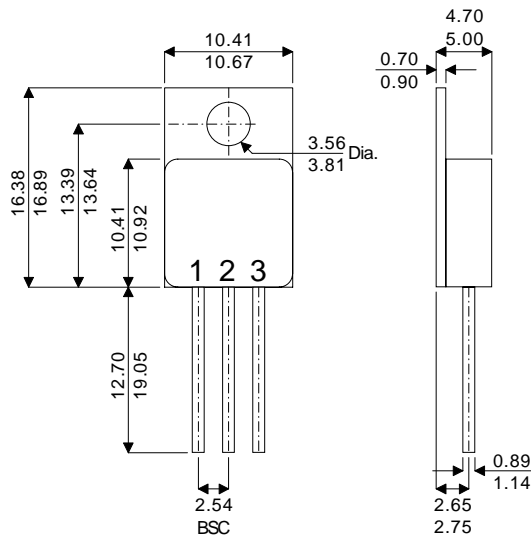


MECHANICAL DATA

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	±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/°C
T_J, T_{stg}	Operating and Storage Temperature Range	-55 to 150°C
T_L	Package Mounting Surface Temperature (for 5 sec)	300°C
$R_{\theta JC}$	Thermal Resistance Junction to Case	2.1°C/W max.

Notes

1) Pulse Test: Pulse Width ≤ 300ms, δ ≤ 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	$\text{V}/^{\circ}\text{C}$
$R_{DS(on)}$	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		$\text{S}(\bar{\omega})$
I_{DSS}	Zero Gate Voltage Drain Current	$V_{GS} = 0$ $V_{DS} = 0.8BV_{DSS}$ $T_J = 125^{\circ}\text{C}$		25	μA
				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	$V_{GS} = 0$		1400	pF
C_{oss}	Output Capacitance	$V_{DS} = 25\text{V}$		350	
C_{riss}	Reverse Transfer Capacitance	$f = 1\text{MHz}$		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	$V_{GS} = 10\text{V}$ $I_D = 6.9\text{A}$	2.2	10	nC
Q_{gd}	Gate – Drain (“Miller”) Charge ¹	$V_{DS} = 0.5BV_{DSS}$	13.8	40.5	
$t_{d(on)}$	Turn–On Delay Time	$V_{DD} = 200\text{V}$		25	ns
t_r	Rise Time	$I_D = 6.9\text{A}$		92	
$t_{d(off)}$	Turn–Off Delay Time	$R_G = 9.1\Omega$		79	
t_f	Fall Time	$V_{GS} = 10\text{V}$		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	$I_S = 6.9\text{A}$ $T_C = 25^{\circ}\text{C}$ $V_{GS} = 0$		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.