

2N3065-2N3173

TYPE	MATERIAL	POLARITY	REPLACE- MENT	PAGE NUMBER	USE	MAXIMUM RATINGS						ELECTRICAL CHARACTERISTICS									
						P _D @ 25°C	T _J Ref Point °C	V _{CB} (volts)	V _{CE} (volts)	I _C Subscript	h _{FE} @ I _C (min) (max)	V _{CE(SAT)} @ I _C (volts)	f _T Subscript Units	f _T Units							
2N3065 2N3066, A thru 2N3071	S	P			AFA	400M	A	200	110	100	0	30	90	1.0M			30	E			
Field Effect Transistors, see Table on Page 1-166																					
2N3072	S	P			MNS	800M	A	200	60	60	0	30	130	50M	0.25	50M	25	E	130M	T	
2N3073	S	P			MNS	360M	A	200	60	60	0	30	130	50M	0.25	50M	25	E	130M	T	
2N3074	S	P			RFA	0.14W	A	85	30	25	S	25	300	3.5M							
2N3075	S	P			RFA	0.14W	A	85	35	25	S	20	250	3.0M							
2N3076	S	N			PHS	125W	C	175	140	50	0	30	90	7.0A	1.0	10A	60	E	50M	T	
2N3077	S	N			AFC	0.36W	A	200	80	60	0	100	400	10*	0.35	1.0M	120	E	15M	T	
2N3078	S	N			AFC	0.36W	A	200	80	60	0	40	120	10*	0.35	1.0M	50	E	15M	T	
2N3079	S	N			PMS	178W	C	150	200	200	0	7.0	40	5.0A	0.7	5.0A			30K	E	
2N3080	S	N			PMS	178W	C	150	300	300	0	7.0	40	5.0A	0.7	5.0A			150M	T	
2N3081	S	N			HSS	600M	A	200	70	50	0	20		500M	0.3	150M			100M	T	
2N3082	S	N			CHP	0.5W	A	200	25	7.0	0	100		0.25M					100M	T	
2N3083	S	N			CHP	0.5W	A	200	25	7.0	0	100		0.25M					100M	T	
2N3084	Field Effect Transistors, see Table on Page 1-166																				
2N3089, A thru 2N3091	Thyristors, see Table on Page 1-154																				
2N3106	S	N			MSS	0.8W	A	200	100	60	0	100	300	0.15A	1.0	1.0A	60	E	70M	T	
2N3107	S	N			MSS	800M	A	200	100	60	0	40	120	150M	0.25	150M			60M	T	
2N3108	S	N			MSS	800M	A	200	100	60	0	40	120	150M	0.25	150M			70M	T	
2N3109	S	N	2N2218A	8-114	MSS	0.8W	A	200	80	40	0	100	300	0.15A	1.0	1.0A	60	E	70M	T	
2N3110	S	N	2N2218A	8-114	MSS	800M	A	200	80	40	0	40	120	150M	0.25	150M			60M	T	
2N3112	Field Effect Transistors, see Table on Page 1-166																				
2N3113	S	N	2N3500	8-232	VID	800M	A	200	150	150	0	30	120	30M	1.0	50M	25	E	40M	T	
2N3114	S	N	2N3500	8-175	HNS	0.4W	A	200	60	20	0	40	120	0.15A	0.5	0.15A			250M	T	
2N3115	S	N	2N3500	8-175	HNS	0.4W	A	200	60	20	0	40	120	0.15A	0.5	0.15A			250M	T	
2N3116	S	N	2N3500	8-175	HNS	0.4W	A	200	60	20	0	40	120	0.15A	0.5	0.15A			250M	T	
2N3117	S	N			AFC	360M	A	200	60	60	0	250	500	10*	0.35	1.0M	400	E	60M	T	
2N3118	S	N			RFA	1.0W	A	200	85	60	0	50	275	25M					250M	T	
2N3119	S	N			HSA	1.0W	A	200	100	80	0	50	200	100M					250M	T	
2N3120	S	P	2N2800	8-161	MNS	800M	A	200	45	45	0	30	130	50M	0.25	50M	25	E	130M	T	
2N3121	S	P	2N2837	8-161	MNS	360M	A	200	45	45	0	30	130	50M	0.25	50M	25	E	130M	T	
2N3122	S	N			AFA	800M	A	200	50	30	0	25	100	300M	1.5	300M			60M	T	
2N3123	S	N			HSS	0.8W	A	175	60	30	0	100	300	0.15A	0.4	0.15A			400M	T	
