223	1	8000	7.5	0.4	0.6	1000	500	ODS-144
MA47418-134	5	10000	6	0.15	3	1000	200	ODS-134 Die
MA47416-132	DC	10000	5	0.15	6	2000	200	ODS-132 Die
MA4P504-132	1	10000	7.5	0.2	0.6	1000	500	ODS-132 Die
MA4P404-132	5	10000	7.5	0.2	0.7	600	250	ODS-132 Die
MEST2G-010-20	100	10000	0.75	0.04	1.5	50	125	2012
MEST2G-080-25	1	10000	2	0.09	1	1550	500	CM27
MEST2G-150-20	1	10000	3	0.19	1.8	1800	500	CM26
MSAT-N25	1	10000	2	—	1.5	3000	200	2012
MSAT-P25	1	10000	2	—	1.5	3000	200	2012
MSWSHB-020-30	1	10000	1	0.13	—	4000	200	2012
MSWSHC-040-40	1	10000	1	0.42	—	3000	300	2615

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**PIN Switch and Attenuator Diodes (continued)**

Part Number	Min Freq (MHz)	Max Freq (MHz)	CW Power Dissipation (W)	Total Capacitance (pF)	Resistance (Ohm)	TI (ns)	Breakdown Voltage Min (V)	Package
MADP-011028-14150T	50	12000	4.3	0.24	3.4	2000	200	1.5x1.2 mm TDFN-6
MADP-011027-14150T	50	12000	3.3	0.24	1.9	1000	100	1.5x1.2 mm TDFN-6
MADP-011029-14150T	50	12000	7.5	0.31	1.5	1000	400	1.5x1.2 mm TDFN-6
MADP-042908-130600	50	16000	0.8	0.06	3.1	230	100	ODS-1306 Die
MADP-042905-130600	50	16000	0.8	0.06	3.1	140	80	ODS-1306 Die
MADP-000402-12530G	50	18000	1	0.04	5	200	1000	ODS-1253 Die
MADP-000402-12530P	50	18000	1	0.04	4.5	200	70	ODS-1253 Die
MADP-064908-131000	50	18000	1	0.05	5	200	100	ODS-1310 Die
MA4PBL027	100	18000	0.2	0.03	4	150	90	Beam Lead Die
MA4P7493-134	50	18000	2.5	0.05	1.8	80	150	ODS-134 Die
MA4SPS402	50	18000	1	0.04	5	200	100	ODS-1253 Die
MA4P161-134	100	18000	2.3	0.1	1.5	150	100	ODS-134 Die
MA4P203-134	30	18000	5	0.15	1.5	100	100	ODS-134 Die
MA4P303-134	20	18000	5	0.15	1.5	200	200	ODS-134 Die
MA4FCP305	100	24000	0.2	0.06	2.1	25	40	ODS-1269 Die
MA4SPS552	50	26000	1	0.06	1.7	2500	200	ODS-1270
MA4SPS502	1	26000	35	0.14	2.4	2800	275	ODS-1270
MA4SPS302	1	26000	0.8	0.4	1.3	460	100	SURMOUNT™ Die
MSWSH-020-24	100	26000	2	—	—	600	200	2020
MADP-001907-13050P	100	30000	0.5	0.03	4.2	4	50	Flip Chip Die
MADP-000907-14020P	100	30000	0.1	0.03	5.2	4	45	Flip Chip Die
MADP-000907-14020W	100	30000	0.1	0.03	5.2	4	45	Flip Chip Die
MA4AGP907	100	30000	0.1	0.03	5.2	4	50	Flip Chip Die
MA4FCP300	100	30000	0.2	0.03	2.6	140	70	ODS-1269 Die
MA4GP907	100	30000	0.3	0.03	4.2	2	45	Flip Chip Die
MA4AGFCP910	100	40000	0.1	0.02	5.2	4	75	Flip Chip Die
MA4AGBLP912	100	40000	0.1	0.02	4	5	50	Beam Lead Die
MA4FCP200	100	40000	0.1	0.02	2.8	100	70	ODS-1264 Die
MA4GP905	100	40000	0.1	0.03	3	2	50	Die
MA4GP022	100	40000	0.3	0.15	1	20	50	ODS-277
MA4GP030	100	40000	0.3	0.06	2	25	100	ODS-277
MEST2GFC-010-25	100	40000	10	0.04	2	85	100	Chip
MMGPN0515-C12	100	18000	—	0.15	1	9	68	C12
MGPN0518-C12	100	12000	—	0.18	1	9	68	C12
MGPN1503-C01A	100	26000	—	0.03	3	10	205	C01A
MGPN1504-C01A	100	26000	—	0.04	3	10	205	C01A
MGPN1506-C12	100	18000	—	0.06	2	20	205	C12
MMP7010	200	14000	—	0.1	1	10	25	Various
MMP7011	200	12000	—	0.15	0.8	10	25	Various
MMP7012	200	6000	—	0.2	0.7	10	25	Various
MMP7013	200	4000	—	0.25	0.6	10	25	Various
MMP7020	1	18000	—	0.05	1.2	60	70	Various
MMP7021	1	14000	—	0.1	1	60	70	Various
MMP7022	1	10000	—	0.15	0.9	60	70	Various
MMP7023	1	8000	—	0.2	0.7	60	70	Various
MMP7024	1	6000	—	0.25	0.5	60	70	Various
MMP7025	1	18000	—	0.03	1.9	100	100	Various
MMP7026	1	14000	—	0.07	1.5	100	100	Various

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## PIN Switch and Attenuator Diodes (continued)

Part Number	Min Freq (MHz)	Max Freq (MHz)	CW Power Dissipation (W)	Total Capacitance (pF)	Resistance (Ohm)	TI (ns)	Breakdown Voltage Min (V)	Package
MMP7027	1	14000	—	0.1	1.2	100	100	Various
MMP7028	1	10000	—	0.15	1	100	100	Various
MMP7029	1	8000	—	0.2	0.9	100	100	Various
MMP7030	1	5000	—	0.3	0.8	100	100	Various
MMP7031	1	18000	—	0.03	3	225	200	Various
MMP7032	1	14000	—	0.07	2.2	225	200	Various
MMP7033	1	14000	—	0.1	1.6	225	200	Various
MMP7034	1	10000	—	0.15	1	225	200	Various
MMP7035	1	8000	—	0.2	0.8	225	200	Various
MMP7036	1	5000	—	0.3	0.7	225	200	Various
MMP7040	1	15000	—	0.03	2.6	400	200	Various
MMP7041	1	12000	—	0.07	1.5	400	200	Various
MMP7042	1	10000	—	0.1	1.3	400	200	Various
MMP7043	1	8000	—	0.15	1	400	200	Various
MMP7044	1	4000	—	0.2	0.8	400	200	Various
MMP7045	1	2000	—	0.3	0.7	400	200	Various
MMP7046	1	1200	—	0.5	0.6	400	200	Various
MMP7047	1	12000	—	0.03	2.6	600	200	Various
MMP7048	1	6000	—	0.07	1.6	600	200	Various
MMP7049	1	8000	—	0.1	1.2	600	200	Various
MMP7050	1	6000	—	0.15	0.9	600	200	Various
MMP7051	1	2500	—	0.2	0.8	600	200	Various
MMP7052	1	1500	—	0.3	0.7	600	200	—
MMP7053	1	1200	—	0.5	0.6	600	200	Various
MMP7060	0.5	16000	—	0.05	2	1	250	Various
MMP7061	0.5	14000	—	0.08	1.5	1	250	Various
MMP7062	0.5	12000	—	0.1	1.2	1	250	various
MMP7063	0.5	8000	—	0.2	1	1	250	Various
MMP7064	0.5	6000	—	0.3	0.8	2	250	Various
MMP7065	0.5	14000	—	0.08	1.5	2	500	Various
MMP7066	0.5	12000	—	0.1	1.2	2	500	Various
MMP7067	0.5	8000	—	0.2	1	2	500	Various
MMP7068	0.5	4000	—	0.3	0.8	2	500	Various
MMP7069	0.5	1000	—	0.5	0.7	2	500	Various
MMP7070	0.1	70	—	2.2	0.5	6	100	Various
MMP7070-127-4	0.1	70	5	2.2	0.5	6	100	CS127-4
MMP7070-128-4	0.1	70	5	2.2	0.5	6	100	CS128-4
MMP7071	0.1	100	—	2	1	8	100	Various
MMP7071-127-4	0.1	100	5	2	1	8	100	CS127-4
MMP7071-128-4	0.1	100	5	2	1	8	100	CS128-4
MMP7072	0.1	150	—	0.7	0.8	3	100	Various
MMP7072-127-1	0.1	150	5	0.7	0.8	3	100	CS127-1
MMP7072-128-1	0.1	150	5	0.7	0.8	3	100	CS128-1
MMP7073	0.1	100	—	1	0.5	3	100	Various
MMP7073-127-1	0.1	100	5	1	0.5	3	100	CS127-1
MMP7073-128-1	0.1	100	5	1	0.5	3	100	CS128-1
MMP7074	0.1	70	—	2.2	0.5	6	200	Various
MMP7074-127-4	0.1	70	5	2.2	0.5	6	200	CS127-4
MMP7074-128-4	0.1	70	5	2.2	0.5	6	200	CS128-4
MMP7075	0.1	100	—	2	1	8	200	Various



**PIN Switch and Attenuator Diodes (continued)**

Part Number	Min Freq (MHz)	Max Freq (MHz)	CW Power Dissipation (W)	Total Capacitance (pF)	Resistance (Ohm)	TI (ns)	Breakdown Voltage Min (V)	Package
MMP7075-127-4	0.1	100	5	2	1	8	200	CS127-4
MMP7075-128-4	0.1	100	5	2	1	8	200	CS128-4
MMP7076	0.1	150	—	0.7	0.8	3	200	Various
MMP7076-127-1	0.1	150	5	0.7	0.8	3	200	CS127-1
MMP7076-128-1	0.1	150	5	0.7	0.8	3	200	CS128-1
MMP7077	0.1	100	—	1	0.5	3	200	Various
MMP7077-127-1	0.1	100	5	1	0.5	3	200	CS127-1
MMP7077-128-1	0.1	100	5	1	0.5	3	200	CS128-1
MMP7078	0.1	100	—	1	0.5	3	400	Various
MMP7078-127-1	0.1	100	5	1	0.5	3	400	CS127-1
MMP7078-128-1	0.1	100	5	1	0.5	3	400	CS128-1
MMP7079	0.1	70	—	2.2	0.5	6	600	Various
MMP7079-127-4	0.1	70	5	2.2	0.5	6	600	CS127-4
MMP7079-128-4	0.1	70	5	2.2	0.5	6	600	CS128-4
MMP7080	0.1	150	—	0.7	0.8	3	600	Various
MMP7080-127-1	0.1	150	5	0.7	0.8	3	600	CS127-1
MMP7080-128-1	0.1	150	5	0.7	0.8	3	600	CS128-1
MMP7081-127-1	0.1	70	5	1.2	0.8	4	50	CS127-1
MMP7081-128-1	0.1	70	5	1.2	0.8	4	50	CS128-1
MMP7089-127-1	0.1	500	5	0.5	0.6	1	500	CS127-1
MMP7089-128-1	0.1	500	5	0.5	0.6	1	500	CS128-1
MMP7090-127-1	0.1	400	5	0.7	0.5	2	500	CS127-1
MMP7090-128-1	0.1	400	5	0.7	0.5	2	500	CS128-1
MMP7091-127-1	0.1	150	5	1	0.3	3	500	CS127-1
MMP7091-128-1	0.1	150	5	1	0.3	3	500	CS128-1
MMP7092	1	6000	—	0.2	0.6	1	500	Various
MMP7093	1	4000	—	0.35	0.5	2	500	Various
MMP7094	1	2000	—	0.7	0.3	3	500	Various
MMP7094-85	1	2000	—	0.8	0.3	3	500	—
MMP7095	1	5000	—	0.3	1	3	1000	Various
MMP7096	1	2000	—	0.6	0.7	4	1000	Various
MMP7097	1	500	—	1.3	0.4	5	1000	Various
MMPN080045	1000	35000	—	—	—	—	200	C50
MMPN080150	1000	35000	—	—	—	—	200	C51
MMSPN050-C53	1000	40000	—	—	—	—	200	C53
MMSPN050-C54	1000	40000	—	—	—	—	200	C54
MMSPN051-C54	1000	40000	—	—	—	—	200	C54
MNP0008	100	12000	1	0.08	2	150	100	C12p
MNP0008-ET47P	100	12000	1	0.48	2	150	100	ET47p
MNP0008-T54P	100	12000	0.25	0.28	2	150	100	T54p
MNP0008-T55P	100	12000	0.25	0.21	2	150	100	T55p
MNP0008-T89P	100	12000	0.25	0.33	2	150	100	T89p
MNP0010	10	12000	1	0.08	2	300	150	C12p
MNP0010-ET47P	10	12000	1	0.048	2	300	150	ET47p
MNP0010-T54P	10	12000	0.25	0.28	2	300	150	T54p
MNP0010-T55P	10	12000	0.25	0.21	2	300	150	T55p
MNP0010-T89P	10	12000	0.25	0.33	2	300	150	T89p
MNP0012	5	12000	1	0.08	3.5	350	300	C12p
MNP0012-ET47P	5	12000	1	0.48	3.5	350	300	ET47p

**PIN Switch and Attenuator Diodes (continued)**

Part Number	Min Freq (MHz)	Max Freq (MHz)	CW Power Dissipation (W)	Total Capacitance (pF)	Resistance (Ohm)	TI (ns)	Breakdown Voltage Min (V)	Package
MNP0012-T54P	5	12000	0.25	0.28	3.5	350	300	T54p
MNP0012-T55P	5	12000	0.25	0.21	3.5	350	300	T55p
MNP0012-T89P	5	12000	0.25	0.33	3.5	350	300	T89p
MNP0012A	5	8000	1	0.18	0.6	650	350	C22p
MNP0012A-ET47P	5	8000	1	0.58	0.6	650	350	ET47p
MNP0012A-T54P	5	8000	0.25	0.36	0.6	650	350	T54p
MNP0012A-T55P	5	8000	0.25	0.31	0.6	650	350	T55p
MNP0012A-T89P	5	8000	0.25	0.43	0.6	650	350	T89p
MNP0014	1	10000	1.5	0.12	1.3	750	500	C22p
MNP0014-ET47P	1	10000	0.5	0.52	0.8	750	450	ET47p
MNP0014-T54P	1	10000	0.1	0.32	0.8	750	450	T54p
MNP0014-T55P	1	10000	0.1	0.25	0.8	750	450	T55p
MNP0014-T89P	1	10000	0.1	0.37	0.8	750	450	T89p
MNP0014A	1	10000	0.1	0.18	0.8	1400	500	C32p
MPN1000-12	500	26000	0.1	0.02	4	80	100	Beam Lead
MPN1001-12	500	24000	0.1	0.027	3.5	80	100	Beam Lead
MPN1002-12	500	20000	0.1	0.03	3.2	80	100	Beam Lead
MPN1003-12	500	18000	0.1	0.035	2.9	80	100	Beam Lead
MPN1004-12	500	18000	0.1	0.04	2.7	80	100	Beam Lead
MPN1005-12	500	18000	0.1	0.048	2.5	80	100	Beam Lead
MPN1006-12	500	17000	0.1	0.055	2.3	80	100	Beam Lead
MPN1007-12	500	17000	0.1	0.065	2.1	80	100	Beam Lead
MPN1100-12	500	22000	0.1	0.025	3.7	50	50	Beam Lead
MPN1101-12	500	20000	0.1	0.03	3.5	50	50	Beam Lead
MPN1102-12	500	18000	0.1	0.04	2.9	50	50	Beam Lead
MPN1103-12	500	17000	0.1	0.06	2.5	50	50	Beam Lead
MPN3001	—	—	—	0.25	1	—	200	A15
MPN3002	—	—	—	0.25	1	—	300	A15
MPN3080	—	—	—	0.4	2.5	—	100	A15
MPN3081	—	—	—	0.4	3.5	—	100	A15
MPN4165	—	—	—	0.3	1.5	—	100	A15
MPN4166	—	—	—	0.3	1.5	—	100	A15
MPN7302	500	12000	1	0.08	1.2	8	20	C11
MPN7302-0805-2	500	10000	1	0.14	1.2	8	20	0805-2
MPN7302-E28 / 28X	500	10000	1	0.16	1.2	8	20	E28 / 28X
MPN7302-H20	500	6000	1	0.26	1.2	8	20	H20
MPN7304	200	12000	1	0.06	2.2	15	40	C11
MPN7304-0805-2	200	10000	1	0.18	2.2	15	40	0805-2
MPN7304-E28 / 28X	200	10000	1	0.14	2.2	15	40	E28 / 28X
MPN7304-H20	200	6000	1	0.24	2.2	15	40	H20
MPN7304A	200	12000	1	0.12	1	30	40	C12
MPN7304A-0805-2	200	10000	1	0.18	1	30	40	0805-2
MPN7304A-E28 / 28X	200	10000	1	0.2	1	30	40	E28 / 28X
MPN7304A-H20	200	6000	1	0.3	1	30	40	H20
MPN7306	100	12000	1	0.08	1.2	50	70	C12
MPN7306-0805-2	100	10000	1	0.14	1.2	50	70	0805-2
MPN7306-E28 / 28X	100	10000	1	0.16	1.2	50	70	E28 / 28X
MPN7306-H20	100	6000	1	0.26	1.2	50	70	H20
MPN7310	50	12000	1	0.05	1.5	100	100	C12
MPN7310-0805-2	50	10000	1	0.11	1.5	100	100	0805-2

**PIN Switch and Attenuator Diodes (continued)**

Part Number	Min Freq (MHz)	Max Freq (MHz)	CW Power Dissipation (W)	Total Capacitance (pF)	Resistance (Ohm)	TI (ns)	Breakdown Voltage Min (V)	Package
MPN7310-E28 / 28X	50	10000	1	0.13	1.5	100	100	E28 / 28X
MPN7310-H20	50	6000	1	0.23	1.5	100	100	H20
MPN73100	50	10000	1	0.2	0.5	2	600	Die
MPN7310A	50	12000	1	0.18	0.6	200	100	C12
MPN7310A-0805-2	50	10000	1	0.24	0.6	200	100	0805-2
MPN7310A-E28 / 28X	50	10000	1	0.26	0.6	200	100	E28 / 28X
MPN7310A-H20	50	6000	1	0.36	0.6	200	100	H20
MPN73120	5	6000	1	0.3	0.5	4	700	Die
MPN7312A	20	12000	1	0.08	1.2	150	120	C12
MPN7312A-0805-2	20	10000	1	0.14	1.2	150	120	0805-2
MPN7312A-E28 / 28X	20	10000	1	0.16	1.2	150	120	E28 / 28X
MPN7312A-H20	20	6000	1	0.26	1.2	150	120	H20
MPN7312B	20	12000	1	0.18	0.8	250	120	C12
MPN7312B-0805-2	20	10000	1	0.24	0.8	250	120	0805-2
MPN7312B-E28 / 28X	20	10000	1	0.26	0.8	250	120	E28 / 28X
MPN7312B-H20	20	6000	1	0.36	0.8	250	120	H20
MPN7315	10	12000	1	0.08	1.2	180	150	C12
MPN7315-0805-2	10	10000	1	0.14	1.2	180	150	0805-2
MPN7315-E28 / 28X	10	10000	1	0.16	1.2	180	150	E28 / 28X
MPN7315-H20	10	6000	1	0.26	1.2	180	150	H20
MPN7320	5	12000	1	0.02	3	120	150	C01
MPN7320-0805-2	5	10000	1	0.08	3	120	150	0805-2
MPN7320-E28 / 28X	5	10000	1	0.1	3	120	150	E28 / 28X
MPN7320-H20	5	6000	1	0.2	3	120	150	H20
MPN7330	5	6000	7	0.3	0.3	500	30	Plastic/Die
MPN7345	5	6000	4	0.3	0.3	700	300	Die
MPN7360	1	6000	10	0.8	0.2	2500	600	Plastic/Die
MPN7370	1	6000	10	2	0.2	5000	700	Plastic/Die
MPN7380	1	6000	10	0.4	0.3	2500	800	Plastic/Die
MPN7420	1	6000	2.5	0.06	1	1000	400	Plastic/Die.
MPN7453A	1	6000	3	0.1	0.7	700	300	Plastic/Die
MPN7453B	1	6000	3	0.15	0.6	2500	400	Plastic/Die
MPN7453C	1	6000	3	0.18	0.4	1000	300	Plastic/Die
MPND4005-0402	100	12000	0.25	0.07	5.5	125	100	402
MPND4005-B15	100	20000	0.25	0.018	5.5	125	100	B15
MPND4005-B16	100	20000	0.25	0.018	5.5	125	100	B16
SMPN7310-SOD323	100	2500	0.75	0.4	0.6	120	100	SOD323
SMPN7310-SOT23	100	2000	0.75	0.4	0.6	120	100	SOT23
SMPN7316-SOD323	50	2000	0.75	0.25	0.6	200	100	SOD323
SMPN7316-SOT23	50	1500	0.75	0.25	0.6	200	100	SOT23
SMPN7320-SOD323	5	1500	0.75	0.2	2	170	100	SOD323
SMPN7320-SOT23	5	1000	0.75	0.2	2	170	100	SOT23
SMPN7335-SOD323	5	1200	0.75	0.3	1.5	500	200	SOD323
SMPN7335-SOT23	5	1000	0.75	0.3	1.5	500	200	SOT23
SMPN7380-SOD323	1	1500	0.75	0.25	4	1500	200	SOD323
SMPN7380-SOT23	1	1200	0.75	0.25	4	1500	200	SOT23
SMPN7453-SOD323	1	1500	0.75	0.25	11	1400	200	SOD323
SMPN7453-SOT23	1	1200	0.75	0.25	4	2500	200	SOT23

**PIN Limiter Diodes**

Part Number	Incident Power, Max (W)	Thermal Resistance	Junction Capacitance (pF)	Resistance (Ohm)	Lifetime (ns)	Package
MADL-011021-14150T	2.5	100	0.4	1.5	10	1.5 x 1.2 mm TDFN-6
MADL-011008	30	150	0.3	1.5	15	1.2 x 1.5 mm PDFN-6
MLP7100	50	100	0.2	1.5	5	Various
MLP7130	50	120	0.12	2	5	Various
MLP7130-0805-2	50	120	0.12	2	5	Various
MLP7140	50	100	0.12	2	7	Various
MADL-000011-13880G	80	175	0.18	2.1	10	ODS-13880G Die
MA4L011-31	80	175	0.36	2.1	10	ODS-31
MA4L011-137	80	175	0.32	2.1	10	ODS-137
MA4L011-1088	80	175	0.3	2.1	10	ODS-1088
MA4L011-186	80	175	0.33	2.1	10	ODS-186
MA4L011-134	80	175	0.18	2.1	10	ODS-134 Die
MA4L011-1056	80	175	0.38	2.1	10	ODS-1056
MA4L011-30	80	175	0.36	2.1	10	ODS-30
MA4L011-32	80	175	0.48	2.1	10	ODS-32
MADL-011021-14210G	90	175	0.2	2.1	10	ODS-1056
MADL-011009-01340W	90	175	0.23	1.5	10	ODS-134
MADL-000021-003000	90	175	0.38	21	10	ODS-30
MA4L022-120	90	175	0.32	2	10	ODS-120
MA4L022-137	90	175	0.33	2	10	ODS-137
MA4L022-1056	90	175	0.39	2	10	ODS-1056
MA4L022-30	90	175	0.37	2	10	ODS-30
MA4L022-186	90	175	0.34	2	10	ODS-186
MA4L021-134	90	175	0.2	2.1	10	ODS-134 Die
MA4L022-134	90	175	0.19	2	10	ODS-134 Die
MA4L021-120	90	175	0.33	2.1	10	ODS-120
MA4L021-1056	90	175	0.4	2.1	10	ODS-1056
MA4L021-31	90	175	0.38	2.1	10	ODS-31
MA4L022-32	90	175	0.49	2	10	ODS-32
MADL-011023-14150T	100	175	0.2	1.3	10	1.5 x 1.2 mm TDFN-6
MLP7101	100	80	0.5	1.2	10	Various
MLP7102	100	55	0.7	1	10	Various
MLP7131	100	80	0.2	1.5	5	Various
MLP7141	100	70	0.2	1.5	7	Various
MADL-011010-01340W	125	150	0.24	1.5	15	ODS-134
MADL-000031-13880G	125	150	0.21	2.1	20	ODS-1388
MA4L032-186	125	150	0.35	2.5	15	ODS-186
MA4L031-31	125	150	0.39	2	20	ODS-31
MA4L031-186	125	150	0.36	2	20	ODS-186
MA4L031-134	125	150	0.21	2	20	ODS-134 Die
MA4L032-1056	125	150	0.4	2.5	15	ODS-1056
MA4L032-134	125	150	0.2	2.5	15	ODS-134 Die
MA4L031-1056	125	150	0.41	2	20	ODS-1056
MA4L032-31	125	150	0.38	2.5	15	ODS-31
MA4L032-32	125	150	0.5	2.5	15	ODS-32
MADL-000032-003000	125	150	0.21	2.1	20	ODS-3000
MADL-011011-01340W	200	150	0.17	2.3	10	ODS-134

**PIN Limiter Diodes (continued)**

Part Number	Incident Power, Max (W)	Thermal Resistance	Junction Capacitance (pF)	Resistance (Ohm)	Lifetime (ns)	Package
MADL-000062-13880G	200	150	0.15	2.5	10	ODS-13880G Die
MADL-000062-105600	200	150	0.35	2.5	10	ODS-1056
MA4L062-134	200	150	0.15	2.5	10	ODS-134 Die
MLP7110	200	80	0.2	1.5	10	Various
MADL-000101-13880G	250	30	0.15	2	90	ODS-13880G Die
MA4L101-134	250	30	0.15	2	90	ODS-134 Die
MA4L101-186	250	30	0.3	2	90	ODS-186
MA4L101-30	250	30	0.33	2	90	ODS-30
MLP7111	400	60	0.5	1.2	15	Various
MADL-000301-01340W	500	30	0.2	1.5	200	ODS-134 Die
MA4L301-1056	500	30	0.4	1.5	200	ODS-1056
MA4L301-31	500	30	0.38	1.5	200	ODS-31
MADL-000301-13870G	500	30	0.2	1.5	200	ODS-1370
MADL-011052-14280W	500	36	0.19	2	222	ODS-134 Die
MLP7112	795	40	0.7	1	20	Various
MA4L401-1056	1000	25	0.5	1.2	800	ODS-1056
MA4L401-31	1000	25	0.48	1.2	800	ODS-31
MA4L401-134	1000	25	0.3	1.2	800	ODS-134 Die
MA4L401-30	1000	25	0.48	1.2	800	ODS-30
MA4L401-120	1000	25	0.43	1.2	800	ODS-32
MADL-000401-13870G	1000	25	0.3	1.2	800	ODS-13870G Die
MLP7120	1000	40	0.2	1.5	50	Various
MLP7120-2012	1000	45	0.2	1.5	50	plastic
MLP7121	2000	20	0.6	1	50	Various
MLP7122	4000	15	0.8	0.5	100	Various

**Schottky Mixer and Detector Diodes**

Part Number	Min Frequency (MHz)	Max Frequency (MHz)	Total Capacitance (pF)	Dynamic Resistance (Ohm)	Vf (mV)	Vb (V)	Package
MA4E932A-186	DC	18	—	0.25	—	1	ODS-186
MA4E932B-186	DC	18	—	0.25	—	1	ODS-186
MA4E929B-119	DC	18	—	0.25	—	1	ODS-119
MA4E929A-119	DC	18	—	0.25	—	15	ODS-119
MADS-002811-00540T	DC	3000	1.2	—	—	70	ODS-55
1N5711	DC	3000	1.2	2	—	70	ODS-54
MA4E2812-54	DC	3000	1.2	—	—	20	ODS-57
MA4E2811	DC	3000	1.2	—	—	15	ODS-56
MA40261	DC	3000	-	0.32	—	70	ODS-186
MADS-005711-0054MT	DC	3000	1.2	2	—	20	ODS-54
MA4E2054C1-287T	DC	4000	17	0.3	—	3	SOT23
MA4E1338B1-1146T	DC	4000	1	—	—	20	SC70 (3L)/SOT-323
MA4E1339A1-1141T	DC	4000	1.2	—	—	70	SOD323 (2L)
MADS-001340-12790T	DC	4000	1	—	—	1.5	SC-79
MA4E2200D1-287T	DC	4000	0.15	—	—	1.5	SOT23
MADS-003000-1292LT	DC	4000	7	0.5	—	8	ODS-1292
MA4E1338A1-1141T	DC	4000	1	1	—	8	SOD323 (2L)
MA4E1340A1-287T	DC	4000	1	—	—	70	SOT23

## Schottky Mixer and Detector Diodes (continued)

Part Number	Min Frequency (MHz)	Max Frequency (MHz)	Total Capacitance (pF)	Dynamic Resistance (Ohm)	Vf (mV)	Vb (V)	Package
MADS-003000-1292HT	DC	4000	0.5	6	—	1.5	ODS-1292
MA4E2200A1-1141T	DC	4000	0.15	0.25	—	70	SOD323 (2L)
MA4E1340B1-1146T	DC	4000	1	—	—	20	SC70 (3L)/SOT-323
MADS-001339-12790T	DC	4000	1.2	—	—	8	SC-79
MADS-001338-12790T	DC	4000	1	—	—	3	SC-79
MA4E20541-1279T	DC	4000	17	0.3	—	3	SC-79
MADS-002200-12790T	DC	4000	0.25	—	—	1.5	SC-79
MA4E2200B1-287T	DC	4000	0.15	0.25	—	3	SOT23
MA4E2054B1-1146T	DC	4000	17	0.3	—	3	SC70 (3L)/SOT-323
MA4E1339B1-287T	DC	4000	1.2	—	—	3	SOT23
MA4E2054A1-287T	DC	4000	0.3	17	—	3	SOT23
MA4E20541-1141T	DC	4000	0.3	17	—	3	SOD323 (2L)
MA4E1338A1-287T	DC	4000	1	—	—	70	SOT23
MA4E1340A1-1141T	DC	4000	1	—	—	3	SOD323 (2L)
MA4E2054D1-287T	DC	4000	0.3	17	—	3	SOT23
MA4E2054B1-287T	DC	4000	0.3	17	—	3	SOT23
MA4E1338A1-1146T	DC	4000	1	—	—	70	SOT-323
MA4E1338B1-287T	DC	4000	1	—	—	8	SOT23
MA4E1339A1-1146T	DC	4000	1.2	—	—	20	SC70 (3L)/SOT-323
MA4E1339A1-287T	DC	4000	1.2	—	—	20	SOT23
MA4E1339B1-1146T	DC	4000	1.2	—	—	70	SC70 (3L)/SOT-323
MA4E1340A1-1146T	DC	4000	1	—	—	70	SC70 (3L)/SOT-323
MA4E1340B1-287T	DC	4000	1	—	—	3	SOT23
MA4E2054A1-1146T	DC	4000	0.3	17	—	3	SC70 (3L)/SOT-323
MADS-011010-1415	DC	6000	0.34	7	—	3	1.5 x 1.2 mm TDFN-6
MA40205-119	DC	10000	—	0.32	—	3	ODS-119
MA4E931Z2-1261A	DC	10000	—	—	—	3	DIE
MA4E2054L-1261	DC	10000	0.15	17	—	3	ODS-1261
MA40201-119	DC	10000	0.32	—	—	—	ODS-119
MA40143-213	DC	10000	0.32	—	—	—	ODS-213
MA40215-276	DC	10000	0.32	—	—	—	ODS-276
MA40208-276	DC	10000	0.32	—	—	—	ODS-276
MA40147-213	DC	10000	0.32	—	—	—	ODS-213
MA40264	DC	10000	0.32	—	—	3	ODS-186
MADS-011010-1419	DC	10000	0.15	7	—	3	ODS-1419
MA40215-120	DC	16000	0.32	—	—	5	ODS-1200
MADS-011030-14280W	DC	16000	0.33	6.5	100	3.5	Die
MADS-002545-1307MG	DC	18000	0.11	10	—	5	ODS-1307
MADS-002545-1307LG	DC	18000	0.11	11	—	5	ODS-1307
MADS-002545-1307HG	DC	18000	0.11	10	—	5	ODS-1307
SMS202	DC	18000	0.18	80	—	1	503
MADS-002502-1246HP	DC	26000	0.12	11	—	3	ODS-1246
MADS-002502-1246LP	DC	26000	0.12	16	—	3	ODS-1246
MADS-002502-1246MP	DC	26000	0.12	12	—	3	ODS-1246
MA4E2513L-1289	DC	26000	0.12	10	—	3	ODS-1289
MA4E2508H-1112	DC	26000	0.24	6	—	5	ODS-1112
MA4E2501L-1290	DC	26000	0.12	10	—	5	ODS-1290
MA4E2532M-1113	DC	26000	0.16	10	—	5	ODS-1113



## Schottky Mixer and Detector Diodes (continued)

Part Number	Min Frequency (MHz)	Max Frequency (MHz)	Total Capacitance (pF)	Dynamic Resistance (Ohm)	Vf (mV)	Vb (V)	Package
MA4E2508M-1112	DC	26000	0.24	12	—	5	ODS-1112
MA4E2514L-1116	DC	26000	0.12	16	—	3	ODS-1116
MA4E2508L-1112	DC	26000	16	0.24	—	5	ODS-1112
MA4E2514M-1116	DC	26000	0.12	12	—	3	ODS-1116
MA4E2502H-1246	DC	26000	0.12	11	—	3	ODS-1246
MA4E2502M-1246	DC	26000	0.12	12	—	3	ODS-1246
MA4E2502L-1246	DC	26000	0.12	16	—	3	ODS-1246
MADS-002501-1290LP	DC	26000	0.12	10	—	—	ODS-1290
SMGS11	DC	26500	0.1	7	—	4.5	503
SMGS21	DC	26500	0.15	7	—	4.5	503
SMS201	DC	26500	0.08	80	—	1	503
MA4E2039	DC	60000	0.05	4	—	4.5	Beam Lead
MA4E2040	DC	60000	0.05	4	—	4.5	Beam Lead
MA4E2037	DC	60000	0.05	4	—	4.5	Beam Lead
MADS-001317-1500AG	DC	80000	0.05	4	—	4.5	ODS-1500
MADS-001317-1500AP	DC	80000	0.05	4	—	7	ODS-1500
MA4E2160	DC	80000	0.05	4	—	7	ODS-1262
MA4E1318	DC	80000	0.09	4	—	4.5	ODS-1197
MA4E1317	DC	80000	0.05	4	—	4.5	ODS-1278
MA4E1319-1	DC	80000	0.05	4	—	4.5	ODS-1199
MA4E2038	DC	80000	0.04	6.5	—	4.5	Beam Lead
MA4E1319-2	DC	80000	0.05	4	—	4.5	ODS-1200
MADS-001318-1197HP	DC	80000	0.09	4	—	7	Tape and Reel
MA4E1310	DC	110000	0.04	7	—	7	ODS-1278
1N5819	—	—	—	110	—	30	DO-7
MGR700	DC	1000	1.2	—	—	8	—
MGR701	DC	1000	1	—	—	8	—
MGR702	DC	1000	1.2	—	—	20	—
MGR703	DC	1000	1	—	—	20	—
MGR704	DC	1000	2	—	—	70	—
MGR705	DC	1000	1.2	—	—	70	—
MGS801	DC	60000	0.06	7	—	5	GC110
MGS801A	DC	60000	0.075	5	—	5	GC110
MGS802	DC	60000	0.1	7	—	—	GC210
MGS802A	DC	60000	0.15	5	—	—	GC210
MGS803	DC	60000	0.06	7	—	5	GC310
MGS901	DC	60000	0.06	7	—	5	GB110
MGS902	DC	60000	0.1	7	—	—	GB210
MGS903	DC	60000	0.06	7	—	5	GB310
MGS904	DC	60000	0.06	7	—	—	B85
MGS904A	DC	60000	0.08	5	—	—	B85
MGS905	DC	60000	0.06	7	—	5	B86
MGS906	DC	60000	0.04	14	—	10	B90
MGS907	DC	60000	0.04	14	—	—	B85
MGS907A	DC	60000	0.06	12	—	—	B85
MGS907B	DC	60000	0.08	10	—	—	B85
MGS908	DC	60000	0.04	14	—	10	B86
MGS909	DC	60000	0.1	21	—	15	B90
MGS910	DC	60000	0.1	21	—	—	B87

Schottky Mixer and Detector Diodes (continued)

Part Number	Min Frequency (MHz)	Max Frequency (MHz)	Total Capacitance (pF)	Dynamic Resistance (Ohm)	Vf (mV)	Vb (V)	Package
MGS911	DC	60000	0.1	21	—	15	B88
MGS912	DC	60000	0.03	28	—	20	B89
MSS20-046-0805-2	DC	40000	0.1	80	—	1	0805-2
MSS20-046-C15	DC	40000	0.1	80	—	1	C15P
MSS20-046-E25	DC	40000	0.1	80	—	1	E25
MSS20-046-H27	DC	40000	0.1	80	—	1	H27
MSS20-046-T86	DC	40000	0.1	80	—	1	T86p
MSS20-047-0805-2	DC	40000	0.1	80	—	1	0805-2
MSS20-047-C15	DC	40000	0.1	80	—	1	C15P
MSS20-047-E25	DC	40000	0.1	80	—	1	E25
MSS20-047-H27	DC	40000	0.1	80	—	1	H27
MSS20-047-T86	DC	40000	0.1	80	—	1	T86p
MSS20-050-0805-2	DC	40000	0.15	80	—	1	0805-2
MSS20-050-C15	DC	40000	0.15	80	—	1	C15P
MSS20-050-E25	DC	40000	0.15	80	—	1	E25
MSS20-050-H27	DC	40000	0.15	80	—	1	H27
MSS20-050-T86	DC	40000	0.15	80	—	1	T86p
MSS20-051-0805-2	DC	40000	0.15	80	—	1	0805-2
MSS20-051-C15	DC	40000	0.15	80	—	1	C15P
MSS20-051-E25	DC	40000	0.15	80	—	1	E25
MSS20-051-H27	DC	40000	0.15	80	—	1	H27
MSS20-051-T86	DC	40000	0.15	80	—	1	T86p
MSS20-054-0805-2	DC	40000	0.2	80	—	1	0805-2
MSS20-054-C15	DC	40000	0.2	80	—	1	C15P
MSS20-054-E25	DC	40000	0.2	80	—	1	E25
MSS20-054-H27	DC	40000	0.2	80	—	1	H27
MSS20-054-T86	DC	40000	0.2	80	—	1	T86p
MSS20-055-0805-2	DC	40000	0.2	80	—	1	0805-2
MSS20-055-C15	DC	40000	0.2	80	—	1	C15P
MSS20-055-E25	DC	40000	0.2	80	—	1	E25
MSS20-055-H27	DC	40000	0.2	80	—	1	H27
MSS20-055-T86	DC	40000	0.2	80	—	1	T86p
MSS20-140-0402	DC	40000	0.08	80	—	1	402
MSS20-140-B10D	DC	40000	0.08	80	—	1	B10D
MSS20-141-0402	DC	40000	0.08	80	—	1	402
MSS20-141-B10D	DC	40000	0.08	80	—	1	B10D
MSS20-142-0402	DC	40000	0.1	80	—	1	402
MSS20-142-B10D	DC	40000	0.1	80	—	1	B10D
MSS20-143-0402	DC	40000	0.1	80	—	1	402
MSS20-143-B10D	DC	40000	0.1	80	—	1	B10D
MSS20-145-0402	DC	40000	0.12	80	—	1	402
MSS20-145-B10D	DC	40000	0.12	80	—	1	B10D
MSS20-146-0402	DC	40000	0.12	80	—	1	402
MSS20-146-B10D	DC	40000	0.12	80	—	1	B10D
MSS25-047-C15c	DC	40000	0.1	65	—	1	C15c
MSS25-049-C15c	DC	40000	0.12	55	—	1	C15c
MSS25-141-B10D	DC	40000	0.08	40	—	1	B10D
MSS25-143-B10D	DC	40000	0.1	60	—	1	B10D
MSS25-145-B10D	DC	40000	0.12	52	—	1	B10D

