



## Selection by Package

The product listed in Tables 1 through 22 have been compiled on an IBM or compatible personal computer disk for quick selection of product. This versatile disk may be obtained

by contacting a Motorola sale office in your area or by contacting a Motorola Literature Distribution Center listed on the back cover. Order the disk by requesting DK101 D.

Tables 1 through 22 are shown by package type. Within the tables the devices are arranged by breakdown voltage and on-resistance as the primary selection criteria. Device types shaded in Tables 1 through 8 are preferred devices recommended for new designs.

# Datasheet Directory

## TMOS Power MOSFETs

### Plastic Packages — TO-220AB



Table 1 — P-Channel

	$V_{(BR)DSS}$ (Volts) Min	$r_{DS(on)}$ (Ohms) Max	$I_D$ (Amps)	Device	$I_D$ (cont) Amps	$P_D^*$ (Watts) Max	Page
	500	6	1	MTP2P50	2	75	3-407
	450			MTP2P45			3-407
	250	4	1.5	MTP3P25	3		3-427
		3	2.5	MTP5P25	5		3-447
		2	4	MTP8P25	8		3-462
NEW	200	0.5	6	IRF9640	11	125	3-147
NEW		0.8	3.5	IRF9630	6.5	75	3-145
		1	2.5	MTP5P20	5		3-442
	180			MTP5P18			3-442
	100	0.4	4	MTP8P10	8		3-457
		0.3	6	MTP12P10	12		3-493
	80	0.4	4	MTP8P08	8		3-457
				MTP12P08	12		3-493
		0.6	3.5	MTP7P06	7		3-651
NEW	60	0.3	6	MTP2955	12		3-806
				MTP12P06			3-493
		0.2	10	MTP20P06	20	100	3-740
	50	0.6	3.5	MTP7P05	7	75	3-651
		0.3	6	MTP12P05	12		3-493

\* at 25°C

**Bold Type** indicates new product.

Shaded devices are preferred devices and are recommended for new designs

Plastic Packages — TO-220AB (continued)

Table 2 — N-Channel

	$V_{GS}$ (V)	$V_{DS}$ (V)	Part No.	$I_D$ (Amps)	$P_D$ (Watts)	Page	
NEW	1000	10	MTP1N100	1	75	3-392	
		4	MTP3N100	3		3-606	
	950	10	MTP1N95	1		3-392	
		4	MTP3N95	3		3-606	
	900	8	MTP2N90	2		3-402	
		4	MTP4N90	4		3-606	
	850	8	MTP2N85	2		3-402	
		4	MTP4N85	4		3-606	
	800	7	MTP3N80	3		3-417	
		3	<b>BUZ80A</b>			3-79	
750	7	MTP3N75		3-417			
NEW	600	12	MTP1N60	1	3-566		
		6	MTP2N60	2	3-586		
	2.5	MTP3N60	3	<b>3-412</b>			
	2	<b>BUZ90</b>	4	3-85			
	1.2	MTP6N60	6	125	<b>3-641</b>		
550	12	MTP1N55	1	75	3-566		
	6	MTP2N55	2		3-586		
	2.5	MTP3N55	3		3-412		
	1.2	MTP6N55	6		125	3-641	
500	8	MTP1N50	1	50	3-561		
			MTP2N50	2	75	<b>3-397</b>	
	3	1.5	IRF820	2.5	40	3-139	
			MTP3N50	3		75	3-601
			IRF832	4		3-141	
			IRF830	4.5		3-141	
			<b>MTP4N50</b>	4		<b>3-432</b>	
	1.1	4	IRF842	7	125	3-143	
	0.85		IRF840	8		3-143	
	0.8		<b>MTP6N50</b>				<b>3-672</b>
450	8	0.5	MTP1N45	1	50	3-561	
			MTP2N45	2	75	3-397	
	4	1	IRF823		40	3-139	
			IRF821	2.5		3-139	
			MTP3N45	3		75	3-601
	2	2.5	IRF833	4	3-141		
	1.5	2	MTP4N45			3-432	
			IRF831	4.5	3-141		

\* @ 25°C

**Bold Type Indicates new product.**

Shaded devices are preferred devices and are recommended for new designs.

Plastic Packages — TO-220AB (continued)

