



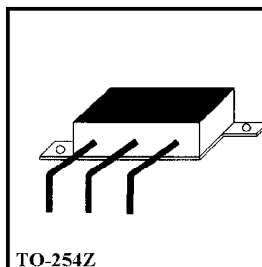
NES

NEW ENGLAND SEMICONDUCTOR

NESM250
NESM250Z

POWER MOSFET N CHANNEL

- REPETITIVE AVALANCHE RATINGS
- LOW $R_{DS(ON)}$
- LOW DRIVE REQUIREMENT
- DYNAMIC dv/dt RATING



TO-254Z

27 AMPERE

200 VOLTS

0.085 Ω

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

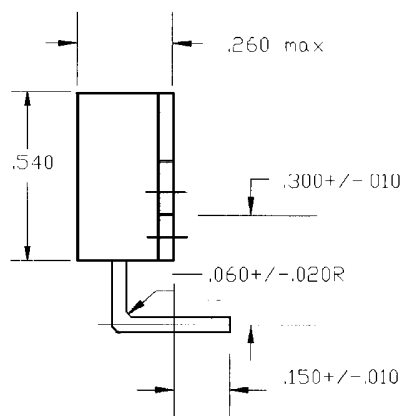
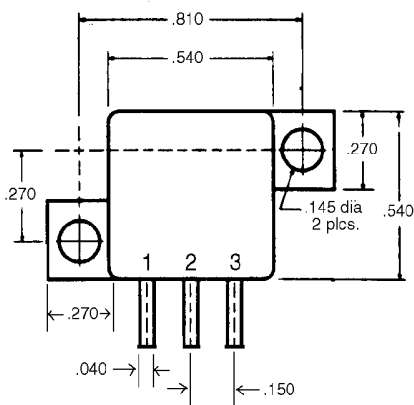
PARAMETERS / TEST CONDITIONS		SYMBOL	NESM250 NESM250Z	UNITS
Drain-Source Voltage		V_{DS}	200	V
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current	$T_C = 25^\circ\text{C}$	I_D	27	A
Pulsed Drain Current (1)		I_{DM}	110	A
Power Dissipation	$T_C = 25^\circ\text{C}$ $T_C = 55^\circ\text{C}$	P_D	125 95	W
Operating Junction & Storage Temperature Range		T_J, T_{stg}	-55 to +150	$^\circ\text{C}$
Lead Temperature (1/16" from case for 10 secs.)		T_L	300	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYP.	MAX.	UNITS
Junction-to-Case	R_{thJC}		1.0	K/W
Junction-to-Ambient	R_{thJA}		48	K/W
Case-to-Sink	R_{thCS}	0.21		K/W

(1) Pulse width limited by maximum junction temperature.

MECHANICAL OUTLINE



NEW ENGLAND SEMICONDUCTOR

6 Lake Street Lawrence, MA 01841
1-800-446-1158 / (978) 794-1666 / FAX: (978) 689-0803

T4-4.8-860-924 REV: --



NES

NEW ENGLAND SEMICONDUCTOR

NESM250 NESM250Z

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

PARAMETERS / TEST CONDITIONS		SYMBOL	MIN.	TYP.	MAX.	UNITS
Drain-Source Breakdown Voltage $V_{GS} = 0\text{ V}, I_D = 250\text{ }\mu\text{A}$		$V_{(BR)DSS}$	200			V
Gate Threshold Voltage $V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$		$V_{GS(th)}$	2.0	3.0	4.0	V
Gate-Body Leakage $V_{GS} = \text{At Rated } V_{GS}$		I_{GSS}			± 100	nA
Zero Gate Voltage Drain Current $V_{DS} = 0.8\text{ max Rating}, V_{GS} = 0\text{ V}$		I_{DSS}			250	μA
Zero Gate Voltage Drain Current $V_{DS} = 80\% \text{ max } V_{(BR)DSS}, V_{GS} = 0\text{ V}, T_J = 125^{\circ}\text{C}$		I_{DSS}			1000	μA
Drain-Source On-State Resistance (2) $V_{GS} = 10\text{ V}, I_D = 60\% \text{ A}$		$r_{DS(on)}$			0.085	Ω
Forward Transconductance (2) $V_{DS} = 15\text{ V}, I_D = 60\% \text{ A } V_{DS} \geq I_{D(ON)} \times R_{DS(ON)} \text{ max}$		g_{fs}	13.0			S(Ω)
Input Capacitance	$V_{GS} = 0\text{ V}$	C_{iss}		2600		pF
Output Capacitance	$V_{DS} = 25\text{ V}$	C_{oss}		650		
Reverse Transfer Capacitance	$f = 1\text{ MHz}$	C_{rss}		150		
Total Gate Charge	$V_{DS} = 80\% V_{(BR)DSS}$ $V_{GS} = 10\text{ V}, I_D = \text{Rated}$ (Gate charge is essentially independent of operating temperature.)	Q_g			120	nC
Gate-Source Charge		Q_{gs}			20	
Gate -Drain Charge		Q_{gd}			65	
Turn-On Delay Time	$V_{dd} = 50\% V,$ $I_D = \text{Rated}$ $R_G = 6.2\text{ }\Omega$ (Switching time is essentially independent of operating temperature.)	$t_{d(on)}$			30	ns
Rise Time		t_r			180	
Turn-Off Delay Time		$t_{d(off)}$			100	
Fall Time		t_f			120	

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

PARAMETERS / TEST CONDITIONS		SYMBOL	MIN.	TYP.	MAX.	UNITS
Continuous Current		I_S			27.0	A
Pulsed Current (1)		I_{SM}			110	A
Forward Voltage (2) $I_F = I_S, V_{GS} = 0\text{ V}, T_J = 25^{\circ}\text{C}$		V_{SD}			2.0	V
Reverse Recovery Time $I_F = I_S, dI/dt = 100\text{ A}/\mu\text{S}, V_{DD} = 50\text{ V}$		t_{rr}			630	ns
Reverse Recovered Charge $I_F = I_S, dI/dt = 100\text{ A}/\mu\text{S}, V_{DD} = 50\text{ V}$		Q_{rr}			8	μC

(1) Pulsed width limited by maximum junction temperature.

(2) Pulse Test: Pulse width < 300 μsec . Duty cycle $\leq 2\%$.

NEW ENGLAND SEMICONDUCTOR

6 Lake Street Lawrence, MA 01841
1-800-446-1158 / (978) 794-1666 / FAX: (978) 689-0803

T4-4.8-860-924 REV: --