## Schottky Mixer and Detector Diodes (continued)

Part Number	Min Frequency (MHz)	Max Frequency (MHz)	Total Capacitance (pF)	Dynamic Resistance (Ohm)	Vf (mV)	Vb (V)	Package
MSS30 PCR46-B47	DC	18000	22	0.07	—	2	B47
MSS30 PCR53-B47	DC	18000	15	0.15	—	2	B47
MSS30-046-C15	DC	18000	0.12	18	—	2	C15
MSS30-046-P55	DC	18000	0.12	18	—	2	P55
MSS30-046-P86	DC	18000	0.12	18	—	2	P86
MSS30-050-C15	DC	18000	0.18	15	—	2	C15
MSS30-050-P55	DC	18000	0.18	15	—	2	P55
MSS30-050-P86	DC	18000	0.18	15	—	2	P86
MSS30-142-B10B	DC	18000	0.1	15	—	2	B10B
MSS30-142-E25	DC	18000	0.1	15	—	2	E25
MSS30-142-H20	DC	18000	0.1	15	—	2	H20
MSS30-148-B10B	DC	18000	0.15	15	—	2	B10B
MSS30-148-E25	DC	18000	0.15	15	—	2	E25
MSS30-148-H20	DC	18000	0.15	15	—	2	H20
MSS30-154-B10B	DC	18000	0.25	12	—	2	B10B
MSS30-154-E25	DC	18000	0.25	12	—	2	E25
MSS30-154-H20	DC	18000	0.25	12	—	2	H20
MSS30-242-B20	DC	18000	0.1	22	—	2	B20
MSS30-242-E35	DC	18000	0.1	22	—	2	E35
MSS30-242-H30	DC	18000	0.1	22	—	2	H30
MSS30-248-B20	DC	18000	0.15	15	—	2	B20
MSS30-248-E35	DC	18000	0.15	15	—	2	E35
MSS30-248-H30	DC	18000	0.15	15	—	2	H30
MSS30-254-B20	DC	18000	0.25	12	—	2	B20
MSS30-254-E35	DC	18000	0.25	12	—	2	E35
MSS30-254-H30	DC	18000	0.25	12	—	2	H30
MSS30-346-B21	DC	18000	0.3	16	—	2	B21
MSS30-346-E25	DC	18000	0.3	16	—	2	E25
MSS30-346-H20	DC	18000	0.3	16	—	2	H20
MSS30-442-B41	DC	18000	0.12	17	0.4	3	B42
MSS30-442-B42	DC	18000	0.1	22	—	2	B42
MSS30-442-E45	DC	18000	0.1	22	—	2	E45
MSS30-442-H40	DC	18000	0.1	22	—	2	H40
MSS30-448-B41	DC	18000	0.12	17	0.4	3	B42
MSS30-448-B42	DC	18000	0.15	15	—	2	B42
MSS30-448-E45	DC	18000	0.15	15	—	2	E45
MSS30-448-H40	DC	18000	0.15	15	—	2	H40
MSS30-454-B40	DC	18000	0.25	12	—	2	B40
MSS30-454-E45	DC	18000	0.25	12	—	2	E45
MSS30-454-H40	DC	18000	0.25	12	—	2	H40
MSS30-B46-B45	DC	18000	0.125	25	—	2	B45
MSS30-B46-E45	DC	18000	0.125	25	—	2	E45
MSS30-B46-H40	DC	18000	0.125	25	—	2	H40
MSS30-B53-B45	DC	18000	0.25	15	—	2	B45
MSS30-B53-E45	DC	18000	0.25	15	—	2	E45
MSS30-B53-H40	DC	18000	0.25	15	—	2	H40
MSS30-CR46-B49	DC	18000	0.125	22	—	2	B49
MSS30-CR46-E45	DC	18000	0.125	22	—	2	E45
MSS30-CR46-H40	DC	18000	0.125	22	—	2	H40

Schottky Mixer and Detector Diodes (continued)

Part Number	Min Frequency (MHz)	Max Frequency (MHz)	Total Capacitance (pF)	Dynamic Resistance (Ohm)	Vf (mV)	Vb (V)	Package
MSS30-CR53-B49	DC	18000	0.25	15	—	2	B49
MSS30-CR53-E45	DC	18000	0.25	15	—	2	E45
MSS30-CR53-H40	DC	18000	0.25	15	—	2	H40
MSS30-PCB46-B48	DC	18000	0.12	20	—	2	B48
MSS39-045-C15	DC	18000	0.1	—	—	5	C15p
MSS39-045-P55	DC	18000	0.1	—	—	5	P55p
MSS39-045-P86	DC	18000	0.1	—	—	5	P86p
MSS39-048-C15	DC	18000	0.15	—	—	5	C15p
MSS39-048-P55	DC	18000	0.15	—	—	5	P55p
MSS39-048-P86	DC	18000	0.15	—	—	5	P86p
MSS39-144-0402	DC	18000	0.08	—	—	3.5	402
MSS39-144-0805-2	DC	18000	0.08	—	—	3.5	0805-2
MSS39-144-B10B	DC	18000	0.08	—	—	3.5	B10Bp
MSS39-144-H27	DC	18000	0.08	—	—	3.5	H27
MSS39-146-0402	DC	18000	0.1	—	—	3.5	402
MSS39-146-0805-2	DC	18000	0.1	—	—	3.5	0805-2
MSS39-146-B10B	DC	18000	0.1	—	—	3.5	B10Bp
MSS39-146-H27	DC	18000	0.1	—	—	3.5	H27
MSS39-148-0402	DC	18000	0.12	—	—	3.5	402
MSS39-148-0805-2	DC	18000	0.12	—	—	3.5	0805-2
MSS39-148-B10B	DC	18000	0.12	—	—	3.5	B10Bp
MSS39-148-E25	DC	18000	0.12	—	—	3.5	E25
MSS39-148-H20	DC	18000	0.12	—	—	3.5	H20
MSS39-152-0402	DC	18000	0.18	—	—	3.5	402
MSS39-152-0805-2	DC	18000	0.18	—	—	3.5	0805-2
MSS39-152-B10B	DC	18000	0.18	—	—	3.5	B10Bp
MSS39-152-E25	DC	18000	0.18	—	—	3.5	E25
MSS39-152-H20	DC	18000	0.18	—	—	3.5	H20
MSS40-045-C15	DC	18000	0.12	15	—	3	C15
MSS40-045-P55	DC	18000	0.12	15	—	3	P55
MSS40-045-P86	DC	18000	0.12	15	—	3	P86
MSS40-048-C15	DC	18000	0.15	15	—	3	C15
MSS40-048-P55	DC	18000	0.15	15	—	3	P55
MSS40-048-P86	DC	18000	0.15	15	—	3	P86
MSS40-141-0402	DC	18000	0.1	22	—	3	402
MSS40-141-B10B	DC	18000	0.1	22	—	3	B10B
MSS40-141-E25	DC	18000	0.1	22	—	3	E25
MSS40-141-H20	DC	18000	0.1	22	—	3	H20
MSS40-148-0402	DC	18000	0.15	17	—	3	402
MSS40-148-B10B	DC	18000	0.15	17	—	3	B10B
MSS40-148-E25	DC	18000	0.15	17	—	3	E25
MSS40-148-H20	DC	18000	0.15	17	—	3	H20
MSS40-155-0402	DC	18000	0.3	13	—	3	402
MSS40-155-B10B	DC	18000	0.3	13	—	3	B10B
MSS40-155-E25	DC	18000	0.3	13	—	3	E25
MSS40-155-H20	DC	18000	0.3	13	—	3	H20
MSS40-244-0805-4	DC	18000	0.12	22	—	3	0805-4
MSS40-244-B20	DC	18000	0.12	22	—	3	B20
MSS40-244-E35	DC	18000	0.12	22	—	3	E35

Schottky Mixer and Detector Diodes (continued)

Part Number	Min Frequency (MHz)	Max Frequency (MHz)	Total Capacitance (pF)	Dynamic Resistance (Ohm)	Vf (mV)	Vb (V)	Package
MSS40-248-0805-4	DC	18000	0.15	17	—	3	0805-4
MSS40-248-B20	DC	18000	0.15	17	—	3	B20
MSS40-248-E35	DC	18000	0.15	17	—	3	E35
MSS40-255-0805-4	DC	18000	0.3	15	—	3	0805-4
MSS40-255-B20	DC	18000	0.3	15	—	3	B20
MSS40-255-E35	DC	18000	0.3	15	—	3	E35
MSS40-448-B42	DC	18000	0.15	17	—	3	B42
MSS40-448-E45	DC	18000	0.15	17	—	3	E45
MSS40-448-H40	DC	18000	0.15	17	—	3	H40
MSS40-455-B40	DC	18000	0.3	17	—	3	B40
MSS40-455-E45	DC	18000	0.3	17	—	3	E45
MSS40-455-H40	DC	18000	0.3	17	—	3	H40
MSS40-B46-B45	DC	18000	0.13	25	—	3	B45
MSS40-B46-E45	DC	18000	0.13	25	—	3	E45
MSS40-B53-B45	DC	18000	0.25	15	—	3	B45
MSS40-B53-E45	DC	18000	0.25	15	—	3	E45
MSS40-CR46-B49	DC	18000	0.125	22	—	3	B49
MSS40-CR46-E45	DC	18000	0.125	22	—	3	E45
MSS40-CR46-H40	DC	18000	0.125	22	—	3	H40
MSS40-CR53-B49	DC	18000	0.25	15	—	3	B49
MSS40-CR53-E45	DC	18000	0.25	15	—	3	E45
MSS40-CR53-H40	DC	18000	0.25	15	—	3	H40
MSS40-PCB46-B48	DC	18000	0.12	20	—	3	B48
MSS40-PCR46-B47	DC	18000	0.12	20	—	3	B47
MSS40-PCR53-B47	DC	18000	0.25	15	—	3	B47
MSS50-046-C26	DC	18000	0.12	20	—	4	C26
MSS50-046-P55	DC	18000	0.12	20	—	4	P55
MSS50-046-P86	DC	18000	0.12	20	—	4	P86
MSS50-048-C15	DC	18000	0.15	15	—	4	C15
MSS50-048-P86A	DC	18000	0.15	15	—	4	P86
MSS50-062-C16	DC	18000	0.55	12	—	4	C16
MSS50-062-P55	DC	18000	0.55	12	—	4	P55
MSS50-062-P86	DC	18000	0.55	12	—	4	P86
MSS50-146-0402	DC	18000	0.12	18	—	4	402
MSS50-146-0805-2	DC	18000	0.12	18	—	4	0805-2
MSS50-146-B10B	DC	18000	0.12	18	—	4	B10B
MSS50-146-E25	DC	18000	0.12	18	—	4	E25
MSS50-146-H20	DC	18000	0.12	18	—	4	H20
MSS50-155-0402	DC	18000	0.3	15	—	4	402
MSS50-155-0805-2	DC	18000	0.3	15	—	4	0805-2
MSS50-155-B10B	DC	18000	0.3	15	—	4	B10B
MSS50-155-E25	DC	18000	0.3	15	—	4	E25
MSS50-155-H20	DC	18000	0.3	15	—	4	H20
MSS50-244-0805-4	DC	18000	0.2	16	—	4	0805-4
MSS50-244-B20	DC	18000	0.2	16	—	4	B20
MSS50-244-E35	DC	18000	0.2	16	—	4	E35
MSS50-244-H30	DC	18000	0.2	16	—	4	H30
MSS50-341-B21	DC	18000	0.26	16	—	4	B21
MSS50-341-E25	DC	18000	0.26	16	—	4	E25
MSS50-341-H20	DC	18000	0.26	16	—	4	H20

## Schottky Mixer and Detector Diodes (continued)

Part Number	Min Frequency (MHz)	Max Frequency (MHz)	Total Capacitance (pF)	Dynamic Resistance (Ohm)	Vf (mV)	Vb (V)	Package
MSS50-448-0805-4	DC	18000	0.25	14	—	4	0805-4
MSS50-448-B40	DC	18000	0.25	14	—	4	B40
MSS50-448-E45	DC	18000	0.25	14	—	4	E45
MSS50-448-H40	DC	18000	0.25	14	—	4	H40
MSS50-B46-B45	DC	18000	0.13	20	—	4	B45
MSS50-B46-E45	DC	18000	0.13	20	—	4	E45
MSS50-B46-H40	DC	18000	0.13	20	—	4	H40
MSS50-B53-B45	DC	18000	0.25	15	—	4	B45
MSS50-B53-E45	DC	18000	0.25	15	—	4	E45
MSS50-B53-H40	DC	18000	0.25	15	—	4	H40
MSS50-CR46-B49	DC	18000	0.125	22	—	4	B49
MSS50-CR46-E45	DC	18000	0.125	22	—	4	E45
MSS50-CR46-H40	DC	18000	0.125	22	—	4	H40
MSS50-CR53-B49	DC	18000	0.25	15	—	4	B49
MSS50-CR53-E45	DC	18000	0.25	15	—	4	E45
MSS50-CR53-H40	DC	18000	0.25	15	—	4	H40
MSS50-PCB46-B48	DC	18000	0.12	20	—	4	B48
MSS50-PCR46-B47	DC	18000	0.12	20	—	4	B47
MSS50-PCR53-B48	DC	18000	0.25	15	—	4	B47
MZB600-19-6	DC	8000	0.2	3500	—	3	CS19-6
MZB600-32	DC	8000	0.2	3500	—	3	CS32
MZB600-B11	DC	8000	0.2	3500	—	3	B11
MZB600-C15P	DC	8000	0.2	3500	—	3	C15P
MZB604-B11	DC	8000	0.2	5000	—	4	B11
MZB604-C15P	DC	8000	0.2	5000	—	4	C15P
MZB604-CS11	DC	8000	0.2	5000	—	4	CS11
MZB604-CS19-1	DC	8000	0.2	5000	—	4	CS19-1
MZB604-CS32	DC	8000	0.2	5000	—	4	CS32
SMSCQ1200-SOT143	DC	3000	0.4	15	270	2	SOT-143
SMSCQ1500-SOT143	DC	3000	0.65	8	270	2	SOT-143
SMSCQ2500-SOT143	DC	3000	0.65	10	400	2	SOT-143
SMSCQ4500-SOT143	DC	3000	0.65	8	600	3	SOT-143
SMSCQ5500-SOT143	DC	3000	0.55	16	1100	3	SOT-143
SMSD3004-SOD323	DC	3000	0.6	10	270	2	SOD-323
SMSD3012-SOD323	DC	3000	0.25	15	270	2	SOD-323
SMSD4004-SOD323	DC	3000	0.6	10	350	2	SOD-323
SMSD4012-SOD323	DC	3000	0.25	15	350	2	SOD-323
SMSD6004-SOD323	DC	3000	0.6	10	600	2	SOD-323
SMSD6012-SOD323	DC	3000	0.25	15	630	2	SOD-323
SMSP3004-SOT143	DC	3000	0.65	10	270	2	SOT-143
SMSP3012-SOT143	DC	3000	0.4	15	270	2	SOT-143
SMSRQ1200-SOT143	DC	3000	0.4	15	270	2	SOT-143
SMSRQ1500-SOT143	DC	3000	0.65	8	270	2	SOT-143
SMSRQ2500-SOT143	DC	3000	0.65	10	400	2	SOT-143
SMSRQ4500-SOT143	DC	3000	0.65	8	600	3	SOT-143
SMSRQ5500-SOT143	DC	3000	0.55	16	1100	3	SOT-143
SMST3004-SOT23	DC	3000	0.6	10	270	2	SOT-23
SMST3012-SOT23	DC	3000	0.25	15	270	2	SOT-23



**Schottky Mixer and Detector Diodes (continued)**

Part Number	Min Frequency (MHz)	Max Frequency (MHz)	Total Capacitance (pF)	Dynamic Resistance (Ohm)	Vf (mV)	Vb (V)	Package
SMST4004-SOT23	DC	3000	0.6	10	350	2	SOT-23
SMST4012-SOT23	DC	3000	0.25	15	350	2	SOT-23
SMST6004-SOT23	DC	3000	0.6	10	600	2	SOT-23
SMST6012-SOT23	DC	3000	0.25	15	630	2	SOT-23
MA4E2532L-1113	DC	1800	0.1	16	440	5	ODS-1113
MSS40-PCR46-B48	—	—	0.08	20	0	0	B48
MNM200	DC	2600	0.14	20	0.4	3	Die
MNM201	DC	2600	0.2	20	0.4	3	Die
MNM202	DC	2600	0.12	20	0.4	3	Die
MNM203	DC	2600	0.14	20	0.4	3	Die
MNM204	DC	2600	0.15	20	0.425	4	Die
MNM205	DC	2600	0.15	20	0.425	4	Die
MNM206	DC	2600	0.12	20	0.425	4	Die
MNM207	DC	2600	0.14	20	0.425	4	Die
MNM208	DC	2600	0.14	20	0.45	4	Die
MNM210	DC	2600	0.12	20	0.45	5	Die
MNM211	DC	2600	0.25	20	0.45	5	Die
MNM212	DC	2600	0.21	20	0.475	5	Die
MNM213	DC	2600	0.15	20	0.475	5	Die
MNM214	DC	2600	0.12	20	0.475	5	Die
MNM215	DC	2600	0.15	20	0.475	5	Die

**Current Limiter Field Effect**

Regulator Part Number	Regulator Current IP Typ (mA)	Regulator Current IP, Min (mA)	Regulator Current IP, Max (mA)	Knee Impedance Zs Min (Ω)	Living Voltage Impedance Zk Min (Ω)	VL Max (V)
1N5283	0.22	0.198	0.242	25	2.75	1
1N5284	0.24	0.216	0.264	19	2.35	1
1N5285	0.27	0.243	0.297	14	1.95	1
1N5286	0.3	0.27	0.33	9	1.6	1
1N5287	0.33	0.297	0.363	6.6	1.35	1
1N5288	0.39	0.351	0.429	4.1	1	1.05
1N5289	0.43	0.387	0.473	3.3	0.87	1.05
1N5290	0.47	0.423	0.517	2.7	0.75	1.05
1N5291	0.56	0.504	0.616	1.9	0.56	1.1
1N5292	0.62	0.558	0.682	1.55	0.47	1.13
1N5293	0.68	0.612	0.748	1.35	0.4	1.15
1N5294	0.75	0.675	0.825	1.15	0.335	1.2
1N5295	0.82	0.738	0.902	1	0.29	1.25
1N5296	0.91	0.819	1	0.88	0.24	1.29
1N5297	1	0.9	1.1	0.8	0.205	1.35
1N5298	1.1	0.99	1.21	0.7	0.18	1.4
1N5299	1.2	1.08	1.32	0.64	0.155	1.45
1N5300	1.3	1.17	1.43	0.58	0.135	1.5
1N5301	1.4	1.26	1.54	0.54	0.115	1.55
1N5302	1.5	1.35	1.65	0.51	0.105	1.6

**Current Limiter Field Effect (continued)**

Regulator Part Number	Regulator Current IP Typ (mA)	Regulator Current IP, Min (mA)	Regulator Current IP, Max (mA)	Knee Impedance Zs Min (Ω)	Living Voltage Impedance Zk Min (Ω)	VL Max (V)
1N5303	1.6	1.44	1.76	0.457	0.092	1.65
1N5304	1.8	1.62	1.98	0.42	0.074	1.75
1N5305	2	1.8	2.2	0.395	0.061	1.85
1N5306	2.2	1.98	2.42	0.37	0.052	1.95
1N5307	2.4	2.16	2.64	0.345	0.044	2
1N5308	2.7	2.43	2.97	0.32	0.035	2.15
1N5309	3	2.7	3.3	0.3	0.029	2.25
1N5310	3.3	2.97	3.63	0.28	0.024	2.35
1N5311	3.6	3.24	3.96	0.265	0.02	2.5
1N5312	3.9	3.51	4.29	0.255	0.017	2.6
1N5313	4.3	3.87	4.73	0.245	0.014	2.75
1N5314	4.7	4.23	5.17	0.235	0.012	2.9

**Silicon Zener Diodes 1N5000 and 1N6000 Series**

Part Number	Reverse Leakage Current Max (μA)	VR1 Max (V)	VR2 (V)	Noise Density Max (μV / √ Hz)	Regulation Factor ΔVz Max (V)	Regulation Factor IzL Max (mA)	Regulator Current Factor IzL Max (mA)	Package
1N5518	5	0.9	1	0.5	0.9	2	115	DO-7
1N5519	3	0.9	1	0.5	0.9	2	105	DO-7
1N5520	1	0.9	1	0.5	0.85	2	98	DO-7
1N5521	3	1	1.5	0.5	0.75	2	88	DO-7
1N5522	2	1.5	2	0.5	0.6	1	81	DO-7
1N5523	2	2	2.5	0.5	0.65	0.25	75	DO-7
1N5524	2	3	3.5	1	0.3	0.25	68	DO-7
1N5525	1	4.5	5	1	0.2	0.01	61	DO-7
1N5526	1	5.5	6.2	1	0.1	0.01	56	DO-7
1N5527	0.5	6	6.8	2	0.05	0.01	51	DO-7
1N5528	0.5	6.5	7.5	4	0.05	0.01	46	DO-7
1N5529	0.1	7	8.2	4	0.05	0.01	42	DO-7
1N5530	0.05	8	9.1	4	0.1	0.01	38	DO-7
1N5531	0.05	9	9.9	5	0.2	0.01	35	DO-7
1N5532	0.05	9.5	10.8	10	0.2	0.01	32	DO-7
1N5533	0.01	10.5	11.7	15	0.2	0.01	29	DO-7
1N5534	0.01	11.5	12.6	20	0.2	0.01	27	DO-7
1N5535	0.01	12.5	13.5	20	0.2	0.01	25	DO-7
1N5536	0.01	13	14.4	20	0.2	0.01	24	DO-7
1N5537	0.01	14	15.3	20	0.2	0.01	22	DO-7
1N5538	0.01	15	16.2	20	0.2	0.01	21	DO-7
1N5539	0.01	16	17.1	20	0.2	0.01	20	DO-7
1N5540	0.01	17	18	20	0.2	0.01	19	DO-7
1N5541	0.01	18	19.8	25	0.25	0.01	17	DO-7
1N5542	0.01	20	21.6	30	0.3	0.01	16	DO-7
1N5543	0.01	21	22.4	35	0.35	0.01	15	DO-7
1N5544	0.01	23	25.2	40	0.4	0.01	14	DO-7

**Silicon Zener Diodes 1N5000 and 1N6000 Series (continued)**

Part Number	Reverse Leakage Current Max (μA)	VR1 Max (V)	VR2 (V)	Noise Density Max (μV / √ Hz)	Regulation Factor ΔVz Max (V)	Regulation Factor IzL Max (mA)	Regulator Current Factor IzL Max (mA)	Package
1N5545	0.01	24	27	45	0.45	0.01	13	DO-7
1N5546	0.01	28	29.7	50	0.5	0.01	12	DO-7
1N6082	2	—	1.5	1	0.75	—	—	DO-7
1N6083	2	—	2	1	0.5	—	—	DO-7
1N6084	2	—	3	1	0.3	—	—	DO-7
1N6085	2	—	4.5	1	0.1	—	—	DO-7
1N6086	0.5	—	5.6	1	0.1	—	—	DO-7
1N6087	0.05	—	6.2	1	0.1	—	—	DO-7
1N6088	0.01	—	6.8	1	0.1	—	—	DO-7
1N6089	0.01	—	7.5	1	0.1	—	—	DO-7
1N6090	0.01	—	8.2	2	0.1	—	—	DO-7
1N6091	0.01	—	9.1	2	0.1	—	—	DO-7

**Silicon Zener Diodes Sharp Breakdown**

Part Number	Reverse Leakage Current IR μadc Max (μA)	Noise Density Max (μV / √ Hz)	Reverse Leakage Max (μA)	Reverse Leakage Vdc Max (nA)	Reverse Leakage Current Max VR Vdc (nA)	Regulation Factor ΔVz Max (V)	Izh Max (mA)	IzL Max (μA)	Package
LVA100A	0.01	4	—	—	9	—	—	—	CS85 (DO-7)
LVA43A	4	4	—	—	1.5	—	—	—	CS85 (DO-7)
LVA450A	—	1	10	4	—	0.4	1	100	CS85 (DO-7)
LVA453A	—	1	5	4.24	—	0.2	1	100	CS85 (DO-7)
LVA456A	—	1	1	4.48	—	0.1	1	50	CS85 (DO-7)
LVA459A	—	1	0.5	4.72	—	0.1	1	10	CS85 (DO-7)
LVA462A	—	1	0.1	4.96	—	0.1	1	10	CS85 (DO-7)
LVA465A	—	1	0.05	5.2	—	0.1	1	10	CS85 (DO-7)
LVA468A	—	1	0.01	5.44	—	0.1	1	10	CS85 (DO-7)
LVA471A	—	1	0.01	5.68	—	0.1	1	10	CS85 (DO-7)
LVA474A	—	1	0.01	5.92	—	0.1	1	10	CS85 (DO-7)
LVA477A	—	1	0.01	6.16	—	0.1	1	10	CS85 (DO-7)
LVA47A	4	4	—	—	2	—	—	—	CS85 (DO-7)
LVA480A	—	1	0.01	6.4	—	0.1	1	10	—
LVA483A	—	1	0.01	6.64	—	0.1	1	10	—
LVA486A	—	1	0.01	6.88	—	0.1	1	10	—
LVA489A	—	2	0.01	7.12	—	0.1	1	10	—
LVA492A	—	2	0.01	7.36	—	0.1	1	10	—
LVA495A	—	2	0.01	7.6	—	0.1	1	10	—
LVA498A	—	2	0.01	7.84	—	0.1	1	10	—
LVA51A	0.1	4	—	—	2	—	—	—	CS85 (DO-7)
LVA56A	0.05	4	—	—	3	—	—	—	CS85 (DO-7)
LVA62A	0.05	4	—	—	4	—	—	—	CS85 (DO-7)
LVA68A	0.05	4	—	—	5	—	—	—	CS85 (DO-7)
LVA75A	0.01	4	—	—	6	—	—	—	CS85 (DO-7)
LVA82A	0.01	4	—	—	6.5	—	—	—	CS85 (DO-7)
LVA91A	0.01	4	—	—	8	—	—	—	CS85 (DO-7)

Silicon Low Level Zener Diodes

Part Number	Nominal Zener Voltage (V)	Noise Density Max ( $\mu\text{V} / \sqrt{\text{Hz}}$ )	Zener Impedance Zzt Max ( $\Omega$ )	Regulator Current Izm (mA)
1N4099	6.8	40	200	35
1N4100	7.5	40	200	31.8
1N4101	8.2	40	200	29
1N4102	8.7	40	200	27.4
1N4103	9.1	40	200	26.2
1N4104	10	40	200	24.8
1N4105	11	40	200	21.6
1N4106	12	40	200	20.4
1N4107	13	40	200	19
1N4108	14	40	200	17.5
1N4109	15	40	100	16.3
1N4110	16	40	100	15.4
1N4111	17	40	100	14.5
1N4112	18	40	100	13.2
1N4113	19	40	150	12.5
1N4114	20	40	150	11.9
1N4115	22	40	150	10.8
1N4116	24	40	150	9.9
1N4117	25	40	150	9.5
1N4118	27	40	150	8.8
1N4119	28	40	200	8.5
1N4120	30	40	200	7.9
1N4121	33	40	200	7.2
1N4614	1.8	1	1200	120
1N4615	2	1	1250	110
1N4616	2.2	1	1300	100
1N4617	2.4	1	1400	95
1N4618	2.7	1	1500	90
1N4619	3	1	1600	85
1N4620	3.3	1	1650	80
1N4621	3.6	1	1700	75
1N4622	3.9	1	1650	70
1N4623	4.3	1	1600	65
1N4624	4.7	1	1550	60
1N4625	5.1	2	1500	55
1N4626	5.6	4	1400	50
1N4627	6.2	5	1200	45

Part Number	Nominal Zener Voltage (V)	Regulation Factor $\Delta\text{Vz}$ Max (V)	Regulator Current Izm Max (mA)
1N4678	1.8	0.7	120
1N4679	2	0.7	110
1N4680	2.2	0.75	100
1N4681	2.4	0.8	95
1N4682	2.7	0.85	90
1N4683	3	0.9	85
1N4684	3.3	0.95	80
1N4685	3.6	0.95	75
1N4686	3.9	0.97	70
1N4687	4.3	0.99	65
1N4688	4.7	0.99	60

**Silicon Low Level Zener Diodes (continued)**

Part Number	Nominal Zener Voltage (V)	Regulation Factor $\Delta V_z$ Max (V)	Regulator Current $I_{zm}$ Max (mA)
1N4689	5.1	0.97	55
1N4690	5.6	0.96	50
1N4691	6.2	0.85	45
1N4692	6.8	0.9	35
1N4693	7.5	0.75	31.8

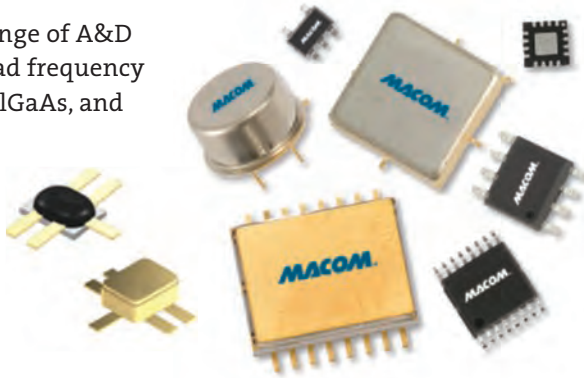
Part Number	Nominal Zener Voltage (V)	Regulation Factor $\Delta V_z$ Max (V)	Regulator Current $I_{zm}$ Max (mA)
1N4694	8.2	0.5	29
1N4695	8.7	0.1	27.4
1N4696	9.1	0.08	26.2
1N4697	10	0.1	24.8
1N4698	11	0.11	21.6
1N4699	12	0.12	20.4
1N4700	13	0.13	19
1N4701	14	0.14	17.5
1N4702	15	0.15	16.3
1N4703	16	0.16	15.4
1N4704	17	0.17	14.5
1N4705	18	0.18	13.2
1N4706	19	0.19	12.5
1N4707	20	0.2	11.9
1N4708	22	0.22	10.8
1N4709	24	0.24	9.9
1N4710	25	0.25	9.5
1N4711	27	0.27	8.8
1N4712	28	0.28	8.5
1N4713	30	0.3	7.9
1N4714	33	0.33	7.2

Part Number	Nominal Zener Voltage (V)	Dynamic Impedance $Z_z$ ( $\Omega$ )	Dynamic Impedance $Z_{zk}$ ( $\Omega$ )
K120	1.2	20	125
K150	1.5	20	125
K180	1.8	20	125
K210	2.1	20	125
K240	2.4	20	125
K270	2.7	20	125
K300	3	20	125
K330	3.3	20	125
K360	3.6	20	125
K390	3.9	20	125
K430	4.3	25	135
K470	4.7	25	135
K510	5.1	25	135
K511	5.1	50	15
K561	5.6	45	15
K621	6.2	35	18
K681	6.8	25	18

## MACOM Control Products

For a wide range of A&D and commercial applications

MACOM offers control products for a wide range of A&D and commercial applications, covering a broad frequency spectrum from DC to 70 GHz, using Silicon, AlGaAs, and GaAs based technologies.



### Power Detectors

- > Broadband devices with integrated low loss directional couplers and built-in temperature compensation circuits
- > Lead-free plastic surface mount packages
- > For power monitoring and leveling in point-to-point radios, IMS, radar, VSAT, EW, A&D systems

### IQ Modulators/Demodulators

- > For aerospace and defense, wireless, and broadband communications
- > Connectorized, flat pack, drop-in and surface mount packages with a broad range of operating frequency ranges

### Digital Phase Shifters

- > 4-Bit and 6-Bit with either serial or parallel control inputs
- > For military or weather radar, transmit/ receive modules, and EW
- > Convenient surface mount PQFN with 360° coverage, fast switching speed, and low phase error

### Voltage Variable Attenuators

- > Automotive and wireless markets
- > Ideal for cellular infrastructure, handset gain control, radar systems, satellite radios, and test equipment

### Digital Attenuators

- > Used in a variety of applications for automotive and wireless markets,
- > Typical applications include: CATV infrastructure, cellular infrastructure, handset gain control, radar systems, satellite radios, and test equipment including 75 Ohm versions for CATV

### Limiters

- > Thin-film hybrid manufacturing for the highest levels of performance, repeatability, reliability, and cost-effectiveness

### CMOS Switch Drivers

- > For wireless infrastructure base stations and A&D applications including: cordless and mobile phones, satellite radio, GPS and DAB, 2.4 GHz and 5.0 GHz WLAN, VSAT, CATV and broadband, commercial and military radar, and multi-market applications

### Switches

- > Frequency spectrum from DC to 70 GHz
- > (HMIC™) PIN diodes: high power and broadband from 50 MHz to 26 GHz
- > AlGaAs PIN diode: upper frequency ranges for instrumentation and radar
- > GaAs pHEMT and MESFET for fast switching and low control voltage for narrow band and broadband
- > 75 Ohm absorptive switches for CATV, FTTx and DBS infrastructure and CPE applications

### Phase Detectors

- > SRD reference frequency multiplier, coupling capacitors and a Schottky diode microwave sampler/phase detector in a 0.075" by 0.100" hybrid
- > Used to phase lock microwave oscillators up to 22 GHz to a much lower reference frequency



**Limiters**

Part Number	Min Freq RF/LO (MHz)	Max Freq RF/LO (MHz)	Insertion Loss (dB)	Ave. Power (W)	Peak Power (W)	Leakage (mW)	Recovery Time (µs)	Package
MADL-011012	300	1000	0.2	360	55.6	100	3	SMT Hermetic
2690-1001 ♦	1000	2000	0.7	1	100	75	100	Coax
2690-1003 ♦	1000	2000	0.9	3	1000	100	1000	Coax
MADL-011014	1000	2000	0.35	200	320	100	3.5	SMT Hermetic
2690-1005 ♦	2000	8000	1.1	1	100	50	100	Coax
2690-1007 ♦	2000	8000	1.3	3	1000	100	1000	Coax
2690-1013 ♦	2000	18000	2	1	100	50	100	Coax
2690-1014 ♦	2000	18000	2.3	2	500	75	250	Coax
2690-1015 ♦	2000	18000	2.3	3	1000	100	1000	Coax
2690-1009 ♦	8000	18000	1.8	1	100	50	100	Coax
2690-1011 ♦	8000	18000	2.3	3	1000	100	1000	Coax
LM202602-H-A-300	2000	6000	0.85	—	100	63	100	Flangeless Ceramic
LM202802-Q-B-301	2000	8000	1.1	—	125	126	5	Flangeless Ceramic
LM202802-Q-C-301	2000	8000	1.1	—	125	126	5	Flangeless Ceramic
LM202802-L-C-300	2000	8000	1	—	100	79	75	Flangeless Ceramic

**Power Detectors**

Part Number	Min Freq (MHz)	Max Freq (MHz)	Insertion Loss (dB)	Sensitivity (dBm)	Directivity (dB)	Max Power (dBm)	Package
MADT-011000-DIE	5000	44000	—	—	—	—	Die
MADT-011000	5000	44000	—	—	—	—	3 mm QFN

**IQ Modulators/Demodulators**

Part Number	Min Freq RF/LO (MHz)	Max Freq RF/LO (MHz)	Min Freq IF (MHz)	Max Freq IF (MHz)	LO Carrier Sup (dB)	Harmonic Sup 3X IQ (dBc)	LO-RF Isol (dB)	Package
MAMO-008665-ES0018	105	115	0	5	—	—	—	SM-28
MAMO-008774-ES0019	135	176	0	5	—	—	—	SM-28
MAMO-007252-IN2960	921	960	0	0.27	—	—	—	SM-28

**Digital Phase Shifters**

Part Number	Min Freq (MHz)	Max Freq (MHz)	Bit Count	LSB (°)	IIP3 (dBm)	RMS Phase (dBm)	Package
MAPS-011007	1200	1400	6-Bit	5.6	48	2	4 mm PQFN-24
MAPS-010143	1400	2400	4-Bit	22.5	40	2	4 mm PQFN-24
MAPS-010163	1400	2400	6-Bit	5.6	40	3	4 mm PQFN-24
MAPS-010144	2300	3800	4-Bit	22.5	47	2.2	4 mm PQFN-24
MAPS-010164	2300	3800	6-Bit	5.6	45	3	4 mm PQFN-24
MAPS-010145	3500	6000	4-Bit	22.5	45	3	4 mm PQFN-24
MAPS-010165	3500	6000	6-Bit	5.6	40	4	4 mm PQFN-24
MAPS-011008	5000	6000	6-Bit	5.6	48	2	4 mm PQFN-24
MAPS-010146	8000	12000	4-Bit	22.5	40	5	4 mm PQFN-24
MAPS-010166	8000	12000	6-Bit	5.6	40	5	4 mm PQFN-24

Note: Part numbers are RoHS compliant ♦ indicates non-RoHS compliant  
 Detailed specifications can be found quickly on our website at [macom.com](http://macom.com) by typing the part number into the search box.  
 All specifications are subject to change.



## Digital Attenuators

Part Number	Min Freq (MHz)	Max Freq (MHz)	Bit Count	Attenuator Range (dB)	LSB (dB)	Insertion Loss (dB)	IIP3 (dBm)	Package
MAAD-008866	50	1000	6	31.5	0.5	1.4	40	4 mm PQFN-24
MAAD-010305	50	1100	1	15	15	0.3	50	SOT-25
MAADSS0009	0	2000	4	30	3	1.6	50	SOIC-16
MAATSS0015	0	2000	4	15	1	2	50	SOIC-16
AT-264-PIN	500	2000	4	30	2	2.2	47	TSSOP-16
AT-357-SMA	0	2000	5	31	1	6.5	47	C-46
MAATSS0021	50	2000	5	15.5	0.5	1.5	45	SOIC-16
AT-232-PIN	0	2000	4	30	2	2.5	50	CR-6
AT-283-PIN	5	2000	5	15.5	0.5	2.2	47	CR-12
AT-233-PIN	5	2000	4	30	2	1.9	50	CR-12
AT-273-PIN	5	2000	2	32	16	1.3	48	CR-11
AT-263-PIN	5	2000	5	31	1	2.1	48	CR-12
MAATSS0016	500	2000	4	30	2	2.2	47	TSSOP-16
MAATSS0018	100	2000	1	10	10	0.4	50	SOT-25
MAATSS0022	500	2500	5	15.5	0.5	1.8	46	MSOP-10
MAATSS0017	400	2500	5	15.5	0.5	2	47	QSOP-16
MAAD-009195-000100	50	3000	5	15.5	0.5	5.3	40	CR-12
MAAD-009194-000100	50	3000	5	31	1	5.3	41	CR-12
AT-213-PIN	5	3000	4	15	1	1.6	50	CR-11
MAAD-009260-000100	50	3000	2	32	16	2.7	42	CR-12
MAAD-008790-000100	0	4000	5	31	1	5.5	37	CSP-1
MAAD-009170-000100	50	4000	5	15.5	0.5	5.2	40	CSP-1
MAATSS0019	500	4000	4	15	1	1.3	47	TSSOP-16
MAADCC0006	50	4000	4	15	1	2.5	48	CSP-1
MAADSS0018	2000	6000	5	15.5	0.5	2	42	3 mm PQFN-16
MAAD-000523	700	6000	6	31.5	0.5	1.9	52	4 mm PQFN-24
MAADSS0012	800	8000	1	21	—	0.6	41	2 mm PQFN-8
MAAD-011021	0	30000	6	31.5	0.5	6	38	3 mm PQFN-16
MAAD-011021-DIE	0	40000	6	31.5	0.5	6	38	Die

## CMOS Switch Drivers

Part Number	Type	Rise Time/Fall Time (ns)	Vcc (V)	Vee (-V)	Icc (mA)	Package
MADR-009151-000DIE	Single	300	5	-5	1	Die
MADR-009150	PIN	30	3.3	—	.05	3 mm PQFN-16
MADR-011007	FET	6	—	-5	—	6 mm PQFN-48
MADR-009269-000100	Single, PIN	300	5	5	1	SOIC-8
MADR-009190-000100	Quad	300	5	-5	1	SOIC-16
MADR-009443-000100	Quad	500	5	-5	20	4 mm PQFN-20
MADR-008888-000100	PIN	250	5	28	51	LGA-23
MADR-008851-000100	PIN	320	5	28	1	LGA-23
MADRCC0005	Single	25	5	-5	1	SO-8
MADRCC0004	Quad	25	5	-5	—	SO-16
MADR-007097-000100	Single	2	5	-5	1	SOIC-8
MADRCC0006	Single	500	5	-5	—	SO-8
MADRCC0007	Quad	500	5	-5	—	SOIC16
SMLG1	PIN	30000	15	15	—	SMT
MADRCC0002 ◆	Dual	5000	20	—	—	CSP-9
MADR-010574	PIN	2	3	—	170	7 mm PQFN-16
MADR-007098-000100	PIN	—	5	—	1	SOW-16
MADR-007131-000100	Dual Linearizer	—	5	—	1	CSP-9
MADR-010410	TR Module	6	3	3	—	5 mm PQFN-40

## Voltage Variable Attenuators

Part Number	Min Freq (MHz)	Max Freq (MHz)	Insertion Loss (dB)	Attenuator Range (dB)	Input IP3 (dBm)	Voltage (Volts)	Current (mA)	Package
MAAA2000G	0	12000	—	40	—	—	—	Die
MAATCC0013	824	960	—	25	—	—	—	SOT-25
MAAV-007088-000100	50	1000	2.8	42	34	—	—	SOW-16
MA4VAT900-1277T	800	1000	1	24	40	—	—	3 mm PQFN-16
MA4VAT904-1061T	800	1000	1	24	49	—	—	SOIC-8
MA4VAT907-1061T	800	1000	1	24	49	—	—	SOIC-8
AT10-0009	800	1000	—	38	—	—	—	SOW-16
MAAV-007092-000100	800	1000	3.6	34	40	—	30	6 mm PQFN-28
MAAVSS0004	0	2000	7.2	35	36	-3	0.02	SOIC-14
MAAV-008022	500	2000	2.7	40	32	+5	0.05	SOIC-8
MAAV-007941	0	2000	3.2	12	36	-4	0.02	SOIC-8
SMG2	5	2000	—	23	—	—	—	SMT
MAAM-007987-000CG2	5	2000	—	23	—	—	—	SMA
MA4VAT2004-1061T	1700	2000	1.4	24	49	—	—	SOIC-8
MAAVSS0005	0	2000	3.2	12	36	-4	0.02	SOT-143
MAAVSS0008	500	2000	2.8	30	28	+5	0.3	SOIC-8
MA4VAT2007-1061T	1700	2000	1.4	23	52	—	—	SOIC-8
CG30	100	2000	—	44	—	—	—	SMA
G2	5	2000	2.6	28	—	+5	15	TO-8
SMG1	5	2000	—	30	—	—	—	SMT0-8
SMG30	100	2000	—	44	—	—	—	SMT0-8
G1*	5	2000	2.5	25	—	+15	15	TO-8, SMT, SMA
G30	100	2000	—	44	—	—	—	TO-8
MAAV-007090-000100	1700	2000	3.5	35	31	—	—	SOW-16
AT10-0017	1700	2000	—	35	—	—	—	SOW-16
MAAV-007091-000100	1700	2200	2.9	33	31	—	30	6 mm PQFN-28
MA4VAT2000-1277T	1700	2200	1.2	24	21	—	—	3 mm PQFN-16
MAAVCC0002	1700	2200	—	35	—	—	—	6 mm PQFN-28
MAAVSS0001	1800	2500	2.4	42	32	+2.25	0.05	SOT-25
MAAVSS0006	0	2500	3.6	25	36	-3	0.025	SOT-25
MADP-007167-12250T	5	3000	2.8	36	50	—	—	SOT-25
MA4P7455-1225T	10	4000	1	29	43	—	—	SOT-25
CG40	500	4000	—	32	—	—	—	SMA
SMG40	500	4000	—	25	—	—	—	SMT
G40	500	4000	2.5	32	—	+15	12	TO-8
MAAT-010521	5000	45000	2	40	30	-2	—	3 mm PQFN-16
MAAV-011013	5000	45000	1.5	30	42	—	—	3 mm PQFN-16
LG1**	—	—	—	—	—	—	—	TO-8
LG30**	—	—	—	—	—	—	—	TO-8
CLG1	—	—	—	—	—	—	—	SMA

\*\*LG1 Linearizer is compatible with the G1 Attenuator. Yields linear attenuation (dB) for linear control voltage. Available in TO-8, SMT, SMA

\*\*LG30 Linearizer is compatible with the G30 Attenuator. Yields linear attenuation (dB) for linear control voltage. Available in TO-8, SMT, SMA

Note: Part numbers are RoHS compliant ♦ indicates non-RoHS compliant

Detailed specifications can be found quickly on our website at [macom.com](http://macom.com) by typing the part number into the search box.