Table 2 — N-Channel — continued

Drain-Source Voltage (V)	Gate-Source Voltage (V)	Number of Leads	Device	Drain Current (A)	PS (W)	Package
450	1.1	4	IRF843	7	125	3-143
	0.85		IRF841	8		3-143
	0.8		MTP8N45			3-672
400	5	1	MTP2N40	2	50	3-581
	3.3	1.5	MTP3N40	3	75	3-596
	2.5		IRF722	2.5	40	3-133
	1.8		IRF720	3		3-133
	1.5	3	IRF732	4.5	75	3-135
	1		IRF730			3-135
		2.5	MTP6N40	5		3-437
	0.55		IRF740	10	125	3-137
			MTP10N40			3-704
350	5	1	MTP2N35	2	50	3-581
	1.5	3	IRF733	4.5	75	3-135
	1		IRF731	5.5		3-135
		2.5	MTP5N35	5		3-437
	0.55	5	IRF741	10	125	3-137
	MTP10N35		3-704			
250	2	1	MTP2N25	2	50	3-576
	0.45	5	MTP10N25	10	100	3-478
200	2.4	1.25	IRF612	2	20	3-123
	1.8	1	MTP2N20		50	3-571
	1.5	1.25	IRF610	2.5	20	3-123
	1		MTP5N20		5	75
	0.8		IRF620		40	3-125
	0.7	3.5	MTP7N20	7	75	3-646
	0.6	5	IRF632	8		3-127
	0.4		IRF630	9		3-127
		4	MTP8N20	8		3-452
		3.5	BUZ73	7	40	3-75
	0.35	6	MTP12N20	12	100	3-714
	0.22	10	IRF642	16	125	3-129
	0.18		IRF640	18		3-129
150	0.8	2.5	IRF621	4	40	3-125
	0.4	5	IRF631	9	75	3-127
	0.3		MTP10N15	10		3-699
	0.25	7.5	MTP15N15	15	100	3-729
	0.22	10	IRF643	16	125	3-129

\* at 25°C  
Shaded devices are preferred devices and are recommended for new designs

Plastic Packages — TO-220AB (continued)

Table 2 — N-Channel — continued

V <sub>GS</sub> (V <sub>GS</sub> ) (Volts) Min	r <sub>DS(on)</sub> (Ohms) Max	I <sub>D</sub> (Amps)	Device	I <sub>D</sub> (cont) (Amps)	P <sub>D</sub> (Watts) Max	Page
150	0.18	10	IRF641	18	125	3-129
120	0.3	5	MTP10N12L	10	75	3-473
	0.9	2.5	MTP5N12	5	50	3-626
	1.2	1.5	MTP3N12	3		..
100	0.8	3	MTP6N10	6	20	3-636
		2	IRF512	3.5		3-115
	0.6		IRF510	4		3-115
	0.5	4	MTP8N10	8	75	3-656
			<b>MTP8N10E</b>			<b>3-661</b>
	0.4		IRF522	7	40	3-117
	0.33	5	MTP10N10	10	75	3-682
	0.3	4	IRF520	8	40	3-117
	0.25	5	<b>MTP10N10E</b>	<b>10</b>	75	3-687
			8	IRF532		
	0.18		IRF530	14		3-119
		6	MTP12N10	12		3-488
	0.15	10	MTP20N10	20	100	3-519
			<b>MTP20N10E</b>			<b>3-734</b>
	0.11	15	IRF542	24	125	3-121
	0.085		IRF540	27		3-121
	0.075	12.5	MTP25N10	25		3-757
<b>MTP25N10E</b>				<b>3-762</b>		
80	0.8	2	MTP4N08	4	50	3-616
	0.5	4	MTP8N08	8	75	3-656
	0.33	5	MTP10N08	10		3-682
	0.18	6	MTP12N08	12	3-488	
	0.15	10	MTP20N08	20	100	3-519
60	0.8	2	IRF513	3.5	20	3-115
	0.6		IRF511	4		3-115
		2.5	MTP5N06	5	50	3-621
	0.4	3.5	MTP7N06	7		..
		4	IRF523		40	3-117
	0.3		IRF521	8		3-117
	0.28	5	MTP10N06	10	75	3-677
	0.25	8	IRF533	12		3-119
	0.2	5	<b>MTP10N06E</b>	10		<b>3-467</b>
		6	MTP12N06		3-483	
0.18	8	IRF531	14		3-119	

\* @ 25°C  
 \*\*Contact Motorola sales office for data sheet.  
 Shaded devices are preferred devices and are recommended for new designs

Table 2 — N-Channel — continued

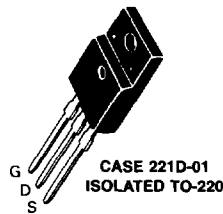
60	0.16	7.5	MTP15N06	15	75	3-719
	0.15		MTP15N06E			3-503
	0.085	15	IRF541	27	125	3-121
	0.08	12.5	MTP25N06	25	100	3-524
			MTP25N06E			3-751
0.055	17.5	MTP35N06E	35	125	3-781	
50	0.6	2.5	MTP5N05	5	50	3-621
	0.28	5	MTP10N05	10	75	3-677
	0.16	7.5	MTP15N05	15	40	3-719
			BUZ71A	12		3-70
			MTP12N05E			**
	0.1	6	IRFZ22	14	3-165	
			BUZ71	12	3-70	
	0.08	7.5	MTP15N05E	15	**	
			IRFZ20		3-165	
			MTP25N05	25	100	3-524
	0.06	15	IRFZ32	30	75	3-167
			BUZ11A			3-67
			MTP30N05E			3-768
			BUZ11			3-67
	0.04		IRFZ42	46		3-169
			29	IRFZ40	51	

\* @ 25°C  
 \*\*Contact Motorola sales office for data sheet.  
 Shaded devices are preferred devices and are recommended for new designs.

