

## POWER MOSFET - P CHANNEL

- Switching Power Supplies
- Repetitive Avalanche Rating
- Isolated Hermetic Package
- High Reliability

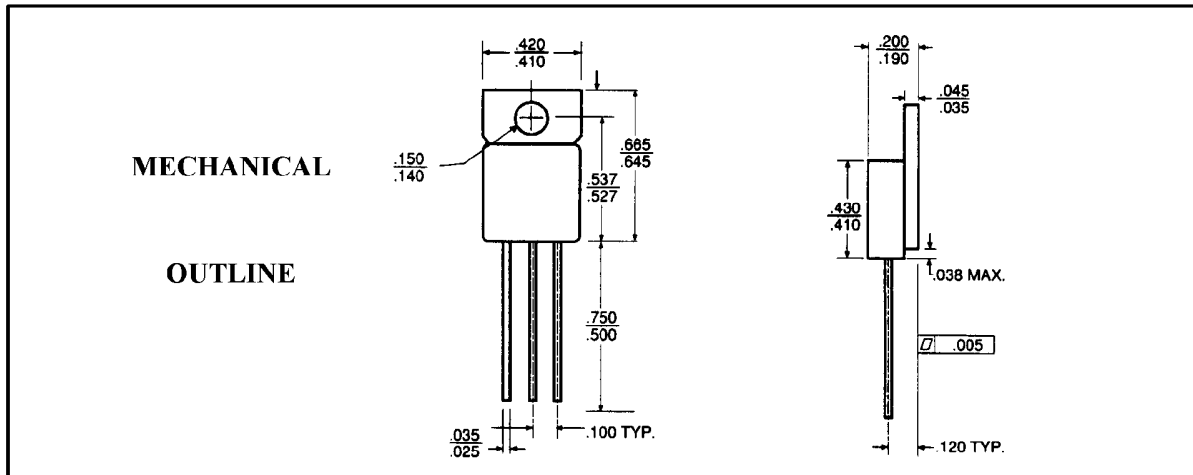
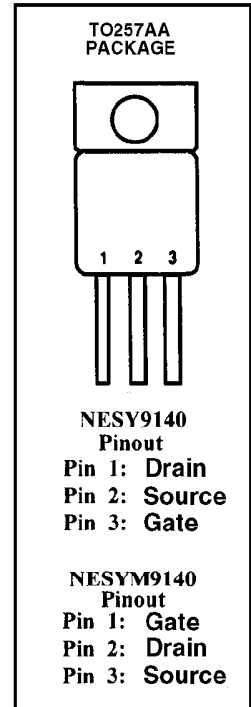
ABSOLUTE MAXIMUM RATINGS ( $T_C = 25^\circ\text{C}$  unless otherwise noted)

PARAMETERS/TEST CONDITIONS	SYMBOL	NESY9140 NESYM9140	UNITS
Drain-Source Voltage	$V_{DS}$	-100	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$I_D$	-13	A
	$T_C = 25^\circ\text{C}$		
Pulsed Drain Current (1)	$I_{DM}$	-52	A
Power Dissipation	$P_D$	60	W
	$T_C = 25^\circ\text{C}$		
Operating Junction & Storage Temperature Range	$T_J, T_{stg}$	-55 to 150	$^\circ\text{C}$

**THERMAL RESISTANCE RATINGS**

THERMAL RESISTANCE	Symbol	Typ.	Max.	Units
Junction-to-Case	$R_{thJC}$		2.1	K/W
Junction-to-Ambient	$R_{thJA}$		80	K/W
Case-to-Sink	$R_{thCS}$		.21	K/W

(1) Pulse width limited by maximum junction temperature.





**NES**  
NEW ENGLAND SEMICONDUCTOR

**NESY9140**  
**NESYM9140**

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

PARAMETERS/TEST CONDITIONS		Symbol	Min	Typ.	Max.	Units
Drain-Source Breakdown Voltage $V_{GS} = 0, I_D = 1.0 \text{ mA}$		$V_{(BR)DSS}$	-100			V
Gate Threshold Voltage $V_{DS} = V_{GS}, I_D = -250 \mu\text{A}$		$V_{GS(th)}$	-2.0		-4.0	V
Gate-Body Leakage $V_{GS} = -20 \text{ V}$		$I_{GSS}$			-100	nA
Zero Gate Voltage Drain Current $V_{DS} = 0.8 \text{ max Rating}, V_{GS} = 0 \text{ V}$		$I_{DSS}$			-25	$\mu\text{A}$
Zero Gate Voltage Drain Current $V_{DS} = 0.8, V_{(BR)DSS}, V_{GS} = 0 \text{ V}, T_j = 125^{\circ}\text{C}$		$I_{DSS}$			-250	$\mu\text{A}$
Drain-Source On-State Resistance (2) $V_{GS} = -10 \text{ V}, I_D = 13 \text{ A}$		$r_{DS(on)}$			0.24	$\Omega$
Drain-Source On-State Resistance (2) $V_{GS} = -10 \text{ V}, I_D = 8.2 \text{ A}$		$r_{DS(on)}$			0.21	$\Omega$
Forward Transconductance (2) $V_{DS} = 15 \text{ V}, I_D = 12 \text{ A}$		$g_{fs}$	9.1			S ( )
Input Capacitance	$V_{GS} = 0 \text{ V}$	$C_{iss}$		1400		pF
Output Capacitance	$V_{DS} = 25 \text{ V}$	$C_{oss}$		600		
Reverse Transfer Capacitance	$f = 1.0 \text{ MHz}$	$C_{rss}$		200		
Total Gate Charge	$V_{DS} = 0.5 V_{(BR)DSS}, V_{GS} = -10 \text{ V}, I_D = -13 \text{ A}$ (Gate charge is essentially independent of operating temperature)	$Q_g$	31.0			nC
Gate-Source Charge		$Q_{gs}$	3.7			
Gate-Drain Charge		$Q_{gd}$	7.0			
Turn-On Delay Time	$V_{DD} = -50 \text{ V}, I_D = 13 \text{ A}, R_G = 9.1 \Omega$  (Switching time is essentially independent of operating temperature)	$t_{d(on)}$			35	ns
Rise time		$t_r$			85	
Turn-Off Delay Time		$t_{d(off)}$			85	
Fall Time		$t_f$			65	

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

PARAMETERS/TEST CONDITIONS		Symbol	Min.	Typ.	Max.	Units
Continuous Current		$I_S$			-13	A
Pulsed Current (1)		$I_{SM}$			-52	A
Forward Voltage (2) $I_F = I_S, V_{GS} = 0 \text{ V}$		$V_{SD}$			-4.2	V
Reverse Recovery Time $I_F = I_S, dI/dt = 100 \text{ A}/\mu\text{S}, V_{DD} = -50 \text{ V}$		$t_{rr}$			280	ns
Reverse Recovered Charge $I_F = I_S, dI/dt = 100 \text{ A}/\mu\text{S}, V_{DD} = -50 \text{ V}$		$Q_{rr}$			3.6	$\mu\text{C}$

(1) Pulse width limited by maximum junction temperature.

(2) Pulse test: Pulse width < 300  $\mu\text{sec}$ . Duty Cycle  $\leq 2\%$ .

**NEW ENGLAND SEMICONDUCTOR**

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