All specifications are subject to change.

**Switches**

Part Number	Min Freq (MHz)	Max Freq (MHz)	Insertion Loss (dB)	Isolation (dB)	Input IP3 (dBm)	Package
<b>SPST</b>						
MASW-001150-1316	45	2500	0.3	65	40	Die
MASW6020G	100	6000	0.9	45	46	Die
MA4SW110	50	26500	0.6	48	40	HMIC Die
MA4AGSW1A	50	50000	1.2	48	—	Die
MA4AGSW1	50	50000	0.2	43	—	Die
MASW-008177	5	1000	0.6	53	52	3 mm PQFN-12
MASWSS0162	50	2500	1	48	46	SOIC-8
SW-209-PIN	0	3000	1.5	27	40	CR-2,CR10
SW05-0311	0	3000		40	46	CR-9
MASWSS0148	300	4000	1.6	51	49	3 mm PQFN-12
SW-231-PIN	5	4000	2	22	46	FP-16
<b>SPDT</b>						
MASW2000	0	3000	0.4	45	53	Die
MASW4030G	50	4000	0.6	53	46	Die
MASW-008206-000DIE	2400	5800	0.7	30	54	Die
MASW6010G	200	6000	0.6	45	46	Die
MASW6010	0	6000	0.5	52	46	Die
MASW-009590	1000	8000	0.5	24	52	Die
MASW-010647	8000	10500	0.8	37	60	Die
MASW-011021	6000	14000	0.7	34	60	SURMOUNT™ Die
MASW-002102-13580	2	18000	1.8	55	40	Die
MASW20000	50	20000	1.4	58	43	Die
MASW-002103-1363	50	20000	0.8	38	40	SURMOUNT™ Die
MA4SW210B-1	2000	26000	1.2	48	40	Die
MASW-011052	2000	26000	0.8	50	43	Die
MA4SW210	50	26500	0.6	52	40	HMIC Die
MASW-002100-1191	50	26500	0.3	65	40	Die
MASW-001100-1190	50	26500	0.3	65	40	Die
MASW-011107-DIE	DC	26500	1.3	46	45	Die
MASW-010646	26000	40000	0.6	39	60	Die
MASW-011036	26000	40000	0.7	40	60	Die
MASW-011068 • Reflective	20000	40000	0.7	28	55	Die
MA4AGSW2	50	50000	0.6	46	—	Die
MASWSS0103	5	1000	0.8	71	47	4 mm PQFN-20
MA8334-004	20	1000	0.4	25	—	844-004
MA8334-001	20	1000	0.4	25	80	844-001
MASWSS0161	500	2000	0.6	30	55	SOIC-8
MASWSS0179	50	2000	0.5	28	52	SOT-26
MASWSS0201	0	2500	1	45	44	3 mm PQFN-12
MASWSS0180	50	2500	0.7	38	46	SOIC-8
MASWSS0157	50	2500	0.7	35	45	SOIC-8
MASW-007221	500	3000	0.4	22	52	SC-70 (SOT-363)
MASW-008899	500	3000	0.3	24	48	SC-70 (SOT-363)
MASW-007075-000100	0	3000	1.8	36	46	SOW-24
MASWSS0166	900	3000	0.4	21	55	SC-70 (SOT-363)
MASWSS0151	0	3000	0.6	32	55	SC-70 (SOT-363)
MASW-007072-000100	0	3000	0.6	30	46	SOIC-16
MASW-007935	0	3000	0.7	34	50	SOT-26
MASWSS0192	50	3000	0.2	24	53	SC-70 (SOT-363)

• Not yet released

## Switches (continued)

Part Number	Min Freq (MHz)	Max Freq (MHz)	Insertion Loss (dB)	Isolation (dB)	Input IP3 (dBm)	Package
<b>SPDT (continued)</b>						
MASWSS0143	100	3000	0.4	18	58	SOT-26
MASWSS0204	300	3000	0.3	22	56	SC-70 (SOT-363)
SW-313-PIN	50	3000	0.8	52	46	CR-9
MASWSS0181	300	3000	0.5	23	57	SOT-26
MASWSS0136	0	3000	0.4	27	48	SC-70 (SOT-363)
MASWSS0176	50	3000	0.3	23	45	SOT-26
MASWSS0178	10	3000	0.6	57	43	MSOP-8
MASWSS0169	100	3000	0.7	48	50	MSOP-10
MASWSS0167	500	3000	0.4	28	48	1.2 x 1.5 mm PQFN-6
MASWSS0115	50	3000	0.3	24	46	SC-70 (SOT-363)
MASWSS0121	500	3000	0.7	54	46	4 mm PQFN-16
MASW-009101	5	3000	1	65	39	3 mm PQFN-16
MASW-008801	5	3000	0.8	85	47	3 mm PQFN-16
SW-228-PIN	0	4000	0.7	42	46	CR-2
MASW-007071-000100	0	4000	1.8	30	46	4 x 6 mm PQFN
SW-226-PIN	0	4000	1	48	46	CR-2
SW-227-PIN	0	4000	1	50	46	CR-2
MASW-009588	500	4000	0.4	26	55	1 mm PDFN-6
MASW-000932	10	4000	53	43	72	4 mm PQFN-16
MASW-008543	10	4000	0.7	58	53	MSOP-8
MASW-008853	0	5000	0.2	25	56	SC-70 (SOT-363)
MASW-011043	0	6000	0.6	30	—	2 mm STQFN-12
MASW-000834-13560T	50	6000	0.2	53	65	4 mm PQFN-16
MASW-000825-12770T	50	6000	0.3	35	64	3 mm PQFN-16
MASW-007588	1000	6000	0.9	28	55	3 mm PQFN-12
MASW-000822-12770T	50	6000	0.2	32	60	3 mm PQFN-16
MASWSS0202	1000	6000	0.6	29	52	3 mm PQFN-12
MASWSS0093	50	6000	0.8	28	55	3 mm PQFN-12
MASW-009444	200	6000	0	28	54	1 mm PDFN-6
MASW-000936	50	6000	0.2	45	72	4 mm PQFN
MASW-007921	50	7000	0.7	30	58	2 mm PDFN-8
MASW-007107	0	8000	0.5	30	54	2 mm PQFN-8
MASW-011071	8000	10500	1	38	60	7 mm PQFN-44
MASW-008322	500	20000	1	45	48	4 mm PQFN-24
MASW-011057 • Reflective	13000	20000	0.8	42	55	4 mm QFN-20
MASW-011067 • Absorbative	13000	20000	0.9	36	53	4 mm QFN-20
MASW-011098	26000	40000	1.17	38	—	5 mm 20-LD laminate
<b>SP3T</b>						
MASW-009276-001DIE	1000	4000	0.7	27	55	Die
MASW-011053	2000	18000	0.8	50	48	Die
MASW-003102-13590	2000	18000	0.8	50	40	Die
MASW-003103-1364	50	20000	0.8	40	40	SURMOUNT™ Die
MA4SW310B-1	2000	26000	1.2	47	40	Die
MA4SW310	50	26500	0.8	48	40	Die
MASW-003100-1192	50	26500	0.3	65	40	Die
MA4AGSW3	50	50000	0.6	48	—	Die
MASW-011029	75000	100000	1.3	33	—	Die
MASW-011074 • Asymmetrical	100	1000	0.45	57	60	12 mm WHQFN-28
MASW-011041	50	1500	0.3	51	73	9 mm HQFN-20
MASWSS0200	500	2500	0.6	24	61	3 mm PQFN-12

## Switches (continued)

Part Number	Min Freq (MHz)	Max Freq (MHz)	Insertion Loss (dB)	Isolation (dB)	Input IP3 (dBm)	Package
<b>SP3T (continued)</b>						
MASWSS0199	0	2500	0.5	30	58	3 mm PQFN-12
MASW-011030	50	2500	0.4	27	77	7 mm HQFN-16
MASW-007074-000100	0	3000	2	32	45	SOW-24
MASWSS0144	500	3000	0.6	24	55	3 mm PQFN-12
MASW-008955	0	3000	0.5	22	54	2 mm PDFN-8
MASW-008330	500	3000	0.3	24	50	2 mm PQFN-8
MASWSS0191	500	3000	0.6	30	58	2 mm VTDFN-8
MASW-010612	0	3500	0.6	21	54	1.5 mm PDFN-8
MASW-009359	0	4000	0.6	27	65	2 mm STQFN-12
MASW-009482	50	4000	0.7	23	65	2 mm STQFN-12
<b>SP4T</b>						
MA4AGSW4	50	50000	0.8	42	40	Die
MA4SW410B-1	2000	18000	0.8	48	40	Die
MA4SW410	50	26500	0.7	48	40	Die
MASW4060G	0	4000	1.3	50	46	Die
MA4SW424B-1	10	24000	2.5	50	—	Die
MASW-004102-12760	2	18000	1.5	50	40	Die
MASW-004103-1365	50	20000	0.8	50	63	SURMOUNT™ Die
MASW-004100-1193	50	26500	0.3	65	40	Die
MASW-004240-13170	10	24000	2.5	50	—	Die
MASW-011087	27000	30000	0.85	50	55	Die
MASW-011075 • Asymmetrical	100	1000	0.45	57	60	12 mm WHQFN-28
MASW-011040	50	1500	0.3	51	73	9 mm HQFN-20
MASWCC0010	0	4000	2.3	38	40	CSP-2
MASWCC0009	3	3000	1.4	42	46	QSOP24
MASW-007813-000000	500	3000	0.8	27	58	3 mm PQFN-16
MASW-008566	50	3000	0.7	26	57	4 mm PQFN-16
<b>SP5T</b>						
MA4SW510B-1	2000	18000	0.9	40	40	Die
MASW-005102-13600	2000	18000	0.9	40	40	Die
MA4SW510	50	26500	0.9	38	40	Die
MASW-005100-1194	50	26500	0.9	38	40	Die
MASW-006102-13610	50	26500	0.3	65	40	Die
MA4AGSW5	50	50000	1.1	47	40	Die
MASW-010351	10	4000	1.4	57	50	4 mm PQFN-24
<b>SP6T</b>						
MASWSS0091	500	2500	0.5	45	—	Die
MA4SW610B-1	2000	18000	1.3	45	40	Die
MASW-006102-13610	50	26500	1.3	45	40	Die
MASWCC0006	0	4000	2.1	25	40	CSP-2
<b>SP8T</b>						
MA4AGSW8-1	50	50000	1.5	37	40	Die

• Not yet released

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## Switches (continued)

Part Number	Min Freq (MHz)	Max Freq (MHz)	Insertion Loss (dB)	Isolation (dB)	Input IP3 (dBm)	Package
<b>DPDT</b>						
MASW2040	0	2000	0.4	20	46	Die
MASW6030G	0	6000	0.6	40	45	Die
MASWSS0184	200	4000	0.7	35	58	3 mm PQFN-12LD
MASW-007587-000000	200	4000	0.7	38	59	3 mm PQFN-12LD
MASWSS0190	2000	6000	0.8	43	50	2 mm UTQFN-8LD
MASWSS0130	500	3000	0.7	27	55	3 mm PQFN-12LD
MASWSS0129	2000	6000	0.8	34	51	3 mm PQFN-12LD
MASWSS0107	1000	6000	1.2	33	51	3 mm PQFN-12LD
MASW-009460	500	3000	0.6	19	52	3 mm PQFN-12LD

## Phase Detectors

Part Number	SRD VBR Min (V)	SRD CJ Typ (pF)	SRD TL Typ (ns)	SRD TT Max (ps)	Cap CT Typ (pF)	SD CJ Typ (pF)	SD VF Typ	SD RD Typ (mV)	FMW Typ (GHz)	Package
MSPD1000-E50	15	1	35	95	20	0.4	270	7	0.5	E50 / E50SM
MSPD1000-H50	15	1	35	95	20	0.4	270	7	0.5	H50
MSPD1002-E50	15	0.5	20	70	3.5	0.22	270	8	2	E50 / E50SM
MSPD1002-H50	15	0.5	20	70	3.5	0.22	270	8	2	H50
MSPD1011-121	15	22	10	100	0.5	0.08	300	20	20	CS121
MSPD1011-122	15	22	10	100	0.5	0.08	300	20	20	CS122
MSPD1012-121	15	22	10	100	0.5	0.08	450	20	20	CS121
MSPD1012-122	15	22	10	100	0.5	0.08	450	20	20	CS122
MSPD1012-E50	15	0.5	10	70	2.5	0.18	270	9	12	E50 / E50SM
MSPD1012-H50	15	0.5	10	70	2.5	0.18	270	9	12	H50
MSPD1013-121	15	22	10	100	0.5	0.08	550	20	20	CS121
MSPD1013-122	15	22	10	100	0.5	0.08	550	20	20	CS122
MSPD2018-E50	15	0.35	5	55	0.6	0.1	430	16	22	E50 / E50SM
MSPD2018-H50	15	0.35	5	55	0.6	0.1	430	16	22	H50

## MACOM Frequency Conversion Products

Offering a broad range of frequency and performance specifications

MACOM's frequency conversion products include hybrid mixers, mixers, receivers, transceivers, up converters, and frequency multipliers. Our frequency conversion devices are ideal for point-to-point radio, aerospace and defense, and other broadband communications applications. Available as surface mount devices, our reliable products enable easy assembly and integration for real estate constrained customers.



### Frequency Multipliers

- > Combining an active doubler with an output buffer amplifier to deliver constant power over a range of input powers
- > Available as bare die or in surface mount lead-free QFN packages

### Hybrid Mixers: Limiting

- > For aerospace and defense, wireless, test and measurement, and broadband communications applications
- > Available in subsets of the frequency range:
  - RF and LO: 50 kHz to 24 GHz
  - IF: DC to 8 GHz
- > Double and triple balanced designs
- > Variety of technologies
  - GaAs pHEMT
  - Si HMIC™
- > Connectorized, flat pack, drop-in, and surface mount packages

### Receivers

- > Widely used in point-to-point radio, aerospace and defense, and broadband communications applications
- > Features an integrated LNA, mixer and LO buffer amplifier on a single chip
- > 4500 to 45000 MHz frequency range
- > Excellent noise figure and conversion gain performance
- > Lead-free QFN or SMD packages

### Transceivers

- > Monolithic and stereo doppler transceivers for directional motion detection
- > Used in automatic door openers, ground speed recorders and police radar detectors

### Up Converters

- > Applications include point-to-point radio and broadband communications
- > Featuring an integrated image reject (balanced) mixer, LO buffer, RF buffer, and LO doubler or variable attenuator on a single chip
- > 5600 to 40000 MHz frequency range
- > Lead-free QFN or SMD packages
- > Excellent variable gain control with adjustable bias, high linearity and image rejection, with low LO leakage

### Mixers

- > Constructed using broadband ferrite balun transformers and matched silicon Schottky diodes
- > Ideal for use in CATV head end systems and up converter applications





## Frequency Multipliers

Part Number	Min Freq RF (MHz)	Max Freq RF (MHz)	Min Output (MHz)	Max Output (MHz)	Input power (dB)	Multiply Factor	Conversion Loss (dB)	Package
XX1000-BD	7500	25000	15000	50000	0	2	13	Die
XX1007-BD	13500	17000	27000	34000	8	2	12	Die
FM-105-PIN ♦	10	750	20	1500	24	2	12	RH-3
FM-104-PIN ♦	75	1500	150	3000	24	2	10	FP-3
FM-107-PIN ♦	5	2400	10	4800	10	2	11	FP-2
FMS-109-PIN ♦	5	2400	10	4800	10	2	11	SF-1
SFD25H	5	2400	10	4800	23	2	12	SMT
SFD25	5	2400	10	4800	10	2	11.5	SMT
CSFD25H ♦	10	2400	20	4800	23	2	12	SMT
CSFD25 ♦	10	2400	20	4800	10	2	11.5	SMT
FD25 ♦	5	2400	10	4800	10	2	11.5	TO-8
FD25C ♦	5	2400	10	4800	10	2	11.5	Conn
FD25H ♦	5	2400	10	4800	23	2	12	TO-8
FD25HC ♦	5	2400	10	4800	23	2	12	Conn
FD25E ♦	5	2400	10	4800	10	2	11.5	Flatpack
SFD26	50	3300	100	6600	10	2	13	SMT
FD26C ♦	50	3300	100	6600	110	2	13	Conn
CSFD26 ♦	50	3300	100	6600	10	2	13.5	SMT
FD26	50	3300	100	6600	10	2	13	TO-8
XX1002-QH	2500	6000	5000	12000	3	2	13	4 mm PQFN-24
FDC2310 ♦	1500	8000	3000	16000	10	2	11	Open Carrier
FDC2710 ♦	3500	8000	7000	16000	10	2	11.2	Open Carrier
FD93C ♦	2000	9000	4000	18000	12	2	12	Conn
FD93 ♦	2000	9000	4000	18000	12	2	12	Versapac
FD93H	2000	9000	4000	18000	19	2	12	Versapac
FD93HC ♦	2000	9000	4000	18000	19	2	12	Conn
FDZ5013 ♦	3000	12000	6000	24000	13	2	12	Versapac
FDZ5013C ♦	3000	12000	6000	24000	13	2	12	Conn
MAFC-004403	8000	12000	16000	24000	0	2	17	4 mm QFN
MAFC-010511	8000	12000	16000	24000	0	—	17	3 mm PQFN-16
XX1010-QT	14625	15000	29250	30000	4.5	2	14	3 mm QFN-16
XX1007-QT	13500	17000	27000	34000	8	2	10	3 mm PQFN-16
XX1001-QK	18000	21000	36000	42000	0	2	26	7 mm QFN-28
XX1000-QT	7500	22500	15000	45000	6	2	12	3 mm QFN-16

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## Hybrid Mixers

Part Number	Min Freq RF/LO (MHz)	Max Freq RF/LO (MHz)	Min Freq IF (MHz)	Max Freq IF (MHz)	LO Drive (dB)	Conversion Loss/Gain (dB)	Package
MDS-222-PIN ♦	0.2	200	0.2	200	7	7.5	SF-1
MAC-50-PIN ♦	0.2	200	0	200	7	6	TO-5-2
M6D-50 ♦	0.05	200	0	200	7	7	Relay Can
SM6D	0.05	200	0	200	7	7	SMT
MAC-51-PIN ♦	5	500	0	500	7	7	TO-5-2
MD-108-PIN ♦	5	500	0	500	7	9	RH-3
MDS-223-PIN ♦	10	500	10	500	7	7	SF-1
MD-161-PIN ♦	1	500	0	500	13	8	FP-2
SM6V	0.4	500	0	500	7	6.5	SMT
M9BC ♦	0.5	500	0	500	17	7	Relay Can
M1H ♦	180	620	0	200	7	7	SMA Relay can
M6EH ♦	5	750	0	500	20	7.5	Relay Can
SM6EH	5	750	0	500	20	7.5	SMT
SM2E	10	1000	0	600	20	8	SMT
M2EC ♦	10	1000	0	600	20	8	SMA
M2E	10	1000	0	600	20	8	TO-8
MD-148-PIN ♦	10	1500	10	1500	10	6	FP-2
MDS-158-PIN ♦	5	1500	—	—	7	9	SF-1
MD-160-PIN ♦	1	1500	1	1000	13	9	RH-3
MDS-148-PIN	10	1500	10	1500	10	6	SF-1
MD-158-PIN ♦	5	1500	—	1000	7	7	FP-2
MD-149-PIN ♦	10	1500	10	1500	7	7.5	FP-2
MDS-149-PIN ♦	10	1500	10	1500	7	6	SF-1
CSM1-17	10	1500	1	500	17	7.5	SMT
M9HC ♦	10	1500	0	600	20	8	SMA
M4A ♦	10	1500	0	1000	7	7.5	Flatpack
SM4A	10	1500	0	1000	7	7.5	SMT
M2AC ♦	10	1500	0	800	7	7.5	SMA
CSM1-13	10	1500	1	500	13	7.5	SMT
SM4B ♦	10	1500	0	1000	13	7.5	SMT
M2BC ♦	10	1600	0	800	13	7.5	SMA
M2B ♦	10	1600	0	800	13	7.5	TO-8
CSM1-10	10	2000	1	500	10	7.5	SMT
M2TC ♦	10	2400	1	1000	13	8	SMA
SM4G ♦	800	2400	0	1500	7	7.5	SMT
CSM2-10	10	2800	10	2000	10	8.5	SMT
CSM2-17	10	2800	10	2000	17	8.5	SMT
CSM2-13	10	2800	10	2000	13	8.5	SMT
MD-123-PIN ♦	10	3000	10	3000	7	8	FP-2
SM4T17	1	3400	1	2000	17	8	SMT
SM4TH	1	3400	1	2000	23	8	SMT
M8T ♦	1	3400	1	2000	10	7	TO-8
M8TC ♦	1	3400	1	2000	10	7	SMA
M8TH ♦	1	3400	1	2000	23	7.5	TO-8
CSM4T17	1	3400	1	2000	17	8	SMT
CSM4TH	1	3400	1	2000	23	8	SMT
SM4T	1	3400	1	2000	10	8	SMT

## Hybrid Mixers (continued)

Part Number	Min Freq RF/LO (MHz)	Max Freq RF/LO (MHz)	Min Freq IF (MHz)	Max Freq IF (MHz)	LO Drive (dB)	Conversion Loss/Gain (dB)	Package
M8THC ♦	1	3400	1	2000	23	7.5	SMA
CSM4T	1	3400	1	2000	10	8	SMT
M4TH ♦	1	3400	1	2000	23	8	Flatpack
MDC-169-SMA ♦	1	3500	1	3500	10	10	C-7
MDS-169-PIN ♦	1	3500	5	1500	10	8	SF-1
MD-189-PIN ♦	1	3500	1	3500	23	8	FP-2
MDS-189-PIN ♦	1	3500	1	3500	23	8	SF-1
MD-169-PIN ♦	1	3500	1	3500	10	10	FP-2
M2GC ♦	800	3500	0	1500	7	8	SMA
M2G	800	3500	0	1500	7	8	TO-8
MDC-179-SMA ♦	1	4000	5	1500	7	10.5	C-7
MD-179-PIN ♦	1	4000	5	1500	7	10.5	FP-2
M8H-3 ♦	3700	4200	0	2000	7	5	TO-8
MC2110 ♦	3400	4700	0	1000	10	6.2	Open Carrier
CSM5TH	50	4800	50	3000	23	7	SMT
CSM5T17	50	4800	50	3000	17	7.8	SMT
CSM5T	50	4800	50	3000	10	7.2	SMT
SM5T17	50	5000	50	3000	17	7.5	SMT
SM5TH	50	5000	50	3000	23	7.7	SMT
SM5T	50	5000	50	3000	10	7.5	SMT
MZ6310C ♦	250	5500	0	1500	10	7	SMA
M63C ♦	2500	5500	0	1500	9	5.5	SMA
M8HC-7 ♦	2400	6000	0	2000	7	6	SMA
M8H-7 ♦	2400	6000	0	2000	7	6	TO-8
MDC-162-SMA ♦	1000	7000	10	2000	13	6	C-2
MY63 ♦	2500	7000	0	15000	9	5.8	Versapac
MY63C ♦	2500	7000	0	15000	9	5.8	SMA
MC2410 ♦	4500	7000	0	2000	10	5.5	Open Carrier
MC2413 ♦	4500	7000	0	2000	13	5.5	Open Carrier
M63H ♦	2500	7500	0	1500	20	6	Minpac
MY63H ♦	2500	7500	0	1500	20	6	Versapac
MY63HC ♦	2500	7500	0	1500	20	6	SMA
M63HC ♦	2500	7500	0	1500	20	6	SMA
MC2310 ♦	2200	8000	0	2000	10	7	Open Carrier
MC2320 ♦	2200	8000	0	2000	13	7	Open Carrier
MC2307 ♦	2200	8000	0	2000	7	7	Open Carrier
MY76H ♦	4500	8500	0	2000	20	7	Versapac
MY76HC ♦	4500	8500	0	2000	20	7	SMA
M76H ♦	4500	8500	0	2000	20	7	Minpac
MY76C ♦	4500	9500	0	2000	10	6	SMA
M76 ♦	4500	9500	0	2000	10	6	Minpac
M76C ♦	4500	9500	0	2000	10	6	SMA
MY76 ♦	4500	9500	0	2000	10	6	Versapac
MC4113 ♦	2000	10000	0	2000	13	7.5	Open Carrier
MC4120 ♦	2000	10000	0	2000	20	7.5	Open Carrier
MC4107 ♦	2000	10000	0	2000	7	7.5	Open Carrier
MY84 ♦	1800	10000	0	1000	9	6.5	Versapac

## Hybrid Mixers (continued)

Part Number	Min Freq RF/LO (MHz)	Max Freq RF/LO (MHz)	Min Freq IF (MHz)	Max Freq IF (MHz)	LO Drive (dB)	Conversion Loss/Gain (dB)	Package
MY84C ♦	1800	10000	0	1000	9	6.5	SMA
MY77 ♦	8000	12500	0	2500	10	5.5	Versapac
M77C ♦	8000	12500	0	2500	10	5.5	SMA
MY77C ♦	8000	12500	0	2500	10	5.5	SMA
M14A ♦	6000	14000	0	2000	7	6.5	SMA
MC2710 ♦	10000	15000	0	2000	10	6	Open Carrier
MC2707 ♦	10000	15000	0	2000	7	7	Open Carrier
M67C ♦	9000	15000	0	2500	10	6.5	SMA
MC2720 ♦	10000	15000	0	2000	20	6	Open Carrier
MC3013 ♦	20000	16000	1000	8000	13	8	Open Carrier
MY85C ♦	2000	18000	0	1000	7	8	SMA
MZ7407C ♦	6000	18000	0	3000	7	6.5	SMA
M88H ♦	2000	18000	2000	8000	21	8	Minpac
MZ8810C ♦	2000	18000	1000	8000	10	7.5	SMA
M85 ♦	2000	18000	0	1000	7	8	Minpac
MZ8813 ♦	2000	18000	1000	8000	13	7	Versapac
MY83H ♦	2	18000	30	5000	20	8.5	Versapac
MZ7407 ♦	6000	18000	0	3000	7	6.5	Versapac
M83	1000	18000	30	5000	13	7.5	Minpac
M74 ♦	7000	18000	0	3000	10	6.5	Minpac
MY88HC ♦	1000	18000	1000	8000	21	8	SMA
M93C ♦	2000	18000	30	4000	10	8	SMA
MZ7410 ♦	6000	18000	0	3000	10	6.5	Versapac
MY88C ♦	2000	18000	1000	8000	13	8	SMA
M83C ♦	1000	18000	30	5000	13	7.5	SMA
M89C ♦	1000	18000	1000	8000	10	8	SMA
M79HC ♦	5000	18000	0	3000	20	7.5	SMA
M79H ♦	5000	18000	0	3000	20	7.5	Minpac
MY93C ♦	2000	18000	30	4000	10	8	SMA
MY93 ♦	2000	18000	30	4000	10	8	Versapac
MY89 ♦	2000	18000	2000	8000	10	8	Versapac
M85C ♦	2000	18000	0	1000	7	8	SMA
M88HC ♦	2000	18000	2000	8000	21	8	SMA
MY88	2000	18000	1000	8000	13	8	Versapac
MY89C ♦	2000	18000	2000	8000	10	8	SMA
MZ9310 ♦	2000	18000	30	5000	10	7.5	Versapac
MZ7420C ♦	6000	18000	0	3000	20	7.5	SMA
M79C ♦	5000	18000	0	3000	10	7	SMA
MZ7410C ♦	6000	18000	0	3000	10	6.5	SMA
M88C ♦	2000	18000	1000	8000	13	8	SMA
MY83HC ♦	2	18000	30	5000	20	8.5	SMA
M86C ♦	3500	18000	0	3000	7	7	SMA
MY82 ♦	2000	18000	30	5000	13	7.5	Versapac
M80C ♦	4000	18000	0	3000	7	6.5	SMA
MZ9310 ♦	2000	18000	30	5000	10	7.5	SMA
MY82C ♦	2000	18000	30	5000	13	7.5	SMA

Note: Part numbers are RoHS compliant ♦ indicates non-RoHS compliant  
 Detailed specifications can be found quickly on our website at [macom.com](http://macom.com) by typing the part number into the search box.  
 All specifications are subject to change.

## Hybrid Mixers (continued)

Part Number	Min Freq RF/LO (MHz)	Max Freq RF/LO (MHz)	Min Freq IF (MHz)	Max Freq IF (MHz)	LO Drive (dB)	Conversion Loss/Gain (dB)	Package
M74C ♦	7000	18000	0	3000	10	6.5	SMA
MY85 ♦	2000	18000	0	1000	7	8	Versapac
M50A ♦	2000	18000	2000	18000	10	8	Minpac
MZ7420 ♦	6000	18000	0	3000	20	7.5	Versapac
MZ9313 ♦	2000	18000	30	5000	13	7	Versapac
MZ9313C ♦	2000	18000	30	5000	13	7	SMA
M87C ♦	500	19000	30	5000	13	9	SMA
MY87 ♦	500	19000	30	5000	13	10.5	Versapac
MY87C ♦	500	19000	30	5000	13	10.5	SMA
MC4507 ♦	4000	20000	0	4000	7	7.5	Open Carrier
MC4513 ♦	4000	20000	0	4000	13	7.5	Open Carrier
MC4510 ♦	4000	20000	0	4000	10	7.5	Open Carrier
MY52 ♦	2000	24000	100	5000	10	8	Versapac
MY51 ♦	2000	24000	1000	15000	10	8	Versapac
MY51C ♦	2000	24000	1000	15000	10	8	SMA
MY52C ♦	2000	24000	100	5000	10	8	SMA
M52C ♦	2000	24000	100	5000	10	8	SMA
M51C ♦	2000	24000	1000	15000	10	8	SMA
MY50AC ♦	2000	26000	1000	12000	10	8	SMA
MY50 ♦	2000	26000	1000	15000	10	8	Versapac
MZ5010C ♦	2000	26000	1	15000	10	8.5	SMA
MY50A ♦	2000	26000	1000	12000	10	8	Versapac
M53C ♦	2000	26000	100	6000	10	8	SMA
M50C ♦	2000	26000	1000	15000	10	8	SMA
MZ5010 ♦	2000	26000	1	15000	10	8.5	Versapac
MY50C ♦	2000	26000	1000	15000	10	8	SMA

## Receivers/Down Converters

Part Number	Min Freq (MHz)	Max Freq (MHz)	Conversion Gain (dB)	Noise Figure (dBm)	Image Rejection (dBm)	LO Input Power (dBm)	Package
XR1011-BD	4500	10500	14	1.6	20	5	Die
XR1004-BD	35000	45000	9	3.5	18	2	Die
XR1011-QH	45000	10500	13	1.8	20	5	4 mm QFN-24
XR1015-QH	10000	16000	12	2.5	20	5	4 mm QFN-24
XR1019-QH	27500	33400	13	2.5	20	4	4 mm QFN-24
XR1020	32000	36000	14	3	20	4	4 mm QFN-24
XR1008-QB	37000	40000	9	3.5	18	2	7 mm SMT
MADC-011010	37400	40000	13	3.8	25	4	4 mm QFN-24
MADC-010736	40500	43500	12	3.5	20	2	6 mm SMD-13

## Transceivers

Part Number	Description	Op Freq (GHz)	Output Power (mW)	Op Current (mA)	IF Bandwidth	Package
MACS-007801-0M1R10	Mono Transceiver	24.125 +/-25 MHz	8	175	10 Hz to 1 kHz	Die Cast Waveguide
MACS-007802-0M1R10	Stereo Transceiver	24.125 +/-25 MHz	8	175	10 Hz to 1 kHz	Die Cast Waveguide
MACS-007801-0M1RMO	Mono Transceiver	24.125 +/-25 MHz	5	90	10 Hz to 1 kHz	Die Cast Waveguide
MACS-007802-0M1RSO	Stereo Transceiver	24.125 +/-25 MHz	5	90	10 Hz to 1 kHz	Die Cast Waveguide
MACS-007800-0M1R00	Local Oscillator	24.150 +/-25 MHz	5	90	—	Die Cast Waveguide

## Up Converters

Part Number	Description	Min Freq (MHz)	Max Freq (MHz)	Gain (dBm)	OIP3 (dBm)	Package
XUI009-BD	GaAs MMIC Transmitter	18000	36000	35	25	Die
XUI006-BD	Transmitter	37000	40000	2	17	Die
XUI004-BD	Transmitter	32000	45000	5	14	Die
MAUC-010506	Up Converter	17680	23620	14	35	4 mm PQFN-24
MAUC-011003	Up Converter	27500	33400	12	32	4 mm PQFN-24
XUI019-QH	Up Converter	37000	40000	7	27	4 mm PQFN-24
XUI006-QB	GaAs Transmitter	37000	40000	2	17	7 mm LGA-28
MAUC-101515	Up Converter	40500	43000	11	30	6 mm LGA-13

## Mixers

Part Number	Min Freq RF/LO (MHz)	Max Freq RF/LO (MHz)	Min Freq IF (MHz)	Max Freq IF (MHz)	Conversion Loss/Gain (dBm)	LO Drive (dBm)	Package
XM1001-BD	12000	40000	0	4000	8	—	Die
XM1003-BD	32000	42000	0	4000	12	—	Die
XM1002-BD	34000	46000	0	4000	9	—	Die
MAMX-007607-ELCM1H	0.5	500	0.5	500	7.2	17	SM-87
MAMX-009722-25MHLP	30	512	—	—	7.5	23	SM-89
MAMX-008786-ES0120	880	915	150	170	5.5	17	SM-87
MAMX-008782-ES0118	925	960	820	915	7	7	SM-87
MAMX-008611	800	1000	170	—	9.3	-5	SOT-26
MAMX-008174-CXD860	1	1000	1	1000	7.5	7	SM-134
MAMXSS0012	800	1000	0	200	8	5	SOT-25
MAMXSS0011	800	1000	0	100	7.5	13	SOIC-8
MAMXES0115	5	1000	0	1000	7	7	SM-89
MA4EXP950H1-1277T	850	1050	0	200	8.3	15	3 mm MLP
MAMX-090950-1277LT	850	1050	0	400	8.2	7	3 mm MLP
MAMX-000950-1225MT	700	1200	0	400	8.2	10	3 mm MLP
MA4EX950L1-1225T	700	1200	0	400	8	5	SOT-25
MA4EX950H1-1225T	700	1200	0	400	6.6	15	SOT-25
MAMX-000900-1061LT	700	1400	0	400	6.7	7	SOIC-8
MAMX-007247-MRS5MH	5	1500	5	1500	7.5	13	SM-1
MAMXSS0010	1700	2000	0	200	8.5	13	SOIC-8
MAMX-007253-ES0067	10	2000	10	800	8	10	SM-2
MAMXSS0013	1400	2100	0	500	8	5	SOT-25
MAMX-009239-001500	10	2500	10	2500	9	17	SM-87
MAMX-007238-CM25MH	2	2500	2	2500	7.3	13	SM-87
MA4EX240L1-1225T	1700	2500	0	400	7	5	SOT-25
MAMXES0117	80	2500	0	1000	7.34	17	SM-2
MA4EXP240L-1277T	2300	2800	0	200	8.3	5	3 mm MLP
MA4EX600L1-1225T	4200	6000	0	2000	5.8	15	SOT-25
MA4EX580L1-1225T	4700	6000	0	1050	7.6	5	SOT-25
MAMX-000600-1225MT	4200	6000	0	2000	6.5	10	SOT-25
MAMX-011009	14000	32000	0	7000	-10	—	1.5 x 1.2 mm TDFN-6
MAMX-011054	18000	46000	0	20000	6.5	—	3 mm AQFN-12
MAMX-011036	8000	43000	0	10000	8.5	—	3 mm AQFN-12

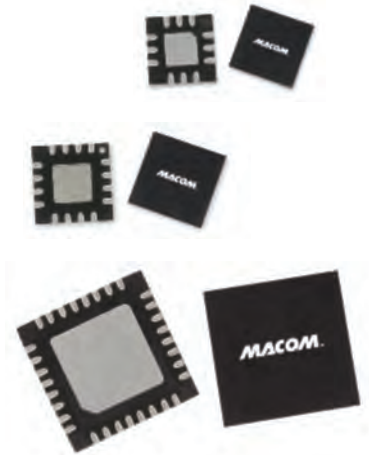
Note: Part numbers are RoHS compliant ◆ indicates non-RoHS compliant  
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## MACOM Multifunction Modules

Integrating size, weight, power and cost for next generation applications

MACOM’s multifunctional modules are designed to provide customers with an affordable, highly integrated unit while delivering reliability and performance.

Applications such as radar and commercial 5G face size constraints and the need for higher frequency necessitates multifunction integration. From MACOM, one can expect an even higher level of integration of RF and microwave chipsets. In the data center and optical transport world, integrated products will provide data conversion and data transport solutions coupled with RF and microwave solutions to provide a very high level of integration that will ultimately drive optimal affordability and reliability.



### Core Chips

- > Designed for communication radar and weather applications
- > Ideal for high levels of integration on a single IC
- > Includes “common path” circuit which incorporates a 4-bit digital attenuator, a 6-bit digital phase shifter, and a T/R SPDT switch
- > RoHS compliant

### Switch LNAs

- > Multifunction MMIC includes a SPDT switch and LNA with by-pass mode for RDX path
- > Compact surface mount module
- > Ideally suited for base stations and for use on the front end of WLAN 802.11a modeules where small size is critical

### MoCA Front-end Integrated Circuits

- > Integrated front end GaAsIC for MoCA mid-band RF applications
- > Fully compatible with Entropic Communications chipset
- > Chip includes a power amplifier, T/R switch, power detector, switched attenuators, bias circuits, and digital control circuitry
- > The digital inputs control all circuit operating modes

## Core Chips

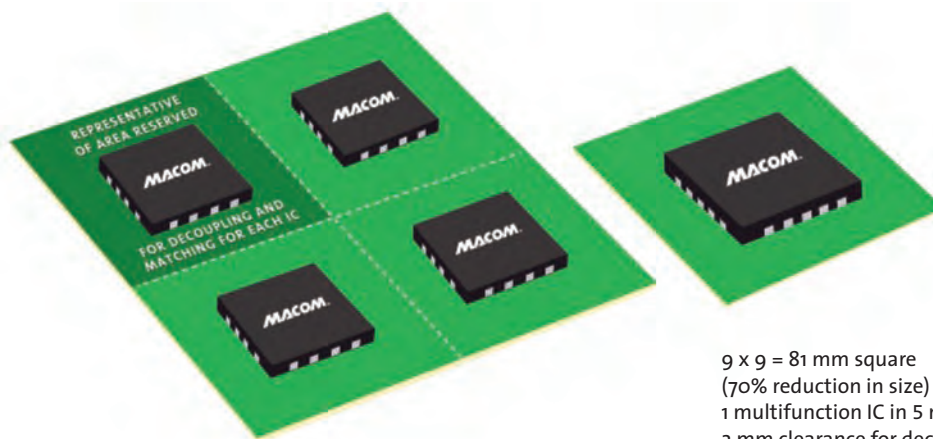
Part Number	Min Freq (GHz)	Max Freq (GHz)	Transmit Gain (dB)	Transmit P1dB (dBm)	Receive Gain (dB)	Receive Noise Figure (dBm)	Package
MAMF-011015	8	11	11	23	24	2	7 mm PQFN-16

## Switch LNAs

Part Number	Min Freq (MHz)	Max Freq (MHz)	Gain (dB)	Noise Figure (dB)	OIP3 (dBm)	Output P1dB (dBm)	Bias Voltage (V)	Bias Current (mA)	Package
MAIA-011002	0.04	4	2	0.8	36	22	3	70	5 mm HQFN-32
MAIA-011004	0.4	400	34	1	—	—	—	75	5 mm HQFN-32
MAMF-010614	5	6	12	2.2	—	—	—	10	2 mm STQFN-12
MAMF-011038	5	6	12	2.2	—	—	—	10	2 mm STQFN-12

## MoCA Front-end Integrated Circuits

Part Number	Min Freq (MHz)	Max Freq (MHz)	Tx Gain (dB)	Vdd (V)	Package
XZ1003-QT	775	1525	16.8	3.3	3 mm PQFN-16
XZ1004-QT	475	625	17.5	3.3	3 mm PQFN-16



16 x 16 = 256 mm square  
 4 ICs in 4 mm x 4 mm packages  
 2 mm clearance for decoupling

9 x 9 = 81 mm square  
 (70% reduction in size)  
 1 multifunction IC in 5 mm x 5 mm package  
 2 mm clearance for decoupling



## MACOM Passive Products

### A variety of solutions for A&D and communications

MACOM offers a variety of passive solutions for a wide range of A&D, wireless, and wireline communication applications. Passive components include transformers, capacitors, dividers/combiners, couplers, and filters/diplexers.

#### Bias Networks

MACOM offers 1800 to 40000 MHz bias networks suitable for DC biasing of PIN diode control circuits.