Table 3 — N- and P-Channel — Isolated TO-220

NEW	60	0.3	6	MTA2955***	7	33	**
NEW		0.15		MTA3055E	10		**
NEW		0.1	7.5	MTA15N06E	15	40	**
NEW		0.028	25	MTA30N06E	30	50	**

\* @ 25°C  
 \*\*Contact Motorola sales office for data sheet  
 \*\*\*Indicates P-Channel  
 Shaded devices are preferred devices and are recommended for new designs





## TMOS Power MOSFETs

Plastic Packages — TO-218AC

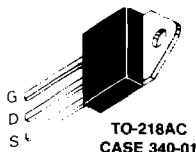


Table 4 — P-Channel

V <sub>BR</sub> (Volts) Min	r <sub>DS(on)</sub> @ I <sub>D</sub> (Ohms) @ I <sub>D</sub> (Amps)		Device	I <sub>D</sub> (cont) Amps	P <sub>D</sub> * (Watts) Max	Page
	Max					
200	0.7	4	MTH8P20	8	125	3-314
180			MTH8P18			3-314
100	0.15	10	MTH20P10	20		3-339
80			MTH20P08			3-339
60	0.14	12.5	MTH25P06	25		3-349
50			MTH25P05			3-349

\* @ 25°C

Shaded devices are preferred devices and are recommended for new designs.

Table 5 — N-Channel

	V <sub>BR</sub> (Volts) Min	r <sub>DS(on)</sub> @ I <sub>D</sub> (Ohms) @ I <sub>D</sub> (Amps)		Device	I <sub>D</sub> (cont) Amps	P <sub>D</sub> * (Watts) Max	Page	
		Max						
NEW	1000	2	3	<b>MTH5N100</b>	6	150	3-287	
			3	2.5	MTH5N100		5	3-272
		950			MTH5N95			3-272
NEW	900	1.8	4	<b>MTH6N90</b>	8	170	3-308	
			3	3	MTH6N90		6	3-282
		850			MTH6N85			3-282
NEW	800	1.5	3.8	<b>BUZ355</b>		125	3-91	
		1.2	3	MTH6N60			150	3-277
	600	0.5	4	MTH8N60	8		3-303	
		1.2	3	MTH6N55	6		3-277	
		0.5	4	MTH8N55	8		3-303	
		0.8	3.5	<b>MTH7N50</b>	7		3-293	
NEW	500	0.6	6	<b>BUZ330</b>	9.5	125	3-87	
		0.4	7	<b>MTH13N50</b>	13		150	3-319
		0.8	3.5	MTH7N45	7			3-293
	450	0.4	7	MTH13N45	13		3-319	
		0.55	4	<b>MTH8N40</b>	8		3-298	
NEW	400	0.3	7.5	<b>MTH15N40</b>	15		3-329	
		0.55	4	MTH8N35	8		3-298	
		0.3	7.5	MTH15N35	15		3-329	
NEW	250	0.14	15	<b>MTH30N25</b>	20	125	3-359	

\* @ 25°C

Bold Type indicates new product.

Shaded devices are preferred devices and are recommended for new designs.

Table 5 — N-Channel — continued

V <sub>(BR)DSS</sub> (Volts) Min	r <sub>DS(on)</sub> @ I <sub>D</sub> (Ohms) (Amps) Max		Device	I <sub>D</sub> (cont) Amps	P <sub>D</sub> * (Watts) Max	Page
200	0.16	7.5	MTH15N20	15	150	3-324
	<b>0.08</b>	<b>15</b>	<b>MTH30N20</b>	<b>30</b>		<b>3-354</b>
150	0.12	10	MTH20N15	20		3-334
	0.06	17.5	MTH35N15	35		3-376
100	0.07	12.5	MTH25N10	25		3-344
	0.04	20	MTH40N10	40		3-381
80	0.07	12.5	MTH25N08	25		3-344
	0.04	20	MTH40N08	40		3-381
60	0.055	17.5	MTH35N06	35		3-365
			MTH35N06E			3-370
	<b>0.028</b>	<b>20</b>	<b>MTH40N06</b>	<b>40</b>		<b>3-381</b>
50	0.055	17.5	MTH35N05	35		3-365
	0.028	20	MTH40N05	40		3-381
	<b>0.028</b>	<b>25</b>	<b>MTH50N05E</b>	<b>50</b>		<b>3-386</b>

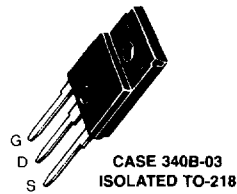
NEW

\* T<sub>C</sub> = 25°C  
**Bold Type** indicates new product.  
 Shaded devices are preferred devices and are recommended for new designs

Table 6 — N- and P-Channel Isolated TO-218

	V <sub>(BR)DSS</sub> (Volts) Min	r <sub>DS(on)</sub> @ I <sub>D</sub> (Ohms) (Amps) Max		Device	I <sub>D</sub> (cont) Amps	P <sub>D</sub> * (Watts) Max	Page
NEW	500	0.4	7	MTG9N50E	9	70	**
NEW	200	0.08	15	MTG20N20	20		**
NEW	100	0.15	10	MTG15P10***	15		**

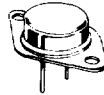
\* T<sub>C</sub> = 25°C  
 \*\*Contact Motorola sales office for data sheet  
 \*\*\*Indicates P-Channel  
**Bold Type** indicates new product.



