



NES

NEW ENGLAND SEMICONDUCTOR

NESM10N60

POWER MOSFET - N CHANNEL

- SWITCHING POWER SUPPLIES
- REPETITIVE AVALANCHE RATING
- ISOLATED HERMETIC PACKAGE
- HIGH RELIABILITY

10.0 Amps

600 Volts

ABSOLUTE MAXIMUM RATINGS ($T_C = 25^\circ\text{C}$ unless otherwise noted)

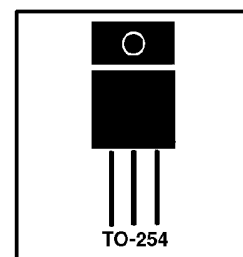
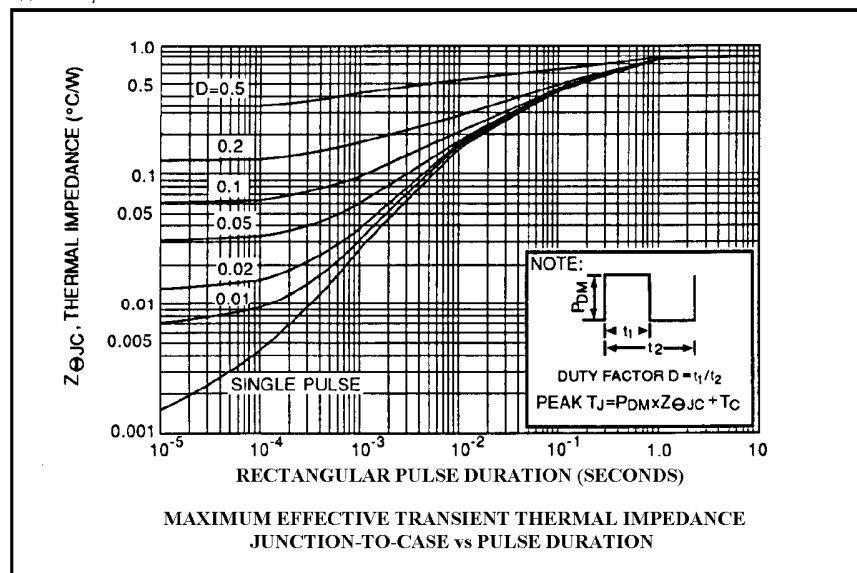
PARAMETERS/TEST CONDITIONS	SYMBOL	LIMITS	UNITS
Drain-Source Voltage	V_{DS}	600	V
Gate-Source Voltage	V_{GS}	± 30	V
Continuous Drain Current $T_C = 25^\circ\text{C}$	I_D	10.0	A
Pulsed Drain Current (1)	I_{DM}	40.0	A
Power Dissipation $T_C = 25^\circ\text{C}$	P_D	150	W
Operating Junction & Storage Temperature Range	T_J, T_{stg}	-55 to 150	$^\circ\text{C}$
Lead Temperature ($\frac{1}{16}$ " from case for 10 sec.)	T_L	300	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS

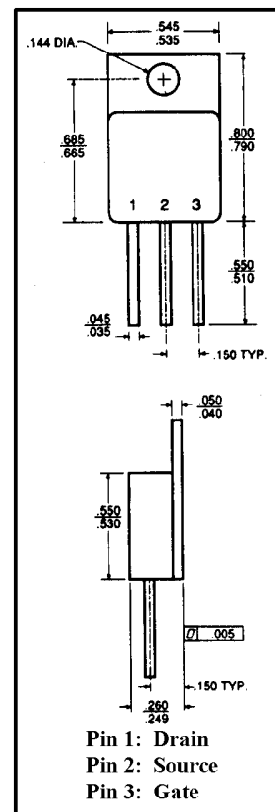
THERMAL RESISTANCE	Symbol	Limits	Units
Junction-to-Case	R_{thJC}	0.8	K/W
Junction-to-Ambient	R_{thJA}	50	K/W

(1) Pulse width limited by maximum junction temperature.

FIGURE 1,



MECHANICAL OUTLINE



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T4-4.8-860-904 REV:--



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

PARAMETERS/TEST CONDITIONS	Symbol	Min	Typ(1)	Max.	Units
STATIC					
Drain-Source Breakdown Voltage $V_{GS} = 0\text{ V}, I_D = 250\mu\text{A}$	$V_{(BR)DSS}$	600			V
Gate Threshold Voltage $V_{DS} = V_{GS}, I_D = 1.0\text{mA}$	$V_{GS(th)}$	2.0		4.0	V
Gate-Body Leakage $V_{DS} = 0\text{ V}, V_{GS} = \pm 30\text{ V}$	I_{GSS}			± 100	nA
Zero Gate Voltage Drain Current $V_{DS} = V_{(BR)DSS}, V_{GS} = 0\text{ V}$	I_{DSS}			250	μA
Zero Gate Voltage Drain Current $V_{DS} = 0.8 V_{(BR)DSS}, V_{GS} = 0\text{ V}, T_J = 125^\circ\text{C}$	I_{DSS}			1000	μA
Drain-Source On-State Resistance (2) $V_{GS} = 10\text{ V}, I_D = 5.0\text{ A}$	$r_{DS(ON)}$			0.6	Ω

DYNAMIC

Input Capacitance	$V_{GS} = 0\text{ V},$ $V_{DS} = 25\text{ V},$ $f = 1.0\text{ MHz}$	C_{iss}			1800	pF
Output Capacitance		C_{oss}			400	
Reverse Transfer Capacitance		C_{rss}			160	
Total Gate Charge	$V_{GS} = 10\text{ V},$ $I_D = 10\text{ A},$ $V_{DD} = 300\text{ V}$	Q_g			105	nC
Gate-Source Charge		Q_{gs}			12	
Gate-Drain Charge		Q_{gd}			53	

SWITCHING

Turn-On Delay Time	$V_{DD} = 0.5 V_{DSS},$ $I_D = 10\text{ A}, V_{GS} = 15\text{ V},$ $R_G = 1.8\Omega$ (Switching time is essentially independent of operating temperature)	$t_{d(on)}$			25	ns
Turn-On Time		t_r			25	
Turn-Off Time		$t_{d(off)}$			80	
Fall Time		t_f			35	

SOURCE-DRAIN DIODE RATINGS & CHARACTERISTICS ($T_J = 25^\circ\text{C}$ unless otherwise noted)

Continuous Current	I_S			10.0	A
Pulsed Current (1)	I_{SM}			42.0	A
Forward Voltage (2) $I_F = I_S, V_{GS} = 0\text{ V}$	V_{SD}			1.3	V
Reverse Recovery Time $I_F = I_S, dI_F/dt = 100\text{ A}/\mu\text{S}$	t_{rr}			600	ns

(1) Pulse width limited by maximum junction temperature.

(2) Pulse test: Pulse width < 300 μsec . Duty Cycle $\leq 2\%$.

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