- > Functions as RF to DC decoupling networks, as well as a DC return
- > Can also be used as bi-directional reactive couplers for Schottky detector circuits in multi-market applications

#### Couplers

- > Used extensively in a range of A&D, wireless, and wireline communications applications. MACOM offers connectorized and surface mount devices with a broad range of coupling values

#### Hybrid Couplers

- > Products available in subsets of the 2-3000 MHz frequency range
- > Available as TO-cans, flatpacks, surface mount, and connectorized

#### Directional Couplers

- > Coupling values of 6 dB to 30 dB
- > Products available in subsets of the 2 MHz to 18 GHz frequency range
- > 75  $\Omega$  products available for CATV, DTV, and DBS applications

#### Power Dividers/Combiners

Used in a range of A&D, wireless, and wireline communications applications.

- > 50 ohm and 75 ohm devices
- > Products available in subsets of 400 kHz to 26 GHz frequency range
- > 2, 3, 4, 5, 6, and 8 channel versions available

#### Transformers/ Baluns

MACOM offers many standard transformers used for a variety of wireless, wireline, and A&D communications applications.

- > Standard impedance ratios up to 4:1
- > Balanced/unbalanced versions
- > 50  $\Omega$  and 75  $\Omega$  nominal impedance devices available
- > Surface mount, flat pack and connectorized packages

#### Filters/Diplexers

MACOM offers a variety of highpass, lowpass, and diplex filter components and assemblies used in common wireless communications standards and CATV, DBS, and DTV applications.

- > 50  $\Omega$  and 75  $\Omega$  diplexers
- > Multi-chip and MMIC products
- > Low cost surface mount packaging

#### Capacitors

- > Suitable for DC blocking and RF bias networks in a variety of control and filter circuits
- > Capacitance-temperature coefficient provides <200 ppm/C
- > Insertion loss <0.1 dB at 15 GHz
- > Ideal for chip and wire/ribbon microwave high performance circuits



**Bias Networks**

Part Number	Min Freq (MHz)	Max Freq (MHz)	Insertion Loss (dB)	Isolation Loss (dB)	Package
MABT-011000-14230G	200	1800	0.2	35	Die
MABT-011000-14230W	200	1800	0.2	35	Die
MABT-011000-14230P	200	1800	0.2	35	Die
MABT-011000-14235P	200	1800	0.2	35	Die
MA4BNI840-1	18000	40000	0.2	35	Die
MA4BNI840-2	18000	40000	0.2	35	Die

**Couplers**

Part Number	Description	Min Freq (MHz)	Max Freq (MHz)	Coupling, Nom (dB)	Isolation (dB)	Input Power (dBm)	Package
JHS-113-PIN ♦	Quad Hybrid	7	14	3	28	36	SF-1
JHS-114-PIN ♦	Quad Hybrid	20	40	3	28	37	SF-1
JH-114-PIN ♦	Quad Hybrid	20	40	3	30	37	FP-2
JH-133-PIN ♦	Quad Hybrid	20	40	3	28	37	TO-8-2
JHS-115-PIN ♦	Quad Hybrid	40	80	3	30	30	SF-1
JH-115-PIN ♦	Quad Hybrid	40	80	3	30	30	FP-2
MACP-010507-CH0160	Coupler, 17 Db	5	120	17	38	24	SMT
JH-119-PIN ♦	Quad Hybrid	80	160	3	33	36	FP-2
JHS-119-PIN ♦	Quad Hybrid	80	160	3	33	36	SF-1
MACP-010121-B8180X	Coupler 19 dB, E-Series	136	174	19	35	38	SM-55B
HH-106-PIN ♦	Hybrid Junction	2	200	3	30	30	FP-2
JH-121-PIN ♦	Quad Hybrid	100	200	3	25	36	FP-2
HHS-109-PIN	Hybrid Junction	5	200	3	40	27	SF-1
HH-109-PIN ♦	Hybrid Junction	5	200	3	40	27	FP-2
JHS-121-PIN	Quad Hybrid	100	200	3	25	36	SF-1
MACP-011047	Coupler	5	300	14	30	0.5	Tape & Reel
JH-136-PIN ♦	Quad Hybrid	175	350	3	28	36	FP-2
CHS-137-PIN ♦	Bi-Directional	1	400	20	40	35	SF-1
JHS-142-PIN ♦	Quad Hybrid	200	400	3	30	37	SF-1
MACP-007984-MDC201	Coupler 20 dB	350	450	20	38	24	SM-22
CHS-134-PIN ♦	Bi-Directional	10	500	11	31	30	SF-1
CH-134-PIN ♦	Bi-Directional	10	500	11	31	30	FP-2
JHS-139-PIN ♦	Quad Hybrid	250	500	3	30	36	SF-1
HH-110-PIN ♦	Hybrid Junction	10	500	3	37	30	FP-2
JH-139-PIN ♦	Quad Hybrid	250	500	3	30	36	FP-2
HHS-110-PIN	Hybrid Junction	10	500	3	40	30	SF-1
MACPCC0002	Bi-Directional 17 dB Coupler	960	824	17	32	33	SOIC-8
MACP-010389-CE0880	Coupler, 14 dB	4	862	14	38	24	N/A
MACP-010383-CHOA40	Coupler, 17 dB	4	862	17	35	24	N/A
MACP-009821-CG0650	Coupler 16 dB, 75 Ohm	5	862	16	33	24	SM-101
MACP-010382-CFOA40	Coupler, 15 dB	4	862	15	33	24	N/A
EMDC-16-8-75	Coupler 16 dB, 75 Ohm	5	862	16	33	24	SM-101
MACPCT0038	Coupler 17 dB, 75 Ohm	5	870	17	42	24	SM-103
MACPES0004	Coupler 10 dB, 75 Ohm	5	870	10	30	24	SM-132
ELDC-10	Coupler 10 dB, 75 Ohm	5	870	10	28	24	FR4
MACP-009598-C80160	Coupler 8 dB, 75 Ohm	5	900	9	26	24	SM-22
MACP-009596-CA0160	Coupler 10 dB, 75 Ohm	5	1000	10	30	24	SM-22
MACP-009944-CK07F0	CATV 20 dB Coupler	5	1000	20	30	24	SM-127
MACP-009943-CH07F0	CATV 17 db Directional Coupler	5	1000	17	37	24	SM-55A
MACP-009404-C80370	Coupler 8 dB, 75 Ohm	5	1000	8	25	24	SM-55
MACPCT0039	10 dB, 75 Ohm	5	1000	10	25	24	SM-138
CH-132-BNC ♦	Bi-Directional	1	1000	20	40	—	C-8-132

## Couplers (continued)

Part Number	Description	Min Freq (MHz)	Max Freq (MHz)	Coupling, Nom (dB)	Isolation (dB)	Input Power (dBm)	Package
MACP-007486-CH0010	17 dB, 75 Ohm	5	1000	17	38	24	SM-1
2020-6602-20 ◆	Directional Mini Octave	500	1000	20	45	47	Conn
MACP-008764-CH0370	Coupler 17 dB, 75 Ohm	5	1000	17	39	24	SM-55
MACP-007490-CA0010	Coupler 10.5 dB, 75 Ohm	5	1000	11	30	24	SM-1
MACP-008311-CE0370	Coupler 14 dB, 75 Ohm	5	1000	14	39	24	SM-55
MACP-008125-CK07F0	Coupler 20 dB, 75 Ohm	5	1000	20	34	24	SM-127
2020-6600-06 ◆	Directional Mini Octave	500	1000	6	31	47	Conn
2020-6603-30 ◆	Directional Mini Octave	500	1000	30	55	47	Conn
2031-6330-00 ◆	Stripline 180 Deg. Hybrid	500	1000	3	25	45	Conn
2020-6601-10 ◆	Directional Mini Octave	500	1000	10	35	47	Conn
JH-140-PIN ◆	High-Freq Quad Hybrid	500	1000	3	25	44	FP-2
CH-140-PIN ◆	Directional	5	1000	20	40	35	FP-2
MACPCT0040	Coupler 10 dB, 75 Ohm	5	1000	10	30	24	SM-91
MACPES0028	Coupler 7 dB, 75 Ohm	40	1000	7	22	24	SM-137
MACPES0034	Coupler 10 dB, 75 Ohm	5	1000	10	23	24	SM-138
MACP-009736-CD0160	Coupler 13 dB, 75 Ohm	5	1000	13	28	24	SM-22
EMDC-13-1-75	Coupler 13 dB, 75 Ohm	5	1000	13	38	24	SM-22
MACP-010718-CG09E0	Coupler, 17 Db	40	1002	17	35	24	SM-22
MACP-010249-CI08A0	Coupler 18 dB, 75 Ohm	5	1200	18	32	24	FR4
MACP-010446-C80370	Coupler, 8 dB	5	1200	8	21	24	N/A
MACP-010414-CA0370	Coupler, 10 dB	5	1200	10	21	24	N/A
MACP-009730-C60370	Coupler 6 dB, 75 Ohm	5	1200	6	16	24	SM-55
MACP-009945-CH0670	CATV 17.5 dB Directional Coupler	5	1200	18	33	24	SM-103
MACP-007741-CG09E0	Coupler 17dB, 75 Ohm	5	1200	17	32	24	SM-22
MACP-007727-CI07B0	18 dB, 75 Ohm	5	1200	18	26	24	SM-123
MACP-009011-C80370	8 dB, 75 Ohm	5	1200	8	25	24	SM-55A
MACP-010250-C808A0	Coupler 8 dB, 75 Ohm	5	1200	9	24	28	FR4
MACP-011008	Coupler 16dB 75 Ohm	5	1200	16	12	24	FR4
MACP-011009	Coupler 8dB 75 Ohm	5	1200	8	-	24	FR4
MACP-011045	Coupler	5	1225	23	42	10	Tape & Reel
2031-6331-00 ◆	Stripline 180 Deg. Hybrid	1000	2000	3	25	45	Conn
2025-6002-10 ◆	Stripline Directional	500	2000	10	28	47	Conn
2020-6604-06 ◆	Directional Mini Octave	1000	2000	6	31	47	Conn
2035-6364-00 ◆	Air Dielectric 90 Deg. Hybrid	1000	2000	3	20	47	Conn
2032-6344-00 ◆	Stripline 90 Deg. Hybrid	1000	2000	3	22	45	Conn
H-9-N	Hybrid Junction	2	2000	4	40	44	Conn
2025-6004-20 ◆	Stripline Directional	500	2000	20	42	47	Conn
2020-6607-30 ◆	Directional Mini Octave	1000	2000	30	55	47	Conn
JH-141-PIN ◆	High-Freq Quad Hybrid	1000	2000	3	27	44	FP-2
HH-128-PIN ◆	Hybrid Junction	20	2000	3	35	27	FP-3
2020-6605-10 ◆	Directional Mini Octave	1000	2000	10	35	47	Conn
MACPCC0001	Bi-Directional 17 dB Coupler	1700	2000	17	34	33	SOIC-8
2020-6606-20 ◆	Directional Mini Octave	1000	2000	20	45	47	Conn
2025-6001-06 ◆	Stripline Directional	500	2000	6	24	47	Conn
2032-6350-00 ◆	Stripline 90 Deg. Hybrid	500	2000	3	24	45	Conn
MACP-010385-CE0880	Coupler, 14 dB	5	2400	14	27	24	SMT
H-183-4-N ◆	Hybrid Junction	30	3000	5	20	37	Conn
2032-6345-00 ◆	Stripline 90 Deg. Hybrid	2000	4000	3	22	45	Conn
2020-6609-10 ◆	(Directional Mini Octave	2000	4000	10	32	47	Conn
2031-6332-00 ◆	Stripline 180 Deg. Hybrid	2000	4000	3	22	45	Conn
2020-6611-30 ◆	Directional Mini Octave	2000	4000	30	52	47	Conn
2020-6610-20 ◆	Directional Mini Octave	2000	4000	20	42	47	Conn

## Couplers (continued)

Part Number	Description	Min Freq (MHz)	Max Freq (MHz)	Coupling, Nom (dB)	Isolation (dB)	Input Power (dBm)	Package
2025-6006-10 ♦	Stripline Directional	1000	4000	10	28	47	Conn
2025-6008-20 ♦	Stripline Directional	1000	4000	20	42	47	Conn
2025-6005-06 ♦	Stripline Directional	1000	4000	6	24	47	Conn
2020-6612-06 ♦	Directional Mini Octave	2600	5200	6	26	47	Conn
2020-6613-10 ♦	Directional Mini Octave	2600	5200	10	30	47	Conn
2031-6333-00 ♦	Stripline 180 Deg. Hybrid	2600	5200	3	20	45	Conn
2020-6614-20 ♦	Directional Mini Octave	2600	5200	20	40	47	Conn
2035-6366-00 ♦	Air Dielectric 90 Deg. Hybrid	2600	5200	3	18	47	Conn
2020-6615-30 ♦	Directional Mini Octave	2600	5200	30	50	47	Conn
2032-6347-00 ♦	Stripline 90 Deg. Hybrid	4000	8000	3	20	45	Conn
2020-6616-06 ♦	Directional Mini Octave	4000	8000	6	28	47	Conn
2032-6352-00 ♦	Stripline 90 Deg. Hybrid	2000	8000	3	20	45	Conn
2031-6334-00 ♦	Stripline 180 Deg. Hybrid	4000	8000	3	20	45	Conn
2020-6618-20 ♦	Directional Mini Octave	4000	8000	20	40	47	Conn
2020-6617-10 ♦	Directional Mini Octave	4000	8000	10	30	47	Conn
2020-6619-30 ♦	Directional Mini Octave	4000	8000	30	50	47	Conn
2025-6012-20 ♦	Stripline Directional	2000	8400	20	40	47	Conn
2025-6010-10 ♦	Stripline Directional	2000	8400	10	28	47	Conn
2025-6009-06 ♦	Stripline Directional	2000	8400	6	24	47	Conn
2032-6348-00 ♦	Stripline 90 Deg. Hybrid	8000	12400	3	18	45	Conn
2026-6001-10 ♦	Stripline Directional	1000	12400	10	28	47	Conn
2020-4018-20 ♦	Directional Mini Octave	7000	12400	20	38		Conn
2025-6016-20 ♦	Stripline Directional	4000	12400	20	35	47	Conn
2031-6335-00 ♦	Stripline 180 Deg. Hybrid	8000	12400	3	17	45	Conn
2020-6623-30 ♦	Directional Mini Octave	7000	12400	30	47	47	Conn
2020-6622-20 ♦	Directional Mini Octave	7000	12400	20	38	47	Conn
2026-6003-20 ♦	Stripline Directional	1000	12400	20	37	47	Conn
2020-4018-10 ♦	Directional Mini Octave	7000	12400	10	30	–	Conn
2020-6621-10 ♦	Directional Mini Octave	7000	12400	10	27	47	Conn
2025-6014-10 ♦	Stripline Directional	4000	12400	10	25	47	Conn
2032-6354-00 ♦	Stripline 90 Deg. Hybrid	4000	12400	3	20	47	Conn
2031-6338-00 ♦	Stripline 180 Deg. Hybrid	4000	12400	3	17	45	Conn
2020-6630-20 ♦	Directional Mini Octave	12400	18000	20	35	47	Conn
2032-6371-00 ♦	Stripline 90 Deg. Hybrid	2000	18000	3	20	47	Conn
2025-6018-10 ♦	Stripline Directional	6000	18000	10	26	47	Conn
2025-6017-06 ♦	Stripline Directional	6000	18000	6	21	47	Conn
2026-6007-10 ♦	Stripline Directional	1000	18000	10	25	47	Conn
2026-6010-10 ♦	Stripline Directional	500	18000	10	25	47	Conn
2020-6629-10 ♦	Directional Mini Octave	12400	18000	10	30	47	Conn
2020-6628-06 ♦	Directional Mini Octave	12400	18000	6	21	47	Conn
2031-6339-00 ♦	Stripline 180 Deg. Hybrid	7000	18000	3	14	43	Conn
2032-6375-00 ♦	Stripline 90 Deg. Hybrid	4000	18000	3	18	50	Conn
2032-6374-00 ♦	Stripline 90 Deg. Hybrid	6500	18000	3	18	45	Conn
2025-6020-20 ♦	Stripline Directional	6000	18000	20	35	47	Conn
2020-6626-20 ♦	Directional Mini Octave	7000	18000	20	35	47	Conn
2026-6012-20 ♦	Stripline Directional	500	18000	20	35	47	Conn
2026-6009-20 ♦	Stripline Directional	1000	18000	20	37	47	Conn
2026-6004-10 ♦	Stripline Directional	2000	18000	10	25	47	Conn
2020-6627-30 ♦	Directional Mini Octave	7000	18000	30	45	47	Conn
2020-6624-06 ♦	Directional Mini Octave	7000	18000	6	21	47	Conn
2020-6625-10 ♦	Directional Mini Octave	7000	18000	10	30	47	Conn
2020-6631-30 ♦	Directional Mini Octave	12400	18000	30	42	47	Conn
2025-6019-16 ♦	Stripline Directional	6000	18000	16	32	47	Conn

## Power Dividers/Combiners

Part Number	Min Freq (MHz)	Max Freq (MHz)	Channels (#)	Amplitude Balance (dB)	Phase Bal (°)	Isolation (dB)	Max Input Power (dBm)	Package
MAPD-010424-C20C80	2400	5	2	0.2	5	6	24	SMT
MAPD-010320-5070HR	50	70	2	1	0.3	30	30	SM-89
M3H-50-PIN ♦	1	100	3	0.2	1	30	30	TO-5
MTH-50-PIN ♦	1	100	2	0.1	1	30	30	TO-5-1
MAPD-008185-C20720	50	150	2	0.5	2	22	30	SM-114
MAPD-008762-ES0001	120	160	2	1	1	20	30	SM-87
MAPD-009850-HW1268	112	168	2	1	1	18	30	SM-89
MAPD-008109-C30040	5	200	3	0.1	1	30	30	SM-4
THV-50-N ♦	2	200	2	0.2	1	30	33	Conn
THV-50-TNC ♦	2	200	2	0.2	1	30	33	Conn
THV-50-BNC ♦	2	200	2	0.2	1	30	33	Conn
THV-50-SMA ♦	2	200	33	0.2	1	30	33	Conn
MAPD-011018	5	250	2	0.3	4.3	19	30	SMT
M3V-50-PIN ♦	50	300	3	0.2	2	25	30	TO-5
DS-310-PIN ♦	0	300	4	0.2	4	25	30	FP-5
DS-117-PIN ♦	1	300	3	0.3	4	20	30	FP-3
DS-308-BNC ♦	1	300	3	0.3	4	20	30	C-8
TU-50-N ♦	20	400	2	0.2	1	35	33	Conn
TU-50-SMA ♦	20	400	2	0.2	1	35	33	Conn
DSS-113-PIN ♦	0	400	2	0.2	1	25	30	SF-1
DS-113-PIN ♦	0	400	2	0.2	1	25	30	FP-2
MTV-50-PIN ♦	40	400	2	0.2	2	30	30	TO-5-1
TU-50-BNC ♦	20	400	33	0.2	1	35	33	Conn
TU-50-TNC ♦	20	400	2	0.2	1	35	33	Conn
DS-112-PIN ♦	10	500	4	0.2	5	25	30	FP-5
MAPD-007249-ESML21	5	500	2	0.2	1	25	30	SM-24
DSS-333-PIN ♦	10	500	2	0.2	2	25	30	SF-1
DS-318-PIN ♦	5	500	2	0.2	2	18	30	RH-1
DS-309-BNC ♦	2	500	8	0.2	2	30	33	C-18
DS-319-PIN ♦	10	500	2	0.2	1	25	30	TO-8-2
DS-109-PIN ♦	10	500	2	0.2	1	25	30	FP-2
DS-312-BNC ♦	10	500	4	0.2	2	25	30	C-14
DS-328-PIN ♦	3	700	3	0.3	3	20	30	TO-8-2
MAPD-008072-ESSM26	5	900	2	0.5	5	20	30	SM-1
MAPDCC0017	824	960	6	0.2	6	20	30	SOW-16
MAPDCC0005	824	960	3	0.6	2	15	30	SOIC-8
MAPDCC0009	824	960	4	0.3	3	20	30	SOIC-8
MAPDCC0007	824	960	4	0.3	2	23	30	SOW-16
MAPDCC0001	824	960	2	0.1	0.5	15	30	SOIC-8
MAPDCC0011	824	960	2	0.1	3	13	30	SOT-26
MAPDCC0021	824	960	8	0.4	5	20	30	SSOP-20
MAPDCC0019	824	960	6	0.5	4	20	30	SOIC-16
ELPD-290	820	980	2	1.2	7	20	30	SM-88
MAPD-010274-C209CO	5	1000	2	0.2	0.3	19	30	Datasheet*
MAPD-010362-C20FAO	5	1000	2	0.4	3	19	24	Datasheet*
MAPD-008812-0003HW	5	1000	3	0.2	2	20	24	SM-4
MAPD-009918-C209CO	5	1000	2	0.3	0.9	26	30	SM-156
MAPD-010038-C209CO	5	1000	2	0.3	0.3	30	30	SM-15
MAPD-009278-5T1000	5	1000	2	0.4	6	16	24	SM-156

\*Reference Datasheet for packaging information

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## Power Dividers/Combiners (continued)

Part Number	Min Freq (MHz)	Max Freq (MHz)	Channels (#)	Amplitude Balance (dB)	Phase Bal (°)	Isolation (dB)	Max Input Power (dBm)	Package
H-81-4-SMA ♦	5	1000	2	0.5	2.5	25	33	Conn
MAPD-008108-C202C0	5	1000	2	0.5	4	17	30	SM-44
T-1000-TNC ♦	10	1000	2	0.1	1	25	33	Conn
MAPDCT0033	5	1000	2	0.4	0	22	30	SM-139
H-81-4-N ♦	5	1000	2	0.5	2.5	25	33	Conn
T-1000-BNC ♦	10	1000	2	0.1	1	25	33	Conn
MAPD-007246-ES4700	2	1000	4	0.2	5	20	30	SM-46
MAPDCT0030	5	1000	2	0.2	1	20	30	SM-138
DSS-327-PIN ♦	5	1000	2	0.3	3	16	30	SF-1
MAPDCT0029	5	1000	2	0.3	1	14	30	SM-55
MAPDCT0028	5	1000	4	0.3	0.5	20	30	SM-46
T-1000-SMA ♦	10	1000	2	0.1	1	25	33	Conn
T-1000-N ♦	10	1000	2	0.1	1	25	33	Conn
DS-323-PIN ♦	25	1000	3	0.4	4	24	30	FP-3
DS-324-PIN ♦	25	1000	4	0.3	6	20	30	FP-5
DS-327-PIN ♦	5	1000	2	0.2	3	20	30	FP-2
MAPDCT0027	5	1000	2	0.3	1	15	30	SM-55
MACPES0026	5	1000	2	0.6	5	17	30	SM-135
ELPD-20-1	5	1000	2	0.5	4	22	30	SM-139
MACPES0045	40	1000	2	0.2	0.5	18	30	SM-150
ESSMJ-2-12-75	5	1000	2	0.5	4	30	30	SM-44
MAPD-010281-C2W024	5	1200	2	0.2	1.3	—	30	Datasheet*
MAPD-010047-C2W24M	5	1200	2	0.2	1.3	—	30	Datasheet*
MAPD-009492-C2W180	5	1200	2	1.3	1.3	—	17	SM-164
MAPDCT0032	5	1200	3	0.3	3	20	24	SM-4
MAPDCT0024	5	1200	2	0.3	2.1	—	30	SM-169
MAPDCT0017	46	1200	3	0.3	3	20	24	SM-4
MAPD-011039	5	1218	2	1	2	29	30	SM-164
MAPD-011050 (High Surge)	5	1218	2	0.4	1.5	30	500	SMT
MAPD-011035	5	1225	2	0.5	5	5	30	SMT
MAPD-011040	5	1225	2	0.35	5	19	1	SMT
MAPD-011032 (High Surge)	5	1250	2	0.4	0.4	25	27	SMT
DS-331-PIN ♦	750	1500	2	0.2	6	10	30	TO-8
MAPD-011002	5	1600	2	0.3	0.7	23	30	SM-22
MAPD-010638-C2WSOT	5	1600	2	0.3	1	26	24	SM-156
MAPDCC0003	1510	1660	2	0.1	1	15	30	SOIC-8
MAPDCC0004	1700	1900	2	0.1	2	15	30	SOIC-8
MAPDCC0002	1850	1990	2	0.1	1	15	30	SOIC-8
MAPDCC0006	1850	1990	3	0.3	7	12	30	SOIC-8
MAPDCC0015	1850	1990	5	0.2	6	21	30	SOIC-16
2089-6406-00 ♦	500	2000	4	0.4	6	20	36	Conn
DS-4-4-BNC ♦	2	2000	4	1	5	30	30	Conn
MAPDCC0008	1700	2000	4	0.1	4	18	30	SOW-16
H-8-4-SMA ♦	2	2000	2	0.1	2.5	25	33	Conn
2089-6206-00 ♦	500	2000	2	0.3	4	20	36	Conn
MAPD-007530-000100	1700	2000	2	0.2	1.5	16	30	SOT-26
2089-6201-00 ♦	1000	2000	2	0.2	4	20	33	Conn
DS-4-4-SMA ♦	2	2000	4	1	5	30	30	Conn

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## Power Dividers/Combiners (continued)

Part Number	Min Freq (MHz)	Max Freq (MHz)	Channels (#)	Amplitude Balance (dB)	Phase Bal (°)	Isolation (dB)	Max Input Power (dBm)	Package
2089-6801-00 ♦	1000	2000	8	0.8	8	20	38	Conn
2089-6401-00 ♦	1000	2000	4	0.4	6	20	36	Conn
DSS-313-PIN ♦	10	2000	2	0.3	4	23	24	SF-1
DS-4-4-N ♦	2	2000	4	1	5	30	30	Conn
DS-313-PIN ♦	10	2000	2	0.3	4	23	24	FP-2
MAPDCC0018	1700	2000	6	0.5	8	18	30	SOW-16
DS-409-4BNC ♦	10	2000	4	0.5	5	25	37	Conn
DS-808-4BNC ♦	20	2000	8	0.6	5	20	37	Conn
DS-409-4SMA ♦	10	2000	4	0.5	5	25	37	Conn
DS-808-4SMA ♦	20	2000	8	0.6	5	20	37	Conn
DS-808-4N ♦	20	2000	8	5	0.6	20	37	Conn
MAPDCC0020	1700	2000	6	1	4	21	30	SOIC-16
DS-409-4TNC ♦	10	2000	4	0.5	5	25	37	Conn
DS-332-PIN ♦	1000	2000	2	0.2	6	10	30	TO-8
DS-808-4TNC ♦	20	2000	8	0.6	5	20	37	Conn
2089-6806-00 ♦	500	2000	8	0.8	8	20	41	Conn
MAPDCC0014	1700	2000	4	0.8	5	18	30	SOIC-16
MAPD-011007	5	2150	2	0.3	1	26	24	SM-156
MAPD-010201-8022CG	1	2200	2	0.5	1	13	24	SM-89
MAPDCT0026	5	2400	2	0.8	2	10	30	SM-156
MAPDCC0010	2200	2500	2	0.1	2	22	30	SOT-25
MAPD-008957-CT0012	1	2700	2	0.5	2	9	24	SM-22
2089-6802-00 ♦	2000	4000	8	0.8	10	18	38	Conn
2089-6402-00 ♦	2000	4000	36	0.4	6	20	36	Conn
2089-6202-00 ♦	2000	4000	2	0.2	4	20	33	Conn
2089-6203-00 ♦	4000	8000	2	0.2	6	20	33	Conn
2089-6403-00 ♦	4000	8000	4	0.4	8	20	36	Conn
2089-6807-00 ♦	2000	8000	8	1.2	16	15	41	Conn
2089-6207-00 ♦	2000	8000	2	0.3	8	18	36	Conn
2089-6407-00 ♦	2000	8000	4	0.5	12	18	39	Conn
2089-6404-00 ♦	8000	12400	4	0.5	8	18	36	Conn
2089-6204-00 ♦	8000	12400	2	0.2	6	20	33	Conn
2089-6808-00 ♦	2000	18000	8	1.8	24	15	45	Conn
2089-6805-00 ♦	12400	18000	8	0.8	24	15	40	Conn
2090-6814-00 ♦	1000	18000	8	1.4	16	17	47	Conn
2089-6405-00 ♦	12400	18000	4	0.5	8	15	38	Conn
2090-6205-00 ♦	2000	18000	2	0.3	5	23	46	Conn
2090-6414-00 ♦	1000	18000	4	1	12	18	47	Conn
2089-6205-00 ♦	12400	18000	2	0.3	6	17	35	Conn
2090-6210-00 ♦	8000	18000	2	0.3	5	18	43	Conn
2089-6210-00 ♦	7000	18000	2	0.3	8	17	35	Conn
2089-6209-00 ♦	4000	18000	2	0.3	8	17	36	Conn
2089-6410-00 ♦	7000	18000	4	0.5	12	15	38	Conn
2089-6409-00 ♦	4000	18000	4	0.5	12	15	39	Conn
2090-6304-00 ♦	500	18000	3	0.5	—	18	49	Conn
2089-6208-00 ♦	2000	18000	2	0.3	8	17	40	Conn
2090-6214-00 ♦	1000	18000	2	0.4	5	22	47	Conn
2089-6408-00 ♦	2000	18000	4	0.5	12	17	20	Conn
2089-6810-00 ♦	7000	18000	8	1.5	24	15	40	Conn

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## Transformers / Baluns

Part Number	Description	Min Freq (MHz)	Max Freq (MHz)	Impedance Ratio	Insertion Loss (dB)	Package
MABA-009807-CF4010	Transformer	0.05	3.072	4:1	1	SM-1
MABA-011006	Transformer	8	8	1:20	0.9	SM1
ETC16-1T-2	Flux Coupled Balun	5	40	16:1	1	SM-22
MABA-010411-CT1160	Transformer	30	60	1:1	0.8	Surface Mount
MABA-007902-CF38A0	Flux Coupled Balun Transformer	5	65	2.56:1	0.8	SM-138
MABAES0017	Flux Coupled Balun	5	65	2.56:1	0.8	SM-138
MABA-011017	Flux Coupled Transformer	5	85	2:1	0.5	SM-138
MABA-011017	Transformer	5	85	2:1	0.5	SM-22
MABA-010181-CF9A40	Flux Coupled Transformer	5	90	1:9	1.3	SMT
MABA-008282-CFGA40	Flux Coupled Transformer	5	90	16:1	1.5	SM-164
MABA-010655-CF1A40	Ethernet Transformer	1	100	1:1	0.3	Surface Mount
MABA-011073	1:1 Flux Coupled Transformer	1	100	1:1	0.3	Surface Mount
MABA-009776-CF28A0	Flux Coupled Balun Transformer	5	100	2:1	0.4	SM-164
MABA-010061-CF4FA0	Flux Coupled Transformer	5	100	1:4	1.2	SMT
MABA-009573-CF1A40	Flux Coupled Transformer	5	100	1.77:1	0.3	SM-164
MABA-008124-CF1FA0	Flux Coupled Balun Transformer	5	100	1:1	0.7	SM-250-5
MABA-008570-ETC414	E-Series Transformer	3	110	1:4	0.3	SM-22
MABA-009650-CF1160	Flux Coupled Transformer	5	120	1:1	0.4	SM-22
MABA-009852-CF1A40	Flux Coupled Balun Transformer	5	120	1:1	0.2	SM-164
MABA-008965-CF1160	Flux Coupled Balun Transformer	5	120	1:1	0.2	SM-22A
MABA-009109-CF1A40	Flux Coupled Balun Transformer	5	120	1:1	0.2	SM-164A
MABA-009412-CF1BC0	Flux Coupled Transformer	5	120	1:1	0.4	SM-193
MABA-009005-CF1A40	Flux Coupled Balun	5	120	1:1	0.2	SM-164A
MABA-009572-CF18A0	Flux Coupled	5	200	1:1	0.5	SM-138
MABA-011009	Transformer	3	200	1:1	0.6	SM-22
MABA-011002	Step Down Transformer	5	200	4:1	1.5	SM-55
MABA-009836-CF48A0	Flux Coupled Transformer	5	200	4:1	0.5	Surface Mount
MABA-009600-CF48A0	Flux Coupled Transformer	5	200	4:1	0.7	SM-138
MABA-009594-CF18A0	Flux Coupled Transformer	5	200	1:1	0.4	FR4
MABACT0068	Flux Coupled Balun	5	200	2:1	0.4	SM-164
MABA-008482-CF1A40	Flux Coupled Transformer	5	200	1:1.8	0.4	SM-156
MABACT0048	Flux Coupled Balun	5	200	2:1	0.4	SM-164
MABA-008260-CF4A40	Flux Coupled Balun	5	200	4:1	0.8	SM-164
MABA-007532-CF18A0	Transmission Line Balun	5	200	1:1	0.4	SM-138
MABACT0071	Flux Coupled Balun	0	200	1:1	0.5	SM-164
MABACT0062	Flux Coupled Balun	3	200	1:1	0.5	SM-22
MABAES0060	Flux Coupled Balun	0	200	1:1	1	SM-22
MABACT0018	Transformer	5	200	1:4	0.7	SM-138-A
MABACT0012	Flux Coupled Balun	3	200	1:1	0.8	SM-22B
MABA-010400-CT18A0	Transformer	40	200	1:1	0.4	Surface Mount
MABA-008354-CF4A40	Flux Coupled Transformer	5	200	4:1	1.5	SM-164
MABA-008354	Flux Coupled Transformer	5	200	4:1	2.2	SM-164
ETC1-1T-2	E-Series Transformer	0	200	1:1	0.3	SM-22
MABA-011043	Flux Coupled Transformer	5	200	4:1	1	SM-136
MABA-011048	Flux Coupled Transformer	5	200	4:1	0.8	SM-136
007488-CT9550	Transmission Line Balun	5	220	9:1	0.8	SM-55
MABA-009250-CT0068	E-Series Transformer	3	300	2:1	0.7	SM-22
MABA-011033	Flux Coupled High Temp	1	300	1:2	0.5	SM-22
MABA-011039	Flux Coupled High Temp	1	300	1:4	0.5	SM22
MABA-011020	E-Series RF 1:4 Flux Coupled Step-Up Transformer	1	350	1:4	0.8	SM-22



## Transformers / Baluns (continued)

Part Number	Description	Min Freq (MHz)	Max Freq (MHz)	Impedance Ratio	Insertion Loss (dB)	Package
MABA-009387-ES0040	Flux Coupled Transformer	1	350	2:1	1.6	SM-138
MABA-007493-CF4160	Flux Coupled Balun	1	350	4:1	1.6	SM-22
MABA-007766-CF28A0	Flux Coupled Balun	5	350	1.5:1	1.4	SM-138
MABACT0067	Flux Coupled Balun	1	350	4:1	1.3	SM-164
MABA-007237-ETC410	Flux Coupled Balun	1	350	1:4	1.2	SM-22
MABA-009126-ET11SM	Flux Coupled Balun	0	400	1:1	1	SM-1
TP-104-PIN ◆	Pulse	1	400	4:1	0.4	FP-1
ETC36-1T-2TR	E-Series RF Transformer	5	400	36:1	12	SM-22
MABA-010143-FLUX18	Flux Coupled Transformer	2	500	1:8	1	SM-22
MABA-009947-CF3160	Flux Coupled Transformer	0.3	500	1:3	0.7	SM-22
MABA-009484-ETC31T	E-Series Transformer	2	500	1:3	0.7	SM-22
MABA-009180-500MHZ	E-Series Transformer	0.4	500	1:1	3	SM-22
TP-102-PIN	Pulse Transformer	1	500	4:1	0.4	FP-1
ETC1-1T-5	E-Series Transformer	2	500	1:1	2	SM-22
MABA-009298-CT48A0	Flux Coupled Balun	1	650	4:1	1.5	SM-138
MABACT0064	Flux Coupled Balun	1	650	4:1	1.5	SM-138
MABAES0031	Flux Coupled Balun	1	650	1:4	1	SM-138
MABA-009488-6IHWCA	E-Series Transformer	3	800	1:4	1	SM-195
MABAES0061	Flux Coupled Balun	2	800	1:4	1.2	SM-22
ETC4-1-2	E-Series Transformer	2	800	4:1	1.2	SM-22B
MABACT0074	Transmission Line Balun	50	870	2.66:1	1.7	SM-152
ETC1-1-6	E-Series Transformer	760	960	1:1	0.2	SM-22
MABA-010463-CA2A40	Transformer	20	1000	1:1.77	1.2	Surface Mount
MABA-009711-ETK2MM	Transmission Line Step-up Transformer	2	1000	1:4	0.7	SM-164B
MABA-009092-CT1A40	Transmission Line Balun Transformer	5	1000	1.33:1	0.7	SM-164
MABA-008752-TC1P57	Auto-Transformer	2	1000	1.5:1	0.4	SM-22
MABA-008639-TC41T7	Flux Coupled Balun	6	1000	1:4	3	SM-22
MABACT0040	Transmission Line Balun, with Center Tap	5	1000	1:1	1.1	SM-164
MABACT0066	Transmission Line Balun	5	1000	4:1	1.3	SM-138
MABA-007569-ETK42T	Transmission Line Balun	2	1000	1:4	0.3	SM-22
TP-105-PIN ◆	Pulse Transformer	0.5	1000	1.4:1	0.4	FP-1
TP-103-PIN ◆	Pulse Transformer	0.5	1000	4:1	0.4	FP-1
MABACT0063	Auto-Transformer	5	1000	1.5:1	0.5	SM-22
MABAES0034	Auto-Transformer	20	1000	4:1	2	SM-22
MABA-010449-CA2A40	Transformer	5	1000	1:2	0.8	Surface Mount
ETK4-2T	E-Series Transformer	2	1000	4:1	3	SM-22
ETC1.5-4	Auto-Transformer	5	1000	1.5:1	1	SM-22
MABA-010245-CT1160	Transmission Line Transformer	46	1002	1:1	0.4	SM-55
TP-108-PIN ◆	Flux Coupled Balun	350	1125	2.5:1	0.8	FP-1
MABA-011029	Transformer, 1:2 Transmission Line Balun	5	1200	1:2	1.5	SM-55
MABA-010725-CT1006	Transmission Line with Tertiary Winding	45	1200	1:1	0.5	Surface Mount
MABA-010726-CT1007	Tranformer	45	1200	1:1	0.6	Surface Mount
MABA-010321-CT1A42	Transmission Line with Tertiary Winding	50	1200	1:1	0.7	Surface Mount
MABA-010238-CT4A80	Transformer	5	1200	1:2	1.3	SM-55
MABA-010441-CT38A0	Transformer	5	1200	1:3	1.1	SM-138
MABA-010268-CT4160	Transmission Line Transformer	5	1200	1:4	0.7	FR4
MABA-010129-CT4A40	Transmission Line Transformer	5	1200	1:4	0.7	SMT
MABA-009602-ES2922	E-Series Transformer With Tap	50	1200	1:1	0.8	SM-22
MABA-009231-CT1A4B	T-line balun	5	1200	1:1	0.7	SM-187
MABA-009691-CT1881	Transmission Line Transformer	5	1200	1:1	0.2	SM-136MABA

## Transformers / Baluns (continued)

Part Number	Description	Min Freq (MHz)	Max Freq (MHz)	Impedance Ratio	Insertion Loss (dB)	Package
007681-CT2010	Transmission Line Balun	5	1200	1:2	0.6	SM-118
MABA-009210-CT1760	Transmission Line Balun with Tertiary Winding	50	1200	1:1	0.6	SM-118A
MABA-009232-CT4A4B	Transmission Line Balun Transformer	5	1200	4:1	1	SM-187
MABACT0061	Auto-Transformer	5	1200	4:1	1.6	SM-22
MABACT0043	Transmission Line Balun Transformer	5	1200	1:1	0.5	SM-138
MABA-008979-CF0290	Transmission Line Balun with Tertiary Winding	50	1200	1:1	0.6	SM-158
MABA-007748-CT1160	Transmission Line Balun with Tertiary Winding	5	1200	1:1	0.6	SM-22
MABACT0069	Transmission Line Balun with Tertiary Winding	50	1200	1:1	0.8	SM-158
MABACT0060	Transmission Line Balun with Tertiary Winding	5	1200	1:1	0.7	SM-164
MABAES0029	Transmission Line Balun with Tertiary Winding	50	1200	1:1	1	SM-158
MABA-010392-CT18A0	Transmission Line Transformer	5	1200	1:1	0.7	SM-138
MABA-010314-CT1370	Transformer	4	1200	1:1	0.9	SM-55
MABA-011013	1:1 TxLine + tertiary winding	45	1200	1:1	0.8	FR4
MABA-011014	1:1 TxLine	45	1200	1:1	0.9	FR4
MABA-011015	Transformer	45	1200	1:1.278	1.5	FR4
MABA-011029	Transformer	5	1200	1:2	0.9	SM-55
MABA-011085	1:1 Transmission Line Balun with Tertiary Winding	5	1225	1:1	0.4	SMT
TP-101-PIN ♦	Pulse Transformer	0	1500	1.6:1	0.4	FP-1
TPX-75-4N ♦	50/75 Ohm	10	1500	1.5:1	0.3	Conn
MABA-010247-2R1250	Transmission Line Transformer	1	1600	1:2	1.5	SM-197
MABA-011028	Txline Balun	600	1700	1:1	0.5	SM-22
MABA-010374-CT4A40	Transmission Line	10	1900	1:4	1.8	Surface Mount
MABA-007731-CT1980	Transmission Line Balun Transformer	50	2150	1:1	1.2	SM-152
MABA-010386-CA3A40	Auto-Transformer	5	2400	1:3	3	Surface Mount
MABA-010012-ES4302	Transmission Line Transformer	30	2500	1:4	1.8	SM-22
MABA-009822-715254	Transmission Line Transformer	4	3000	1:1	0.3	SMT
MABA-010125-TC1113	Transmission Line Transformer	4	3000	1:1	1.5	SM-22
MABA-007871-CT1A40	Transmission line Balun, MoCA	5	3000	1:1	0.6	SM-164
MABA-008757-CT1160	Transmission Line Balun Transformer	4	3000	1:1	2	SM-22B
MABA-007327-CT1A40	Transmission Line Transformer	4	3000	1:1	1.6	SM-164
MABACT0065	Transmission line Balun	500	3000	4:1	0.2	SM-22
MABA-007236-C16423	Transmission line Balun	500	3000	1:4	3	SM-22
MABA-007159-000000	Transmission line Balun	4	3000	1:1	0.3	SM-22
MABACT0059	Transmission line Balun	4	3000	1:1	2	SM-22B
MABACT0039	Transmission line Balun	5	3000	1:1	1.3	SM-138
MABACT0034	Transmission line Balun	4	3000	1:1	1.6	SM-164
ETC1.6-4-2-3	E-Series Transformer	500	3000	4:1	0.2	SM-22
ETC1-1-13	E-Series Transformer	4	3000	1:1	0.3	SM-22
MABA-000001-75KIT1	75 Ohm CATV Transformer Designer's™ Kit					SMT
MABA-000001-50KIT1	Transformer Designer's Kit					SMT

Note: Part numbers are RoHS compliant ♦ indicates non-RoHS compliant  
Detailed specifications can be found quickly on our website at [macom.com](http://macom.com) by typing the part number into the search box.  
All specifications are subject to change.