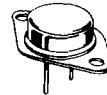
CASE 340B-03  
 ISOLATED TO-218

# TMOS Power MOSFETs

## Metal Packages — TO-204AA/AE



TO-204AA  
CASE 1-06



TO-204AE  
CASE 197A-02

Table 7 — P-Channel

500	6	1	MTM2P50	2	75	3-407
450			MTM2P45			3-407
250	4	1.5	MTM3P25	3	75	3-427
	3	2.5	MTM5P25	5		3-447
	2	4	MTM8P25	8		3-462
200	1	2.5	MTM5P20	5	125	3-442
	0.7	4	MTM8P20	8		3-314
180	1	2.5	MTM5P18	5	75	3-442
	0.7	4	MTM8P18	8	125	3-314
100	0.4		MTM8P10		75	3-457
	0.3	6	MTM12P10	12		3-493
80	0.4	4	MTM8P08	8	75	3-457
	0.3	6	MTM12P08	12		3-493
	0.15	10	MTM20P08	20	125	3-339
60	0.3	6	MTM12P06	12	75	3-493
50	0.3	6	MTM12P05	12	75	3-493
	0.2	10	MTM20P05	20	100	**
	0.14	12.5	MTM25P05	25	125	3-349

\* @ 25°C  
 \*\*Contact Motorola sales office for data sheet.  
 Shaded devices are preferred devices and are recommended for new designs

Table 8 — N-Channel

1000	10	0.5	MTM1N100	1	75	3-392
	4	1.5	MTM3N100	3	125	3-422

NEW

\* @ 25°C  
 \*\*Contact Motorola sales office for data sheet.  
 Shaded devices are preferred devices and are recommended for new designs



Table 8 — N-Channel — continued

V <sub>DS</sub> (Volts)	r <sub>DS(on)</sub> @ I <sub>D</sub>		Device	I <sub>D</sub> (cont) (Amps)	P <sub>tot</sub> (Watts) Max	Page
	Min	Max				
950	10	0.5	MTM1N95	1	75	3-392
	4	1.5	MTM3N95	3	125	3-422
	3	2.5	MTM5N95	5	150	3-272
900	8	1	MTM2N90	2	75	3-402
	4	2	MTM4N90	4	125	3-422
	3	3	MTM6N90	6	150	3-282
850	8	1	MTM2N85	2	75	3-402
	4	2	MTM4N85	4	125	3-422
	3	3	MTM6N85	6	150	3-282
800	7	1.5	MTM3N80	3	75	3-417
	2	3	BUZ84	5.3	125	3-83
	1.5		BUZ84A	6		3-83
750	7	1.5	MTM3N75	3	75	3-417
600	2.8	3	2N6823			3-48
	2.5	1.5	MTM3N60			3-412
	1.6	6	2N6826	6	150	3-53
	1.2	3	MTM6N60			3-277
	0.5	4	<b>MTM8N60</b>	8		<b>3-303</b>
500	4	1	MTM2N50	2	75	3-397
	1.5	2	MTM4N50	4		3-432
		3	2N6762	4.5		3-18
	0.85	4	IRF440	8	125	3-111
	0.8	3.5	<b>MTM7N50</b>	7	150	<b>3-293</b>
	0.5	7	IRF452	12		3-113
	0.4		IRF450	13		3-113
		7.75	2N6770	12		3-37
		7.5	MTM15N50	15	250	3-514
	<b>0.25</b>	<b>12</b>	<b>MTM24N50E</b>	<b>24</b>	<b>300</b>	<b>**</b>
450	1.5	2	MTM4N45	4	75	3-432
	0.85	4	IRF441	8	125	3-111
	0.8	3.5	MTM7N45	7	150	3-293
	0.4	7	IRF451	13		3-113
		7.5	MTM15N45	15	250	3-514

NEW

\* at 25°C  
 \*\*Contact Motorola sales office for data sheet  
 Shaded devices are preferred devices and are recommended for new designs

Metal Packages — TO-204AA/AE (continued)

Table 8 — N-Channel — continued

Drain-Source Voltage (V)	Gate-Source Voltage (V)	Drain Current (A)	Device	to Case (mm)	R <sub>θJC</sub> (°C/W)	Page
400	1	3	IRF330	5.5	75	3-105
		2.5	MTM5N40	5		3-437
		3.5	2N6760	5.5		3-14
	0.55	5	IRF340	10	125	3-107
		4	MTM8N40	8	150	3-298
	0.3	8	IRF350	15		3-109
		9	2N6768	14		3-32
7.5		<b>MTM15N40</b>	15	250	<b>3-509</b>	
<b>0.18</b>	18	<b>MTM20N40E</b>	20	300		
350	1.5	3	IRF333	4.5	75	3-105
			2N6759			3-14
	1	IRF331	5.5		3-105	
		2.5	MTM5N35	5		3-437
		8	IRF351	15	150	3-109
0.3	7.5	MTM15N35		250	3-509	
	5	MTM10N25	10	100	3-478	
250	0.45					
200	0.4		IRF230	9	75	3-99
			2N6758			3-10
		4	MTM8N20	8		3-452
	0.18	10	IRF240	18	125	3-101
		7.5	<b>MTM15N20</b>	15	180	<b>3-324</b>
		16	IRF252	25		3-103
		0.085		30		3-103
		19	2N6766			3-27
0.08	20	<b>MTM40N20</b>	40	250	<b>3-534</b>	
150	0.22	10	IRF243	16	125	3-101
		16	IRF241	18		3-101
	0.12	10	MTM20N15	20	150	3-334
		16	IRF253	25		3-103
	0.085		IRF251	30		3-103
0.06	22.5	MTM45N15	45	250	3-545	
100	0.18	8	IRF130	14	75	3-93
		6	MTM12N10	12		3-488
		9	2N6756	14		3-6
	0.15	10	MTM20N10	20	100	3-519
	0.11	15	IRF142	24	125	3-95
			IRF140	27		3-95
	0.08	20	IRF152	33	150	3-97

