

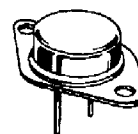
**MTM55N10
 MTM60N06**

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**

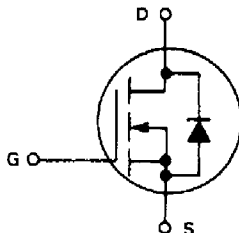


(TO-204AE)

**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



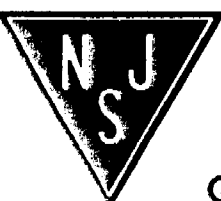
MAXIMUM RATINGS

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 ($t_p \leq 50 \mu\text{s}$)	V_{GS} V_{GSM}	± 20 ± 40		Vdc Vpk
Drain Current Continuous Pulsed	I_D I_{DM}	60 300	55 275	Adc
Total Power Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	250 2		Watts W/°C
Operating and Storage Temperature Range	T_J, T_{stg}	-85 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_C = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
----------------	--------	-----	-----	------

OFF CHARACTERISTICS

Drain-Source Breakdown Voltage (V _{GS} = 0, I _D = 5.0 mA)	MTM60N06 MTM55N10	V _{(BR)DSS}	60 100	— —	V _{dc}
Zero Gate Voltage Drain Current (V _{DS} = Rated V _{DS} , V _{GS} = 0) T _C = 125°C		I _{DSS}	— —	10 100	μA _{dc}
Gate-Body Leakage Current (V _{GS} = 20 V _{dc} , V _{DS} = 0)		I _{GSS}	—	100	nA _{dc}

ON CHARACTERISTICS*

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

DYNAMIC CHARACTERISTICS

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

SWITCHING CHARACTERISTICS* (T_J = 100°C)

Turn-On Delay Time	(V _{DD} = 25 V, I _D = 0.5 Rated I _D , R _{gen} = 50 ohms) See Figure 16	t _{d(on)}	—	70	ns
Rise Time		t _r	—	350	
Turn-Off Delay Time		t _{d(off)}	—	350	
Fall Time		t _f	—	400	
Total Gate Charge	V _{DS} = 0.8 Rated, I _D = Rated, V _{GS} = 10 V See Figure 15	Q _g	105 (Typ)	120	nC
		Q _{gs}	74 (Typ)	—	
		Q _{gd}	31 (Typ)	—	

SOURCE DRAIN DIODE CHARACTERISTICS*

Forward On-Voltage	(I _S = Rated I _D , V _{GS} = 0)	V _{SD}	3.5	4	V _{dc}
Forward Turn-On Time		t _{on}	Limited by stray inductance		
Reverse Recovery Time		t _{rr}	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 _d	5 (Typ)	—	nH
Internal Source Inductance (Measured from the source pin, 0.25" from the package to the source bond pad)	L _s	12.5 (Typ)	—	

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