## MNS Chip Capacitors

Part Number	Capacitance (pf)	Standoff Voltage (V)	Chip Style	Package
MA4M3010	10	200	350	Die
MA4M2020	20	200	132	Die
MA4M3030	30	200	352	Die
MA4M1050	50	100	132	Die
MA4M3050	50	200	354	Die
MA4M1100	100	100	199	Die
MA4M3100	100	50	358	Die
MA4M3150	150	50	359	Die

## High Q MNOS Series Chip Capacitors

Part Number	Capacitance (pf)	Working Voltage (V)	Chip Size + .002"	Package
902R0 thru 9010R	2 to 10	50	0.010" x 0.010" x 0.005"	Die
9011R thru 9029R	11 to 29	50	0.015" x 0.015" x 0.005"	Die
9030R thru 9049R	30 to 49	50	0.020" x 0.020" x 0.006"	Die
9050R thru 9099R	50 to 99	50	0.030" x 0.030" x 0.006"	Die
0100 thru 90199R	100 to 199	50	0.040" x 0.040" x 0.008"	Die
90200 thru 90399R	200 to 399	50	0.050" x 0.050" x 0.008"	Die
90400 thru 90600R	400 to 600	50	0.070" x 0.070" x 0.008"	Die
910R1 thru 911R9	0.1 to 1.9	100	0.010" x 0.010" x 0.005"	Die
912R0 thru 919R9	2 to 9.9	100	0.015" x 0.015" x 0.005"	Die
9110R thru 9129R	10 to 29	100	0.020" x 0.020" x 0.006"	Die
9130R thru 9149R	30 to 49	100	0.030" x 0.030" x 0.006"	Die
9150R thru 9199R	50 to 99	100	0.040" x 0.040" x 0.008"	Die
91100 thru 91199	100 to 199	100	0.050" x 0.050" x 0.008"	Die
91200 thru 91399	200 to 399	100	0.070" x 0.070" x 0.008"	Die

## Beam Lead Capacitors: 9000 Series VB &gt; 50 V

Part Number	Capacitance Range (pf)	Package
90100R0M	100 + 20%	14' -4
9010R0M	10 + 20%	14' -3
9015R0M	15 + 20%	14' -3
901R0 thru 901R5	1.0 to 1.5	14' -1
901R0 thru 902R2	1.0 to 2.2	14' -2
9022R0M	22 + 20%	14' -3
902R2 thru 904R7	2.2 to 4.7	14' -2
9033R0M	33 + 20%	14' -3
9047R0M	47 + 20%	14' -4
905R6M	5.6 + 20%	14' -2
9068R0M	68 + 20%	14' -4
906R8M	6.8 + 20%	14' -2
9082R0M	82 + 20%	14' -4
908R2M	8.2 + 20%	14' -2
90R1 thru 90R9	0.1 to 0.9	14' -1
90R5 thru 901R0	0.5 to 1.0	14' -2

Detailed specifications can be found quickly on our website at [macom.com](http://macom.com) by typing the part number into the search box. All specifications are subject to change.

**Binary Chip Capacitors**

Part Number	PAD1 (pF)	PAD2 (pF)	PAD3 (pF)	PAD4 (pF)	Total (pF)	Chip Size
906R5K-SP03	6	0.09	0.09	0	6.18	0.028 x 0.008
9115R0K-BOO	1	2	4	8	15	0.020 x 0.020
9115R0K-BSP-1	1	2	4	8	15	0.030 x 0.020
911R5K-BSP-3	0.1	0.2	0.4	0.8	1.5	0.015 x 0.015
9122R5K-BOO	1.5	3	6	12	22.5	0.020 x 0.020
9122R5K-BSP-1	1.5	3	6	12	22.5	0.030 x 0.020
913R0K-BSP-3	0.2	0.4	0.8	1.6	3	0.015 x 0.015
913R7K-BOO	0.25	0.5	1	2	3.75	0.020 x 0.020
913R7K-BSP-1	0.25	0.5	1	2	3.75	0.030 x 0.020
913R7K-BSP-3	0.25	0.5	1	2	3.75	0.015 x 0.015
915R6K-BSP-3	0.35	0.75	1.5	3	5.6	0.015 x 0.015
917R5K-BOO	0.5	1	2	4	7.5	0.020 x 0.020
917R5K-BSP-1	0.5	1	2	4	7.5	0.030 x 0.020

**DC Floating/RF Bypass Mounting Capacitors**

Part Number	Capacitance Range (pF)	Chip Size A	Chip Size B	Pad Size D	Pad Size E	Customer Specified Field D
SP49	5 – 50	0.014	0.034	0.011	0.031	0.005 – 0.020
SP84	7 – 70	0.02	0.04	0.016	0.03	0.005 – 0.020
SP51	8 – 80	0.015	0.045	0.013	0.043	0.005 – 0.020
SP14	9 – 90	0.02	0.04	0.016	0.036	0.005 – 0.020
SP34	9 – 90	0.024	0.034	0.02	0.03	0.005 – 0.020
SP6	10 – 100	0.014	0.055	0.012	0.053	0.005 – 0.020
SP89	12 – 120	0.02	0.06	0.014	0.055	0.005 – 0.020
SP80	13 – 130	0.016	0.065	0.014	0.063	0.005 – 0.020
SP12	14-140	0.02	0.055	0.018	0.053	0.005 – 0.020
SP87	15 – 150	0.013	0.12	0.009	0.16	0.005 – 0.0207
SP81	17 – 170	0.015	0.09	0.013	0.088	0.005 – 0.020
SP22	24 – 240	0.025	0.08	0.021	0.075	0.005 – 0.020
SP88	25 – 250	0.021	0.121	0.015	0.115	0.005 – 0.020
SP48	29 – 290	0.035	0.065	0.031	0.061	0.005 – 0.020
SP64	75 – 750	0.055	0.102	0.051	0.098	0.005 – 0.020
SP120	90 – 900	0.055	0.12	0.05	0.115	0.005 – 0.020
SP7	100 – 1000	0.085	0.085	0.081	0.081	0.005 – 0.020
SP2	150 – 1500	0.11	0.11	0.1	0.1	0.005 – 0.020
SP68	175 – 1750	0.101	0.124	0.097	0.12	0.005 – 0.020
SP1	200 – 2000	0.11	0.14	0.1	0.13	0.005 – 0.020
SP5	200 – 1000	0.1	0.1	0.095	0.095	0.005 – 0.020
SP20	200 – 2000	0.12	0.14	0.11	0.13	0.005 – 0.020
SP29	200 – 2000	0.121	0.121	0.115	0.115	0.005 – 0.020
SP38	200 – 2000	0.094	0.152	0.091	0.148	0.005 – 0.020
SP39	200 – 2000	0.12	0.134	0.11	0.13	0.005 – 0.020
SP40	200 – 2000	0.107	0.134	0.103	0.13	0.005 – 0.020
SP77	300 – 3000	0.118	0.175	0.114	0.171	0.005 – 0.020
SP52	300 – 3000	0.13	0.17	0.124	0.164	0.005 – 0.020
SP104	350 – 3500	0.142	0.171	0.138	0.167	0.005 – 0.020
SP111	350 – 3500	0.143	0.18	0.138	0.167	0.005 – 0.020
SP37	350 – 3500	0.151	0.168	0.147	0.164	0.005 – 0.020
SP44	350 – 3500	0.14	0.17	0.135	0.165	0.005 – 0.020
SP55	360 – 3600	0.117	0.22	0.113	0.216	0.005 – 0.020

**MNOS Series Capacitors**

Part Number	Type	Capacitance Range Min (pF)	Range (pF)	Capacitance Dv <sub>v</sub> Min (V)	IR Min (Ω)	TCC Typ (ppm/deg°C)	Package
MBC50-0.2B14	Beam Lead	0.16	0.24	50	1000	55	B14
MBC50-1.0B14	Beam Lead	0.8	1.2	50	1000	55	B14
MBC50-1B12	Beam Lead	0.8	1.2	50	1000	55	B12
MBC50-1.5B14	Beam Lead	1.2	1.8	50	1000	55	B14
MBC50-2.0B14	Beam Lead	1.6	2.4	50	1000	55	B14
MBC50-2B12	Beam Lead	1.6	2.4	50	1000	55	B12
MBC50-3B12	Beam Lead	2.4	3.6	50	1000	55	B12
MBC50-4B12	Beam Lead	3.2	4.8	50	1000	55	B12
MBC50-6B12	Beam Lead	4.8	7.2	50	1000	55	B12
MBC50-8B12	Beam Lead	6.4	9.6	50	1000	55	B12
MBC50-10B12	Beam Lead	8	12	50	1000	55	B12
MBC50-15B12	Beam Lead	12	18	50	1000	55	B12
MBC50-20B12	Beam Lead	16	24	50	1000	55	B12
MBC50-33B13	Beam Lead	26.4	39.6	50	1000	55	B13
MBC50-47B13	Beam Lead	37.6	56.4	50	1000	55	B13
MBC50-68B13	Beam Lead	54.4	81.6	50	1000	55	B13
MBC50-82B13	Beam Lead	65.6	96	50	1000	55	B13
MBC50-100B13	Beam Lead	80	120	50	1000	55	B13
MC2DXXX010-010	Chips	0.1	5	50	1000	55	Die
MC2SXXX010-010	Chips	0.25	8	50	1000	55	B12
MC2SXXX011-011	Chips	1	12	50	1000	55	B12
MC2DXXX015-015	Chips	1.5	15	50	1000	55	Die
MC2RXXX010-015	Chips	2	20	50	1000	55	Die
MC2SXXX015-015	Chips	3	30	50	1000	55	B12
MC2SXXX016-016	Chips	3	35	50	1000	55	B12
MC2RXXX015-020	Chips	5	42	50	1000	55	Die
MC2DXXX020-020	Chips	5	50	50	1000	55	Die
MC2SXXX020-020	Chips	5	55	50	1000	55	B12
MC2SXXX022-022	Chips	5	60	50	1000	55	B12
MC2RXXX015-032	Chips	5	62	50	1000	55	C20
MC2SXXX025-025	Chips	10	100	50	1000	55	B12
MC2RXXX022-042	Chips	15	120	50	1000	55	C20
MC2SXXX030-030	Chips	10	120	50	1000	55	B12
MC2SXXX035-035	Chips	15	150	50	1000	55	B12
MC2SXXX040-040	Chips	20	200	50	1000	55	B13
MC2SXXX050-050	Chips	25	250	50	1000	55	B13
MC2SXXX055-055	Chips	25	300	50	1000	55	B13
MC2SXXX060-060	Chips	35	375	50	1000	55	B13
MC2SXXX070-070	Chips	50	550	50	1000	55	B14
MC2SXXX080-080	Chips	70	700	50	1000	55	B14
MC2RXXX097-107	Chips	100	999	50	1000	55	C20
MC2RXXX099-138	Chips	100	999	50	1000	55	C20
MC2SXXX100-100	Chips	100	999	50	1000	55	B14
MC2RXXX127-145	Chips	200	1800	50	1000	55	C20
MC2RXXX142-160	Chips	200	2200	50	1000	55	B12
MC2B0.8020-020	Binary Chip	1.2	1.8	50	1000	55	C20
MC2B002020-020	Binary Chip	3	4.5	50	1000	55	C20
MC2B004020-020	Binary Chip	6.4	9.6	50	1000	55	C20
MC2B008020-020	Binary Chip	12	18	50	1000	55	C20
MC2B016020-020	Binary Chip	24	36	50	1000	55	C20

Detailed specifications can be found quickly on our website at [macom.com](http://macom.com) by typing the part number into the search box. All specifications are subject to change.

**Filters/Diplexers**

Part Number	Description	Min Freq (MHz)	Max Freq (MHz)	Crossover Frequency (dB)	LP/HP Insertion Loss (dB)	LP/HP Return Loss (dB)	LP/HP Isolation (dB)	Package
MAFLCT0066	Diplexer	5	870	30/46	0.7/0.75	18/20	47/46	SMT
MAFL-009055-CD4254	Diplexer	5	1000	42/54	0.5	16	48/50	SMT
MAFL-010465-CD0B20	Filter, MoCA Diplexer	5	1002	42/88	1.2/1.2	15/12	60/70	SMT
MAFL-011025	Broadband CATV Diplexer	5	1002	65/108	0.5/0.5	16/16	50/50	SMT
MAFL-011024	Broadband CATV Diplexer	5	1002	85/108	0.5/0.5	16/16	50/50	SMT
MAFL-011015	CATV Diplex Filter	5	1002	42/54	0.5/0.5	20/18	55/55	SMT
MAFL-011014	CATV Diplex Filter	5	1002	65/88	0.5/0.5		55/50	SMT
MAFL-011037	Diplex Filter	5	1002	42/54	0.5/0.5	18/18	52/52	SMT
MAFL-011038	Diplex Filter	5	1002	65/88	0.5/0.5	18/18	52/52	SMT
MAFLCT0068	Diplexer	5	1100	42/54	0.8/0.8	12/10	53/50	SMT
MAFLCT0081	Diplexer	50	1425	870/1125	1.1/1.1	18/18	65/66	SMT
MAFL-009217-CD0ACO	Diplex Filter	5	1525	864/1128	0.5/1	14/18	35/44	SMT
MAFL-008070-CLOAD0	MoCA Low Pass Filter	50	1525	870/975	0.75/1.8	12	30/25	SMT
MAFL-010256-CBOADO	MoCA Band Pass Filter	1125	1550	1125/1550	1.7	11	40	SMT
MAFL-011012	CATV Diplex Filter	5	1675	1002/1125	1.5/1.5	14/14	39/40	SMT
MAFL-011026	MoCA Triplex Filter	5	1675	85/105;1002/1125	1.2/1.5/2.8	18/16/16	65/55	SMT
MAFL-011018	MoCA Triplex Filter	5	1675	42/54;1002/1125	1.2/1.5/2.8	18/16/16	65/55	SMT
MAFL-011023	MoCA Triplex Filter	5	1675	65/88;1002/1125	1.2/1.5/2.5	18/18/16	65/55	SMT
MAFL-010140-CT0C60	MoCA Triplex Filter	5	2000	42/54;1002/1125	1.2/1.5	12/10	37/47	SMT
MAFL-010670-CBOADO	MoCA Band Pass Filter	350	3000	650/875	2/2	11/11	—	SMT
MAFL-011047	Horizontal Plug In Filter	5	1218	42/54	1	—	41	31 x 27.8 mm
MAFL-011048	Horizontal Plug In Filter	5	1218	42/54	1	—	41	31 x 27.8 mm
MAFL-011049	Horizontal Plug In Filter	5	1218	65/85	1	—	41	31 x 27.8 mm
MAFL-011050	Horizontal Plug In Filter	5	1218	65/85	1	—	41	31 x 27.8 mm
MAFL-011051	Horizontal Plug In Filter	5	1218	85/102	1.4	—	41	31 x 27.8 mm
MAFL-011052	Horizontal Plug In Filter	5	1218	85/102	1.4	—	41	31 x 27.8 mm
MAFL-011053	Horizontal Plug In Filter	5	1218	204/258	1	—	41	31 x 27.8 mm
MAFL-011054	Horizontal Plug In Filter	5	1218	204/258	1	—	41	31 x 27.8 mm
MAFL-011059	Vertical Plug In Filter	5	1218	42/54	1	—	37	50.8 x 19.05 mm
MAFL-011060	Vertical Plug In Filter	5	1218	65/85	1	—	37	50.8 x 19.05 mm
MAFL-011061	Vertical Plug In Filter	5	1218	85/102	1	—	37	50.8 x 19.05 mm
MAFL-011062	Vertical Plug In Filter	5	1218	204/258	1	—	37	50.8 x 19.05 mm
MAFL-011055	Surface Mount Filter	5	1218	42/54	0.5	—	25	30 x 30 mm
MAFL-011056	Surface Mount Filter	5	1218	65/85	0.5	—	25	30 x 30 mm
MAFL-011057	Surface Mount Filter	5	1218	85/102	0.5	—	25	30 x 30 mm

Part Number	Description	Min Freq (MHz)	Max Freq (MHz)	Insertion Loss (dB)	Rejection (dB)	Crossover Frequency (dB)	Package
MAFLCT0083	CATV Diplex Filter	5	860	0.900	59	65/94	
MAFLES0102	CATV Diplex Filter	5	870	1.000	45	42/54	
MAFL-007529-CD0550	CATV Diplex Filter, 30 x 30 mm	5	1000	0.500		36/48	30 x 30 mm
MAFL-009593-CD0A10	CATV Diplex Filter, 55 x 16 x 6.1 mm	5	1000	1.000	57	65/86	55 x 16 x 6.1 mm
MAFL-010467-CD0B20	CATV Diplexer 35 x 25 mm, SMT	5	1002	1.500	60	65/108	35 x 25 mm
MAFL-011027	Vertical Plug-in	5	1002	1.200	45	85/102	
MAFL-010464-CD0B20	CATV Diplexer 35 x 25 mm, SMT	5	1525	1.800	60	42/88	35 x 25 mm
MAFL-010412-CLOAD0	MoCA Low Pass Filter 15 x 15 mm	5	1550	1.500	37	5-1002	15 x 15 mm
MAFL-009478-CD0ACO	MoCA Diplex Filter	50	3000	1.500	40	870/950	
MAFL-010608	SAT Diplexer	350	3000	2.500	35	875/950	
MAFL-011003	MoCA Band Pass Filter 15 x 15 mm	500	3000	2.000	37	650-875	15 x 15 mm
MAFL-010609	SAT Triplexer	500	4500	2.500	40	1450/1650, 2150/2500	

## MACOM Frequency Generation Products

### Leading-edge solutions for challenging communications needs

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MACOM voltage controlled oscillators (VCOs) generate frequency in aerospace and defense, point-to-point microwave backhaul, and other commercial communications applications. IC VCOs support a variety of applications operating between the 500 to 14400 MHz frequency range.



Featuring low phase noise, stable performance over temperature, low power consumption, and highly linear tuning, MACOM's VCOs provide leading edge solutions for challenging communications needs.

#### VCOs

- > Low phase noise
- > Wide tuning range
- > Low power consumption
- > Bandwidths greater than 10%
- > RoHs compliant package

#### NLTL GaAs Comb Generators

- > Superior phase noise performance up to -18 dBc/Hz better than a SRD
- > Usable harmonics out to 50 GHz
- > Available in SMT or connectorized packages



## Voltage Controlled Oscillators (VCOs)

Part Number	Min Freq (MHz)	Max Freq (MHz)	Phase Noise at 10 kHz Offset (Vt=5V)(dBc/Hz)	Phase Noise at 100 kHz Offset (Vt=5V)(dBc/Hz)	Pout at Fo (dBm)	DC Current (mA)	Package
MAOC-009259	5700	6400	-93	-117	12	190	5 mm PQFN-32
MAOC-009260	6100	7000	-92	-117	8.5	205	5 mm PQFN-32
MAOC-009261	7100	7900	-93	-116	10	180	5 mm PQFN-32
MAOC-009262	7400	8210	-92	-117	14	170	5 mm PQFN-32
MAOC-009263	7800	8700	-90	-115	10.5	180	5 mm PQFN-32
MAOC-010334	8400	9250	-88	-115	10	168	5 mm PQFN-32
MAOC-109082	8714	9450	-90	-117	9	90	5 mm PQFN-32
MAOC-009264	8800	9800	-88	-115	9	185	5 mm PQFN-32
MAOC-009871	9200	10200	-86	-113	7	185	5 mm PQFN-32
MAOC-009265	9400	10800	-86	-113	8.5	175	5 mm PQFN-32
MAOC-109173	8805	9542	-88	-117	9	90	5 mm PQFN-32
MAOC-009266	10200	11300	-87	-114	8.5	200	5 mm PQFN-32
MAOC-009872	11000	11800	-83	-112	7	165	5 mm PQFN-32
MAOC-009267	11200	12600	-82	-112	6	175	5 mm PQFN-32
MAOC-009269	11400	12800	-83	-110	5	180	5 mm PQFN-32
MAOC-009270	12200	13800	-78	-107	6.5	165	5 mm PQFN-32
MAOC-009268	12700	14200	-79	-108	9	165	5 mm PQFN-32
MAOC-011027	13400	14400	-79	-108	8	205	5 mm PQFN-32
MAOC-114850	14500	15200	-84	-108	3.5	90	5 mm PQFN-32

## NLTL GaAs Comb Generators

Part Number	Power Min (dBm)	Power Max (dBm)	Output Harmonics 1	Output Harmonics 2	Output Harmonics 3	Package
MLPNC-7102-SMA800	21 @ 400 MHz	23 @ 600 MHz	> -8 @ 4 GHz	> -16 @ 12 GHz	> -20 @ 20 GHz	SMA800
MLPNC-7102-SMT680	21 @ 400 MHz	23 @ 600 MHz	> -8 @ 4 GHz	> -16 @ 12 GHz	> -20 @ 20 GHz	SMT680
MLPNC-7103-SMA800	21 @ 800 MHz	23 @ 1300 MHz	> -5 @ 6 GHz	> -15 @ 18 GHz	> -20 @ 30 GHz	SMA800
MLPNC-7103-SMT680	21 @ 800 MHz	23 @ 1300 MHz	> -5 @ 6 GHz	> -15 @ 18 GHz	> -20 @ 30 GHz	SMT680
MLPNC-7100S1-SMA800	18 @ 75 MHz	24 @ 250 MHz	> -15 @ 1 GHz	> -18 @ 2 GHz	> -24 @ 4 GHz	SMA800
MLPNC-7100S1-SMT580	18 @ 75 MHz	24 @ 250 MHz	> -15 @ 1 GHz	> -18 @ 2 GHz	> -24 @ 4 GHz	SMT580
MLPNC-7100-SMA850	20 @ 100 MHz	24 @ 400 MHz	> -8 @ 4 GHz	> -18 @ 12 GHz	> -35 @ 20 GHz	SMA850
MLPNC-7100-SMT680	20 @ 100 MHz	24 @ 400 MHz	> -8 @ 4 GHz	> -16 @ 12 GHz	> -35 @ 20 GHz	SMT680
MLPNC-7102S1-SMA800	18 @ 300 MHz	24 @ 700 MHz	> -10 @ 4 GHz	> -15 @ 8 GHz	> -22 @ 12 GHz	SMA800
MLPNC-7102S1-SMT580	18 @ 300 MHz	24 @ 700 MHz	> -10 @ 4 GHz	> -15 @ 8 GHz	> -22 @ 12 GHz	SMT580
MLPNC-7103S1-SMA800	18 @ 600 MHz	24 @ 1500 MHz	> -10 @ 4 GHz	> -8 @ 8 GHz	> -20 @ 15 GHz	SMA800
MLPNC-7103S1-SMT580	18 @ 600 MHz	24 @ 1500 MHz	> -10 @ 4 GHz	> -8 @ 8 GHz	> -20 @ 15 GHz	SMT580



## A Spectrum of Aerospace and Defense Solutions

### Discrete components, MMICs, and integrated modules

MACOM continues to build upon our legacy of providing high reliability semiconductor products to the Aerospace and Defense industry by adding to our product portfolio and capabilities. MACOM's standard line of RF and microwave components provides solutions to meet the requirements commonly found on airborne applications, high MTBF ground-based equipment, and space applications.

From our DLA-Certified and US Trusted Foundry in Lowell, Massachusetts, to our QML-Certified facility in Lawrence, Massachusetts—where QPL JAN, JANTX, JANTXV, and JANS standard products are produced—we continue to improve our ability to provide the highest quality aerospace and defense products. The Lawrence facility is also an environmental test center of excellence, as they continue to expand their list of DLA Lab Suitability tests and inspections.

When program screening requirements call for more than MACOM's standard catalog screening, custom screening programs can be created by adding screening options or by generating a program specific sequence.

### MACOM's Space & High-Reliability Evolution

Watkins Johnson Company/Stellex Microwave Systems/Tyco Electronics/Anzac/RHG/Phoenix Microwave/Metelics/Micrometrics/Hi-Rel Components & MACOM

#### 1960s

- > Pioneered production of TWT's for Pioneer, Voyager, and DSCS satellites

#### 1970s

- > First solid state flight qualified production amplifiers and mixers

#### 1980s / 1990s / through today

- > Participated in more than 85 programs (USA & International)
- > Provided hundreds of space qualified solid state space component models

### Hi-Reliability Catalog Screened Products

- > 40+ year history of proven Hi-Rel manufacturing processes supporting both thin film & solder circuit assemblies
- > Same proven manufacturing processes as used in equivalent component designs for custom military and space programs
- > Long established cost effective standardized screening programs for catalog products available in a variety of hermetically sealed metal package styles
- > Available for screening: hybrid amplifiers, hybrid mixers, switches, diodes
- > MACOM has an extensive "in-house" environmental screening capability
- > US Screening Lab to perform specific environmental test requirements
- > Working to expand our partner network
- > Custom environmental screening plans available for hermetically-sealed, packaged products (MIL-PRF-19500, MIL-PRF-38534, MIL-DTL- 28837B, MIL-STD-202, etc.)

Please contact your local sales representative to discuss any environmental screening options.

## General Purpose Gain Block Hybrid Amplifiers

Part Number	Min Frequency (MHz)	Max Frequency (MHz)	Gain (dB)	OIP3 (dBm)	Package
SMPA511	10	500	12.7	40	SMT
EA54	5	250	27	16	TO-5
A75-2	5	250	21	19	TO-8
CA181	10	250	16.5	35	Connectorized-SMA
SMA181	10	250	16.5	35	SMT
A181	10	250	16.5	35	TO-8
CA79	5	300	14	38	Connectorized-SMA
A79	5	300	14	38	TO-8
SMA79	5	300	14	38	SMT
A56	5	400	26	27	TO-8
EA2	5	400	13.5	21	TO-5
SMA87	10	400	14	33	SMT
A87	10	400	14	33	TO-8
CA87	10	400	14	33	Connectorized-SMA
AMC-151-SMA	5	500	12	36	Connectorized-SMA
SMRA89	5	500	26.5	35	SMT
SMA74-2	5	500	26	10	SMT
A5	5	500	14.8	22	TO-8
EA54-2	5	500	29.5	20	TO-5
A74-2	5	500	26	10	TO-8
A72	5	500	15	26	TO-8
SMA72	5	500	15	26	SMT
A77	5	500	16.5	30	TO-8
A88	5	500	18.7	30	TO-8
SMA77	5	500	16.5	30	SMT
SMA88	5	500	18.7	30	SMT
RA89	5	500	26.5	35	TO-8
A5-5	5	500	15.5	21	TO-8
A54	5	500	15.5	21	TO-8
CA77	5	500	16.5	30	Connectorized-SMA
CRA89	5	500	26.5	35	Connectorized-SMA
SMA54	5	500	15.5	21	SMT
AMC-146-SMA	10	500	21	35	Connectorized-SMA
MAAM-007502-SPA512	10	500	18	40	SMTO-8
PA511	10	500	12.7	40	TO-8
A57	10	500	14.7	28	TO-8
SMA57	10	500	14.7	28	SMT
SMA513	10	500	20	30	SMT
A55	10	500	14.7	24	TO-8
RA89-1	10	500	30	36	TO-8
SMRA89-1	10	500	30	36	SMT
PA512	10	500	18	40	TO-8
CRA89-1	10	500	30	36	Connectorized-SMA
A513	10	500	20	30	TO-8
MAAM-007502-CPA512	10	500	18	40	Connectorized-SMA
MAAM-008200-000A83	10	500	30	10	TO-8
SMA77-1	5	600	16	30	SMT
A77-1	5	600	16	30	TO-8
CA77-1	5	600	16	30	Connectorized-SMA
A5-6	6	600	15.5	21	TO-8
SMA5-6	6	600	16	21	SMT
A59-1	10	700	10.5	36	TO-8
SMA59-1	10	700	10.5	36	SMT

## General Purpose Gain Block Hybrid Amplifiers (continued)

Part Number	Min Frequency (MHz)	Max Frequency (MHz)	Gain (dB)	OIP3 (dBm)	Package
A89	50	800	22	30	TO-8
SMA89	100	800	22	30	SMT
AMC-184-SMA	5	1000	20	20	Connectorized-SMA
A11-2	5	1000	16	10	TO-8
AMC-180-SMA	5	1000	9.7	28	Connectorized-SMA
AMC-145-SMA	10	1000	10.7	32	Connectorized-SMA
CA17	10	1000	12	27	Connectorized-SMA
CA1021	10	1000	26	26	Connectorized-SMA
CRA69	10	1000	25	34	Connectorized-SMA
CRA66	10	1000	37	30	Connectorized-SMA
CA66-1	10	1000	27.5	28	Connectorized-SMA
SMA1021	10	1000	26	26	SMT
RA66	10	1000	37	30	TO-8
SMRA69	10	1000	25	34	SMT
SMA17	10	1000	12	27	SMT
A17	10	1000	12	27	TO-8
A66-1	10	1000	27.5	28	TO-8
SMA66-1	10	1000	27.5	28	SMT
RA69	10	1000	25	34	TO-8
A19-1	10	1000	11.5	35	TO-8
SMA19-110	10	1000	11.5	35	SMT
CA19-1	10	1000	11.5	35	Connectorized-SMA
A1021	10	1000	26	26	TO-8
SMRA66	10	1000	37	30	SMT
AMC-155-SMA	300	1000	12.3	30	Connectorized-SMA
CA66	10	1200	23.5	28	Connectorized-SMA
CA64	10	1200	26	20	Connectorized-SMA
SMA66	10	1200	23.5	28	SMT
SMA64	10	1200	26	20	SMT
A64	10	1200	26	20	TO-8
A66	10	1200	23.5	28	TO-8
CA24	5	1500	10	21	TO-8
A24	5	1500	20	21	TO-8
SMA24	5	1500	20	21	SMT
A27	5	1500	8.5	28	TO-8
SMA27	5	1500	8.5	28	SMT
SMA28	10	1500	11	29	SMT
CA26	10	1500	20.5	27	Connectorized-SMA
SMA29-1	10	1500	9	32	SMT
A26	10	1500	20.5	27	TO-8
A28	10	1500	11	29	TO-8
A29-1	10	1500	9	32	TO-8
SMA26	10	1500	20.5	27	SMT
CA28	10	1500	11	29	Connectorized-SMA
CA29-1	10	1500	9	32	Connectorized-SMA
A38	10	2000	9.5	30	TO-8
CA38	10	2000	9.5	30	Connectorized-SMA
SMA39	10	2000	7.5	34	SMT
SMA35	10	2000	10	21	SMT
A39	10	2000	7.5	34	TO-8
SMA38	10	2000	9.5	30	SMT

## General Purpose Gain Block Hybrid Amplifiers (continued)

Part Number	Min Frequency (MHz)	Max Frequency (MHz)	Gain (dB)	OIP3 (dBm)	Package
SMPA511	10	500	12.7	40	SMT
SMA37	10	2000	10	28	SMT
A37	10	2000	10	28	TO-8
A35	10	2000	10	21	TO-8
CA35	10	2000	10	21	Connectorized-SMA
CRA36	100	2000	24	22	Connectorized-SMA
SMA36	100	2000	16.5	23	SMT
RA36	100	2000	24	22	TO-8
A34	100	2000	16	18	TO-8
A36	100	2000	16.5	23	TO-8
SMRA36	100	2000	24	22	SMT
SMA34	100	2000	16	18	SMT
SMPA2010	200	2000	10	33	SMT
CA36-1	100	2300	16.2	23	Connectorized-SMA
A36-1	100	2300	16.2	23	TO-8
SMA36-1	100	2300	16.2	23	SMT
A33-1	2	2400	9	19	TO-8
SMA33-1	2	2400	9	19	SMT
A35-1	2	2400	9	23	TO-8
CA33-1	2	2400	9	19	Connectorized-SMA
SMA35-1	2	2400	9	23	SMT
CA3010	0	2500	9.5	35	Connectorized-SMA
MAAM-007947-CA3602	100	2600	15	30	Connectorized-SMA
A36-2	100	2600	15	30	TO-8
SMA36-2	100	2600	15	30	SMT
PA38-2	200	2600	8.5	33	TO-8
SMPA38-2	200	2600	8.5	33	SMT
A43	100	3200	11.5	21	TO-8
SMA43	100	3200	11.5	21	SMT
CPA48	1000	4000	16	34	Connectorized-SMA
RA46	0	4000	25.5	30	TO-8
SMPA48	1000	4000	16	34	SMT
PA48	1000	4000	16	34	TO-8
SMRA46	1000	4000	25.5	30	SMT
SMRA62	2000	6000	16	28	SMT
RA62	2000	6000	16	28	TO-8
AM42-0040	5900	6400	30	42	R380/CR15
AM42-0039	5900	7100	33	45	CR-15
AM42-0007	14000	14500	22	41	R380/CR15
AM42-0002	14000	14500	22	39	R380/CR15

## Low Noise Hybrid Amplifiers

Part Number	Min Freq (MHz)	Max Freq (MHz)	Gain (dB)	Noise Figure (mA)	OIP3 (dBm)	Package
AMC-162-SMA	10	100	12.5	1.5	30	Connectorized-SMA
AMS-162-PIN	10	100	12.5	1.5	30	SF-1
AM-162-PIN	10	100	12.5	1.1	32	TO-8
A101	5	100	17	3	36	TO-8
SMA101	5	100	17	3	36	SMT

## Low Noise Hybrid Amplifiers (continued)

Part Number	Min Freq (MHz)	Max Freq (MHz)	Gain (dB)	Noise Figure (mA)	OIP3 (dBm)	Package
MAAM-007844-OCA801	10	200	27.3	2	28	Connectorized-SMA
A80-1	10	200	27.3	2	28	TO-8
SMA80-1	10	200	27.3	2	28	SMT
A71	5	200	18	2.1	10	TO-8
AMC-119-SMA	30	250	8	2.5	35	Connectorized-SMA
A82-1	20	250	19	2.8	26	TO-8
SMA82-1	20	250	19	2.8	26	SMT
CA82	20	250	25	2.8	31	Connectorized-SMA
SMA82	20	250	25	2.8	31	SMT
SMA81-1	20	250	25	2.5	27	SMT
SMA81	20	250	24.5	2.6	28	SMTO-8
A81-1	20	250	25	2.5	27	TO-8
A70-3	20	250	8	2.8	40	TO-8
A82	20	250	25	2.8	31	TO-8
A81	20	250	25.5	3	28	TO-8
SMA70-1	10	250	8	1.8	28	SMT
CA83-1	10	250	35.5	2.5	9	Connectorized-SMA
SMA70	10	250	8	1.6	24	SMT
A70-1	10	250	8	1.8	28	TO-8
CA231	10	250	26	1.7	22	Connectorized-SMA
A231	10	250	26	1.7	22	TO-8
A70	10	250	8	1.6	24	TO-8
SMA83-1	10	250	35.5	2.5	9	SMT
SMA231	10	250	26	1.7	22	SMT
CA70-2	10	250	8	2.2	38	Connectorized-SMA
A70-2	10	250	8	2.2	38	TO-8
A83-1	10	250	35.5	2.5	9	TO-8
A74-1	5	250	31	4.5	21	TO-8
SMA70-3	15	300	8	2.8	40	SMTO-8
SMA87-2	10	300	16	2.9	24	SMT
A87-2	10	300	16	2.9	24	TO-8
SMA70-2	10	300	8	2.2	38	SMTO-8
CA78	5	300	14	3.5	35	Connectorized-SMA
A78	5	300	14	3.5	35	TO-8
SMA78	5	300	14	3.5	35	SMT
PAWI027	35	350	38.5	3.7	43	SOT115J
CA87-1	10	400	16	3.4	31	Connectorized-SMA
SMA411	10	400	15.8	3	24	SMT
SMA87-1	10	400	16	3.4	31	SMT
A87-1	10	400	16	3.4	31	TO-8
A411	10	400	15.8	3	24	TO-8
MAAM-008199-000A51	10	400	15	2.7	10	TO-8
EA1	5	400	14	4.3	13	TO-5
PAWI027-1	35	500	38	4.2	43	SOT115J
CA81-2	20	500	24.5	3	28	Connectorized-SMA
SMA81-2	20	500	24.5	3	28	SMT
A80	20	500	29	2.3	27	TO-8
A81-2	20	500	24.5	3	28	TO-8
A81-3	20	500	17	4	20	TO-8
CA511	10	500	17	3.4	33	Connectorized-SMA
CA531	10	500	31.7	2	14	Connectorized-SMA
CA180	10	500	16.5	3.4	33	Connectorized-SMA

## Low Noise Hybrid Amplifiers (continued)

Part Number	Min Freq (MHz)	Max Freq (MHz)	Gain (dB)	Noise Figure (mA)	OIP3 (dBm)	Package
SMA75-3	10	500	20.5	1.7	16	SMT
A75-3	10	500	20.5	1.7	16	TO-8
SMA531	10	500	31.7	2	14	SMT
A531	10	500	31.7	2	14	TO-8
A180	10	500	16.5	3.4	33	TO-8
A511	10	500	17	3.4	33	TO-8
A53	10	500	15	3	16	TO-8
MAAM-008317-CA7503	10	500	20.5	1.7	16	Connectorized-SMA
SMA180	10	500	16.5	3.4	33	SMT
SMA53	10	500	15	3	16	SMT
MAAM-007272-SMA514	5	500	28	4	32	SMTO-8
CA180	10	500	16.5	3.4	33	Connectorized-SMA
MAAM-007272-OCA515	5	500	27.5	3.5	33	Connectorized-SMA
CA74	5	500	30	3	20	Connectorized-SMA
AMC-147-SMA	5	500	17	3.4	33	Connectorized-SMA
AMC-143-SMA	5	500	15.8	2.5	20	Connectorized-SMA
AM-131-PIN	5	500	11.5	4	34	TO-8
AMC-123-SMA	5	500	10	5.5	30	Connectorized-SMA
MAAM-007272-SMA515	5	500	27.5	3.5	33	SMTO-8
A515	5	500	27.5	3.5	33	TO-8
CA75	5	500	21	2.1	21	Connectorized-SMA
CA76	5	500	28	3	28	Connectorized-SMA
A76	5	500	28	3	28	TO-8
SMA59	5	500	11.5	4.3	36	SMT
SMA75	5	500	21	2.1	21	SMT
SMA74	5	500	30	3	20	SMT
SMA58	5	500	11.5	4	34	SMT
EA53-2	5	500	19	3.6	24	TO-5
A74	5	500	30	3	20	TO-8
SMA73	5	500	32	3.5	15	SMT
A58	5	500	11.5	4	34	TO-8
SMA1	5	500	16	2.4	11	SMT
A1	5	500	16	2.4	11	TO-8
A73	5	500	32	3.5	15	TO-8
A75	5	500	21	2.1	21	TO-8
SMA76	5	500	28	3	28	SMT
SMA76-1	5	500	27.5	3	26	SMT
A59	5	500	11.5	4.3	36	TO-8
A76-1	5	500	27.5	3	26	TO-8
A514	5	500	28	4	32	TO-8
MAAM-007272-OCA514	5	500	28	4	32	Connectorized-SMA
SMA80	10	550	29	2.3	27	SMTO-8
AM-160-PIN	100	600	28.2	1.6	30	FP-9
SMA67-1	10	600	15	3.7	30	SMT
CA67-1	10	600	15	3.7	30	Connectorized-SMA
A67-1	10	600	15	3.7	30	TO-8
A611	5	700	15	3.2	24	TO-8
SMA611	5	700	15	3.2	24	SMT
A67	10	800	14	4	30	TO-8
SMA67	10	800	14	4	30	SMT
CA66-3	10	1000	26	3	13	Connectorized-SMA