\* @ 25°C

\*\*Contact Motorola sales office for data sheet

Shaded devices are preferred devices and are recommended for new designs

Table 8 — N-Channel — continued

V <sub>GS</sub> (V)	I <sub>D</sub> (A)		R <sub>DS(on)</sub> (mΩ)	R <sub>θJC</sub> (°C/W)	R <sub>θJA</sub> (°C/W)	
	0.1ms	10ms				
100	0.07	12.5	MTM25N10	40	3-344	
	0.055	20	IRF150			38
		24	2N6764			
	0.04	27.5	MTM55N10	55	250	3-556
80		MTM55N08	3-556			
60	0.15	7.7	MTM15N06E	17	75	3-503
	0.085	15	IRF141	27	125	3-95
		0.055	17.5			
	MTM35N06E			3-370		
		20	IRF151	40		3-97
	0.028	30	MTM60N06	60	250	3-556
50	0.2	6	MTM12N05	12	75	3-483
	0.055	17.5	MTM35N05	35	125	3-365
			MTM45N05E			
	0.035	29	MTM60N05E	60		3-556
	0.028	25	MTM60N05	60	250	3-556
	30	MTM60N05	60	250	3-556	

\* @ 25°C

\*\*Contact Motorola sales office for data sheet.

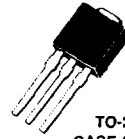
Shaded devices are preferred devices and are recommended for new designs



TO-204AA  
(TO-3)  
CASE 1-06



TO-220AB  
CASE 221A-04



TO-251  
CASE 369-03



TO-252  
CASE 369A-04

## TMOS Power MOSFETs

### Logic Level Power MOSFETs

Logic level MOSFETs are fully enhanced with 5 volts applied to the gate.

Table 9 — N-Channel Logic Level Power MOSFETs (TO-204AA and TO-220AB)

	$V_{(BR)DSS}$ (Volts) Min	$r_{DS(on)}$ (Ohms) Max	@	$I_D$ (Amps)	Device	$I_D(cont)$ Amps	$P_D @ T_C = 25^\circ C$ Watts	Package TO-	Page					
NEW	150	0.3	5	10	MTM10N15L	10	75	204AA	3-473					
					MTP10N15L			220AB	3-473					
					<b>MTP8N15L</b>				3-667					
	120	0.3	5	10	MTM10N12L	10		204AA	3-473					
					MTP10N12L			220AB	3-473					
NEW	100	0.2	6	12	MTM12N10L	12		204AA	..					
					MTP12N10L			220AB	3-709					
					1.25			2	MTP3N10L	3		3-591		
NEW	80	0.135	7.5	15	<b>MTP15N08L</b>	15			3-724					
					0.2			6	MTM12N08L	12	204AA	..		
					1.25			2	MTP3N08L	3	220AB	3-709		
NEW	60	0.06	20	40	<b>MTP4N06EL</b>	40	150		3-787					
					0.08			12.5	MTM25N06L	25	204AA	3-529		
									MTP25N06L		220AB	3-529		
NEW	50	0.15	7.5	15	MTM15N06L	15	75	204AA	3-498					
					MTP15N06L			220AB	3-498					
NEW	50	0.18	6	12	<b>MTP3055EL</b>	12	40		3-817					
					<b>MTD3055EL</b>			TO-252	3-266					
NEW	50	0.032	25	50	<b>MTP50N05EL</b>	50	150	220AB	3-266					
NEW	50	0.032	25	50	50	50	150		3-611					
								0.6	2	MTP4N06L	4	25	220AB	3-611
								0.08	12.5	MTM25N05L	25	100	204AA	3-529
										MTP25N05L			220AB	3-529
								0.15	7.5	MTM15N05L	15	75	204AA	3-498
		MTP15N05L			220AB	3-498								
		0.6	2	MTP4N05L	4	25		3-611						

