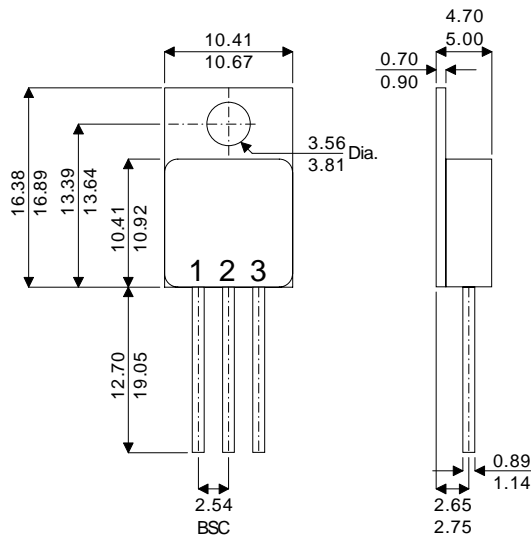


**MECHANICAL DATA**

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**

$V_{DSS}$                     **100V**  
 $I_{D(cont)}$                 **18A**  
 $R_{DS(on)}$                 **0.092Ω**

**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 @ $T_{case} = 25^{\circ}C$	18A
$I_D$	Continuous Drain Current @ $T_{case} = 100^{\circ}C$	12A
$I_{DM}$	Pulsed Drain Current	72A
$P_D$	Power Dissipation @ $T_{case} = 25^{\circ}C$	50W
	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	$V_{GS} = 0$ $I_D = 1\text{mA}$	100		V
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Temperature Coefficient of Breakdown Voltage	Reference to $25^\circ\text{C}$ $I_D = 1\text{mA}$		0.1	$\text{V}/^\circ\text{C}$
$R_{DS(on)}$	Static Drain – Source On–State Resistance	$V_{GS} = 10\text{V}$ $I_D = 12\text{A}$		0.092	$\Omega$
		$V_{GS} = 10\text{V}$ $I_D = 18\text{A}$		0.11	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$ $I_D = 250\mu\text{A}$	2	4	V
$g_{fs}$	Forward Transconductance	$V_{DS} \geq 15\text{V}$ $I_{DS} = 12\text{A}$	9.1		$\text{S}(\bar{v})$
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{GS} = 0$ $V_{DS} = 0.8BV_{DSS}$ $T_J = 125^\circ\text{C}$		25	$\mu\text{A}$
				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	$V_{GS} = 0$		1660	pF
$C_{oss}$	Output Capacitance	$V_{DS} = 25\text{V}$		550	
$C_{rss}$	Reverse Transfer Capacitance	$f = 1\text{MHz}$		120	
$Q_g$	Total Gate Charge	$V_{GS} = 10\text{V}$ $I_D = 18\text{A}$ $V_{DS} = 0.5BV_{DSS}$	30	59	nC
$Q_{gs}$	Gate – Source Charge	$I_D = 18\text{A}$	2.4	12	nC
$Q_{gd}$	Gate – Drain (“Miller”) Charge	$V_{DS} = 0.5BV_{DSS}$	12	30.7	
$t_{d(on)}$	Turn–On Delay Time	$V_{DD} = 50\text{V}$ $I_D = 18\text{A}$ $R_G = 9.1\Omega$		21	ns
$t_r$	Rise Time			145	
$t_{d(off)}$	Turn–Off Delay Time			64	
$t_f$	Fall Time			105	
<b>SOURCE – DRAIN DIODE CHARACTERISTICS</b>					
$I_S$	Continuous Source Current			18	A
$I_{SM}$	Pulse Source Current			73	
$V_{SD}$	Diode Forward Voltage	$I_S = 18\text{A}$ $T_J = 25^\circ\text{C}$ $V_{GS} = 0$		1.5	V
$t_{rr}$	Reverse Recovery Time	$I_S = 18\text{A}$ $T_J = 25^\circ\text{C}$		400	ns
$Q_{rr}$	Reverse Recovery Charge	$d_i / d_t \leq 100\text{A}/\mu\text{s}$ $V_{DD} \leq 50\text{V}$		2.4	$\mu\text{C}$
<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	