## Low Noise Hybrid Amplifiers (continued)

Part Number	Min Freq (MHz)	Max Freq (MHz)	Gain (dB)	Noise Figure (mA)	OIP3 (dBm)	Package
SMA66-3	10	1000	26	3	13	SMT
SMA1031	10	1000	28.5	2.7	22	SMT
A12	10	1000	16	2.8	22	TO-8
A66-3	10	1000	26	3	13	TO-8
A1031	10	1000	28.5	2.7	22	TO-8
A18-1	10	1000	14.7	3.8	30	TO-8
CA18-1	10	1000	14.7	3.8	30	Connectorized-SMA
SMA12	10	1000	16	2.8	22	SMT
SMA18-1	10	1000	14.7	3.8	30	SM
AMC-176-SMA	5	1000	13.2	4	27	Connectorized-SMA
A11	5	1000	14.7	3.1	10	TO-8
SMA11-2	5	1000	16	2.5	10	SMT
A63	5	1000	16	3	15	TO-8
AMC-182-SMA	5	1000	28.2	3.5	20	Connectorized-SMA
SMA63	5	1000	16	3	15	SMT
CA1212	100	1200	14	1.8	29	Connectorized-SMA
A1212	100	1200	14	1.8	29	TO-8
SMA1212	100	1200	14	1.8	29	SMT
MAAM-008198-SMA162	10	1200	13	3.5	18	SMTO-8
SMA1211	10	1200	14	2.8	20	SMT
CA12	10	1200	14	2.8	20	Connectorized-SMA
A1211	10	1200	14	2.8	20	TO-8
MAAM-008198-OCA162	10	1200	13	3.5	18	Connectorized-SMA
CA28-2	10	1500	14	3.5	24	Connectorized-SMA
A28-2	10	1500	14	3.5	24	TO-8
SMA28-2	10	1500	14	3.5	24	SMT
A25-1	2	1500	13.5	3	22	TO-8
CA25-1	2	1500	13.5	3	22	Connectorized-SMA
SMA25-1	2	1500	13.5	3	22	SMT
AM-153-PIN	300	1800	12.4	2.5	17	TO-8
PA38	200	2000	10	4	34	TO-8
CPA38	200	2000	10	4	34	Connectorized-SMA
SMPA38	200	2000	10	4	34	SMT
CA32	100	2000	13	2.1	32	Connectorized-SMA
SMA32	100	2000	13	2.1	32	SMT
SMA32-1	100	2000	11.5	2.5	25	SMT
A32-1	100	2000	11.5	2.5	25	TO-8
A32	100	2000	13	2.1	32	TO-8
CA32-1	100	2000	11.5	2.5	25	Connectorized-SMA
A31-1	10	2000	11.5	3.5	9	TO-8
A33	10	2000	9.5	4.5	15	TO-8
SMA31-1	10	2000	11.5	3.5	9	SMT
MAAM-007501-OA2002	20	2700	11.5	2.5	40	TO-8
MAAM-007501-CA2002	20	2700	11.5	2.5	40	Connectorized-SMA
MAAM-007501-SA2002	20	2700	11.5	2.5	40	SMTO-8
CA4011	1000	4000	15.5	2	29	Connectorized-SMA
CA45-1	1000	4000	17.5	4	26	Connectorized-SMA
SMA45	1000	4000	17.5	4	29	SMT
CA45	1000	4000	17.5	4	29	Connectorized-SMA

## Low Noise Hybrid Amplifiers (continued)

Part Number	Min Freq (MHz)	Max Freq (MHz)	Gain (dB)	Noise Figure (mA)	OIP3 (dBm)	Package
SMA66-3	10	1000	26	3	13	SMT
A45-1	1000	4000	17.5	4	26	TO-8
SMA4012	1000	4000	18	3.5	26	SMT
A4012	1000	4000	18	3.5	26	TO-8
A4011	1000	4000	15.5	2	29	TO-8
SMA45-1	1000	4000	17.5	4	26	SMT
A45	1000	4000	17.5	4	29	TO-8
SMA4011	1000	4000	15.5	2	29	SMT
A61	2000	6000	7.5	3.2	25	TO-8
A6011	2000	6000	14.8	1.5	30	TO-8
SMA61	C2000	6000	7.5	3.2	25	SMT
CA6011	2000	6000	14.8	1.5	30	Connectorized-SMA
SMA6011	1500	6000	14.8	1.5	30	SMT0-8

## Mixers

Part Number	Min Freq RF/RO (MHz)	Max Freq RF/RO (MHz)	Min Freq IF (MHz)	Max Freq (MHz)	Package
M6D-50	0.05	200	0	200	Relay Header
MAC-50-PIN	0.2	200	0	200	TO-5
MDS-222-PIN	0.2	200	0.2	200	SF-1
SM6D	0.05	200	0	200	SMT
M6E-50	5	500	0	500	Relay Header
M9BC	0.5	500	0	500	Relay Header
MAC-51-PIN	5	500	0	500	TO-5
MD-108-PIN	5	500	0	500	RH-3
MD-161-PIN	1	500	0	500	FP-2
MDS-223-PIN	10	500	10	500	SF-1
SM6V	0.4	500	0	500	SMT
M1H	180	620	0	200	SMA
M6EH	5	750	0	500	Relay Header
SM6EH	5	750	0	500	SMT
M2E	10	1000	0	600	TO-8
M2EC	10	1000	0	600	SMA
SM2E	10	1000	0	600	SMT
M2AC	10	1500	0	800	SMA
M4A	10	1500	0	1000	Flatpack-SMT
M9H	10	1500	0	600	TO-8
M9HC	10	1500	0	600	SMA
MD-148-PIN	10	1500	10	1500	FP-2
MD-149-PIN	10	1500	10	1500	FP-2
MD-149-PINN	102	1500	102	1500	FPO2
MD-160-PIN	1	1500	1	1000	RH-3
MDS-148-PIN	10	1500	10	1500	SF-1
MDS-149-PIN	10	1500	10	1500	SF-1
MDS-158-PIN	5	1500	—	—	SF-1
SM4A	10	1500	0	1000	SMT
SM4B	10	1500	0	1000	SMT
M2B	10	1600	0	800	TO-8
M2BC	10	1600	0	800	SMA
M2TC	10	2400	1	1000	SMA
SM4G	800	2400	0	1500	SMT



## Mixers (continued)

Part Number	Min Freq RF/RO (MHz)	Max Freq RF/RO (MHz)	Min Freq IF (MHz)	Max Freq (MHz)	Package
MD-123-PIN	10	3000	10	3000	FP-2
M4TH	1	3400	1	2000	Flatpack-SMT
M8T	1	3400	1	2000	TO-8
M8TC	1	3400	1	2000	SMA
M8TH	1	3400	1	2000	TO-8
M8THC	1	3400	1	2000	SMA
SM4T	1	3400	1	2000	SMT
SM4T17	1	3400	1	2000	SMT
SM4TH	1	3400	1	2000	SMT
M2G	800	3500	0	1500	TO-8
M2GC	800	3500	0	1500	SMA
MD-169-PIN	1	3500	1	3500	FP-2
MD-189-PIN	1	3500	1	3500	FP-2
MDC-169-SMA	1	3500	1	3500	C-7
MDS-169-PIN	1	3500	5	1500	SF-1
MDS-189-PIN	1	3500	1	3500	SF-1
MD-179-PIN	1	4000	5	1500	FP-2
MDC-179-SMA	1	4000	5	1500	C-7
M8H-3	3700	4200	0	2000	TO-8
SM5T	50	5000	50	3000	SMT
SM5T17	50	5000	50	3000	SMT
SM5TH	50	5000	50	3000	SMT
M63C	2500	5500	0	1500	SMA
MZ6310C	250	5500	0	1500	SMA
M8H-7	2400	6000	0	2000	TO-8
M8HC-7	2400	6000	0	2000	SMA
MDC-162-SMA	1000	7000	10	2000	C-2
MY63	2500	7000	0	15000	Versapac
MY63C	2500	7000	0	15000	SMA
M63H	2500	7500	0	1500	Minpac
M63HC	2500	7500	0	1500	SMA
MY63H	2500	7500	0	1500	Versapac
MY63HC	2500	7500	0	1500	SMA
M76H	4500	8500	0	2000	Minpac
M76HC	4500	8500	0	2000	SMA
MY76H	4500	8500	0	2000	Versapac
MY76HC	4500	8500	0	2000	SMA
M76	4500	9500	0	2000	Minpac
M76C	4500	9500	0	2000	SMA
MY76	4500	9500	0	2000	Versapac
MY76C	4500	9500	0	2000	SMA
MY84	1800	10000	0	1000	Versapac
MY84C	1800	10000	0	1000	SMA
M77C	8000	12500	0	2500	SMA
MY77	8000	12500	0	2500	Versapac
M14A	6000	14000	0	2000	SMA
MY77C	8000	12500	0	2500	SMA
M67C	9000	15000	0	2500	SMA
M50A	2000	18000	2000	18000	Minpac
M50AC	2000	18000	2000	18000	SMA
M74	7000	18000	0	3000	Minpac
M74C	7000	18000	0	3000	SMA

## Mixers (continued)

Part Number	Min Freq RF/RO (MHz)	Max Freq RF/RO (MHz)	Min Freq IF (MHz)	Max Freq (MHz)	Package
M8H-3	3700	4200	0	2000	TO-8
SM5T	50	5000	50	3000	SMT
SM5T17	50	5000	50	3000	SMT
SM5TH	50	5000	50	3000	SMT
M63C	2500	5500	0	1500	SMA
MZ6310C	250	5500	0	1500	SMA
M8H-7	2400	6000	0	2000	TO-8
M8HC-7	2400	6000	0	2000	SMA
MDC-162-SMA	1000	7000	10	2000	C-2
MY63	2500	7000	0	15000	Versapac
MY63C	2500	7000	0	15000	SMA
M63H	2500	7500	0	1500	Minpac
M63HC	2500	7500	0	1500	SMA
MY63H	2500	7500	0	1500	Versapac
MY63HC	2500	7500	0	1500	SMA
M76H	4500	8500	0	2000	Minpac
M76HC	4500	8500	0	2000	SMA
MY76H	4500	8500	0	2000	Versapac
MY76HC	4500	8500	0	2000	SMA
M76	4500	9500	0	2000	Minpac
M76C	4500	9500	0	2000	SMA
MY76	4500	9500	0	2000	Versapac
MY76C	4500	9500	0	2000	SMA
MY84	1800	10000	0	1000	Versapac
MY84C	1800	10000	0	1000	SMA
M77C	8000	12500	0	2500	SMA
MY77	8000	12500	0	2500	Versapac
M14A	6000	14000	0	2000	SMA
MY77C	8000	12500	0	2500	SMA
M67C	9000	15000	0	2500	SMA
M50A	2000	18000	2000	18000	Minpac
M50AC	2000	18000	2000	18000	SMA
M74	7000	18000	0	3000	Minpac
M74C	7000	18000	0	3000	SMA
M79C	5000	18000	0	3000	SMA
M79H	5000	18000	0	3000	Minpac
M79HC	5000	18000	0	3000	SMA
M80C	4000	18000	0	3000	SMA
M83	1000	18000	30	5000	Minpac
M83C	1000	18000	30	5000	SMA
M85	2000	18000	0	1000	Minpac
M85C	2000	18000	0	1000	SMA
M86C	3500	18000	0	3000	SMA
M88C	2000	18000	1000	8000	SMA
M88H	2000	18000	2000	8000	Minpac
M88HC	2000	18000	2000	8000	SMA
M89C	1000	18000	1000	8000	SMA
M93C	2000	18000	30	4000	SMA
MY82	2000	18000	30	5000	Versapac
MY82C	2000	18000	30	5000	SMA
MY83H	2	18000	30	5000	Versapac
MY83HC	2	18000	30	5000	SMA

## Mixers (continued)

Part Number	Min Freq RF/RO (MHz)	Max Freq RF/RO (MHz)	Min Freq IF (MHz)	Max Freq (MHz)	Package
MY85	2000	18000	0	1000	Versapac
MY85C	2000	18000	0	1000	SMA
MY88	2000	18000	1000	8000	Versapac
MY88C	2000	18000	1000	8000	SMA
MY88HC	1000	18000	1000	8000	SMA
MY89	2000	18000	2000	8000	Versapac
MY89C	2000	18000	2000	8000	SMA
MY93	2000	18000	30	4000	Versapac
MY93C	2000	18000	30	4000	SMA
MZ7407	6000	18000	0	3000	Versapac
MZ7407C	6000	18000	0	3000	SMA
MZ7410	6000	18000	0	3000	Versapac
MZ7410C	6000	18000	0	3000	SMA
MZ7420	6000	18000	0	3000	Versapac
MZ7420C	6000	18000	0	3000	SMA
MZ8810C	2000	18000	1000	8000	SMA
MZ8813	2000	18000	1000	8000	Versapac
MZ9310	2000	18000	30	5000	Versapac
MZ9310C	2000	18000	30	5000	SMA
MZ9313	2000	18000	30	5000	Versapac
MZ9313C	2000	18000	30	5000	SMA
M87C	500	19000	30	5000	SMA
MY87	500	19000	30	5000	Versapac
MY87C	500	19000	30	5000	SMA
M51C	2000	24000	1000	15000	SMA
M52C	2000	24000	100	5000	SMA
MY51	2000	24000	1000	15000	Versapac
MY51C	2000	24000	1000	15000	SMA
MY52	2000	24000	100	5000	Versapac
MY52C	2000	24000	100	5000	SMA
M50C	2000	26000	1000	15000	SMA
M53C	2000	26000	100	6000	SMA
MY50	2000	26000	1000	15000	Versapac
MY50A	2000	26000	1000	12000	Versapac
MY50AC	2000	26000	1000	12000	SMA
MY50C	2000	26000	1000	15000	SMA
MZ5010	2000	26000	1	15000	Versapac
MZ5010C	2000	26000	1	15000	SMA

## Switches: SPDT

Part Number	Min Freq (MHz)	Max Freq (MHz)	Insertion Loss (dB)	Isolation (dB)	Input IP3 (dBm)	Package
SW-313-PIN	50	3000	0.8	52	46	CR-2
SW-226-PIN	0	4000	1	48	46	CR-2
SW-227-PIN	0	4000	1	50	46	CR-2
SW-228-PIN	0	4000	0.7	42	46	CR-2

**Power Dividers**

Part Number	Min Freq (MHz)	Max Freq (MHz)	Channels (#)	Amplitude Balance (dB)	Phase Balance (°)	Isolation (dB)	Max Input Power (dBm)	Package
M3H-50-PIN	1	100	3	0.2	1	30	30	TO-5
DS-310-PIN	0	300	4	0.2	4	25	30	FP-5
M3V-50-PIN	50	300	3	0.2	2	25	30	TO-5
DS-113-PIN	0	400	2	0.2	1	25	30	FP-2
DSS-113-PIN	0	400	2	0.2	1	25	30	SF-1
DS-318-PIN	5	500	2	0.2	1	18	30	RH-1
DS-109-PIN	10	500	2	0.2	1	25	30	FP-2
DSS-333-PIN	10	500	2	0.2	2	25	30	SF-1
DS-319-PIN	10	500	2	0.2	1	25	30	TO-8
DS-112-PIN	10	500	3	0.2	2	25	30	TO-5
DS-328-PIN	3	700	3	0.3	3	20	30	TO-8
DSS-327-PIN	5	1000	2	0.2	3	20	30	FP-2
DSS-333-PIN	5	1000	2	0.2	3	20	30	FP-2
DS-323-PIN	25	1000	3	0.4	4	24	30	FP-3
DS-324-PIN	25	1000	4	0.3	6	20	30	FP-5
DS-331-PIN	750	1500	2	0.2	6	10	30	TO-8
DS-313-PIN	10	2000	2	0.3	4	23	24	FP-2
DSS-313-PIN	10	2000	2	0.3	4	23	24	SF-1
DS-332-PIN	1000	2000	2	0.2	6	10	30	TO-8

**RAD Hard Transistor Chips**

Type	Slash Sheet	V <sub>CEO</sub> <sup>(SUS)</sup> (V)	V <sub>CBO</sub> (V)	I <sub>C</sub> (max) (amps)	h <sub>FE</sub> @ I <sub>C</sub> /V <sub>CE</sub> (min/max@ A/V)	C <sub>OBO</sub> (pF)	f <sub>T</sub> (MHz)
JANKCDR2N2221A	255	50	75	0.8	40/120 @ .15/10	8	250
JANKCCR2N2222A	255	50	75	0.8	100/300 @ .15/10	8	250
JANKCCR2N4150	394	70	100	10	40/20 @ 5/5	350	15
JANKCE2N5152*	544	80	100	2	30/90 @ 2.5/5	250	60
JANKCE2N5154*	544	80	100	2	70/200 @ 2.5/5	250	70
JANKCD2N5151*	545	80	100	2	30/90 @ 2.5/5	250	70
JANKCD2N5153*	545	80	100	2	70/200 @ 2.5/5	250	70
JANKCCR2N3700	255	80	140	1	100/300 @ .15/10	12	100
JANKCE2N5339*	560	100	100	5	60/40 @ 2/2	250	30
JANKCDR2N6193	561	100	100	5	60/40 @ 2/2	300	30

\*Chips qualified to M, D, P, L, and R RAD levels  
All chips are also available in JANHC quality level

**CD5817-19 Schottky Chips**

Part Number	Working Peak Reverse Voltage V <sub>RWM</sub> (V)	Average Rectified Forward Current I <sub>O</sub> (A)	Max Reverse Leakage Current @ V <sub>RWM</sub> @25°C I <sub>R1</sub> (mA)	Max Reverse Leakage Current @ V <sub>RWM</sub> @100°C I <sub>R2</sub> (mA)	Max Forward Voltage @ 0.1A (pk) V <sub>F1</sub> (V)	Max Forward Voltage @ 1.0A (pk) V <sub>F2</sub> (V)	Max Capacitance Capacitance 5 V dc F ≤ 1 MHz C <sub>T</sub> (pF)
CD5817	20	1	0.10	5	0.360	0.600	110
CD5818	30	1	0.10	5	0.360	0.600	110
CD5819	40	1	0.10	5	0.360	0.600	110
JANHC, JANKCIN5817	20	1	0.07	5	0.320	0.450	110
JANHC, JANKCIN5819	45	1	0.05	5	0.340	0.490	70

**Zener Diodes: 1N6309 to 1N6349, available in JAN, JANTX, JANTXV, and JANS per MIL-PRF-19500/533**

Type	Nominal Zener Voltage $V_Z@I_Z$ (Note 2) (V)	Zener Test Current $I_{ZT}$ (mA)	Max Zener Impedance $Z_{ZT}@I_{ZT}$ (ohms)	Reverse Voltage $V_R$ (V)	Max Reverse Current $I_{R1}@V_2$ (uA)	Max Noise Density $N_D@250\text{ uA}$ uV/ HZ	Max Zener Current, $I_{ZM}$
1N6309, 1N6309US	2.4	20	30	1.0	100	1	177
1N6310, 1N6310US	2.7	20	30	1.0	60	1	157
1N6311, 1N6311US	3.0	20	29	1.0	30	1	141
1N6312, 1N6312US	3.3	20	27	1.0	5	1	128
1N6313, 1N6313US	3.6	20	25	1.0	3	1	117
1N6314, 1N6314US	3.9	20	23	1.0	2	1	108
1N6315, 1N6315US	4.3	20	20	1.0	2	1	99
1N6316, 1N6316US	4.7	20	17	1.5	5	1	90
1N6317, 1N6317US	5.1	20	14	2.0	5	1	83
1N6318, 1N6318US	5.6	20	8	2.5	5	2	76
1N6319, 1N6319US	6.2	20	3	3.5	5	5	68
1N6320, 1N6320US	6.8	20	3	4.0	2	5	63
1N6321, 1N6321US	7.5	20	4	5.0	2	5	57
1N6322, 1N6322US	8.2	20	5	6.0	1	20	52
1N6323, 1N6323US	9.1	20	6	7.0	1	40	47
1N6324, 1N6324US	10	20	6	8.0	1	80	43
1N6325, 1N6325US	11	20	7	8.5	1	100	39
1N6326, 1N6326US	12	20	7	9.0	1	100	35
1N6327, 1N6327US	13	9.5	8	9.9	0.05	100	33
1N6328, 1N6328US	15	8.5	10	11.0	0.05	100	28
1N6329, 1N6329US	16	7.8	12	12.0	0.05	100	27
1N6330, 1N6330US	18	7.0	14	14.0	0.05	100	24
1N6331, 1N6331US	20	6.2	18	15.0	0.05	100	21
1N6332, 1N6332US	22	5.6	20	17.0	0.05	100	19
1N6333, 1N6333US	24	5.2	24	18.0	0.05	100	18
1N6334, 1N6334US	27	4.6	27	21.0	0.05	100	16
1N6335, 1N6335US	30	4.2	32	23.0	0.05	100	14
1N6336, 1N6336US	33	3.8	40	25.0	0.05	100	13
1N6337, 1N6337US	36	3.4	50	27.0	0.05	100	12
1N6338, 1N6338US	39	3.2	55	30.0	0.05	100	11
1N6339, 1N6339US	43	3.0	65	33.0	0.05	80	9.9
1N6340, 1N6340US	47	2.7	75	36.0	0.05	80	9
1N6341, 1N6341US	51	2.5	85	39.0	0.05	80	8.3
1N6342, 1N6342US	56	2.2	100	43.0	0.05	80	7.6
1N6343, 1N6343US	68	2.0	125	47.0	0.05	80	6.8
1N6344, 1N6344US	75	1.8	155	52.0	0.05	80	6.3
1N6345, 1N6345US	82	1.7	180	56.0	0.05	80	5.7
1N6346, 1N6346US	91	1.5	220	62.0	0.05	80	5.2
1N6347, 1N6347US	100	1.4	270	69.0	0.05	80	4.7
1N6348, 1N6348US	110	1.3	340	76.0	0.05	80	4.3
1N6349, 1N6349US	120	1.1	500	84.0	0.05	80	3.9

Electrical specifications at TA = 250°C (unless otherwise noted)

Note 1: Standard voltage tolerance is +/- 5%. Tighter tolerances are available. C suffix denotes +/- 2%; D suffix denotes +/- 1%

**Switching Diodes**

Type	VRWM (V)	IO (mA)	IFSM tp=1s (A)	IFSM tp=1 us (V)	VF1 (max) IF=200 mA dc (V)	VF2 (max) IF=100 mA dc (nA)	IR1 VR=125V (V)	IR2 VR=125V, 150°C (uA)	C VR=0, f=1 MHz (pF)	t <sub>rr</sub> (max) IF=10 mA, VR=35 V (us)
1N3595	125	150	500	4	1.0	0.92	1.0	3.0	8.0	3.0
1N3595US	125	150	500	4	1.0	0.92	1.0	3.0	8.0	3.0
1N3595A	125	150	500	4	1.0	0.92	2.0	3.0	8.0	3.0

Zener Diodes: 1N4099-1 to 1N4627-1, available in JAN, JANTX, JANTXV, and JANS per/435

Part Number <sup>1</sup>	Nominal Zener <sup>2</sup> Voltage, V <sub>Z</sub> (V)	Zener Test Current, I <sub>ZT</sub> (μA)	Max Zener <sup>3</sup> Impedance, Z <sub>ZT</sub> (Ohms)	Max Reverse Current, I <sub>R</sub> @ V <sub>R</sub> (μA) (V)		Max Noise Density, N <sub>b</sub> @ I <sub>ZT</sub> (μV / √Hz)	Max Zener DC Current, I <sub>ZM</sub> (mA)
1N4614-1, 1N4614UR-1	1.8	250	1200	7.5	1	1	120
1N4615-1, 1N4615UR-1	2	250	1250	5	1	1	110
1N4616-1, 1N4616UR-1	2.2	250	1300	4	1	1	100
1N4617-1, 1N4617UR-1	2.4	250	1400	2	1	1	95
1N4618-1, 1N4618UR-1	2.7	250	1500	1	1	1	90
1N4619-1, 1N4619UR-1	3	250	1600	0.8	1	1	87
1N4620-1, 1N4620UR-1	3.3	250	1650	7.5	1.5	1	85
1N4621-1, 1N4621UR-1	3.6	250	1700	7.5	2	1	83
1N4622-1, 1N4622UR-1	3.9	250	1650	5	2	1	80
1N4623-1, 1N4623UR-1	4.3	250	1600	4	2	1	77
1N4624-1, 1N4624UR-1	4.7	250	1550	10	2	1	75
1N4625-1, 1N4625UR-1	5.1	250	1500	10	3	2	70
1N4626-1, 1N4626UR-1	5.6	250	1400	10	4	4	65
1N4627-1, 1N4627UR-1	6.2	250	1200	10	5	5	61
1N4099-1, 1N4099UR-1	6.8	250	200	10	5.17	40	56
1N4100-1, 1N4100UR-1	7.5	250	200	10	5.7	40	51
1N4101-1, 1N4101UR-1	8.2	250	200	1	6.24	40	46
1N4102-1, 1N4102UR-1	8.7	250	200	1	6.61	40	44
1N4103-1, 1N4103UR-1	9.1	250	200	1	6.92	40	42
1N4104-1, 1N4104UR-1	10	250	200	1	7.6	40	38
1N4105-1, 1N4105UR-1	11	250	200	0.05	8.44	40	35
1N4106-1, 1N4106UR-1	12	250	200	0.05	8.12	40	32
1N4107-1, 1N4107UR-1	13	250	200	0.05	9.857	40	29
1N4108-1, 1N4108UR-1	14	250	200	0.05	10.65	40	27
1N4109-1, 1N4109UR-1	15	250	100	0.05	11.4	40	25
1N4110-1, 1N4110UR-1	16	250	100	0.05	12.15	40	24
1N4111-1, 1N4111UR-1	17	250	100	0.05	12.92	40	22
1N4112-1, 1N4112UR-1	18	250	100	0.05	13.67	40	21
1N4113-1, 1N4113UR-1	19	250	150	0.05	14.44	40	20
1N4114-1, 1N4114UR-1	20	250	150	0.01	15.2	40	19
1N4115-1, 1N4115UR-1	22	250	150	0.01	16.72	40	17
1N4116-1, 1N4116UR-1	24	250	150	0.01	18.25	40	16
1N4117-1, 1N4117UR-1	25	250	150	0.01	19	40	15
1N4118-1, 1N4118UR-1	27	250	150	0.01	20.45	40	14
1N4119-1, 1N4119UR-1	29	250	200	0.01	21.28	40	14
1N4120-1, 1N4120UR-1	30	250	200	0.01	22.8	40	13
1N4121-1, 1N4121UR-1	33	250	200	0.01	25.08	40	12
1N4122-1, 1N4122UR-1	36	250	200	0.01	27.38	40	11
1N4123-1, 1N4123UR-1	39	250	200	0.01	29.65	40	9.8
1N4124-1, 1N4124UR-1	43	250	250	0.01	32.65	40	8.9
1N4125-1, 1N4125UR-1	47	250	250	0.01	35.75	40	8.1
1N4126-1, 1N4126UR-1	51	250	300	0.01	38.76	40	7.5
1N4127-1, 1N4127UR-1	56	250	300	0.01	42.6	40	6.7
1N4128-1, 1N4128UR-1	60	250	400	0.01	45.6	40	6.4
1N4129-1, 1N4129UR-1	62	250	500	0.01	47.1	40	6.1
1N4130-1, 1N4130UR-1	68	250	700	0.01	51.68	40	5.6
1N4131-1, 1N4131UR-1	75	250	700	0.01	57	40	5.1
1N4132-1, 1N4132UR-1	82	250	800	0.01	62.32	40	4.6

(table continued on page 112)

## Zener Diodes: 1N4099-1 to 1N4627-1, available in JAN, JANTX, JANTXV, and JANS per/435 (continued)

Part Number <sup>1</sup>	Nominal Zener <sup>2</sup> Voltage, V <sub>Z</sub> (V)	Zener Test Current, I <sub>ZT</sub> (μA)	Max Zener <sup>3</sup> Impedance, Z <sub>ZT</sub> (Ohms)	Max Reverse Current, I <sub>R</sub> @ V <sub>R</sub>		Max Noise Density, N <sub>D</sub> @ I <sub>ZT</sub> (μV / √Hz)	Max Zener DC Current, I <sub>ZM</sub> (mA)
				(μA)	(V)		
1N4133-1, 1N4133UR-1	87	250	1000	0.01	66.12	40	4.4
1N4134-1, 1N4134UR-1	91	250	1200	0.01	69.16	40	4.2
1N4135-1, 1N4135UR-1	100	250	1500	0.01	76	40	3

Electrical specifications @ T<sub>A</sub> = +25°C (unless otherwise specified).

Note 1: The JEDEC type numbers shown have a ±5% tolerance on nominal Zener voltage. The suffix C is used to identify ±2% and suffix D is used to identify ±1%.

Note 2: Zener voltage is measured with the device junction in thermal equilibrium at an ambient temperature of 25°C ± 3°C.

Note 3: Zener impedance is derived by superimposing on I<sub>ZT</sub> A 60 Hz rms a.c. current equal to 10% of I<sub>ZT</sub>.

## Low Noise Zener Diodes: 1N5518B-1 to 1N5546B-1, available in JAN, JANTX, and JANTXV per/437

Part Number <sup>1</sup>	Nominal Zener <sup>2</sup> Voltage, V <sub>Z</sub> @ I <sub>ZT</sub> (V)	Zener Test Current, I <sub>ZT</sub> (mA)	Max Zener <sup>3</sup> Impedance B, C, D Suffix Z <sub>ZT</sub> @ I <sub>ZT</sub> (Ohms)	Max Reverse Current, I <sub>R</sub> V <sub>R</sub> = Volts			Max Zener DC Current, I <sub>ZM</sub> (mA)	Max Reverse Current, I <sub>R</sub> @ V <sub>R</sub> (μA) (V)	Max Noise Density, N <sub>D</sub> @ I <sub>ZT</sub> (μV / √Hz)	Low V <sub>Z</sub> Current, I <sub>ZL</sub>
				(μA dc)	(NON & A- Suffix)	(B- C- D- Suffix)				
1N5518B-1, 1N5518BUR-1	3.3	20	26	5	0.9	1	115	0.5	0.9	2
1N5519B-1, 1N5519BUR-1	3.6	20	24	3	0.9	1	105	0.5	0.9	2
1N5520B-1, 1N5520BUR-1	3.9	20	22	1	0.9	1	98	0.5	0.85	2
1N5521B-1, 1N5521BUR-1	4.3	20	18	3	1	1.5	88	0.5	0.75	2
1N5522B-1, 1N5522BUR-1	4.7	10	22	2	1.5	2	81	0.5	0.6	1
1N5523B-1, 1N5523BUR-1	5.1	5	26	2	2	2.5	75	0.5	0.65	0.25
1N5524B-1, 1N5524BUR-1	5.6	3	30	2	3	3.5	68	1	0.3	0.25
1N5525B-1, 1N5525BUR-1	6.2	1	30	1	4.5	5	61	1	0.2	0.01
1N5526B-1, 1N5526BUR-1	6.8	1	30	1	5.5	6.2	56	1	0.1	0.01
1N5527B-1, 1N5527BUR-1	7.5	1	35	0.5	6	6.8	51	2	0.05	0.01
1N5528B-1, 1N5528BUR-1	8.2	1	40	0.5	6.5	7.5	46	4	0.05	0.01
1N5529B-1, 1N5529BUR-1	9.1	1	45	0.1	7	8.2	42	4	0.05	0.01
1N5530B-1, 1N5530BUR-1	10	1	60	0.05	8	9.1	38	4	0.1	0.01
1N5531B-1, 1N5531BUR-1	11	1	80	0.05	9	9.9	35	5	0.2	0.01
1N5532B-1, 1N5532BUR-1	12	1	90	0.05	9.5	0.8	32	10	0.2	0.01
1N5533B-1, 1N5533BUR-1	13	1	90	0.01	10.5	11.7	29	15	0.2	0.01
1N5534B-1, 1N5534BUR-1	14	1	100	0.01	11.5	12.6	27	20	0.2	0.01
1N5535B-1, 1N5535BUR-1	15	1	100	0.01	12.5	13.5	25	20	0.2	0.01
1N5536B-1, 1N5536BUR-1	16	1	100	0.01	13	14.4	24	20	0.2	0.01
1N5537B-1, 1N5537BUR-1	17	1	100	0.01	14	15.3	22	20	0.2	0.01
1N5538B-1, 1N5538BUR-1	18	1	100	0.01	15	16.2	21	20	0.2	0.01
1N5539B-1, 1N5539BUR-1	19	1	100	0.01	16	17.1	20	20	0.2	0.01
1N5540B-1, 1N5540BUR-1	20	1	100	0.01	17	18	19	20	0.2	0.01
1N5541B-1, 1N5541BUR-1	22	1	100	0.01	18	19.8	17	20	0.25	0.01
1N5542B-1, 1N5542BUR-1	24	1	100	0.01	20	21.6	16	20	0.3	0.01
1N5543B-1, 1N5543BUR-1	25	1	100	0.01	21	22.4	15	20	0.35	0.01
1N5544B-1, 1N5544BUR-1	28	1	100	0.01	23	25.2	14	20	0.4	0.01
1N5545B-1, 1N5545BUR-1	30	1	100	0.01	24	27	13	20	0.45	0.01
1N5546B-1, 1N5546BUR-1	33	1	100	0.01	28	29.7	12	20	0.5	0.01

Electrical specifications @ T<sub>A</sub> = +25°C (unless otherwise specified).

Note 1: No suffix type numbers are ±20% with guaranteed limits for only V<sub>Z</sub>, I<sub>R</sub>, and V<sub>F</sub>. Units with "A" suffix are ±10% with guaranteed limits for V<sub>Z</sub>, I<sub>R</sub>, and V<sub>F</sub>. Units with guaranteed limits for all six parameters are indicated by a "B" suffix for ±5.0% units, "C" suffix for ±2.0% and "D" suffix for ±1.0%.

Note 2: Zener voltage is measured with the device junction in thermal equilibrium at an ambient temperature of 25°C ± 3°C.

Note 3: Zener impedance is derived by superimposing on I<sub>ZT</sub> A 60 Hz rms a.c. current equal to 10% of I<sub>ZT</sub>.

**Zener Diodes: 1N746A-1 to 1N759A-1; 1N4307A-1 to 1N4372A-1, available in JAN, JANTX, JANTXV per /127**

Part Number <sup>1</sup>	Nominal Zener <sup>2</sup> Voltage $V_Z @ I_{ZT}$ (V)	Zener Test Current $I_{ZT}$ (mA)	Max Zener <sup>3</sup> Impedance $Z_{ZT} @ I_{ZT}$ (Ohms)	Max Reverse Current, $I_R @ V_R$ ( $\mu$ A)	Max Zener Current, $I_{ZM}$ (V)
1N4370A-1, 1N4370AUR-1	2.4	20	30	100	155
1N4371A-1, 1N4371AUR-1	2.7	20	30	60	140
1N4372A -1, 1N4372AUR-1	3	20	29	30	125
1N746A-1, 1N746AUR-1	3.3	20	28	5	120
1N747A-1, 1N747AUR-1	3.6	20	24	3	110
1N748A-1, 1N748AUR-1	3.9	20	23	2	100
1N749A-1, 1N749AUR-1	4.3	20	22	2	90
1N750A-1, 1N750AUR-1	4.7	20	19	5	85
1N751A-1, 1N751AUR-1	5.1	20	17	5	75
1N752A-1, 1N752AUR-1	5.6	20	11	5	70
1N753A-1, 1N753AUR-1	6.2	20	7	5	65
1N754A,-1, 1N754AUR-1	6.8	20	5	2	60
1N755A-1, 1N755AUR-1	7.5	20	6	2	55
1N756A-1, 1N756AUR-1	8.2	20	8	1	50
1N757A-1, 1N757AUR-1	9.1	20	10	1	45
1N758A-1, 1N758AUR-1	10	20	17	1	40
1N759A-1, 1N759AUR-1	12	20	30	1	35

Electrical specifications @  $T_A = +25^\circ\text{C}$  (unless otherwise specified).

Note 1: Zener voltage tolerance on "A" suffix is  $\pm 5\%$ . No suffix denotes  $\pm 10\%$  tolerance, "C" suffix denotes  $\pm 2\%$  tolerance and "D" suffix denotes  $\pm 1\%$  tolerance.

Note 2: Zener voltage is measured with the device junction in thermal equilibrium at an ambient temperature of  $25^\circ\text{C} \pm 3^\circ\text{C}$ .

Note 3: Zener impedance is derived by superimposing on  $I_{ZT}$  A 60 Hz rms a.c. current equal to 10% of  $I_{ZT}$ .



## Zener Diodes: 1N957B-1 to 1N986B-1, available in JAN, JANTX, JANTXV per /117

Part Number <sup>1</sup>	Nominal Zener <sup>2</sup> Voltage, $V_Z$ (V)	Zener Test Current, $I_{ZT}$ (mA)	Max Zener <sup>3</sup> Impedance $Z_{ZT} @ I_{ZT}$ (Ohms)	Max Zener <sup>3</sup> Knee Impedance $Z_{ZT} @ I_{ZT}$		Max DC Zener Current, $I_{ZM}$ (mA)	Max Surge Current, $I_{ZSM}$ (mA)	Max Reverse Leakage, $T_A = 25^\circ\text{C}, I_R @ V_R$		Max Temperature Coefficient $\alpha_{VZ}$ (%/ $^\circ\text{C}$ )
				(Ohms)	(mA)			( $\mu\text{A}$ )	(V)	
1N957B-1	6.8	18.5	4.5	700	1	55	300	150	5.2	0.05
1N958B-1	7.5	16.5	5.5	700	0.5	50	275	75	5.7	0.058
1N959B-1	8.2	15	6.5	700	0.5	45	250	50	6.2	0.065
1N960B-1	9.1	14	7.5	700	0.5	41	225	25	6.9	0.068
1N961B-1	10	12.5	8.5	700	0.25	38	200	10	7.6	0.075
1N962B-1	11	11.5	9.5	700	0.25	35	590	1	8.4	0.073
1N963B-1	12	10.5	11.5	700	0.25	32	540	1	9.1	0.076
1N964B-1	13	9.5	13	700	0.25	30	500	0.5	9.9	0.079
1N965B-1	15	8.5	16	700	0.25	26	433	0.5	11	0.082
1N966B-1	16	7.8	17	700	0.25	25	406	0.5	12	0.083
1N967B-1	18	7	21	750	0.25	21	361	0.5	14	0.085
1N968B-1	20	6.2	25	750	0.25	19	325	0.5	15	0.086
1N969B-1	22	5.6	29	750	0.25	17	295	0.5	17	0.087
1N970B-1	24	5.2	33	750	0.25	16	271	0.5	18	0.088
1N971B-1	27	4.6	41	750	0.25	14	240	0.5	21	0.09
1N972B-1	30	4.2	49	1000	0.25	13	216	0.5	23	0.091
1N973B-1	33	3.8	58	1000	0.25	12	197	0.5	25	0.092
1N974B-1	36	3.4	70	1000	0.25	11	180	0.5	27	0.093
1N975B-1	39	3.2	80	1000	0.25	9.1	166	0.5	30	0.094
1N976B-1	43	3	93	1000	0.25	8.8	151	0.5	33	0.095
1N977B-1	47	2.7	105	1500	0.25	7.9	138	0.5	36	0.095
1N978B-1	51	2.5	125	1500	0.25	7.4	127	0.5	39	0.096
1N979B-1	56	2.2	150	2000	0.25	6.9	116	0.5	43	0.096
1N980B-1	62	2	185	2000	0.25	6	105	0.5	47	0.097
1N981B-1	68	1.8	230	2000	0.25	5.5	95	0.5	52	0.097
1N982B-1	75	1.7	270	2000	0.25	5.1	86	0.5	56	0.098
1N983B-1	82	1.5	330	3000	0.25	4.6	79	0.5	62	0.098
1N984B-1	91	1.4	400	3000	0.25	4.2	71	0.5	69	0.099
1N985B-1	100	1.3	500	3000	0.25	3.7	65	0.5	76	0.11
1N986B-1	110	1.1	750	4000	0.25	3.3	59	0.5	84	0.11

Electrical specifications @  $T_A = +25^\circ\text{C}$  (unless otherwise specified).

Note 1: The JEDEC type numbers shown (B Suffix) have a  $\pm 5\%$  tolerance on nominal Zener voltage. The suffix A is used to identify  $\pm 10\%$  tolerance; suffix C is used to identify  $\pm 2\%$ ; and suffix D is used to identify  $\pm 1\%$ ; no suffix indicates  $\pm 20\%$ .

Note 2: Zener voltage is measured with the device junction in thermal equilibrium at an ambient temperature of  $25^\circ\text{C} \pm 3^\circ\text{C}$ .

Note 3: Zener impedance is derived by superimposing on  $I_{ZT}$  A 60 Hz rms a.c. current equal to 10% of  $I_{ZT}$ .

## TC Zener Diodes 1N4565-1 to 1N4584-1, available in JAN, JANTX, JANTXV, and JANS per /452

Part Number <sup>1</sup>	Zener Test Current, $I_{ZT}$ (mA)	Effective Temperature Coefficient (% / °C)	Voltage Temperature Stability ( $\Delta V_{ZT}$ ) <sup>1</sup> (mV)	Temperature Range (°C)	Maximum Dynamic Zener Impedance <sup>2</sup> (Ohms)
1N4565-1, 1N4565UR-1	0.5	0.01	48	0 to +75°C	200
1N4565A-1, 1N4565AUR-1	0.5	0.01	100	-55 to +100°C	200
1N4566-1, 1N4566UR-1	0.5	0.005	24	0 to +75°C	200
1N4566A-1, 1N4566AUR-1	0.5	0.005	50	-55 to +100°C	200
1N4567-1, 1N4567UR-1	0.5	0.002	10	0 to +75°C	200
1N4567A-1, 1N4567AUR-1	0.5	0.002	20	-55 to +100°C	200
1N4568-1, 1N4568UR-1	0.5	0.001	5	0 to +75°C	200
1N4568A-1, 1N4568AUR-1	0.5	0.001	10	-55 to +100°C	200
1N4569-1, 1N4569UR-1	0.5	0.0005	2.5	0 to +75°C	200
1N4569A-1, 1N4569AUR-1	0.5	0.0005	5	-55 to +100°C	200
1N4570-1, 1N4570UR-1	1	0.01	48	0 to +75°C	100
1N4570A-1, 1N4570AUR-1	1	0.01	100	-55 to +100°C	100
1N4571-1, 1N4571UR-1	1	0.005	24	0 to +75°C	100
1N4571A-1, 1N4571AUR-1	1	0.005	50	-55 to +100°C	100
1N4572-1, 1N4572UR-1	1	0.002	10	0 to +75°C	100
1N4572A-1, 1N4572AUR-1	1	0.002	20	-55 to +100°C	100
1N4573-1, 1N4573UR-1	1	0.001	5	0 to +75°C	100
1N4573A-1, 1N4573AUR-1	1	0.001	10	-55 to +100°C	100
1N4574-1, 1N4574UR-1	1	0.0005	2.5	0 to +75°C	100
1N4574A-1, 1N4574AUR-1	1	0.0005	5	-55 to +100°C	100
1N4575-1, 1N4575UR-1	2	0.01	48	0 to +75°C	50
1N4575A-1, 1N4575AUR	2	0.01	100	-55 to +100°C	50
1N4576, 1N4576UR	2	0.005	24	0 to +75°C	50
1N4576A, 1N4576AUR-1	2	0.005	50	-55 to +100°C	50
1N4577-1, 1N4577UR-1	2	0.002	10	0 to +75°C	50
1N4577A-1, 1N4577AUR-1	2	0.002	20	-55 to +100°C	50
1N4578-1, 1N4578UR-1	2	0.001	5	0 to +75°C	50
1N4578A-1, 1N4578AUR-1	2	0.001	10	-55 to +100°C	50
1N4579-1, 1N4579UR-1	2	0.0005	2.5	0 to +75°C	50
1N4579A-1, 1N4579AUR-1	2	0.0005	5	-55 to +100°C	50
1N4580-1, 1N4580UR-1	4	0.01	48	0 to +75°C	25
1N4580A-1, 1N4580AUR-1	4	0.01	100	-55 to +100°C	25
1N4581-1, 1N4581UR-1	4	0.005	24	0 to +75°C	25
1N4581A-1, 1N4581AUR-1	4	0.005	50	-55 to +100°C	25
1N4582-1, 1N4582UR-1	4	0.002	10	0 to +75°C	25
1N4582A-1, 1N4582AUR-1	4	0.002	20	-55 to +100°C	25
1N4583-1, 1N4583UR-1	4	0.001	5	0 to +75°C	25
1N4583A-1, 1N4583AUR-1	4	0.001	10	-55 to +100°C	25
1N4584-1, 1N4584UR-1	4	0.0005	2.5	0 to +75°C	25
1N4584A-1, 1N4584AUR-1	4	0.0005	5	-55 to +100°C	25

Electrical specifications @ +25°C (unless otherwise specified).