\*\*Contact Motorola sales office for data sheet

**Bold Type indicates new product.**

Shaded devices are preferred devices and are recommended for new designs



# TMOS Power MOSFETs

Hermetic, Isolated, Tab Mount  
Power MOSFETs

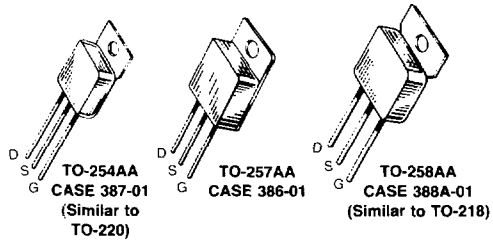


Table 10 — TO-254AA, TO-257AA, and TO-258AA  
ALL NEW DEVICES\*\*

	V(BR)DSS (Volts) Min	rDS(on) (Ohms) Max	@	ID (Amps)	Device	ID(cont) Amps	PD @ Tc = 25°C Watts	Package TO-
NEW	1000	3		2.5	MHR5N100	5	125	258AA
NEW					MHM5N100			254AA
NEW					MHT1N100			257AA
NEW	800	6		1	MHT2N80	2	50	257AA
NEW					MHT2N80			257AA
NEW	500	0.4		7	MHR15N50	15	125	258AA
NEW					MHM12N50			254AA
NEW					MHR7P50*			258AA
NEW		1.8		3.5	MHM7P50*	7	50	254AA
NEW					MHT4N50			257AA
NEW					MHT2P50*			257AA
NEW	200	0.1		16	MHR30N20	30	125	258AA
NEW					MHM25N20			254AA
NEW					MHT8N20			257AA
NEW		0.4		6	MHR8P20*	8	125	258AA
NEW					MHM8P20*			254AA
NEW					MHT8P20*			257AA
NEW	100	0.065		20	MHR35N10	35	125	258AA
NEW					MHM25N10			254AA
NEW		0.15		10	MHM20P10*	20	50	257AA
NEW					MHT10N10			
NEW	0.2		5	MHT12P10*	10			
NEW	0.3							
NEW	60	0.05		15	MHR35N06M	35	125	CASE 388-01

\*Indicates P-Channel.

\*\*Contact Motorola sales office for data sheet

**Bold Type indicates new product.**

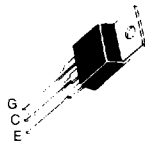
Note: All of these devices can be purchased with JTX or JTXV equivalent processing by adding HX or HVX suffix to device type.



# TMOS Insulated Gate Bipolar Transistors

## Gain Enhanced MOSFETs (IGBTs)

This relatively new series of power transistors combines the high input resistance of a MOSFET with the low internal on-resistance of a bipolar transistor to provide more efficient performance than either a MOSFET or bipolar device in low-frequency switching service. Recommended for motor drive circuits, home appliances, and other applications where high switching speed is not a requirement. All are N-Channel.



TO-220AB  
CASE 221A-04

Table 11 — TO-220AB

Transistor Type	$r_{CE(on)}$ (Ohms) Max	$I_C$ (Amps)	Device	$I_C$ (cont) (Amps)	$P_D^*$ (Watts) Max	Page
500	0.27	10	MGP20N50	20	100	3-184
	1.6	2.5	MGP5N50	5	50	3-180
450	0.27	10	MGP20N45	20	100	3-184
	1.6	2.5	MGP5N45	5	50	3-180

\* @ 25°C



TO-204AA  
(TO-3)  
CASE 1-06

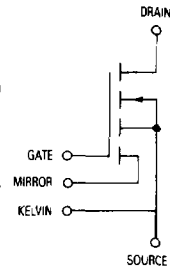
Table 12 — TO-204AA

Transistor Type	$r_{CE(on)}$ (Ohms) Max	$I_C$ (Amps)	Device	$I_C$ (cont) (Amps)	$P_D^*$ (Watts) Max	Page
500	0.27	10	MGM20N50	20	100	3-184
	1.6	2.5	MGM5N50	5	50	3-180
450	0.27	10	MGM20N45	20	100	3-184
	1.6	2.5	MGM5N45	5	50	3-180

\* @ 25°C

### TMOS SENSEFETs

**CASE 314B**  
(5 PIN TO-220)



SENSEFETs are conventional power MOSFETs with an option provided to sense the drain current by measuring a small proportion of the total drain current. These devices are ideal for current mode switching regulators and motor controls.

**Table 13 — Case 314B**

	$V_{DS(on)}$ (Volts) Min	$r_{DS(on)}$ @ $I_D$ (Ohms) Max	$I_D$ (Amperes)	Device	$I_D$ (Amperes) Max	$P_D$ (Watts) Max	Page
NEW	50	0.04	20	<b>MTD10N10M</b>	10	75	3-755
NEW	80	0.065	15	<b>MTD10N10M</b>	15	75	3-774
	100	0.25	5	MTP10N10M	10	75	3-693
		0.085	12.5	MTP25N10M	25	100	..
	250	1.5	4	MTP4N25M	4	75	..
		0.45	2	MTP10N25M	10	100	..

\* @ 25°C  
 \*\*Contact Motorola sales office for data sheet  
**Bold Type indicates new product.**

### DPAK



**CASE 369A-04\*\*\*\***  
TO-252



**CASE 369-03\*\*\***  
TO-251

**Table 14 — Case 369A-04 Surface Mount**  
**Case 369-03 Insertion Mountable**

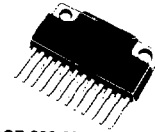
	$V_{DS(on)}$ (Volts) Min	$r_{DS(on)}$ @ $I_D$ (Ohms) Max	$I_D$ (Amperes)	Device	$I_D$ (Amperes) Max	$P_D$ (Watts) Max	Page
	500	4	†	<b>MTD2N150</b>	2	1.75	3-216
	400	5	0.5	MTD1N40	1		3-208
NEW	200	0.7	2	MTD4N20	4		3-224
		1.5	1	<b>MTD2N20</b>	2		3-213
	150	0.3	3	MTD6N15	6		3-244
	100	0.25		MTD6N10			3-239
	80			MTD6N08		3-239	
NEW	60	0.6	2	<b>MTD4P05†</b>	4		3-228
		0.4	2.5	MTD5N05	5		3-234
		0.3	6	MTD2N55†	2		3-255
	50	0.15	4	<b>MTD2N55E</b>	4		3-280
		0.6	2	MTD4P05†	4		3-228
	0.4	2.5	MTD6N05	6		3-244	
		0.1	5	MTD10N05E	10		3-249

