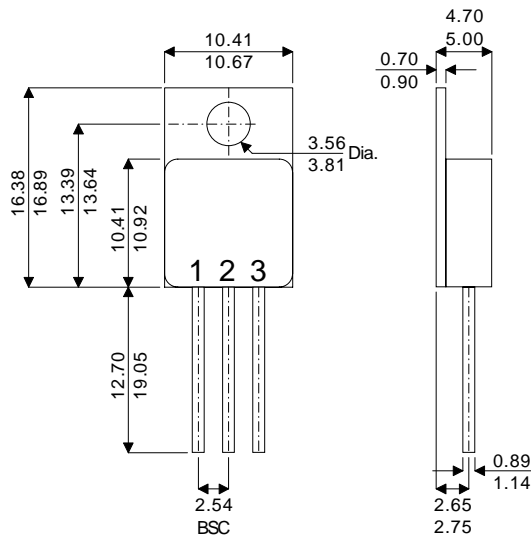


**MECHANICAL DATA**

Dimensions in mm (inches)



**TO-220M – Metal Package**

Pad 1 – Gate      Pad 2 – Drain      Pad 3 – Source

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

$V_{DSS}$                     **500V**  
 $I_{D(cont)}$                 **5.5A**  
 $R_{DS(on)}$                 **0.85Ω**

**FEATURES**

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

**ABSOLUTE MAXIMUM RATINGS** ( $T_{case} = 25^{\circ}C$  unless otherwise stated)

$V_{GS}$	Gate – Source Voltage	±20V
$I_D$	Continuous Drain Current @ $T_{case} = 25^{\circ}C$	5.5A
$I_D$	Continuous Drain Current @ $T_{case} = 100^{\circ}C$	3.5A
$I_{DM}$	Pulsed Drain Current	22A
$P_D$	Power Dissipation @ $T_{case} = 25^{\circ}C$	60W
	Linear Derating Factor	0.48W/°C
$T_J, T_{stg}$	Operating and Storage Temperature Range	-55 to 150°C
$R_{\theta JC}$	Thermal Resistance Junction to Case	2.1°C/W max.
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	80°C/W max.

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

Parameter	Test Conditions	Min.	Typ.	Max.	Unit	
<b>STATIC ELECTRICAL RATINGS</b>						
$BV_{DSS}$	Drain – Source Breakdown Voltage	$V_{GS} = 0$	$I_D = 1\text{mA}$	500	V	
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Temperature Coefficient of Breakdown Voltage	Reference to $25^\circ\text{C}$ $I_D = 1\text{mA}$		0.78	$\text{V}/^\circ\text{C}$	
$R_{DS(on)}$	Static Drain – Source On–State Resistance	$V_{GS} = 10\text{V}$	$I_D = 3.5\text{A}$		0.85	
		$V_{GS} = 10\text{V}$	$I_D = 5.5\text{A}$		0.98	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$	$I_D = 250\mu\text{A}$	2	4	V
$g_{fs}$	Forward Transconductance	$V_{DS} \geq 15\text{V}$	$I_{DS} = 3.5\text{A}$	4.7		$\text{S}(\bar{\omega})$
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{GS} = 0$	$V_{DS} = 0.8BV_{DSS}$		25	$\mu\text{A}$
			$T_J = 125^\circ\text{C}$			250
$I_{GSS}$	Forward Gate – Source Leakage	$V_{GS} = 20\text{V}$			100	nA
$I_{GSS}$	Reverse Gate – Source Leakage	$V_{GS} = -20\text{V}$			-100	
<b>DYNAMIC CHARACTERISTICS</b>						
$C_{iss}$	Input Capacitance	$V_{GS} = 0$			1300	pF
$C_{oss}$	Output Capacitance	$V_{DS} = 25\text{V}$			310	
$C_{riss}$	Reverse Transfer Capacitance	$f = 1\text{MHz}$			120	
$Q_g$	Total Gate Charge	$V_{GS} = 10\text{V}$	$I_D = 5.5\text{A}$	27.3	68.5	nC
$Q_{gs}$	Gate – Source Charge	$I_D = 5.5\text{A}$		2	12.5	nC
$Q_{gd}$	Gate – Drain (“Miller”) Charge	$V_{DS} = 0.5BV_{DSS}$		11.1	42.4	
$t_{d(on)}$	Turn–On Delay Time	$V_{DD} = 250\text{V}$ $I_D = 5.5\text{A}$ $R_G = 9.1\Omega$			21	ns
$t_r$	Rise Time				73	
$t_{d(off)}$	Turn–Off Delay Time				72	
$t_f$	Fall Time				51	
<b>SOURCE – DRAIN DIODE CHARACTERISTICS</b>						
$I_S$	Continuous Source Current				5.5	A
$I_{SM}$	Pulse Source Current				22	
$V_{SD}$	Diode Forward Voltage	$I_S = 5.5\text{A}$	$T_J = 25^\circ\text{C}$		1.5	V
$t_{rr}$	Reverse Recovery Time	$I_S = 5.5\text{A}$	$T_J = 25^\circ\text{C}$		700	ns
$Q_{rr}$	Reverse Recovery Charge	$d_i / d_t \leq 100\text{A}/\mu\text{s}$		$V_{DD} \leq 50\text{V}$	8.9	$\mu\text{C}$
<b>PACKAGE CHARACTERISTICS</b>						
$L_D$	Internal Drain Inductance	(from 6mm down drain lead pad to centre of die)			8.7	nH
$L_S$	Internal Source Inductance	(from 6mm down source lead to centre of source bond pad)			8.7	