Note 1: The maximum allowable change observed over the entire temperature range i.e., the diode voltage will not exceed the specified mV at any discrete temperature between the established limits, per JEDEC standard No. 5.

Note 2: Zener impedance is derived by superimposing on  $I_{ZT}$  A 60 Hz rms a.c. current equal to 10% of  $I_{ZT}$ .

## TC Zener Diodes 1N821-1 to 1N829-1, available in JAN, JANTX, JANTXV, and JANS per /159

Part Number	Zener Test Current, $I_{ZT}$ (V)	Effective Temperature Coefficient (mA)	Max Zener Impedance $Z_{ZT}^1$ (Ohms $\Omega$ )	Voltage Temperature Stability, $\Delta V_{ZT}$ -55°C to +100°C <sup>2</sup> (mV)	Efficient Temperature Coefficient (% / °C)
1N821-1, 1N821UR-1	5.9 - 6.5	7.5	15	96	0.01
1N821A-1, 1N821AUR-1	5.9 - 6.5	7.5	10	96	0.01
1N822-1, 1N822UR-1 †	5.9 - 6.5	7.5	15	96	0.01
1N823-1, 1N823UR-1	5.9 - 6.5	7.5	15	48	0.005
1N823A-1, 1N823AUR-1	5.9 - 6.5	7.5	10	48	0.005
1N824-1, 1N824UR-1 †	5.9 - 6.5	7.5	15	48	0.005
1N825-1, 1N825UR-1	5.9 - 6.5	7.5	15	19	0.002
1N825A-1, 1N825AUR-1	5.9 - 6.5	7.5	10	19	0.002
1N826-1, 1N826UR-1	6.2 - 6.9	7.5	15	20	0.002
1N827-1, 1N827UR-1	5.9 - 6.5	7.5	15	9	0.001
1N827A-1, 1N827AUR-1	5.9 - 6.5	7.5	10	9	0.001
1N828-1, 1N828UR-1	6.2 - 6.9	7.5	15	10	0.001
1N829-1, 1N829UR-1	5.9 - 6.5	7.5	15	5	0.0005
1N829A-1, 1N829AUR-1	5.9 - 6.5	7.5	10	5	0.0005

† Double anode: electrical specifications apply under both bias polarities.

Electrical specifications @ +25°C (unless otherwise specified).

Note 1: Zener impedance is derived by superimposing on  $I_{ZT}$  A 60 Hz rms a.c. current equal to 10% of  $I_{ZT}$ .

Note 2: The maximum allowable change observed over the entire temperature range i.e., the diode voltage will not exceed the specified mV at any discrete temperature between the established limits, per JEDEC standard No. 5.

## Switching Diodes 1N3600, 1N4150-1 available in JAN, JANTX, and JANTXV per /231

Part Number	$V_{BR} I_R = 10 \mu A$	$V_{RWM}$	$I_R V_R = 50 Vdc$ $T_A = 25^\circ C$	$I_R V_R = 50 Vdc$ $T_A = 150^\circ C$	$C_{11} I_R = 0, f = 1 MHz$ AC signal = 50 mV (p-p)	$t_{tr} I_R = 10 - 100 mA$ $I_F = 100 mA$ $R_L = 100 \Omega$	$V_{11} I_F = 1 mA dc$	$V_{12} I_F = 10 mA dc$	$V_{13} I_F = 50 mA dc$ (pulsed)	$V_{14} I_F = 100 mA dc$ (pulsed)	$V_{15} I_F = 200 mA dc$ (pulsed)					
	(V)	(V pk)	( $\mu A$ dc)	( $\mu A$ dc)	(pF)	(nA)	(V dc min)	(V dc max)	(V dc min)	(V dc max)	(V dc min)	(V dc max)	(V dc min)	(V dc max)		
1N3600	75	50	0.1	100	2.5	4.0	0.54	0.62	0.66	0.74	0.76	0.86	0.82	0.92	0.87	1.00
1N4150-1, 1N4150UR-1	75	50	0.1	100	2.5	4.0	0.54	0.62	0.66	0.74	0.76	0.86	0.82	0.92	0.87	1.00

Electrical specifications @ +25°C (unless otherwise specified).

## Switching Diodes 1N914, 1N4148-1 available in JAN, JANTX, and JANTXV per /116

Part Number	$V_{BR} @ 100 \mu A$	$V_{RWM}$	$I_0$	$V_{11} I_F = 10 mA$	$V_{12} I_F = 50 mA$	$t_{tr} I_R = 10 mA$ $I_F = 10 mA$ $R_L = 100 \Omega$	$I_{R1} @ 20 Vdc$	$I_{R2} @ 75 Vdc$	$I_{R3} V_R = 20 Vdc$ $T_A = 150^\circ C$	$I_{R3} V_R = 20 Vdc$ $T_A = 150^\circ C$	Capacitance @ 0 V	Capacitance @ 1.5 V
	(V)	(V pk)	(mA)	(V dc)	(V dc)	(nsec)	(nA)	( $\mu A$ )	( $\mu A$ )	( $\mu A$ )	(pF)	(pF)
1N914, 1N914UR	100	75	75	0.8	1.2	5	25	0.5	35	75	4	2.8
1N4148-1, 1N4148UR-1	100	75	200	0.8	1.2	5	35	0.5	35	75	4	2.8

Electrical specifications @ +25°C (unless otherwise specified).

## Switching Diodes 1N6638 to 1N6643, available in JAN, JANTX, JANTXV, and JANS per /578 and /609

Part Number	$V_{BR} @ I_R$	$V_{RWM}$	$V_{FR} / t_{tr} @ I_F = 200 mA$	$C_{11} V_R = 0.0 V$	$C_{12} V_R = 1.5 V$	$t_{tr} I_R = 10 mA$ $I_F = 10 mA$	$V_{R1} V_R = V_{RWM}$	$I_{R2} V_R = 20 V$ $T_A = 150^\circ C$	$I_{R3} V_R = 20 V$ $T_A = 150^\circ C$	$I_{R4} V_R = V_{RWM}$	$V_F @ I_F$	$V_{F2} @ I_F$ $T_A = -55^\circ C$	$I_F$			
	(V pk)	(mA)	$V_{FR}$ (V pk)	$t_{tr}$ (ns)	(pF)	(pF)	(ns)	(nA dc)	(nA dc)	( $\mu A$ dc)	( $\mu A$ dc)	(V dc min)	(V dc max)	(V dc max)	(mA pulsed)	
1N6638	150	100	125	5	20	2.5	2	4.5	35	500	50	100	-	1.1	1.2	200
1N6639	100	10	75	5	10	2.5	-	4	-	100	-	90	-	1.2	1.3	500
1N6640	75	10	50	5	10	2.5	-	4	-	100	-	90	0.54	0.62	-	1
													0.76	0.86	-	50
													0.82	0.92	-	100
													0.87	1	1.1	200
1N6641	75	10	50	5	10	3	-	5	-	100	-	90	-	1.1	1.2	200
1N6642	100	100	75	5	20	5	2.8	5	25	500	50	100	-	1	-	10
													1.2	1.2	-	100
1N6643	75	100	50	5	20	5	2.8	6	50	500	75	100	-	1	-	10
													1.2	1.4	-	100

Electrical specifications @  $T_A = +25^\circ C$  (unless otherwise specified).

## Switching Diodes: 1N6638US to 1N6643US, available in JAN, JANTX, JANTXV, and JANS per /578 and /609

Part Number	$V_{BR} @ I_F$	$V_{RWM}$	$V_{FR} / t_{rr} @ I_F = 200 \text{ mA}$	$C_{T1} V_R = 0.0 \text{ V}$	$C_{T2} V_R = 1.5 \text{ V}$	$t_{rr} I_F = 10 \text{ mA}$ $I_F = 10 \text{ mA}$	$V_{R1} V_R = V_{RWM}$	$I_{R2} V_R = 20 \text{ V}$ $T_A = 150^\circ\text{C}$	$I_{R3} V_R = 20 \text{ V}$ $T_A = 150^\circ\text{C}$	$I_{R4} V_R = V_{RWM}$	$V_F @ I_F$	$V_{F2} @ I_F$ $T_A = -55^\circ\text{C}$	$I_F$			
	(V pk)	( $\mu\text{A}$ )	(V pk)	(V pk)	(pF)	(pF)	(ns)	(nA dc)	(nA dc)	( $\mu\text{A}$ dc)	( $\mu\text{A}$ dc)	(V dc min)	(V dc max)	(V dc max)	(mA pulsed)	
1N6638U and US	150	100	125	5.0	20	2.5	2.0	4.5	35	500	50	100	-	1.1	1.2	200
1N6639U and US	100	10	75	5.0	10	2.5	-	4.0	-	100	-	90	-	1.2	1.3	500
1N6640U and US	75	10	50	5.0	10	2.5	-	4.0	-	100	-	90	0.54	0.62	-	1
													0.76	0.86	-	50
													0.82	0.92	-	100
													0.87	1.0	1.1	200
1N6641U and US	75	10	50	5.0	10	3.0	-	5.0	-	100	-	90	-	1.1	1.2	200
1N6642U, US and UB	100	100	75	5.0	20	5.0	2.8	5.0	25	500	50	100	-	1.0	-	10
													-	1.2	1.2	100
1N6643U and US	75	100	50	5.0	20	5.0	2.8	6.0	50	500	75	100	-	1.0	-	10
													-	1.2	1.4	100

Electrical specifications @  $T_A = +25^\circ\text{C}$  (unless otherwise specified).

## Switching Diodes: 1N4531, available in JAN, JANTX, and JANTXV per /116

Part Number	$V_F$	$I_F$	$V_{BR}$	$t_{rr} I_F = 10 \text{ mA}$ $I_F = 10 \text{ mA}$ $R_S = 100 \Omega$	$T_{rr} @ I_F = 50 \text{ mA}$	$V_{FR} @ I_F = 50 \text{ mA}$	Capacitance @ 0 V	Capacitance @ 1.5 V							
	Ambient ( $^\circ\text{C}$ )	( $I_F$ mA)	(V dc) max	Ambient ( $^\circ\text{C}$ )	V dc	A max	Ambient ( $^\circ\text{C}$ )	( $I_r \mu\text{A}$ )	(V dc max)	(V dc max)	(nsec)	(nsec)	(V pk)	(pF)	(pF)
1N4531-1	25	10	0.8	25	20	0.025	25	100	100	25	5	20	5	4	2.8
	25	100	1.2	25	75	0.500									
	150	10	0.8	150	20	35.0									
	-55	100	1.3	150	75	75.0									

## Switching Diodes: 1N4454-1, available in JAN, JANTX, and JANTXV per /144

Part Number	$V_{BR} @ 5 \mu\text{A}$ (V)	$V_{RWM}$ (V pk)	$I_O$ (mA)	$V_{R1} I_F = 10 \text{ mA}$ (V dc)	$V_{R2} I_F = 10 \text{ mA}$ (V dc)	$T_{rr}$ (nsec)	$I_{R1} @ 50 \text{ Vdc}$ ( $\mu\text{A}$ )	$I_{R2} @ 75 \text{ Vdc}$ $T_A = 150^\circ\text{C}$ ( $\mu\text{A}$ )	Capacitance @ 0 V (pF)
1N4454-1, 1N4454UR-1	75	50	200	0.8	0.7	4	0.1	100	20

**Current Regulator Diodes: 1N5283-1 to 1N5314-1; 1N7041-1 to 1N7055-1 available in JAN, JANTX, JANTXV, and JANS per /463**

Part Number	Regulator Current $I_p$ (mA) @ $V_s=25V$			Max Dynamic Impedance @ $V_s = 25V$ $Z_s$ (M) <sup>1</sup>	Min Knee Impedance @ $V_k = 6.0V$ $Z_k$ (M) <sup>2</sup>	Max Limiting Voltage @ $I_L = 0.8 I_p$ (min) $V_L$ (V)	Peak Operating Voltage (V)
	Nominal	Minimum	Maximum				
1N5283-1, 1N5283UR-1	0.22	0.198	0.242	25	2.75	1	100
1N5284-1, 1N5284UR-1	0.24	0.216	0.264	19	2.35	1	100
1N5285-1, 1N5285UR-1	0.27	0.243	0.297	14	1.95	1	100
1N5286-1, 1N5286UR-1	0.3	0.27	0.33	9	1.6	1	100
1N5287-1, 1N5287UR-1	0.33	0.297	0.363	8	1.35	1	100
1N5288-1, 1N5288UR-1	0.39	0.351	0.429	4.1	1	1.05	100
1N5289-1, 1N5289UR-1	0.043	0.387	0.473	3.3	0.87	1.05	100
1N5290-1, 1N5290UR-1	0.47	0.423	0.517	2.7	0.75	1.05	100
1N5291-1, 1N5291UR-1	0.56	0.504	0.616	1.9	0.56	1.1	100
1N5292-1, 1N5292UR-1	0.62	0.558	0.682	1.55	0.47	1.13	100
1N5293-1, 1N5293UR-1	0.68	0.612	0.748	1.35	0.4	1.15	100
1N5294-1, 1N5294UR-1	0.75	0.675	0.825	1.15	0.335	1.2	100
1N5295-1, 1N5295UR-1	0.82	0.738	0.902	1	0.29	1.25	100
1N5296-1, 1N5296UR-1	0.91	0.819	1.001	0.88	0.24	1.29	100
1N5297-1, 1N5297UR-1	1	0.9	1.1	0.8	0.205	1.35	100
1N5298-1, 1N5298UR-1	1.1	0.99	1.21	0.7	0.18	1.4	100
1N5299-1, 1N5299UR-1	1.2	1.08	1.32	0.64	0.155	1.45	100
1N5300-1, 1N5300UR-1	1.3	1.17	1.43	0.58	0.135	1.5	100
1N5301-1, 1N5301UR-1	1.4	1.26	1.54	0.54	0.115	1.55	100
1N5302-1, 1N5302UR-1	1.5	1.35	1.65	0.51	0.105	1.6	100
1N5303-1, 1N5303UR-1	1.6	1.44	1.76	0.475	0.092	1.65	100
1N5304-1, 1N5304UR-1	1.8	1.62	1.98	0.42	0.074	1.75	100
1N5305-1, 1N5305UR-1	2	1.8	2.2	0.395	0.061	1.85	100
1N5306-1, 1N5306UR-1	2.2	1.98	2.42	0.37	0.052	1.95	100
1N5307-1, 1N5307UR-1	2.4	2.16	2.54	0.345	0.044	2	100
1N5308-1, 1N5308UR-1	2.7	2.43	2.97	0.32	0.035	2.15	100
1N5309-1, 1N5309UR-1	3	2.7	3.3	0.3	0.029	2.25	100
1N5310-1, 1N5310UR-1	3.3	2.97	3.63	0.28	0.024	2.35	100
1N5311-1, 1N5311UR-1	3.6	3.24	3.96	0.265	0.02	2.5	100
1N5312-1, 1N5312UR-1	3.9	3.51	4.29	0.255	0.017	2.6	100
1N5313-1, 1N5313UR-1	4.3	3.87	4.73	0.245	0.014	2.75	100
1N5314-1, 1N5314UR-1	4.7	4.23	5.17	0.235	0.012	2.9	100
1N7048-1, 1N7048UR-1	5.1	4.59	5.61	100	4	3.67	80
1N7049-1, 1N7049UR-1	5.6	5.04	6.16	90	4	4.03	80
1N7050-1, 1N7050UR-1	6.2	5.58	6.82	80	3	4.46	70
1N7051-1, 1N7051UR-1	6.8	6.12	7.48	70	2	4.9	70
1N7052-1, 1N7052UR-1	7.5	6.75	8.25	50	1.5	5.4	60
1N7053-1, 1N7053UR-1	8.2	7.38	9.02	30	1.5	5.9	60
1N7054-1, 1N7054UR-1	9.1	8.19	10.01	20	1	6.55	50
1N7055-1, 1N7055UR-1	10	9	11.1	10	1	7.2	50

Electrical specifications @ +25°C (unless otherwise specified).

Note 1:  $Z_s$  is derived by superimposing A 90 Hz RMS signal equal to 10% of  $V_s$  on  $V_s$

Note 2:  $Z_k$  is derived by superimposing A 90 Hz RMS signal equal to 10% of  $V_k$  on  $V_k$

Available in chip form.

## Zener Diode Chip Series: CD4099 to CD4135, available in JANHC and JANKC per /435

Part Number	Nominal Zener Voltage $V_z @ I_{zT}^1$ (V)	Zener Test Current, $I_{zT}$ ( $\mu$ A)	Max Zener Impedance $Z_{zT} @ I_{zT}^2$ (Ohms)	Maximum Reverse Leakage Current, $I_R @ V_R$	
				( $\mu$ A)	(V)
CD4099	6.8	250	200	10	5.17
CD4100	7.5	250	200	10	5.7
CD4101	8.2	250	200	1	6.24
CD4102	8.7	250	200	1	6.61
CD4103	9.1	250	200	1	6.92
CD4104	10	250	200	1	7.6
CD4105	11	250	200	0.05	8.44
CD4106	12	250	200	0.05	9.12
CD4107	13	250	200	0.05	9.87
CD4108	14	250	200	0.05	10.65
CD4109	15	250	100	0.05	11.4
CD4110	16	250	100	0.05	12.15
CD4111	17	250	100	0.05	12.92
CD4112	18	250	100	0.05	13.67
CD4113	19	250	150	0.05	14.44
CD4114	20	250	150	0.01	15.2
CD4115	22	250	150	0.01	16.72
CD4116	24	250	150	0.01	18.25
CD4117	25	250	150	0.01	19
CD4118	27	250	150	0.01	20.46
CD4119	28	250	200	0.01	21.28
CD4120	30	250	200	0.01	22.8
CD4121	33	250	200	0.01	25.08
CD4122	36	250	200	0.01	27.38
CD4123	39	250	200	0.01	29.65
CD4124	43	250	250	0.01	32.56
CD4125	47	250	250	0.01	35.75
CD4126	51	250	300	0.01	38.76
CD4127	56	250	300	0.01	42.6
CD4128	60	250	400	0.01	45.6
CD4129	62	250	500	0.01	47.1
CD4130	68	250	700	0.01	51.68
CD4131	75	250	700	0.01	57
CD4132	82	250	800	0.01	62.32
CD4133	87	250	1000	0.01	66.12
CD4134	91	250	1200	0.01	69.16
CD4135	100	250	1500	0.01	76

Electrical specifications @ +25°C (unless otherwise specified).

Note 1: Zener voltage range equals nominal Zener voltage  $\pm$  5% for no suffix types. Zener voltage is read using a pulse measurement, 10 milliseconds maximum. "C" suffix =  $\pm$  2% and "D" suffix =  $\pm$  1%.

Note 2: Zener impedance is derived by superimposing on  $I_{zT}$  a 60 Hz rms AC current equal to 10 % of  $I_{zT}$ .

## Zener Diode Chip Series: CD4614 to CD4627, available in JANHC and JANKC per /435

Part Number	Nominal Zener Voltage	Zener Test Current, $I_{ZT}$	Max Zener Impedance	Maximum Reverse Leakage Current, $I_R @ V_R$	
	$V_Z @ I_{ZT}^1$ (V)			( $\mu$ A)	(V)
CD4614	1.8	250	1200	7.5	1
CD4615	2	250	1250	5	1
CD4616	2.2	250	1300	4	1
CD4617	2.4	250	1400	2	1
CD4618	2.7	250	1500	1	1
CD4619	3	250	1600	0.8	1
CD4620	3.3	250	1650	7.5	1.5
CD4621	3.6	250	1700	7.5	2
CD4622	3.9	250	1650	5	2
CD4623	4.3	250	1600	4	2
CD4624	4.7	250	1550	10	3
CD4625	5.1	250	1500	10	3
CD4626	5.6	250	1400	10	4
CD4627	6.2	250	1200	10	5

Electrical specifications @ +25°C (unless otherwise specified).

Note 1: Zener voltage range equals nominal Zener voltage  $\pm$  5% for no suffix types. Zener voltage is read using a pulse measurement, 10 milliseconds maximum. "C" suffix =  $\pm$  2% and "D" suffix =  $\pm$  1%.

Note 2: Zener impedance is derived by superimposing on  $I_{ZT}$  a 60 Hz rms AC current equal to 10 % of  $I_{ZT}$ .

## Zener Diode Chip Series: CD4370A to CD4372A, CD746A to CD759A, available in JANHC and JANKC per /127

Part Number	Nominal Zener Voltage	Zener Test Current, $I_{ZT}$	Max Zener Impedance	Maximum Reverse Leakage Current, $I_R @ V_R$		Max Zener Current, $I_{ZM}$
	$V_Z @ I_{ZT}^1$ (V)			( $\mu$ A)	(V)	
CD4370A	2.4	20	30	100	1	155
CD4371A	2.7	20	30	75	1	140
CD4372A	3	20	29	50	1	125
CD746A	3.3	20	28	10	1	120
CD747A	3.6	20	24	5	1	110
CD748A	3.9	20	23	5	1	100
CD749A	4.3	20	22	2	1	90
CD750A	4.7	20	19	5	1.5	85
CD751A	5.1	20	17	5	2	75
CD752A	5.6	20	11	5	2.5	70
CD753A	6.2	20	7	5	3.5	85
CD754A	6.8	20	5	2	4	60
CD755A	7.5	20	6	2	5	55
CD756A	8.2	20	8	1	6	50
CD757A	9.1	20	10	1	7	45
CD758A	10	20	17	1	8	40
CD759A	12	20	30	1	9	35

Electrical specifications @ +25°C (unless otherwise specified).

Note 1: Zener voltage range equals nominal voltage  $\pm$  5% for "A" suffix. No suffix denotes  $\pm$  10%. "C" suffix =  $\pm$  2% and "D" suffix =  $\pm$  1%. Zener voltage is read using a pulse measurement, 10 milliseconds maximum.

Note 2: Zener impedance is derived by superimposing on  $I_{ZT}$  a 60 Hz rms a.c. current equal to 10 % of  $I_{ZT}$ .



## Zener Diode Chip Series: CD5518B to CD5546B, available in JANHC and JANKC per /437

Part Number	Nominal Zener Voltage $V_Z @ I_{ZT}^1$ (V)	Zener Test Current, $I_{ZT}$ (mA dc)	Max Zener Impedance $Z_{ZT} @ I_{ZT}^2$ (Ohms)	Max Reverse Leakage Current $I_R$ (mA dc)	Max Reverse Leakage Current $V_R$ (V)	Regulation Factor $V_Z^3$ (V)	Low $V_Z$ Current, $I_{ZL}$ (mA dc)
CD5518B	3.3	20	26	5	1	0.9	2
CD5519B	3.6	20	24	3	1	0.9	2
CD5520B	3.9	20	22	1	1	0.9	2
CD5521B	4.3	20	18	3	1.5	0.75	2
CD5522B	4.7	10	22	2	2	0.6	1
CD5523B	5.1	5	26	2	2.5	0.65	0.25
CD5524B	5.6	3	30	2	3.5	0.3	0.25
CD5525B	6.2	1	30	1	5	0.2	0.01
CD5526B	6.8	1	30	1	6.2	0.1	0.01
CD5527B	7.5	1	35	0.5	6.8	0.05	0.01
CD5528B	8.2	1	40	0.5	7.5	0.05	0.01
CD5529B	9.1	1	45	0.1	8.2	0.05	0.01
CD5530B	10	1	60	0.05	9.1	0.1	0.01
CD5531B	11	1	80	0.05	9.9	0.2	0.01
CD5532B	12	1	90	0.05	10.8	0.2	0.01
CD5533B	13	0	90	0.01	11.7	0.2	0.01
CD5534B	14	1	100	0.01	12.6	0.2	0.01
CD5535B	15	1	100	0.01	13.5	0.2	0.01
CD5536B	16	1	100	0.01	14.4	0.2	0.01
CD5537B	17	1	100	0.01	15.3	0.2	0.01
CD5538B	18	1	100	0.01	16.2	0.2	0.01
CD5539B	19	1	100	0.01	17.1	0.2	0.01
CD5540B	20	1	100	0.01	18	0.2	0.01
CD5541B	22	1	100	0.01	19.8	0.25	0.01
CD5542B	24	1	100	0.01	21.6	0.3	0.01
CD5543B	25	1	100	0.01	22.4	0.35	0.01
CD5544B	28	1	100	0.01	25.2	0.4	0.01
CD5545B	30	10	100	0.01	27	0.45	0.01
CD5546B	33	1	100	0.01	29.7	0.5	0.01

Electrical specifications @ +25°C (unless otherwise specified).

Note 1: Suffix "B" voltage range equals nominal Zener voltage,  $\pm 5\%$ . Suffix "A" equals  $\pm 10\%$ . "C" suffix =  $\pm 2\%$  and "D" suffix =  $\pm 1\%$ . No suffix equals  $\pm 20\%$ . Zener voltage is read using a pulse measurement, 10 milliseconds maximum.

Note 2: Zener impedance is derived by superimposing on  $I_{ZT}$  a 60 Hz rms ac current equal to 10% of  $I_{ZT}$ .

Note 3:  $DV_Z$  is the maximum difference between  $V_Z @ I_{ZT}$  and  $V_Z$  at  $I_{ZL}$  measured with the device junction in thermal equilibrium at an ambient temperature of  $+25^\circ \pm 3^\circ\text{C}$ .

## Zener Diode Chips: CD6309 to CD6349

Part Types <sup>1</sup>	Nominal Zener Voltage +/-5% @ I <sub>Z1</sub> (V)	Zener Test Current I <sub>ZT</sub> (mA)(typ)	Dynamic Impedance <sup>3</sup>		Current Maximum Zener I <sub>ZM</sub> (mA)	Voltage Reg <sup>2</sup> V <sub>Z</sub> (reg) (V)(typ)	Maximum Reverse Current I <sub>R1</sub> @ V <sub>R</sub> 25°C (μA)	Max Noise Density @ 250 mA 1 to 3 kHz μA/√Hz
			Z <sub>ZT</sub> @ I <sub>Z2</sub> (Ohms) (typ)	Z <sub>ZK</sub> @ 250μA (Ohms) (typ)				
CD6309	2.4	20	30	1200	177	1.5	100	1
CD6310	2.7	20	30	1300	157	1.5	60	1
CD6311	3	20	29	1400	141	1.5	30	1
CD6312	3.3	20	27	1400	128	1.6	5	1
CD6313	3.6	20	25	1400	117	1.6	3	1
CD6314	3.9	20	23	1700	108	1.6	2	1
CD6315	4.3	20	20	1900	99	0.9	2	1
CD6316	4.7	20	17	1500	90	0.5	5	1.5
CD6317	5.1	20	14	1300	83	0.4	5	2
CD6318	5.6	20	8	1200	76	0.4	5	2.5
CD6319	6.2	20	3	800	68	0.3	5	3.5
CD6320	6.8	20	3	400	63	0.35	2	4
CD6321	7.5	20	4	400	57	0.4	2	5
CD6322	8.2	20	5	400	52	0.4	1	6
CD6323	9.1	20	6	500	47	0.5	1	7
CD6324	10	20	6	500	43	0.5	1	8
CD6325	11	20	7	550	39	0.5	1	8.5
CD6326	12	20	7	550	35	0.55	1	9
CD6327	13	12	8	550	33	0.55	0.05	9.9
CD6328	15	8.5	10	600	28	0.7	0.05	11
CD6329	16	7.8	12	600	27	0.75	0.05	12
CD6330	18	7	14	600	24	0.85	0.05	14
CD6331	20	6.2	18	500	21	0.95	0.05	15
CD6332	22	5.6	20	500	19	1.05	0.05	17
CD6333	24	5.2	24	500	18	1.15	0.05	18
CD6334	27	4.6	27	500	16	1.3	0.05	21
CD6335	30	4.2	32	500	14	1.45	0.05	23
CD6336	33	3.8	40	600	13	1.6	0.05	25
CD6337	36	3.4	50	600	12	1.75	0.05	27
CD6338	39	3.2	55	700	11	1.9	0.05	30
CD6339	43	3	65	800	9.9	2.1	0.05	33
CD6340	47	2.7	75	900	9	2.25	0.05	36
CD6341	51	2.5	85	1000	8.3	2.5	0.05	39
CD6342	56	2.2	100	1200	7.6	2.7	0.05	43
CD6343	62	2	125	1300	6.8	2.9	0.05	47
CD6344	68	1.8	155	1500	6.3	3.2	0.05	52
CD6345	75	1.7	180	1600	5.7	3.4	0.05	56
CD6346	82	1.5	220	1800	5.2	3.8	0.05	62
CD6347	91	1.4	270	2100	4.7	4.2	0.05	69
CD6348	100	1.3	340	2400	4.3	4.4	0.05	76
CD6349	110	1.1	500	2800	3.9	4.8	0.05	84

Notes:

- The JEDEC type numbers shown above have a standard tolerance of ±5% of the nominal Zener voltage.  
Nominal Zener voltage is measured with the device junction in thermal equilibrium at an ambient temperature of 25°C ±3°C.  
Suffix "C" signifies ±2%, suffix "D" signifies ±1% tolerance.
- V<sub>Z</sub> REG = V<sub>Z</sub> @ 50% of I<sub>ZM</sub> minus V<sub>Z</sub> @ 10% of I<sub>ZM</sub>.
- Zener impedance is derived by superimposing on I<sub>ZT</sub> a 60 Hz rms a.c. current equal to 10% of I<sub>ZT</sub> or I<sub>ZK</sub>.

## Zener Diode Chip Series: CD957B to CD986B, available in JANHC and JANKC per /117

Part Number	Nominal Zener Voltage, $V_Z^1$ (V)	Zener Test Current, $I_{ZT}$ (mA)	Max Zener Impedance $Z_{ZT}$ @ $I_{ZT}^2$ (Ohms)	Max Zener Impedance $Z_{ZK}$ @ $I_{ZK}^2$		Max DC Zener Current, $I_{ZM}$ (mA)	Max Reverse Leakage Current, $I_R$ @ $V_R$	
				(Ohms)	(mA)		( $\mu$ A)	(V)
CD957B	6.8	18.5	4.5	700	1	55	5	5.2
CD958B	7.5	16.5	5.5	700	0.5	50	5	5.7
CD959B	8.2	15	6.5	700	0.5	45	5	6.2
CD960B	9.1	14	7.5	700	0.5	41	5	6.9
CD961B	10	12.5	8.5	700	0.25	38	2	7.6
CD962B	11	11.5	9.5	700	0.25	32	1	8.4
CD963B	12	10.5	11.5	700	0.25	31	1	9.1
CD964B	13	9.5	13	700	0.25	28	0.5	9.9
CD965B	15	8.5	16	700	0.25	25	0.5	11
CD966B	16	7.8	17	700	0.25	24	0.5	12
CD967B	18	7	21	750	0.25	20	0.5	14
CD968B	20	6.2	25	750	0.25	18	0.5	15
CD969B	22	5.6	29	750	0.25	16	0.5	17
CD970B	24	5.2	33	750	0.25	15	0.5	18
CD971B	27	4.6	41	750	0.25	13	0.5	21
CD972B	30	4.2	49	1000	0.25	12	0.5	23
CD973B	33	3.8	58	1000	0.25	11	0.5	25
CD974B	36	3.4	70	1000	0.25	10	0.5	27
CD975B	39	3.2	90	1000	0.25	9.5	0.5	30
CD976B	43	3	93	1500	0.25	8.8	0.5	33
CD977B	47	2.7	105	1500	0.25	7.9	0.5	36
CD978B	51	2.5	125	1500	0.25	7.4	0.5	39
CD979B	56	2.2	150	2000	0.25	6.8	0.5	43
CD980B	62	2	185	2000	0.25	6	0.5	47
CD981B	68	1.8	230	2000	0.25	5.5	0.5	52
CD982B	75	1.7	270	2000	0.25	5	0.5	56
CD983B	82	1.5	330	3000	0.25	4.6	0.5	62
CD984B	91	1.4	400	3000	0.25	4.1	0.5	69
CD985B	100	1.3	500	3000	0.25	3.7	0.5	76
CD986B	110	1.1	750	4000	0.25	3.3	0.5	84

Electrical specifications @ +25°C (unless otherwise specified).

Note 1: Zener voltage range equals nominal voltage  $\pm$  5% for "B" suffix. "A" Suffix denotes  $\pm$  10%. No suffix denotes  $\pm$  20%. "C" suffix =  $\pm$  2% and "D" suffix =  $\pm$  1%. Zener voltage is read using a pulse measurement, 10 milliseconds maximum.

Note 2: Zener impedance is derived by superimposing on  $I_{ZT}$  a 60 Hz rms a.c. current equal to 10 % of  $I_{ZT}$ .

## TC Zener Diode Chip Series: CD4565 to CD4584A, available in JANHC and JANKC per /452

Part Number	Zener Test Current, $I_{ZT}$ (mA)	Effective Temperature Coefficient (% / °C)	Voltage Temperature Stability, $\Delta V_{ZT}$ Max -55° to +100° <sup>1</sup> (Ohms)	Temperature Range (°C)	Max Zener Impedance, $Z_{ZT}^2$ (Ohms)
CD4565	0.5	0.01	48	0 to +75 °C	200
CD4565A	0.5	0.01	100	-55 to +100 °C	200
CD4566	0.5	0.005	24	0 to +75 °C	200
CD4566A	0.5	0.005	50	-55 to +100 °C	200
CD4567	0.5	0.002	10	0 to +75 °C	200
CD4567A	0.5	0.002	20	-55 to +100 °C	200
CD4568	0.5	0.001	5	0 to +75 °C	200
CD4568A	0.5	0.001	10	-55 to +100 °C	200
CD4569	0.5	0.0005	2.5	0 to +75 °C	200
CD4569A	0.5	0.0005	5	-55 to +100 °C	200
CD4570	1	0.01	48	0 to +75° C	100
CD4570A	1	0.01	100	-55 to +100 °C	100
CD4571	1	0.005	24	0 to +75°C	100
CD4571A	1	0.005	50	-55 to +100°C	100
CD4572	1	0.002	10	0 to +75°C	100
CD4572A	1	0.002	20	-55 to +100°C	100
CD4573	1	0.001	5	0 to +75 °C	100
CD4573A	1	0.001	10	-55 to +100 °C	100
CD4574	1	0.0005	2.5	0 to +75 °C	100
CD4574A	1	0.0005	5	-55 to +100 °C	100
CD4575	2	0.01	48	0 to +75°C	50
CD4575A	2	0.01	100	-55 to +100 °C	50
CD4576	2	0.005	24	0 to +75 °C	50
CD4576A	2	0.005	50	-55 to +100 °C	50
CD4577	2	0.002	10	0 to +75 °C	50
CD4577A	2	0.002	20	-55 to +100 °C	50
CD4578	2	0.001	5	0 to +75 °C	50
CD4578A	2	0.001	10	-55 to +100 °C	50
CD4579	2	0.0005	2.5	0 to +75 °C	50
CD4579A	2	0.0005	5	-55 to +100 °C	50
CD4580	4	0.01	48	0 to +75 °C	25
CD4580A	4	0.01	100	-55 to +100 °C	25
CD4581	4	0.005	24	0 to +75 °C	25
CD4581A	4	0.005	50	-55 to +100 °C	25
CD4582	4	0.002	10	0 to +75 °C	25
CD4582A	4	0.002	20	-55 to +100 °C	25
CD4583	4	0.001	5	0 to +75 °C	25
CD4583A	4	0.001	10	-55 to +100 °C	25
CD4584	4	0.0005	2.5	0 to +75° C	25
CD4584A	4	0.0005	5	-55 to +100 °C	25

Electrical specifications @ +25 °C (unless otherwise specified).

Note 1: The maximum allowable change observed over the entire temperature range, i.e., the diode voltage will not exceed the specialized mV at any discrete temperature between the established limits, per JEDEC standard No.5.

Note 2: Zener impedance is derived by superimposing on  $I_{ZT}$  a 60 Hz rms ac current equal to 10% of  $I_{ZT}$ .

## Ultrafast Rectifier Diode Chips: CD5802, CD5804 & CD5806, available in JANHC and JANKC per /477

Part Number	$V_{RVM}$ (V min)	$V_{BR}$ (V pk)	$I_o$ (A)	$T_J = 75^\circ\text{C}$ (ns)	$T_{rr}$ (ns)	$I_F = 0.5\text{ A}, I_{RM} = 0.5\text{ A}$ $I_{REC} = 0.05\text{ A}$ $C_j$ (max) @ $V_R = 10.0\text{ V}$ (pF)	$V_{FVM1}$ $I_{FM} = 1.0\text{ A}$ $T_P = 8.3\text{ ms (max)}$ (V dc)	$V_{FVM2}$ $I_{FM} = 2.5\text{ A}$ $T_P = 8.3\text{ ms (max)}$ (V dc)	$V_{FVM3}$ $I_{FM} = 1.0\text{ A}$ $T_A = +125^\circ\text{C}$ (V dc)	$V_{FVM4}$ $I_{FM} = 1.0\text{ A}$ $T_A = -65^\circ\text{C}$ (V dc)	$I_R$ @ $V_{RVM}$ $T_C = 25^\circ\text{C}$ ( $\mu\text{A dc}$ )	$I_{R2}$ @ $V_{RVM}$ Rated $T_A = 125^\circ\text{C}$ ( $\mu\text{A dc}$ )	$V_{FVM}$ $t_r = 8\text{ ns}$ $I_{FM} = 250\text{ mA}$ (V dc)
CD5802	50	60	25	25	25	25	0.875	0.975	0.800	1.075	1	175	2.2
CD5804	100	110	25	25	25	25	0.875	0.975	0.800	1.075	1	175	2.2
CD5806	150	160	25	25	25	25	0.875	0.975	0.800	1.075	1	175	2.2

Electrical specifications @ +25°C (unless otherwise specified).

## Ultrafast Rectifier Diode Chips: CD5807, CD5809 & CD5811, available in JANHC and JANKC per /477

Part Number	$V_{RVM}$ (V min)	$V_{BR}$ (V pk)	$I_o$ (A)	$T_J = 75^\circ\text{C}$ (ns)	$T_{rr}$ (ns)	$I_F = 0.5\text{ A}, I_{RM} = 0.5\text{ A}$ $I_{REC} = 0.05\text{ A}$ $C_j$ (max) @ $V_R = 10.0\text{ V}$ (pF)	$V_{FVM1}$ $I_{FM} = 1.0\text{ A}$ $T_P = 8.3\text{ ms (max)}$ (V dc)	$V_{FVM2}$ $I_{FM} = 2.5\text{ A}$ $T_P = 8.3\text{ ms (max)}$ (V dc)	$V_{FVM3}$ $I_{FM} = 1.0\text{ A}$ $T_A = +125^\circ\text{C}$ (V dc)	$V_{FVM4}$ $I_{FM} = 1.0\text{ A}$ $T_A = -65^\circ\text{C}$ (V dc)	$I_R$ @ $V_{RVM}$ $T_C = 25^\circ\text{C}$ ( $\mu\text{A dc}$ )	$I_{R2}$ @ $V_{RVM}$ Rated $T_A = 125^\circ\text{C}$ ( $\mu\text{A dc}$ )	$V_{FVM}$ $t_r = 8\text{ ns}$ $I_{FM} = 250\text{ mA}$ (V dc)
CD5807	50	60	2.5	30	30	60	0.865	0.875	0.925	0.800	5	525	2.2
CD5809	100	110	2.5	30	30	60	0.865	0.875	0.925	0.800	5	525	2.2
CD5811	150	160	2.5	30	30	60	0.865	0.875	0.925	0.800	5	525	2.2

Electrical specifications @ +25°C (unless otherwise specified).

## Silicon Switching Diode Chips: CD914, CD4148, CD4531, CD6642 & CD4454, available in JANHC and JANKC per /116 and /578

Part Number	$V_{BR}$ @ 100 mA (V min)	$V_{RVM}$ (V pk)	$I_o$ (mA)	$V_{F1}$ $I_F = 10\text{ mA}$ (Vdc)	$V_{F2}$ $I_F = 50\text{ mA}$ (Vdc)	$V_{F3}$ $I_F = 100\text{ mA}$ (Vdc)	$T_{rr}$ (nsec)	$I_{R1}$ @ 20 Vdc (nA)	$I_{R2}$ ( $\mu\text{A @ V}$ )	$I_{R3}$ @ 20 Vdc $T_A = 150^\circ\text{C}$ ( $\mu\text{A}$ )	$I_{R4}$ $T_A = 150^\circ\text{C}$ ( $\mu\text{A @ V}$ )	Capacitance @ 0 V (pF)	Capacitance @ 1.5 V (pF)
CD914	100	75	75	0.8	1.2	N/A	5	25	0.5 @ 75	35	75 @ 75	4.0	2.8
CD4148	100	75	200	0.8	N/A	1.2	5	35	0.5 @ 75	35	75 @ 75	4.0	2.8
CD4531													
CD6642													
CD4454	75	50	200	1.0	N/A	N/A	4	N/A	0.1 @ 50	N/A	100 @ 50	2.0	N/A

Electrical specifications @ +25°C (unless otherwise specified).