\* @ 25°C  
 \*\*Power rating when mounted on a board with the minimum pad size recommended  
 \*\*\*Add -1 Suffix to part number to order insertion mountable package.  
 \*\*\*\*Available in tape and reel.  
 † Indicates P-Channel  
**Bold Type indicates new product.**  
 Shaded devices are preferred devices and are recommended for new designs.



# TMOS Power MOSFETs

## Multiple Chip Products



CASE 806-02

Table 15 — Multiple Chip Products in the Isolated ICePAK\*

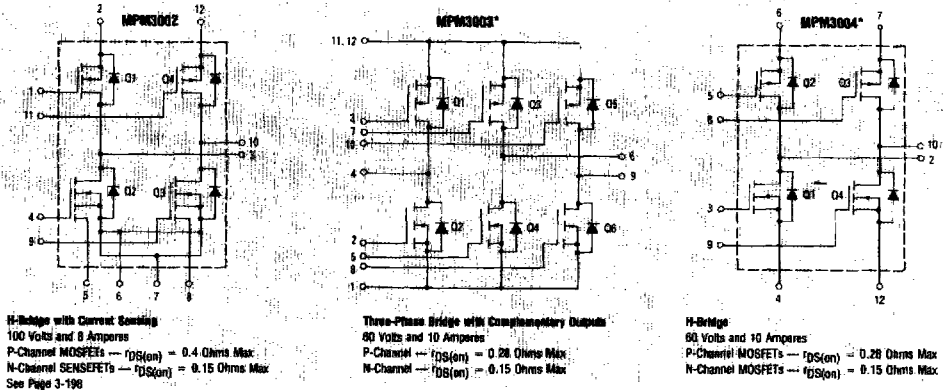


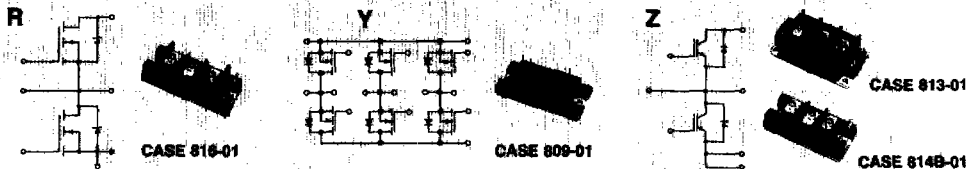
Table 16 — TMOS Power MOSFET Modules\*

Max $I_D$ (cont) Amps	Max $V_{DS}$ Volts	Device Type	Module Type	Max $V_{DS(on)}$ Volts	Conditions		Max. Resistive Switching					$T_C = 25^\circ C$ PD Watts	Case No.	Circuit Config.
					$I_D$ Amps	$V_{GS}$ Volts	$t_{on}$ $\mu s$	$t_{off}$ $\mu s$	$t_r$ $\mu s$	Conditions				
15	450	MT15FR45	Six-pack	6	15x6	10	0.6	2	0.5	15	10	125x6	809-01	Y
50	450	MT50BY45	Dual	7	50	10	0.8	1.3	0.2	50	10	400x2	816-01	R

Table 17 — IGBT Power Modules\*

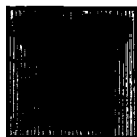
Max $I_C$ (cont) Amps	Max $V_{CES}$ Volts	Device Type	Module Type	Max $V_{CE}$ Volts	Conditions		Max. Resistive Switching					$T_C = 25^\circ C$ PD Watts	Case No.	Circuit Config.
					$I_C$ Amps	$V_{GE}$ Volts	$t_{on}$ $\mu s$	$t_b$ $\mu s$	$t_r$ $\mu s$	Conditions				
25	1000	MG25BZ100	Dual	5	25	15	1	2	1	25	15	200x2	813-01	Z
50	1000	MG50BZ100	Dual	5	50	15	1	1.5	1	50	15	300x2	813-01	Z
100	1000	MG100BZ100	Dual	5	100	15	1	1.5	1	100	15	400x2	814B-01	Z
25	500	MG25BZ50	Dual	5	25	15	1	1.5	1	25	15	125x2	813-01	Z
50	500	MG50BZ50	Dual	5	50	15	1	1.5	1	50	15	300x2	813-01	Z
75	500	MG75BZ50	Dual	5	75	15	1	1.5	1	75	15	350x2	813-01	Z
100	500	MG100BZ50	Dual	5	100	15	1	1.5	1	100	15	400x2	813-01	Z

Table 18 — TMOS Power MOSFET and IGBT Power Module Circuit Configurations and Packages.\*

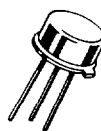


\*Contact Motorola sales office for data sheets.