2N3124	S	P			LPA	90W	C	100	40	30	S	50	100	10A	0.5	10A	20	E	2.5K	T	
2N3125	S	P			LPA	90W	C	100	80	80	S	30	75	3.0A	1.5	3.0A	10	E	5.0K	T	
2N3126	S	P			LPA	90W	C	100	100	75	S	10	30	10A	1.0	10A	10	E	6.0K	T	
2N3127	S	P		9-43	RFA	0.1W	A	100	30	20	0	20	75	3.0M	0.3	5.0M	20	E	400M	T	
2N3128	S	P			AFA	0.15W	A	150	20	20	0	50	150	0.1M	0.25	1.0M	75	E	60M	T	
2N3129	S	P			AFA	0.15W	A	150	45	45	0	100	300	10M	0.25	1.0M	160	E	60M	T	
2N3130	S	N			AFA	0.15W	A	150	60	60	0	60	180	10M	0.25	1.0M	110	E	60M	T	
2N3131	S	N			HSS	0.15W	A	150	40	15	0	30	120	10M	0.25	1.0M			250M	T	
2N3132	S	P			PMS	90W	C	100	100	70	S	40	200	2.0A	1.5	5.0A			3.0K	T	
2N3133	S	P		8-194	HSS	0.6W	A	200	50	35	0	40	120	0.15A	0.6	0.15A			200M	T	
2N3134	S	P		8-194	HSS	0.6W	A	200	50	35	0	100	300	0.15A	0.6	0.15A			200M	T	
2N3135	S	P		8-194	HSS	0.4W	A	200	50	35	0	40	120	0.15A	0.6	0.15A			200M	T	
2N3136	S	P		8-194	HSS	0.4W	A	200	50	35	0	100	300	0.15A	0.6	0.15A			200M	T	
2N3137	S	N		9-47	RFA	600M	A	200	40	20	0				0.3	50M			500M	T	
2N3138	S	N			HPA	20W	C	200	65	65	0	10		1.0A					100M	T	
2N3139	S	N			HPA	20W	C	200	140	140	0	10		1.0A					100M	T	
2N3140	S	N			HPA	20W	C	200	65	65	0	10		1.0A					100M	T	
2N3141	S	N			HPA	20W	C	200	140	140	0	10		1.0A					100M	T	
2N3142	S	N			HPA	25W	C	200	65	65	0	10		1.0A					100M	T	
2N3143	S	N			HPA	25W	C	200	140	140	0	10		1.0A					100M	T	
2N3144	S	N			HPA	25W	C	200	65	65	0	10		1.0A					100M	T	
2N3145	S	N			HPA	25W	C	200	140	140	0	10		1.0A					100M	T	
2N3146	S	P	2N3616	7-121	LPA	150W	C	100	150	140	V	30	90	5.0A	0.4	5.0A	20	E	200K	T	
2N3147	S	P	2N3616	7-121	LPA	150W	C	100	180	160	V	30	90	5.0A	0.4	5.0A	20	E	200K	T	
2N3148	S	P			MSS	0.45M	A	100	11	6.0	0	70		20M	0.2	50M	80	E	25M	T	
2N3149	S	N			PMS	300W	C	200	80	80	0	10		50A	1.5	50A			0.1M	T	
2N3150	S	N			PMS	300W	C	200	100	100	0	10		50A	1.5	50A			0.1M	T	
2N3151	S	N			PMS	300W	C	200	150	150	0	10		50A	1.5	50A			0.1M	T	
2N3152	S	N			VID	25M	C	200	120	120	0	40		30M			20	E	200M	T	
2N3153	S	N			CHP	0.3W	A	200	15	15	0								30M	T	
2N3154	S	P			PMS	37.5W	C	100	40	25	0	60	180	0.5A	1.1	3.0A			15K	E	
2N3155	S	P			PMS	37.5W	C	100	60	40	0	60	180	0.5A	1.1	3.0A			15K	E	
2N3156	S	P			PMS	37.5W	C	100	80	55	0	60	180	0.5A	1.1	3.0A			15K	E	
2N3157	S	P			PMS	37.5W	C	100	100	65	0	60	180	0.5A	1.1	3.0A			15K	E	
2N3158	S	P			PMS	37.5W	C	100	40	25	0	30	75	0.5A	1.4	3.0A			10K	E	
2N3159	S	P			PMS	37.5W	C	100	60	40	0	30	75	0.5A	1.4	3.0A			10K	E	
2N3160	S	P			PMS	37.5W	C	100	80	55	0	30	75	0.5A	1.4	3.0A			10K	E	
2N3161	S	P			PMS	37.5W	C	100	100	65	0	30	75	0.5A	1.4	3.0A			10K	E	
2N3162	S	N	2N3411	11-33	DFA	300M	A	200	45	25	0	50	200	10M	0.5	10M			300M	T	
2N3163	S	P			HPA	85W	C	200	40	40	0	12	36	1.0A	0.75	1.0A	10	E	1.0M	T	
2N3164	S	P			HPA	85W	C	200	60	60	0	12	36	1.0A							