## Silicon Switching Diode Chips: CD3600, CD4150, CD4153 & CD6640. CD6640 available in JANHC and JANKC per /609

Part Number	$V_{BR}$ $I_R = 10\ \mu\text{A}^*$ (V min)	$V_{RVM}$ (V pk)	$I_{R1}$ $V_R = 50\text{ Vdc}$ $T_A = 150^\circ\text{C}$ ( $\mu\text{A Vdc}$ )	$I_{R2}$ $V_R = 50\text{ Vdc}$ $T_A = 150^\circ\text{C}$ ( $\mu\text{A Vdc}$ )	Capacitance $V_R = 0; f = 1\text{ MHz}$ ac signals = 50 mV (p-p) (pF)	$t_{rr}$ (nsec)
CD3600	75	50	0.1	100	2.5	4
CD4150	75	50	0.1	100	2.5	4
CD6640						
CD4153	75*	50	0.05	150	2	4

\* @ 5 mA for CD4153

Electrical specifications @ +25°C (unless otherwise specified).

## NPN Transistors available in JAN, JANTX, JANTXV, and JANS as noted

Part Number	Slash Sheet	$V_{CE0}^{(sus)}$ (V)	$V_{CBO}$ (V)	$I_C^{(max)}$ (Amps)	$h_{FE}$ @ $I_C / V_{CE}$ min/max@A/V	$C_{obo}$ (pF)	$f_T$ (MHz)	Package
2N3055	407	70	100	15	20/60 @ 4/4	700	0.8	TO-3
2N3418*	393	60	85	3	20/60 @ 1/2	150	26	TO-5 / TO-39
2N3419*	393	80	125	3	20/60 @ 1/2	150	26	TO-5 / TO-39
2N3420*	393	60	85	3	40/20 @ 1/2	150	26	TO-5 / TO-39
2N3421*	393	80	125	3	40/20 @ 1/2	150	26	TO-5 / TO-39
2N3715	408	60	80	10	30/120 @ 3/2	500	4	TO-3
2N3716	408	80	100	10	30/120 @ 3/2	500	4	TO-3
2N3766	518	60	80	4	40/160 @ .5/5	50	10	TO-66
2N3767	518	80	100	4	40/160 @ .5/5	50	10	TO-66
2N3879	526	75	120	7	20/80 @ 4/5	175	40	TO-66
2N3902	371	400	700	3.5	30/90 @ 1/5	250	2.5	TO-3
2N4150*	394	70	100	10	40/120 @ 5/5	350	15	TO-5 / TO-39 / U3
2N4237	581	40	50	1	30/150 @ .25/1	100	30	TO-39
2N4238	581	60	80	1	30/150 @ .25/1	100	30	TO-39
2N4239	581	80	100	1	30/150 @ .25/1	100	30	TO-39
2N5152*†	544	80	100	2	30/90 @ 2.5/5	250	60	TO-5 / TO-39
2N5154*†	544	80	100	2	70/200 @ 2.5/5	250	70	TO-5 / TO-39 / U3
2N5157	371	500	700	3.5	30/90 @ 1/5	250	2.5	TO-3
2N5339*†	560	100	100	5	60/240 @ 2/2	250	30	TO-5 / TO-39 / U3
2N5681	583	100	100	1	40/150 @ .25/2	50	30	TO-39
2N5682	583	120	120	1	40/150 @ .25/2	50	30	TO-39
2N6058	502	80	80	12	1K/18K @ 6/3	300	10	TO-3
2N6059	502	100	100	12	1K/18K @ 6/3	300	10	TO-3
2N6249	510	200	300	10	10/50 @ 10/3	500	2.5	TO-3
2N6250	510	275	375	10	8/50 @ 10/3	500	2.5	TO-3
2N6251	510	350	450	10	6/50 @ 10/3	500	2.5	TO-3
2N6283	504	80	80	20	1.25K/18K @ 10/3	350	8	TO-3
2N6284	504	100	100	20	1.25K/18K @ 10/3	350	8	TO-3
2N6300	539	60	60	8	750/18K @ 4/3	200	25	TO-66
2N6301	539	80	80	8	750/18K @ 4/3	200	25	TO-66
2N6383	523	40	40	10	1K/20K @ 5/3	200	20	TO-3
2N6384	523	60	60	10	1K/20K @ 5/3	200	20	TO-3
2N6385	523	80	80	10	1K/20K @ 5/3	200	20	TO-3
2N6674	537	300	450	15	8/20 @ 10/2	500	15	TO-3
2N6675	537	400	650	15	8/20 @ 10/2	500	15	TO-3
2N6676	538	300	450	15	8/20 @ 15/3	500	15	TO-3
2N6678	538	400	650	15	8/20 @ 15/3	500	15	TO-3

\* Also available in JANS.

† These parts are RAD Hard.

## NPN RAD Hard Small Signal Transistors available in JANTXV, JANS, and JANSR

Part Number	Slash Sheet	$V_{CE0}^{(sus)}$ (V)	$V_{CBO}$ (V)	$I_C^{(max)}$ (Amps)	$h_{FE}$ @ $I_C / V_{CE}$ min/max@A/V	$C_{obo}$ (pF)	$f_T$ (MHz)	Package
JANS2N2219	251	50	75	0.8	100/300 @ .15/10	8	250	TO-5 / TO-39
JANS2N2222A	255	50	75	0.8	100/300 @ .15/10	8	250	TO-18, UA, UB
JANS2N2484	376	60	60	0.05	250/800 @ .001/5	5	60	TO-18, UA, UB
JANS2N3019	391	80	140	1	100/300 @ .15/10	12	100	TO-5 / TO-39
JANS2N3700	391	80	140	1	100/300 @ .15/10	12	100	TO-18, UA, UB

## PNP Transistors: available in JAN, JANTX, JANTXV, JANS, and JANSR as noted

Part Number	Slash Sheet	$V_{CE0}^{(sus)}$ (V)	$V_{CBO}$ (V)	$I_C^{(max)}$ (Amps)	$h_{FE}$ @ $I_C / V_{CE}$ min/max@A/V	$C_{obo}$ (pF)	$f_T$ (MHz)	Package
2N3740*	441	60	60	4	30/120 @ 0.25/1	100	5	TO-66
2N3741*	441	80	80	4	30/120 @ 0.25/1	100	5	TO-66
2N3791	379	60	60	10	30/120 @ 3/2	500	4	TO-3
2N3792	379	80	80	10	30/120 @ 3/2	500	4	TO-3
2N3867*	350	40	40	3	40/200 @ 1.5/2	120	60	TO-5 / TO-39
2N3868*	350	60	60	3	30/150 @ 1.5/2	120	60	TO-5 / TO-39
2N4234	580	40	40	1	30/150 @ 0.25/1	100	30	TO-39
2N4235	580	60	60	1	30/150 @ 0.25/1	100	30	TO-39
2N4236	580	80	80	1	30/150 @ 0.25/1	100	30	TO-39
2N5151*	545	80	100	2	30/90 @ 2.5/5	250	60	TO-5 / TO-39
2N5153*	545	80	100	2	70/200 @ 2.5/5	250	70	TO-5 / TO-39 / U3
2N5679	582	100	100	1	40/150 @ 0.25/2	50	30	TO-39
2N5680	582	120	120	1	40/150 @ 0.25/2	50	30	TO-39
2N6051	501	80	80	12	1K/18K @ 6/3	300	10	TO-3
2N6052	501	100	100	12	1K/18K @ 6/3	300	10	TO-3
2N6193*	561	100	100	5	60/240 @ 2/2	300	30	TO-5 / TO-39 / U3
2N6286	505	80	80	20	1.25K/18K @ 10/3	400	8	TO-3
2N6287	505	100	100	20	1.25K/18K @ 10/3	400	8	TO-3
2N6298	540	60	60	8	750/18K @ 4/3	200	25	TO-66
2N6299	540	80	80	8	750/18K @ 4/3	200	25	TO-66
JANS2N2905A**	290	60	60	0.6	100/300 @ .15/10	8	200	TO-5/TO-39
JANS2N2907A**	291	60	60	0.6	100/300 @ .15/10	8	250	TO-18, UA, UB

\*\* PNP Rad Hard Small Signal Transistors: JANS and JANSR

## Silicon Controlled Rectifiers: available in JAN, JANTX and JANTXV per /276

Part Number	Slash Sheet	$V_{DRM}$ (V)	$I_O$ (mA)	$I_{RBX}$ ( $\mu$ A)	$V_{GT}$ (V min/max)	$I_{GT}$ ( $\mu$ A)	$I_{HOX}$ (mA)	Package
2N2323	276	50	220	10	0.35/0.80	200	2	TO-5
2N2323S	276	50	220	10	0.35/0.80	200	2	TO-39
2N2323A	276	50	220	10	0.35/0.60	20	2	TO-5
2N2323AS	276	50	220	10	0.35/0.60	20	2	TO-39
2N2324	276	100	220	10	0.35/0.80	200	2	TO-5
2N2324S	276	100	220	10	0.35/0.80	200	2	TO-39
2N2324A	276	100	220	10	0.35/0.60	20	2	TO-5
2N2324AS	276	100	220	10	0.35/0.60	20	2	TO-39
2N2326	276	200	220	10	0.35/0.80	200	2	TO-5
2N2326S	276	200	220	10	0.35/0.80	200	2	TO-39
2N2326A	276	200	220	10	0.35/0.60	20	2	TO-5
2N2326AS	276	200	220	10	0.35/0.60	20	2	TO-39
2N2328	276	300	220	10	0.35/0.80	200	2	TO-5
2N2328S	276	300	220	10	0.35/0.80	200	2	TO-39
2N2328A	276	300	220	10	0.35/0.60	20	2	TO-5
2N2328AS	276	300	220	10	0.35/0.60	20	2	TO-39
2N2329	276	400	220	10	0.35/0.80	200	2	TO-5
2N2329S	276	400	220	10	0.35/0.80	200	2	TO-39
2N2329A	276	400	220	10	0.35/0.60	20	2	TO-5
2N2329AS	276	400	220	10	0.35/0.60	20	2	TO-39

## Appendix and Part Number Index

Package Selection Guide

Decibels-Volts-Watts Conversion Table

Wavelength and Frequency

Part Number Index



## Plastic Leadless Packages

Package Type	Approx Outline Dimensions (mm)	
1 mm X1-DFN-6LD	1 x 1 x 0.45	
1.2 x 1.5 TDFN-6LD	1.2 x 1.5 x 0.75	
1.5 x 1.2 TDFN-6LD	1.5 x 1.2 x 0.75	
2 mm STDFN-8LD	2 x 2 x 0.55	
2 mm STQFN-12LD	2 x 2 x 0.55	
2 x 2.5 mm STQFN-14LD	2 x 2.5 x 0.55	
3 mm PQFN-12LD/16LD	3 x 3 x 0.9	
3 mm TQFN-12LD/16LD	3 x 3 x 0.75	
3 mm HQFN-16LD	3 x 3 x 1.5	
4 mm PQFN-16LD/20LD/24LD	4 x 4 x 0.9	
4 mm TQFN-16LD/20LD	4 x 4 x 0.75	
4 mm HQFN-8LD/16LD/20LD	4 x 4 x 1.5	
4 x 5 mm PQFN-28LD	4 x 5 x 0.9	
4 x 6 mm PQFN-32LD	4 x 6 x 0.9	
4 x 7 mm PQFN-36LD	4 x 7 x 0.9	
5 mm PQFN-20LD/24LD/ 28LD/32LD/40LD	5 x 5 x 0.9	
5 mm HQFN-32LD		
5 x 7 mm PQFN-40LD	5 x 7 x 0.9	
5 x 8 mm PQFN-52LD	5 x 8 x 0.9	
6 mm PQFN-28LD/40LD/48LD	6 x 6 x 0.9	
7 mm PQFN-13LD/16LD/32LD/44LD	7 x 7 x 0.9	
7 mm HQFN-16LD/32LD	7 x 7 x 1.5	

## Plastic Leaded Packages

SC-79	0.8 x 1.6 x 0.6	
SOD-323	1.3 x 2.5 x 1.1	
SOT-23	2.9 x 2.4 x 1	
SOT-25	2.9 x 2.8 x 1.3	
SOT-26	2.9 x 2.8 x 1.3	

## Plastic Leaded Packages

Package Type	Approx Outline Dimensions (mm)	
SOT-89	4.5 x 4 x 1.5	
SOT-143	2.9 x 2.4 x 1	
SC70 3LD (SOT-323)	2 x 2.1 x 1	
SC70 6LD (SOT-363)	2 x 2.1 x 1	
SOIC-8/SOIC-8EP	4.9 x 6 x 1.6	
SOIC-14	8.7 x 6 x 1.6	
SOIC-16	9.9 x 6 x 1.6	
SOW-16	10.3 x 10.3 x 2.5	
SOW-24	15.4 x 10.3 x 2.5	
TSSOP-16	5 x 6.4 x 1.1	
SSOP-20	7.2 x 7.8 x 1.9	
MSOP-8	3 x 4.9 x 1	
MSOP-8EP	3 x 4.9 x 1	
MSOP-10/MSOP-10EP	3 x 4.9 x 1	
QSOP-16	4.9 x 6 x 1.6	
QSOP-24	8.7 x 6 x 1.6	
QSOP-28	9.9 x 6 x 1.6	

## Ceramic/Chip Diode Packages

Package Type	Approx Outline Dimensions (mm)	
30 Ceramic	3.2 dia. x 5.7	
134 Die	0.4 x 0.4 x 0.2	
186 Ceramic	11.2 x 2.5 x 1.1	
401 Axial Lead	2.3 dia. x 55	
1027 Ceramic	8 dia. x 6.9	
1056 Ceramic	1.9 x 1.9 x 1	
1072 Ceramic	2.4 x 2.4 x 3.4	
1073 Ceramic	12.3 dia. x 10	
1038 Ceramic	8 dia. x 17	
1080 Ceramic	8 dia. x 22.2	
1082 Ceramic	8 dia. x 19.8	
1088 Ceramic	2.4 x 1.3 x 1	
1246 SURMOUNT™	1.2 x 0.5 x 0.2	

## Metal/Ceramic Packages

Package Type	Approx Outline Dimensions (mm)	
CR2-6LD	18.3 x 11.3 x 1.3	
CR2	18.3 x 17.1 x 1.3	
CR3	16.2 x 4.6 x 1.6	
CR4	12.4 x 12.4 x 1.6	
CR5	8.9 x 8.0 x 1.6	
CR6	11.4 x 8.9 x 1.6	
CR12	11.4 x 11.4 x 2.0	
CR13	16.5 x 11.4 x 2.0	
CR15	17.8 x 11.4 x 2	
CR16	9.8 x 8.3 x 1.5	
1000017733	23.5 x 13.8 x 2.8	

## Metal/Ceramic Packages

Package Type	Approx Outline Dimensions (mm)	
MOD2 (3/4 size)	20.3 x 15 x 6.6	
MOD3 (3/4 size)	20.3 x 15 x 4.8	
SMA-AMP (3/4 size)	23.4 x 27.9 x 13.3	
SMA-MXR (3/4 size)	22.9 x 22.9 x 14	
SMT-01	11.4 x 11.4 x 4.3	
SMT-02	10 x 13 x 4	
SMT-88	13.4 x 13.4 x 4.3	
SMT-88F	11.4 x 11.4 x 4.3	
TO-8-01	12.7 dia. x 11	
TO-8-02	12.7 dia. x 9.7	
TO-8-03	15.2 dia. x 9.7	

## Metal/Ceramic Packages

Package Type	Approx Outline Dimensions (mm)	
CSM	12.5 x 9.4 x 4.8	
FP	13 x 9.8 x 3.6	
MOD1	14.2 x 13.2 x 4.8	

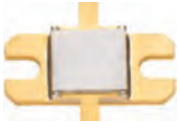
## Passives Packagess

Package Type	Approx Outline Dimensions (mm)	
SM-2	12.5x 9.4 x 6.4	
SM-4	12.4 x 9.4 x 5.8	
SM-22	3.8 x 3.8 x 3.8	
SM-55	7.1 x 6.4 x 3.6	
SM-85 (3/4 size)	30 x 30 x 9	
SM-89	8 x 6.4 x 0.15	
SM-138	4.2 x 5.3 x 3.9	
SM-152	4.2 x 5.3 x 4.3	

## Transistor Packages

Package Type	Approx Outline Dimensions (mm)	
P-237 Ceramic	20 x 15 x 4	
P-238 Ceramic	34 x 19.6 x 4	
P-239 Ceramic	21 x 1 x 4	
355E-01, Style 1 Ceramic	23 x 21 x 5	
368-03, Style 2 Ceramic	38 x 50 x 9	
PH1214-M Series Ceramic	23 x 10 x 4.5	
P-8TF	20.8 x 6.4 x 3.5	

## Transistor Packages

Package Type	Approx Outline Dimensions (mm)	
P-51H	22.9 x 10.2 x 5.5	
P-94C	22.9 x 10.2 x 5.5	
P-94D	22.9 x 10.2 x 4.2	
P-94I	22.9 x 10.2 x 4.2	
P-154C	25.4 x 15.2 x 5.1	
Pallet	50.8 x 35.8 x 7	

## GaN Transistor Packages

Package Type	Approx Outline Dimensions (mm)	
SOT-89	4.5 x 4.0 x 1.5	
6 x 3 mm DFN-14	6.0 x 3.0 x 1.0	
P-254A	5.6 x 8.1 x 2.4	
P-260	3.97 x 8.12 x 3.25	
P-253	20.32 x 10.92 x 3.99	
P-256	28.96 x 17.78 x 4.78	
P-237	20.32 x 14.96 x 4.11	
P-261	20.57 x 19.44 x 3.74	

## GaN Transistor Packages

Package Type: Plastic Packages		
SOT89-3LD	4.5 x 4 x 1.5 mm	
SOIC-EP	4.9 x 6.1 x 1.47 mm	
3 x 6 mm PDFN-14LD	6 x 3 x 1 mm	
4 mm PQFN-24LD	4 x 4 mm	
5 x 6 mm PDFN-8LD	5 x 6 mm	
7 mm PQFN-20LD	7 x 7 mm	
TO-272-2	23.62 x 11.18 x 2.59 mm	
TO-272-4	23.62 x 14.1 x 2.59 mm	
TO-272S-2	17.25 x 11.18 x 2.59 mm	
TO-272S-2B	17.25 x 11.18 x 2.59 mm	
TO-272S-4	17.25 x 11.18 x 2.59 mm	
PO-780S-2	20.57 x 19.43 x 3.81 mm	
PO-780S-4	20.57 x 19.43 x 3.81 mm	

## GaN Transistor Packages

Package Type:  
Ceramic Air Cavity (AC) and Copper Air Cavity (ACu)

AC-200B-2  
13.97 x 8.13 x 3.1 mm



AC-200S-2  
5.18 x 8.13 x 3.1 mm



AC-360B-2  
20.32 x 10.92 x 3.86 mm



AC-360S-2  
9.65 x 10.92 x 3.86 mm



AC-400S-2  
10.16 x 14.96 x 4.11 mm



AC-650B-4  
28.95 x 17.78 x 4.85 mm



AC-780B-2  
34.04 x 19.43 x 3.6 mm



AC-780S-2  
20.57 x 19.43 x 3.6 mm



ACu-780S-2  
20.57 x 19.43 x 3.6 mm



AC-780B-4  
34.04 x 19.43 x 3.6 mm



AC-780S-4  
20.57 x 19.43 x 3.6 mm



AC-1230B-4  
41.28 x 19.61 x 4.42 mm



AC-1230S-4  
32.26 x 19.61 x 4.42 mm



ACu-1230S-4  
32.26 x 19.61 x 4.42 mm



## Space & Hi-Rel

Package Type

DO-35



DO-213AA



D-5D MELF



D-5D Axial



DO-41



US





# Decibels – Volts – Watts Conversion Table



dBm	V	P <sub>o</sub>	50-ohm System Terminated						dBm	V	P <sub>o</sub>
			dBm	V	P <sub>o</sub>	dBm	mV	P <sub>o</sub>			
53	100	200W									
50	70.7	100W	0	0.225	1 mW	-49	0.8		-97	3.2	
49	64	80W	-1	0.2	0.8 mW	-50	0.71	.01 μW	-98	2.9	
48	58	64W	-2	0.18	0.64 mW	-51	0.64		-99	2.51	
47	50	50W	-3	0.16	0.5 mW	-52	0.57		-100	2.25	
46	44.5	40W	-4	0.141	0.4 mW	-53	0.5		-101	2	
45	40	32W	-5	0.125	0.32 mW	-54	0.45		-102	1.8	
44	32.5	25W	-6	0.115	0.25 mW	-55	0.4		-103	1.6	
43	32	20W	-7	0.1	0.2 mW	-56	0.351		-104	1.41	
42	28	16W	-8	0.09	0.16 mW	-57	0.32		-105	1.27	
41	26.2	12.5W	-9	0.08	0.125 mW	-58	0.286		-106	1.18	
40	22.5	10W	-10	0.071	0.1 mW	-59	0.251				
39	20	8W	-11	0.064		-60	0.225	0.001 μW	dBm	nV	
38	18	6.4W	-12	0.058		-61	0.2		-107	1000	
37	16	5W	-13	0.05		-62	0.18		-108	900	
36	14.1	4W	-14	0.045		-63	0.16		-109	800	
35	12.5	3.2W	-15	0.04		-64	0.141		-110	710	
34	11.5	2.5W	-16	0.0355					-111	640	
33	10	2W				dBm	μV		-112	580	
32	9	1.6W	dBm	mV		-65	128		-113	500	
31	8	1.25W	-17	31.5		-66	115		-114	450	
30	7.1	1W	-18	28.5		-67	100		-115	400	
29	6.4	800 mW	-19	25.1		-68	90		-116	355	
28	5.8	640 mW	-20	22.5	.01 mW	-69	80		-117	825	
27	5	500 mW	-21	20		-70	71	0.1 nW	-118	285	
26	4.45	400 mW	-22	17.9		-71	65		-119	251	
25	4	320 mW	-23	15.9		-72	58		-120	225	
24	3.55	250 mW	-24	14.1		-73	50		-121	200	
23	3.2	200 mW	-25	12.8		-74	45		-122	180	
22	2.8	160 mW	-26	11.5		-75	40		-123	160	
21	2.52	125 mW	-27	10		-76	35		-124	141	
20	2.25	100 mW	-28	8.9		-77	32		-125	128	
19	2	80 mW	-29	8		-78	29		-126	117	
18	1.8	64 mW	-30	7.1	.001 mW	-79	25		-127	100	
17	1.6	50 mW	-31	6.25		-80	22.5	0.01 nW	-128	90	
16	1.41	40 mW	-32	5.8		-81	20		-129	80	
15	1.25	32 mW	-33	5		-82	18		-130	71	
14	1.15	25 mW	-34	4.5		-83	16		-131	61	
13	1	20 mW	-35	4		-84	11.1		-132	58	
12	0.9	16 mW	-36	3.5		-85	12.9		-133	50	
11	0.8	12.5 mW	-37	3.2		-86	11.5		-134	45	
10	0.71	10 mW	-38	2.85		-87	10		-135	40	
9	0.64	8 mW	-39	2.5		-88	9		-136	35	
8	0.58	6.4 mW	-40	2.25	1 μW	-89	8		-137	33	
7	0.5	5 mW	-41	2		-90	7.1	0.001 nW	-138	29	
6	0.445	4 mW	-42	1.8		-91	6.1		-139	25	
5	0.4	3.2 mW	-43	1.6		-92	5.75		-140	23	
4	0.355	2.5 mW	-44	1.4		-93	5			0.01 fW	
3	0.32	2 mW	-45	1.25		-94	4.5				
2	0.28	1.6 mW	-46	1.18		-95	4				
1	0.252	1.25 mW	-47	1		-96	3.51				
			-48	0.9							

## Frequency Band Designations

Previous Frequency Designations	P	L	S	C	X	Ku	K	Ka					
Current Frequency Designations	C	D	E	F	G	H	I	J	K				
	0.5	1.0	2.0	3.0	4.0	6.0	8.0	10.0	12.4	18.0	20.0	26.5	40.0
	Frequency (GHz)												

## Wavelength and Frequency

For all forms of wave, the velocity, wavelength, and frequency are related such that

$$\lambda F \sqrt{\epsilon_r \mu_r} = c$$

- $\lambda$  = wavelength in meters (m)
- $F$  = frequency in hertz (Hz)
- $\epsilon_r$  = relative dielectric constant of propagation medium
- $c$  = velocity of light (300,000,000 m/s)
- $\mu_r$  = relative permeability of propagation medium

The dielectric constant ( $\epsilon$ ) is a property of the medium in which the wave propagates. The value of  $\epsilon$  is defined as 1.000 for a perfect vacuum, and very nearly 1.0 for dry air (typically 1.006). In most practical applications, the value of  $\epsilon$  in dry air is taken to be 1.000. For mediums other than air or vacuum, however, the velocity of propagation is slower, and the value of  $\epsilon$  relative to a vacuum is higher. Teflon®, for example, can be made with dielectric constant values ( $\epsilon$ ) from about 2 to 11.

## Frequency vs Wavelength

Frequency	Wavelength
1 MHz	300 meters (m)
10 MHz	30 m
100 MHz	3 m
300 MHz	1 m – 100 centimeters (cm)
1 GHz	30 cm
10 GHz	3 cm
100 GHz	3 millimeters (mm)
300 GHz	1 mm – $10^{-3}$ m
$3 \times 10^{14}$	1 micron – $10^{-6}$ m



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0100 thru 90199R	92	1N4565-1, 1N4565UR-1	115	1N4683	63	1N5293-1, 1N5293UR-1	119
101N6639U and US	118	1N4565A-1, 1N4565AUR-1	115	1N4684	63	1N5294	60
1N3595	110	1N4566-1, 1N4566UR-1	115	1N4685	63	1N5294-1, 1N5294UR-1	119
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MABACT0012	89	MACPCT0040	84	MADP-007448-0287FT	44	MADS-011030-14280W	54
MABACT0018	89	MACPES0004	83	MADP-007448-0287GT	44	MADT-011000	66
MABACT0034	91	MACPES0026	87	MADP-007448-11410T	44	MADT-011000-DIE	66
MABACT0039	91	MACPES0028	84	MADP-007448-1146BT	44	MAFC-004403	74
MABACT0040	90	MACPES0034	84	MADP-007448-1146DT	44	MAFC-010511	74
MABACT0043	91	MACPES0045	87	MADP-007448-1146GT	43	MAFL-007529-CD0550	95
MABACT0048	89	MACS-007800-OM1R00	78	MADP-007448-12790T	43	MAFL-008070-CLOADO	95
MABACT0059	91	MACS-007801-OM1R10	78	MADP-007455-0287DT	43	MAFL-009055-CD4254	95
MABACT0060	91	MACS-007801-OM1RMO	78	MADP-007455-1146DT	44	MAFL-009217-CDOACO	95
MABACT0061	91	MACS-007802-OM1R10	78	MADP-007455-12790T	44	MAFL-009478-CDOACO	95
MABACT0062	89	MACS-007802-OM1RSO	78	MADP-008120-12790T	45	MAFL-009593-CDOA10	95
MABACT0063	90	MADC-010736	78	MADP-009989	42	MAFL-010140-CTOC60	95
MABACT0064	90	MADL-000011-13880G	51	MADP-010630-13920T	44	MAFL-010256-CBOADO	95
MABACT0065	91	MADL-000021-003000	51	MADP-010631-13920T	44	MAFL-010412-CLOADO	95
MABACT0066	90	MADL-000031-13880G	51	MADP-010633-13920T	44	MAFL-010464-CDOB20	95
MABACT0067	90	MADL-000032-003000	51	MADP-011027-14150T	46	MAFL-010465-CDOB20	95
MABACT0068	89	MADL-000062-105600	52	MADP-011028-14150T	46	MAFL-010467-CDOB20	95
MABACT0069	91	MADL-000062-13880G	52	MADP-011029-14150T	46	MAFL-010608	95
MABACT0071	89	MADL-000101-13880G	52	MADP-011034-10720T	42	MAFL-010609	95
MABACT0074	90	MADL-000301-01340W	52	MADP-011037-13900T	42	MAFL-010670-CBOADO	95
MABAES0017	89	MADL-000301-13870G	52	MADP-011048	41	MAFL-011003	95
MABAES0029	91	MADL-000401-13870G	52	MADP-017015-1314	45	MAFL-011012	95



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MAFL-011015	95	MAMX-008782-ES0118	79	MAPDCC0015	87	MASW-008853	70
MAFL-011018	95	MAMX-008786-ES0120	79	MAPDCC0017	86	MASW-008899	69
MAFL-011023	95	MAMX-009239-001500	79	MAPDCC0018	88	MASW-008955	71
MAFL-011024	95	MAMX-009722-25MHLP	79	MAPDCC0019	86	MASW-009101	70
MAFL-011025	95	MAMX-011009	79	MAPDCC0020	88	MASW-009276-001DIE	70
MAFL-011026	95	MAMX-011036	79	MAPDCC0021	86	MASW-009359	71
MAFL-011027	95	MAMX-011054	79	MAPDCT0017	87	MASW-009444	70
MAFL-011037	95	MAMX-090950-1277LT	79	MAPDCT0024	87	MASW-009460	72
MAFL-011038	95	MAMXES0115	79	MAPDCT0026	88	MASW-009482	71
MAFL-011047	95	MAMXES0117	79	MAPDCT0027	87	MASW-009588	70
MAFL-011048	95	MAMXSS0010	79	MAPDCT0028	87	MASW-009590	69
MAFL-011049	95	MAMXSS0011	79	MAPDCT0029	87	MASW-010351	71
MAFL-011050	95	MAMXSS0012	79	MAPDCT0030	87	MASW-010612	71
MAFL-011051	95	MAMXSS0013	79	MAPDCT0032	87	MASW-010646	69
MAFL-011052	95	MAOC-009259	97	MAPDCT0033	87	MASW-010647	69
MAFL-011053	95	MAOC-009260	97	MAPG-102729-400*	11	MASW-011021	69
MAFL-011054	95	MAOC-009261	97	MAPR-000912-500S00	12	MASW-011029	70
MAFL-011055	95	MAOC-009262	97	MAPR-001011-850S00	13	MASW-011030	71
MAFL-011056	95	MAOC-009263	97	MAPR-001090-350S00	13	MASW-011036	69
MAFL-011057	95	MAOC-009264	97	MAPR-002729-170M00	13	MASW-011040	71
MAFL-011059	95	MAOC-009265	97	MAPRST0912-350	12	MASW-011041	70
MAFL-011060	95	MAOC-009266	97	MAPRST0912-50	12	MASW-011043	70
MAFL-011061	95	MAOC-009267	97	MAPRST1030-IKS	13	MASW-011052	69
MAFL-011062	95	MAOC-009268	97	MAPS-010143	66	MASW-011053	70
MAFLCT0066	95	MAOC-009269	97	MAPS-010144	66	MASW-011057• Reflective	70
MAFLCT0068	95	MAOC-009270	97	MAPS-010145	66	MASW-011067• Absorbive	70
MAFLCT0081	95	MAOC-009871	97	MAPS-010146	66	MASW-011068• Reflective	69
MAFLCT0083	95	MAOC-009872	97	MAPS-010163	66	MASW-011071	70
MAFLES0102	95	MAOC-010334	97	MAPS-010164	66	MASW-011074• Asymmetrical	70
MAGe-100809-1K0*	11	MAOC-011027	97	MAPS-010165	66	MASW-011075• Asymmetrical	71
MAGe-100809-500	11	MAOC-109082	97	MAPS-010166	66	MASW-011087	71
MAGe-100809-600*	11	MAOC-109173	97	MAPS-011007	66	MASW-011098	70
MAGe-102425-050*	11	MAOC-114850	97	MAPS-011008	66	MASW-011107-DIE	69
MAGe-102425-100*	11	MAPD-007246-ES4700	87	MASW-000822-12770T	70	MASW2000	69
MAGe-102425-200*	11	MAPD-007249-ESML21	86	MASW-000825-12770T	70	MASW20000	69
MAGe-102425-300*	11	MAPD-007530-000100	87	MASW-000834-13560T	70	MASW2040	72
MAGx-011086	12	MAPD-008072-ESSM26	86	MASW-000932	70	MASW4030G	69
MAGX-100027-002*	11, 12	MAPD-008108-C202C0	87	MASW-000936	70	MASW4060G	71
MAGX-100027-005*	11, 12	MAPD-008109-C30040	86	MASW-001100-1190	69	MASW6010	69
MAGX-100027-010*	11, 12	MAPD-008185-C20720	86	MASW-001150-1316	69	MASW6010G	69
MAGX-100027-015*	11, 12	MAPD-008762-ES0001	86	MASW-002100-1191	69	MASW6020G	69
MAGX-100027-050*	12	MAPD-008812-0003HW	86	MASW-002102-13580	69	MASW6030G	72
MAGx-100027-100*	12	MAPD-008957-CT0012	88	MASW-002103-1363	69	MASWCC0006	71
MAGx-100027-300*	12	MAPD-009278-5T1000	86	MASW-003100-1192	70	MASWCC0009	71
MAGX-100914-125*	11	MAPD-009492-C2W180	87	MASW-003102-13590	70	MASWCC0010	71
MAGX-100914-1K1*	11	MAPD-009673-C2DA40	86	MASW-003103-1364	70	MASWSS0091	71
MAGX-100914-250*	11	MAPD-009850-HW1268	86	MASW-004100-1193	71	MASWSS0093	70
MAGX-100914-500*	11	MAPD-009918-C209C0	86	MASW-004102-12760	71	MASWSS0103	69
MAGX-100914-650*	11	MAPD-010038-C209C0	86	MASW-004103-1365	71	MASWSS0107	72
MAGX-102731-180*	11	MAPD-010047-C2W24M	87	MASW-004240-13170	71	MASWSS0115	70
MAGX-103135-145*	11	MAPD-010201-8022CG	88	MASW-005100-1194	71	MASWSS0121	70
MAIA-011002	81	MAPD-010274-C209C0	86	MASW-005102-13600	71	MASWSS0129	72
MAIA-011004	81	MAPD-010281-C2W024	87	MASW-006102-13610	71	MASWSS0130	72
MAIA-011022	19	MAPD-010320-5070HR	86	MASW-006102-13610	71	MASWSS0136	70
MAMF-010614	81	MAPD-010362-C20FA0	86	MASW-007071-000100	70	MASWSS0143	70
MAMF-011015	81	MAPD-010424-C20C80	86	MASW-007072-000100	69	MASWSS0144	77
MAMF-011038	81	MAPD-010638-C2WSOT	87	MASW-007074-000100	71	MASWSS0148	69
MAMG-100227-010*	11	MAPD-011002	87	MASW-007075-000100	69	MASWSS0151	69
MAMG-102733-085*	11	MAPD-011003	87	MASW-007107	70	MASWSS0157	69
MAMG-102933-030*	11	MAPD-011007	88	MASW-007221	69	MASWSS0161	69
MAMG-103135-085*	11	MAPD-011018	86	MASW-007587-000000	72	MASWSS0162	69
MAMO-007252-IN2960	66	MAPDCC0001	86	MASW-007588	70	MASWSS0166	69
MAMO-008665-ES0018	66	MAPDCC0002	87	MASW-007813-000000	71	MASWSS0167	70
MAMO-008774-ES0019	66	MAPDCC0003	87	MASW-007921	70	MASWSS0169	70
MAMX-000600-1225MT	79	MAPDCC0004	87	MASW-007935	69	MASWSS0176	70
MAMX-000900-1061LT	79	MAPDCC0005	86	MASW-008075	70	MASWSS0178	70
MAMX-000950-1225MT	79	MAPDCC0006	87	MASW-008177	69	MASWSS0179	69
MAMX-007238-CM25MH	79	MAPDCC0007	86	MASW-008206-000DIE	69	MASWSS0180	69
MAMX-007247-MRS5MH	79	MAPDCC0008	87	MASW-008322	70	MASWSS0181	70
MAMX-007253-ES0067	79	MAPDCC0009	86	MASW-008330	71	MASWSS0184	72
MAMX-007607-ELCM1H	79	MAPDCC0010	88	MASW-008543	70	MASWSS0190	72
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MASWSS0201	69	MBC50-100B13	94	MD-189-PIN	76, 106	MGV075-08	34
MASWSS0202	70	MBC50-10B12	94	MDC-162-SMA	76, 106, 107	MGV075-09	34
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MAUC-010506	79	MBC50-1B12	94	MDC-179-SMA	76, 106	MGV075-11	34
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MAVR-000080-0287AT	36	MBC50-33B13	94	MDS-169-PIN	76, 106	MGV075-15	34
MAVR-000080-0287FT	36	MBC50-3B12	94	MDS-189-PIN	76, 106	MGV075-16	34
MAVR-000081-0287AT	36	MBC50-47B13	94	MDS-222-PIN	75, 105	MGV075-17	34
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MAVR-000082-0287AT	36	MBC50-68B13	94	MEST2G-010-20	45	MGV100-09	35
MAVR-000083-0287AT	36	MBC50-6B12	94	MEST2G-020-15	45	MGV100-20	35
MAVR-000083-0287FT	36	MBC50-82B13	94	MEST2G-025-10	45	MGV100-21	35
MAVR-000120-12030W	35	MBC50-8B12	94	MEST2G-050-45	44	MGV100-22	35
MAVR-000120-1410G	34	MC2110	76	MEST2G-050-80	42	MGV100-23	35
MAVR-000120-1410P	34	MC2307	76	MEST2G-080-25	45	MGV100-24	35
MAVR-000146-12030W	34	MC2310	76	MEST2G-100-20-CM33	44	MGV100-25	35
MAVR-000202-12790T	35	MC2320	76	MEST2G-150-10-CM30	42	MGV100-26	35
MAVR-000230-0287AT	35	MC2410	76	MEST2G-150-10-CM32	43	MGV100-27	35
MAVR-000230-0287FT	35	MC2413	76	MEST2G-150-20	45	MGV125-08	36
MAVR-000230-11410T	34	MC2707	77	MEST2G-160-10-CM33	44	MGV125-09	36
MAVR-000240-0287AT	35	MC2710	77	MEST2GFC-010-25	46	MGV125-20	36
MAVR-000240-11410T	34	MC2720	77	MGPNO518-C12	46	MGV125-21	36
MAVR-000240-1146FT	35	MC2B0.8020-020	94	MGPNI503-C01A	46	MGV125-22	36
MAVR-000250-0287AT	34	MC2B002020-020	94	MGPNI504-C01A	46	MGV125-23	36
MAVR-000250-0287FT	34	MC2B004020-020	94	MGPNI506-C12	46	MGV125-24	36
MAVR-000250-11410T	34	MC2B008020-020	94	MGR700	54	MGV125-25	36
MAVR-000250-1146AT	34	MC2B016020-020	94	MGR701	54	MGV125-26	36
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MAVR-000250-12790T	34	MC2DXXX015-015	94	MGR703	54	MHV501-11	36
MAVR-000320-11410T	35	MC2DXXX020-020	94	MGR704	54	MHV502-11	36
MAVR-000340-11410T	34	MC2RXXX010-015	94	MGR705	54	MHV503-11	36
MAVR-000350-11410T	34	MC2RXXX015-020	94	MGS801	54	MHV504-11	36
MAVR-000401-0287AT	34	MC2RXXX015-032	94	MGS801A	55	MHV505-11	36
MAVR-000401-0287FT	34	MC2RXXX022-042	94	MGS802	55	MHV506-11	36
MAVR-000403-0287AT	34	MC2RXXX097-107	94	MGS802A	55	MHV507-11	36
MAVR-000403-0287FT	34	MC2RXXX099-138	94	MGS803	55	MHV508-11	36
MAVR-000404-0287FT	34	MC2RXXX127-145	94	MGS901	55	MHV509-11	36
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MAVR-001230-12790T	34	MC2SXXX016-016	94	MGS905	55	MLP7100	51
MAVR-001240-12790T	34	MC2SXXX020-020	94	MGS906	55	MLP7101	51
MAVR-001320-11410T	34	MC2SXXX022-022	94	MGS907	55	MLP7102	51
MAVR-001320-1146FT	34	MC2SXXX025-025	94	MGS907A	55	MLP7110	52
MAVR-001330-11410T	35	MC2SXXX030-030	94	MGS907B	55	MLP7111	52
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MAVR-001340-11410T	34	MC2SXXX050-050	94	MGS910	55	MLP7121	52
MAVR-001340-1146FT	34	MC2SXXX055-055	94	MGS911	55	MLP7122	52
MAVR-001340-12790T	35	MC2SXXX060-060	94	MGS912	55	MLP7129	52
MAVR-001350-1146FT	34	MC2SXXX070-070	94	MGV050-18	30	MLP7130	51
MAVR-001350-12790T	34	MC2SXXX080-080	94	MGV050-18-0805-2	30	MLP7130-0805-2	51
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MAVR-044767-0287AT	38	MC4107	76	MGV050-20	30	MLP7141	51
MAVR-044769-0287FT	38	MC4113	76	MGV050-20-0805-2	30	MLPNC-7100-SMA850	97
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MAVR-045436-0287AT	29	MC4507	78	MGV050-20-H20	31	MLPNC-7100S1-SMA800	97
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MAVR-045436-12790T	30	MC4513	78	MGV050-22-0805-2	31	MLPNC-7102-SMA800	97
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MAVR-045441-0287FT	29	MD-158-PIN	75	MGV050-24-H20	31	MLPNC-7103S1-SMA800	97
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