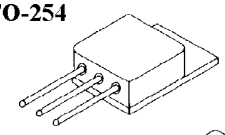
NEW ENGLAND SEMICONDUCTOR

NESM140
NESM140Z

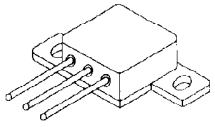
POWER MOSFET
N CHANNEL

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

TO-254



TO-254Z



28 AMPERE

100 VOLTS

0.077 Ω

ABSOLUTE MAXIMUM RATINGS (T_C = 25°C unless otherwise noted)

PARAMETERS / TEST CONDITIONS		SYMBOL	VALUE	UNITS
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C = 25°C	I_D	28	A
Pulsed Drain Current (1)		I_{DM}	112	A
Power Dissipation	T_C = 25°C	P_D	125	W
Operating Junction & Storage Temperature Range		T_J, T_{stg}	-55 to + 175	°C
Lead Temperature (1/16" from case for 10 secs.)		T_L	300	°C

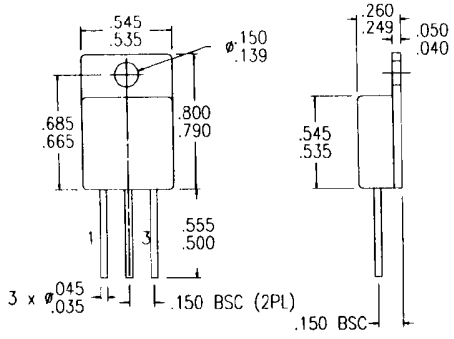
THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYP.	MAX.	UNITS
Junction-to-Case	R_{thJC}		1.2	K/W
Junction-to-Ambient	R_{thJA}		48	K/W
Case-to-Sink	R_{thCS}	0.21		K/W

(1)Pulse width linited by maximum junction temperature.

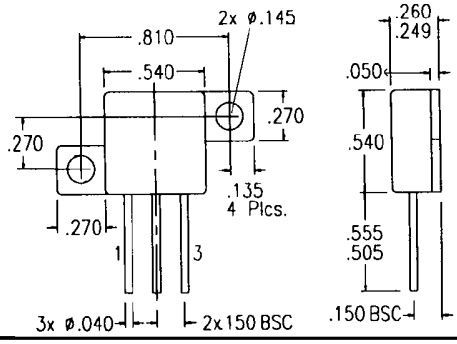
MECHANICAL OUTLINE

TO-254
PIN OUT:
PIN 1: DRAIN
PIN 2: SOURCE
PIN 3: GATE



MECHANICAL OUTLINE

TO-254 Z
PIN OUT:
PIN 1: DRAIN
PIN 2: SOURCE
PIN 3: GATE



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

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NESM140
NESM140Z

ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise noted)

PARAMETERS / TEST CONDITIONS		SYMBOL	MIN.	TYP.	MAX.	UNITS
Drain-Source Breakdown Voltage V_{GS} = 0 V, I_D = 250 µA		$V_{(BR)DSS}$	100			V
Gate Threshold Voltage V_{DS} = V_{GS}, I_D = 250 µA		$V_{GS(th)}$	2.0		4.0	V
Gate-Body Leakage V_{GS} = At Rated V_{GS}		I_{GSS}			±100	nA
Zero Gate Voltage Drain Current V_{DS} = 0.8 max Rating, V_{GS} = 0 V		I_{DSS}			250	µA
Zero Gate Voltage Drain Current V_{DS} = 80% $V_{(BR)DSS}$, V_{GS} = 0 V, T_J = 125°C		I_{DSS}			1000	µA
Drain-Source On-State Resistance (2) V_{GS} = 10 V, I_D = 28 A		$r_{DS(on)}$			0.077	Ω
Forward Transconductance (2) V_{DS} = 15 V, I_D = 28 A (V_{DS} ≥ $I_{D(ON)}$ x $R_{DS(ON)}$ max)		g_{fs}	8.7			S(Ω)
Input Capacitance	V_{GS} = 0 V	C_{iss}		1500		
Output Capacitance	V_{DS} = 25 V	C_{oss}		500		pF
Reverse Transfer Capacitance	f = 1.0 MHz	C_{rss}		90		
Total Gate Charge	V_{DS} = 80 %$V_{(BR)DSS}$	Q_g			60	
Gate-Source Charge	V_{GS} = 10 V, I_D = 28 A	Q_{gs}			12	nC
Gate -Drain Charge	(Gate charge is cssentially independent of operating temperature.)	Q_{gd}			28	
Turn-On Delay Time	V_{dd} = 50% V,	$t_{d(on)}$			23	
Rise Time	I_D = 28 A, R_G = 9.1 Ω	t_r			110	ns
Turn-Off Delay Time	(Switching time is essentially independent of	$t_{d(off)}$			60	
Fall Time	operating temperature.)	t_f			75	

SOURCE-DRAIN DIODE RATINGS & CHARACTERISTICS (T_j = 25°C unless otherwise noted)

PARAMETERS / TEST CONDITIONS	SYMBOL	MIN.	TYP.	MAX	UNITS
Continuous Current	I_S			28	A
Pulsed Current (1)	I_{SM}			112	A
Forward Voltage (2) I_F = I_S, V_{GS} = 0 V	V_{SD}			2.5	V
Reverse Recovery Time I_F = I_S, dI/dt = 100 A/µS, V_{DD} = 50 v	t_{rr}			300	ns
Reverse Recovered Charge I_F = I_S, dI/dt = 100 A/µS, V_{DD} = 50 v	Q_{rr}			2.9	µC

(1)Pulsed width limited by maximum junction temperature.
(2)Pulse Test: Pulse width < 300 µsec. Duty cycel ≤ 2%.

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