## Small-Signal MOSFETs



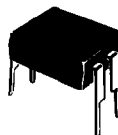
TO-205AF  
(TO-39)  
CASE 79-05

Table 19 — Switches and Choppers — TO-205AF

Power (W)	Gate Drive (V)	Gate Charge (nC)	Part Number	Gate-Source (V)	Drain-Source (V)	Notes
240	6	0.5	VN2406B	0.63	2.5	**
	10	0.5	VN2410B	0.63	2.5	**
200	0.8	2.25	2N6790	3.5	20	**
	0.8	2	IRFF220	3.5	20	3-163
	1.5	1.5	2N6784	2.25	15	3-44
	6.4	0.25	MFE9200	0.4	1.8	3-177
170	6	0.5	VN1708B	0.63	2.5	**
	10	0.5	VN1710B	0.63	2.5	**
100	0.3	3	IRFF120	6	20	3-161
90	4	1	2N6661	0.9	6.25	3-2
60	3	1	2N6660	1.1	6.25	3-2
	5	0.5	MFE910	1	6.25	3-171
35	1.8	1	2N6659	1.4	6.25	**
30	1.2	1	VN0300B	1.25	6.25	**

\*\*Contact Motorola sales office for data sheet

Table 20 — 4-Pin Dip — Case 370-01



CASE 370-01

$P_D @ T_C = 25^\circ C$  1 Watt Max

Power (W)	Gate Drive (V)	Gate Charge (nC)	Part Number	Gate-Source (V)	Drain-Source (V)	Notes
200	0.6	0.4	IRFD220	0.8	3-157	
	1.5	0.3	IRFD210	0.6	3-155	
150	2.4	0.3	IRFD213	0.45	3-155	
100	0.3	0.6	IRFD120	1.3	3-153	
	0.6	0.8	IRFD110	1	3-151	
	0.6	-0.8	IRFD9120	-1	**	
	1.2	-0.3	IRFD9110	-0.7	**	
	2.4	0.25	IRFD120	0.5	3-149	
60	0.4	0.6	IRFD123	1.1	3-153	
	0.8	0.8	IRFD113	0.8	3-151	
	0.8	-0.8	IRFD9123	-0.8	**	

\*\*Contact Motorola sales office for data sheet

Small-Signal MOSFETs (continued)



TO-226AA  
(TO-92)  
CASE 29-04

Table 21 — Plastic — TO-226AA

$V_{BRSS}$ (Volts)	$I_{DS(on)}$ @ $I_D$ (Ohms)		Device	$I_D$ (Cont) (Amp) Max	$P_D$ @ $T_C = 25^\circ C$ Watts Max	Page
	Max	(Amp)				
240	6	0.5	VN2406L	0.158	0.4	..
	10	0.5	VN2410L	0.12	0.4	..
200	6.4	0.25	BS107A	0.25	0.6	..
	6.4	0.25	MPF9200	0.4	0.5	3-195
	14	0.2	BS107	0.25	0.6	..
170	6	0.5	VN1706L	0.158	0.4	..
	10	0.5	VN1710L	0.12	0.4	..
150	12	0.1	MPF4150†	0.25	0.625	3-193
60	5	0.5	2N7000	0.5	0.4	3-58
	5	0.2	BS170	0.195	0.4	3-62
	5	0.5	VN0610LL	0.12	0.4	3-823
	7.5	0.5	VN2222LL	0.099	0.4	3-825
30	1.2	1	VN0300L	0.4	0.4	..

†Contact Motorola sales office for data sheet  
†Depletion Mode



TO-236AA  
(SOT-23)  
CASE 318-02

Table 22 — Surface Mount — Case 318-02

$V_{BRSS}$ (Volts) Min	$I_{DS(on)}$ @ $I_D$ (Ohms)		Device	$I_D$ (Cont) (Amp) Max	$P_D$ @ $T_C = 25^\circ C$ Watts Max	Package	Page
	Max	(Amp)					
100	6	0.1	BSS123	0.17	0.2	318-02	3-65
60	5	0.2	MMBF170	0.5	0.2	318-02	3-188
	7.5	0.5	2N7002	0.8	0.2	318-02	3-60

# TO-220 Leadforms

<p><b>LEADFORM AJ</b></p>	<p><b>LEADFORM AK</b></p>	<p><b>LEADFORM S</b></p>
<p><b>LEADFORM W</b></p>	<p><b>LEADFORM WC</b></p>	<p><b>LEADFORM 2A</b></p>
<p><b>LEADFORM 3</b></p>	<p><b>LEADFORM 3A</b></p>	<p><b>LEADFORM 5F</b></p>
<p><b>LEADFORM 5FA</b></p>	<p><b>LEADFORM 5R</b></p>	<p><b>LEADFORM 5RA</b></p>
<p><b>LEADFORM 10R</b></p>	<p><b>LEADFORM 10RC</b></p>	<p><b>LEADFORM 15FA</b></p>
<p><b>LEADFORM 16</b></p>	<p><b>LEADFORM 16A</b></p>	<p><b>Ordering Information:</b>          To purchase a leadformed device, contact your local sales office and advise which leadform is required. The sales office will contact the factory and obtain a part number to be used to order the leadformed device.</p>