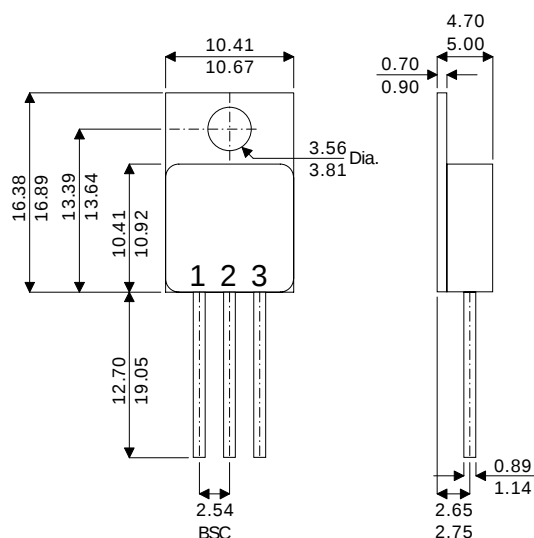


MECHANICAL DATA

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} **400V**
 $I_{D(cont)}$ **6.9A**
 $R_{DS(on)}$ **0.55Ω**
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	$\pm 20V$
I_D	Continuous Drain Current ($V_{GS} = 0$, $T_{case} = 25^{\circ}C$)	6.9A
I_D	Continuous Drain Current ($V_{GS} = 0$, $T_{case} = 100^{\circ}C$)	4.4A
I_{DM}	Pulsed Drain Current ¹	27A
P_D	Power Dissipation @ $T_{case} = 25^{\circ}C$	60W
	Linear Derating Factor	0.48W/ $^{\circ}C$
T_J , T_{stg}	Operating and Storage Temperature Range	-55 to 150 $^{\circ}C$
T_L	Package Mounting Surface Temperature (for 5 sec)	300 $^{\circ}C$
$R_{\theta JC}$	Thermal Resistance Junction to Case	2.1 $^{\circ}C/W$ max.

Notes

 1) Pulse Test: Pulse Width $\leq 300ms$, $\delta \leq 2\%$

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

Parameter		Test Conditions		Min.	Typ.	Max.	Unit
STATIC ELECTRICAL RATINGS							
BV_{DSS}	Drain – Source Breakdown Voltage	$V_{GS} = 0$	$I_D = 1\text{mA}$	400			V
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Temperature Coefficient of Breakdown Voltage	Reference to 25°C $I_D = 1\text{mA}$			0.46		V/°C
$R_{DS(on)}$	Static Drain – Source On–State Resistance ¹	$V_{GS} = 10\text{V}$	$I_D = 4.4\text{A}$			0.55	Ω
		$V_{GS} = 10\text{V}$	$I_D = 6.9\text{A}$			0.63	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$	$I_D = 250\mu\text{A}$	2		4	V
g_{fs}	Forward Transconductance ¹	$V_{DS} \geq 15\text{V}$	$I_{DS} = 4.4\text{A}$	4.9			S(Ω)
I_{DSS}	Zero Gate Voltage Drain Current	$V_{GS} = 0$	$V_{DS} = 0.8BV_{DSS}$			25	μA
			$T_J = 125^\circ\text{C}$			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	
DYNAMIC CHARACTERISTICS							
C_{iss}	Input Capacitance	$V_{GS} = 0$ $V_{DS} = 25\text{V}$ $f = 1\text{MHz}$			1400		pF
C_{oss}	Output Capacitance				350		
C_{rss}	Reverse Transfer Capacitance				230		
Q_g	Total Gate Charge ¹	$V_{GS} = 10\text{V}$ $I_D = 6.9\text{A}$ $V_{DS} = 0.5BV_{DSS}$		32		65	nC
Q_{gs}	Gate – Source Charge ¹	$V_{GS} = 10\text{V}$ $I_D = 6.9\text{A}$ $V_{DS} = 0.5BV_{DSS}$		2.2		10	nC
Q_{gd}	Gate – Drain (“Miller”) Charge ¹			13.8		40.5	
$t_{d(on)}$	Turn–On Delay Time	$V_{DD} = 200\text{V}$ $I_D = 6.9\text{A}$ $R_G = 9.1\Omega$ $V_{GS} = 10\text{V}$				25	ns
t_r	Rise Time					92	
$t_{d(off)}$	Turn–Off Delay Time					79	
t_f	Fall Time					58	
SOURCE – DRAIN DIODE CHARACTERISTICS							
I_S	Continuous Source Current					6.9	A
I_{SM}	Pulse Source Current ²					27	
V_{SD}	Diode Forward Voltage	$I_S = 6.9\text{A}$ $V_{GS} = 0$	$T_C = 25^\circ\text{C}$			1.5	V
t_{rr}	Reverse Recovery Time	$I_S = 6.9\text{A}$	$T_J = 25^\circ\text{C}$			600	ns
Q_{rr}	Reverse Recovery Charge	$d_i / d_t \leq 100\text{A}/\mu\text{s}$ $V_{DD} \leq 50\text{V}$				5.6	μC
t_{on}	Forward Turn–On Time			Negligible			
PACKAGE CHARACTERISTICS							
L_D	Internal Drain Inductance (6mm down drain lead to centre of die)				8.7		nH
L_S	Internal Source Inductance (6mm down source lead to centre of source bond pad)				8.7		

Notes

- 1) Pulse Test: Pulse Width $\leq 300\text{ms}$, $\delta \leq 2\%$
- 2) Repetitive Rating – Pulse width limited by maximum junction temperature.