RF TRANSISTOR SELECTOR GUIDES

SMALL-SIGNAL TRANSISTORS

(Listed in order of operating test frequency and power gain)

Type	Material	Polarity	f MHz	Min G_{pe} (dB) Min P_{out} (mW)* Typ Conversion Gain (dB)†
2N3324	Ge	P	10	24
2N2273	Ge	P	30	10
2N741, A	Ge	P	30	16
2N2929	Ge	P	60	26
2N700	Ge	P	70	20
2N700A	Ge	P	70	22
2N3323	Ge	P	100	11
2N707, A	Si	N	100	200*
2N1562	Ge	P	160	5.0
2N1693	Ge	P	160	5.0
2N1561	Ge	P	160	6.0
2N1692	Ge	P	160	6.0
MM1941	Si	N	175	7.0
2N4072, 3	Si	N	175	10
2N3286	Ge	P	200	14
2N3294	Si	N	200	14
2N918	Si	N	200	15
2N2708	Si	N	200	15
2N3281	Ge	P	200	16
2N3282	Ge	P	200	16
2N3283	Ge	P	200	16
2N3284	Ge	P	200	16
2N3291, 2	Si	N	200	16
2N3127	Ge	P	200	17
2N3279, 80	Ge	P	200	17
2N3287 thru 90	Si	N	200	17
2N3307, 8	Si	P	200	17
2N3785	Ge	P	200	18
2N3783, 4	Ge	P	200	20
MM5002	Ge	P	200	20
MM5001	Ge	P	200	22
MM5000	Ge	P	200	24
2N3137	Si	N	250	6.0
MM1803	Si	N	250	7.5
2N2857	Si	N	450	12.5
2N3839	Si	N	450	12.5
2N4959	Si	P	450	15
2N4958	Si	P	450	16
2N4957	Si	P	450	17
2N1141, 2, 3	Ge	P	500	10 typ
2N1195	Ge	P	500	10 typ
AF239	Ge	P	800	11.2 G
2N3544	Si	N	1000	10*
MM1501	Si	N	1500	150*
MM1500	Si	N	1500	250*
MM380	Ge	P	1500 f_{max}	
MM1139	Ge	P	108 to 10.7	22†

RF POWER TRANSISTORS

(Listed in order of operating test frequency and power output)

ALL SILICON NPN

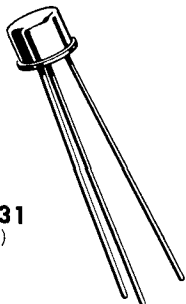
Type	f MHz	P _{out} W	@	P _{in} W
2N3295	30	0.3		0.012
2N3296	30	3.0		0.075
2N3297	30	12		1.2
2N2948	30	15		2.0
2N2951, 52	50	0.6		0.1
2N2949, 50	50	3.5		0.35
2N2947	50	15		2.0
2N3950	50	50		4.5
2N3298	80	0.1		-
2N3375	100	7.5		1.0
2N3818	100	15		3.0
2N3553	175	2.5		0.25
2N3961	175	4.0		0.5
2N3924	175	4.0		1.0
2N3925	175	5.0		1.3
2N3926	175	7.0		2.0
2N3927	175	12		4.0
2N3632	175	13.5		3.5
2N3137	250	0.7		0.1
2N3664	250	2.2		0.4
2N3866	400	1.0		0.1
2N3948	400	1.0		0.25
2N4012	400	3.0 (typ)		1.0
2N3375	400	3.0 (min)		1.0
2N3733	400	10		4.0

HIGH-VOLTAGE TRANSISTORS

Type	V _{CEO}	f _T (MHz)		@	I _C mA
		min	max		
2N4924	100	100	500		20
2N4925	150	100	500		20
2N4926	200	30	300		10
2N4927	250	30	300		10

2N3137 (SILICON)
MM1803

$G_{PE} = 7.7-8.5 \text{ dB @ 250 MHz Typ}$
 $P_{out} = 600-700 \text{ mW @ 250 MHz Typ}$



CASE 31
(TO-5)

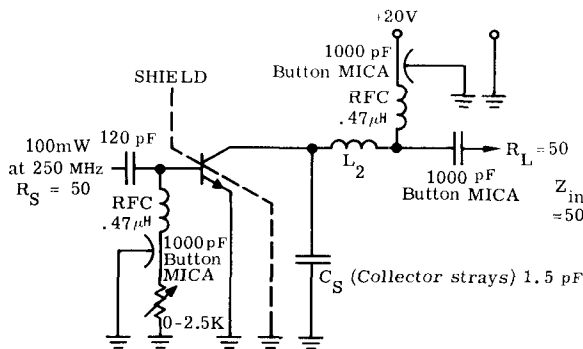
NPN silicon annular transistors for large signal VHF and UHF applications.

