

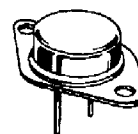
**MTM55N10**  
**MTM60N06**

55 and 60 AMPERE

**N-CHANNEL TMOS**  
**POWER FETs**

$R_{DS(on)} = 0.04 \text{ OHM}$   
100 VOLTS

$R_{DS(on)} = 0.028 \text{ OHM}$   
60 VOLTS

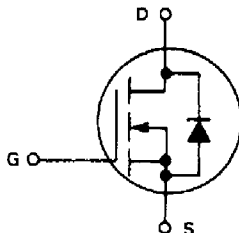


(TO-204AE)

**N-CHANNEL ENHANCEMENT-MODE SILICON GATE**  
**TMOS POWER FIELD EFFECT TRANSISTOR**

These TMOS Power FETs are designed for low voltage, high speed power switching applications such as switching regulators, converters, solenoid and relay drivers.

- Silicon Gate for Fast Switching Speeds — Switching Times Specified at 100°C
- Designer's Data —  $I_{DSS}$ ,  $V_{DS(on)}$ ,  $V_{GS(th)}$  and SOA Specified at Elevated Temperature
- Rugged — SOA is Power Dissipation Limited
- Source-to-Drain Diode Characterized for Use With Inductive Loads



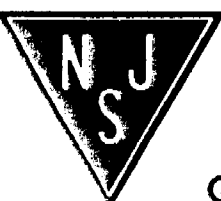
**MAXIMUM RATINGS**

Rating	Symbol	MTM		Unit
		60N06	55N10	
Drain-Source Voltage	$V_{DSS}$	60	100	Vdc
Drain-Gate Voltage ( $R_{GS} = 1 \text{ M}\Omega$ )	$V_{DGR}$	60	100	Vdc
Gate-Source Voltage Continuous Non-repetitive ( $t_p \leq 50 \mu s$ )	$V_{GS}$ $V_{GSM}$	$\pm 20$ $\pm 40$		Vdc Vpk
Drain Current Continuous Pulsed	$I_D$ $I_{DM}$	60 300	55 275	Adc
Total Power Dissipation @ $T_C = 25^\circ C$ Derate above $25^\circ C$	$P_D$	250 2		Watts W/°C
Operating and Storage Temperature Range	$T_J, T_{stg}$	- 65 to 150		°C

**THERMAL CHARACTERISTICS**

Thermal Resistance Junction to Case	$R_{\theta JC}$	0.5	°C/W
Maximum Lead Temp. for Soldering Purposes, 1/8" from case for 5 seconds	$T_L$	300	°C

NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However, NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.



## MTM55N10/MTM60N06

### ELECTRICAL CHARACTERISTICS (T<sub>C</sub> = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
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#### OFF CHARACTERISTICS

Drain-Source Breakdown Voltage (V <sub>GS</sub> = 0, I <sub>D</sub> = 5.0 mA)	MTM60N06 MTM55N10	V <sub>(BR)DSS</sub>	60 100	— —	V <sub>dc</sub>
Zero Gate Voltage Drain Current (V <sub>DS</sub> = Rated V <sub>DS</sub> , V <sub>GS</sub> = 0) T <sub>C</sub> = 125°C		I <sub>DSS</sub>	— —	10 100	μA <sub>dc</sub>
Gate-Body Leakage Current (V <sub>GS</sub> = 20 V <sub>dc</sub> , V <sub>DS</sub> = 0)		I <sub>GSS</sub>	—	100	nA <sub>dc</sub>

#### ON CHARACTERISTICS\*

Gate Threshold Voltage (V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 1 mA), V <sub>DS</sub> = V <sub>GS</sub> T <sub>J</sub> = 100°C		V <sub>GS(th)</sub>	2 1.5	4.5 4	V <sub>dc</sub>
Static Drain-Source On-Resistance (V <sub>GS</sub> = 10 V <sub>dc</sub> , I <sub>D</sub> = 30 A <sub>dc</sub> ) (V <sub>GS</sub> = 10 V <sub>dc</sub> , I <sub>D</sub> = 27.5 A <sub>dc</sub> )	MTM60N06 MTM55N10	R <sub>DS(on)</sub>	— —	0.028 0.04	Ohm
Drain-Source On-Voltage (V <sub>GS</sub> = 10 V) (I <sub>D</sub> = 60 A <sub>dc</sub> ) (I <sub>D</sub> = 30 A <sub>dc</sub> , T <sub>J</sub> = 100°C) (I <sub>D</sub> = 55 A <sub>dc</sub> ) (I <sub>D</sub> = 27.5 A <sub>dc</sub> , T <sub>C</sub> = 100°C)	MTM60N06 MTM60N06 MTM55N10 MTM55N10	V <sub>DS(on)</sub>	— — — —	1.98 1.68 2.6 2.2	V <sub>dc</sub>
Forward Transconductance (V <sub>DS</sub> = 15 V, I <sub>D</sub> = 30 A) (V <sub>DS</sub> = 15 V, I <sub>D</sub> = 27.5 A)	MTM60N06 MTM55N10	g <sub>FS</sub>	10 10	— —	mhos

#### DYNAMIC CHARACTERISTICS

Input Capacitance	(V <sub>DS</sub> = 25 V, V <sub>GS</sub> = 0, f = 1 MHz) See Figure 8	C <sub>iss</sub>	—	5000	pF
Output Capacitance		C <sub>oss</sub>	—	2500	
Reverse Transfer Capacitance		C <sub>res</sub>	—	1000	

#### SWITCHING CHARACTERISTICS\* (T<sub>J</sub> = 100°C)

Turn-On Delay Time	(V <sub>DD</sub> = 25 V, I <sub>D</sub> = 0.5 Rated I <sub>D</sub> , R <sub>gen</sub> = 50 ohms) See Figure 16	t <sub>d(on)</sub>	—	70	ns
Rise Time		t <sub>r</sub>	—	350	
Turn-Off Delay Time		t <sub>d(off)</sub>	—	350	
Fall Time		t <sub>f</sub>	—	400	
Total Gate Charge	V <sub>DS</sub> = 0.8 Rated, I <sub>D</sub> = Rated, V <sub>GS</sub> = 10 V See Figure 15	Q <sub>g</sub>	105 (Typ)	120	nC
		Q <sub>gs</sub>	74 (Typ)	—	
		Q <sub>gd</sub>	31 (Typ)	—	

#### SOURCE DRAIN DIODE CHARACTERISTICS\*

Forward On-Voltage	(I <sub>S</sub> = Rated I <sub>D</sub> , V <sub>GS</sub> = 0)	V <sub>SD</sub>	3.5	4	V <sub>dc</sub>
Forward Turn-On Time		t <sub>on</sub>	Limited by stray inductance		
Reverse Recovery Time		t <sub>rr</sub>	200	—	ns

#### INTERNAL PACKAGE INDUCTANCE

Internal Drain Inductance (Measured from the contact screw on the header closer to the source pin and the center of the die)	L <sub>d</sub>	5 (Typ)	—	nH
Internal Source Inductance (Measured from the source pin, 0.25" from the package to the source bond pad)	L <sub>s</sub>	12.5 (Typ)	—	

\*Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2%.