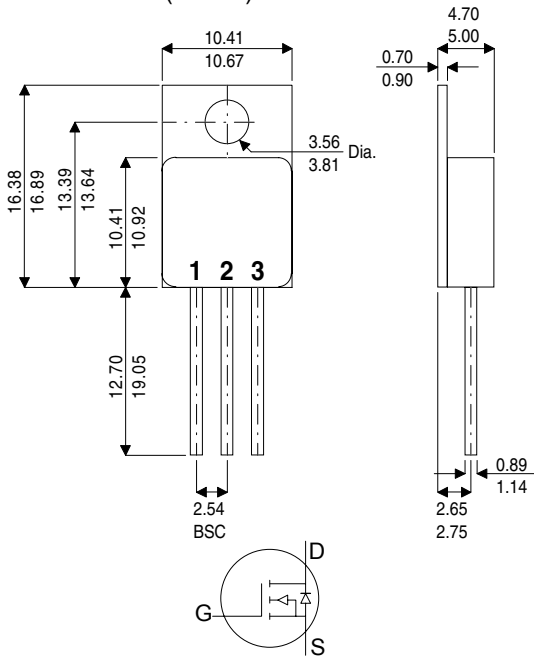


## MECHANICAL DATA

Dimensions in mm (inches)



### TO-220M (TO-257AB)

Pin 1 – Gate Pin 2 – Drain Pin 3 – Source

## N-CHANNEL POWER MOSFET FOR HI-REL APPLICATIONS

**$BV_{DSS}$  400V**  
 **$I_D$  8.7A**  
 **$R_{DS(on)}$  0.55 $\Omega$**

### FEATURES

- HERMETICALLY SEALED TO-220 METAL PACKAGE
- SIMPLE DRIVE REQUIREMENTS
- ALL LEADS ISOLATED FROM CASE
- LIGHTWEIGHT
- SCREENING OPTIONS AVAILABLE

### ABSOLUTE MAXIMUM RATINGS $T_{CASE} = 25^\circ\text{C}$ unless otherwise stated

$V_{DS}$	Drain - Source Voltage	400V
$V_{GS}$	Gate - Source Voltage	$\pm 20\text{V}$
$I_D$	Drain Current - Continuous ( $T_C = 25^\circ\text{C}$ )	8.7A
$I_D$	Drain Current - Continuous ( $T_C = 100^\circ\text{C}$ )	5.5A
$I_{DM}$	Drain Current - Pulsed <sup>1</sup>	35A
$P_D$	Total Power Dissipation at $T_{case} \leq 25^\circ\text{C}$	100W
	De-rate Linearly above $25^\circ\text{C}$	0.8W/ $^\circ\text{C}$
$T_j, T_{stg}$	Operating Junction and Storage Temperature Range	-55 to $+150^\circ\text{C}$
$T_L$	Lead Temperature (for 5 sec)	300 $^\circ\text{C}$
$R_{thj-case}$	Thermal Resistance Junction - Case	1.25 $^\circ\text{C}/\text{W}$

NOTES: 1) Pulse Width limited by maximum junction temperature.  
 2) Pulse Test: Pulse Width  $\leq 380\mu\text{s}$ , Duty Cycle,  $\delta$  2%

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## STATIC ELECTRICAL RATINGS (T<sub>case</sub> = 25°C unless otherwise stated)

	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
BV <sub>DSS</sub>	Drain – Source Breakdown Voltage	V <sub>GS</sub> = 0V I <sub>D</sub> = 1.0mA	400	-	-	V
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Temperature Coefficient of Breakdown Voltage	Reference to 25°C I <sub>D</sub> = 1.0mA	-	0.46	-	V/°C
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> = 320V V <sub>GS</sub> = 0V T <sub>J</sub> = 125°C	-	-	25	μA
			-	-	250	
I <sub>GSS</sub>	Gate – Source Leakage Current	V <sub>GS</sub> = ±20V V <sub>DS</sub> = 0V	-	-	±100	nA
V <sub>GS(TH)</sub>	Gate Threshold Voltage	V <sub>DS</sub> = V <sub>GS</sub> I <sub>D</sub> = 250μA	2.0	-	4.0	V
R <sub>DS(ON)</sub>	Drain – Source On State Resistance	V <sub>GS</sub> = 10V I <sub>D</sub> = 5.5A	-	-	0.55	Ω
		V <sub>GS</sub> = 10V I <sub>D</sub> = 8.7A	-	-	0.63	Ω
g <sub>FS</sub>	Forward Transconductance <sup>2</sup>	V <sub>DS</sub> ≥ 15V I <sub>D</sub> = 5.5A	4.9	-	-	S

## DYNAMIC CHARACTERISTICS

C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> = 25V f = 1.0MHz V <sub>GS</sub> = 0V	-	1400	-	pF
C <sub>oss</sub>	Output Capacitance		-	350	-	
C <sub>rss</sub>	Reverse Transfer Capacitance		-	230	-	
Q <sub>g</sub>	Total Gate Charge <sup>2</sup>	V <sub>DS</sub> = 200V V <sub>GS</sub> = 10V I <sub>D</sub> = 8.7A	-	-	65	nC
Q <sub>gs</sub>	Gate – Source Charge <sup>2</sup>		-	-	10	
Q <sub>gd</sub>	Gate – Drain Charge <sup>2</sup>		-	-	40.5	
T <sub>d(on)</sub>	Turn-On Delay	V <sub>DD</sub> = 200V R <sub>G</sub> = 9.1Ω I <sub>D</sub> = 8.7A V <sub>GS</sub> = 10V	-	-	25	ns
t <sub>r</sub>	Rise Time		-	-	92	
T <sub>d(off)</sub>	Turn-Off Delay Time		-	-	79	
t <sub>f</sub>	Fall Time		-	-	58	

## SOURCE – DRAIN DIODE RATINGS AND CHARACTERISTICS

I <sub>S</sub>	Continuous Source Current (MAX)		-	-	8.7	A
I <sub>SM</sub>	Pulsed Source Current (MAX)		-	-	35	
V <sub>SD</sub>	Diode Forward Voltage <sup>2</sup>	V <sub>GS</sub> = 0V I <sub>S</sub> = 8.7A	-	-	1.5	V
t <sub>rr</sub>	Reverse Recovery Time <sup>2</sup>	V <sub>GS</sub> = 0V I <sub>S</sub> = 8.7A	-	-	600	ns
Q <sub>rr</sub>	Reverse Recovery Charge <sup>2</sup>	di/dt = 100A/μs V <sub>DD</sub> ≤ 50V	-	-	5.6	μC
T <sub>on</sub>	Forward Turn-On Time		Negligible			

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