Collector connected to case

MAXIMUM RATINGS

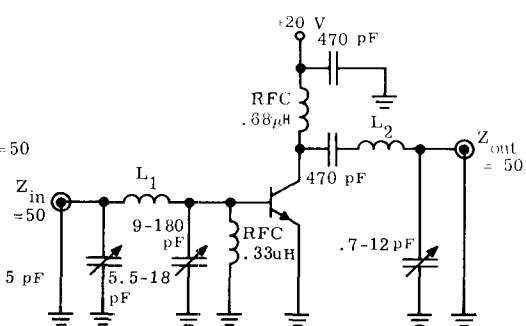
Rating	Symbol	2N3137	MM1803	Units
Collector-Base Voltage	V_{CB}	40	50	Vdc
Collector-Emitter Voltage	V_{CEO}	20	25	Vdc
Emitter-Base Voltage	V_{EB}	4	5	Vdc
Collector Current (Continuous)	I_C	150	150	mA dc
Power Dissipation @25° C Case Temperature @25° C Ambient Temperature	P_D	2.0 0.8		Watts
Operating Junction Temperature Storage Temperature Range	T_J T_{stg}	200 -65 to +200		°C
Thermal Resistance-- Junction to Case	θ_{JC}	87.5		°C/ Watt
Thermal Resistance-- Junction to Air	θ_{JA}	153		°C/ Watt

250 MHz POWER GAIN TEST CIRCUIT (2N3137)



$L_2 = .075 \mu\text{H}$ (5.5 turns #16ga. ID = 3/16" length 1/2")

250 MHz POWER GAIN TEST CIRCUIT (MM1803)



$L_1 = 3/4$ turn No. 14 tinned wire 3/8" ID
 $L_2 = 4$ turns No. 18 tinned wire 1/4" ID 7/16" long

2N3137, MM1803 (Continued)

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise specified)

Characteristic		Symbol	Min	Typical	Max	Unit
Collector-Base Breakdown Voltage $I_C = 0.1\text{mAdc}$, $I_E = 0$	2N3137 MM1803	V_{CBO}	40 50			Vdc
Collector-Emitter Open Base Sus. Voltage $I_C = 15\text{mAdc}$, $I_B = 0$	2N3137 MM1803	$V_{CEO(sus)}$	20 25			Vdc
Collector Cutoff Current $V_{CB} = 20\text{Vdc}$, $I_E = 0$, $T_C = +150^\circ\text{C}$	Both Types	I_{CBO}			50	μA dc
Collector Cutoff Current $V_{CB} = 20\text{Vdc}$, $I_E = 0$	Both Types	I_{CBO}			.05	μA dc
Emitter-Base Breakdown Voltage $I_E = 100\mu\text{A}$, $I_C = 0$	2N3137 MM1803	V_{EBO}	4 5			Vdc
DC Current Gain $V_{CE} = 5\text{Vdc}$, $I_C = 50\text{mA}$ dc	2N3137 MM1803	h_{FE}	20 40		120 160	
Collector-Emitter Saturation Voltage $I_C = 50\text{mA}$ dc, $I_E = 5\text{mA}$ dc	Both Types	$V_{CE(sat)}$			0.3	Vdc
Small Signal Current Gain $V_{CE} = 10\text{Vdc}$, $I_C = 50\text{mA}$ dc, $f = 100\text{MHz}$		$ h_{fe} $	5.0			
Common-base Output Capacitance $V_{CB} = 10\text{Vdc}$, $I_C = 0$, $f = 100\text{kHz}$		C_{ob}			3.5	pF
Power Output		P_{out}	400	600		mWatts
Power Gain $P_{in} = 100\text{mw}$, $f = 250\text{MHz}$	2N3137	G_e	6.0	7.7		dB
Efficiency $V_{CE} = 20\text{Vdc}$		η	40	65		%
Power Output		P_{out}	560	700		mWatts.
Power Gain $P_{in} = 100\text{mw}$, $f = 250\text{MHz}$	MM1803	G_e	7.5	8.5		db
Efficiency $V_{CE} = 20\text{V}$		η	45	60		%

*Pulse Width $\approx 300\ \mu\text{s}$, Duty cycle = 1%