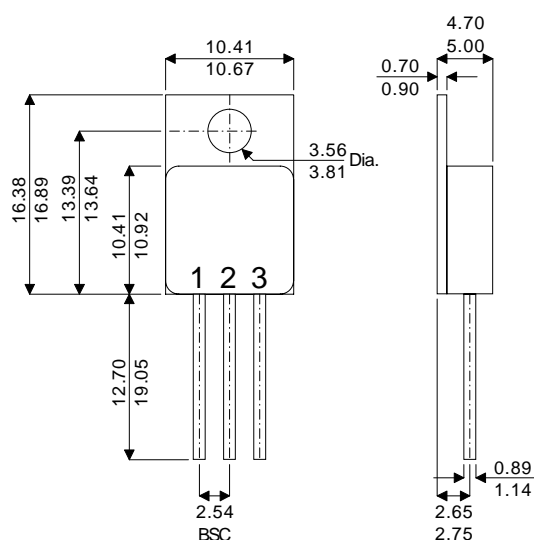


## MECHANICAL DATA

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<sub>DSS</sub> 100V**

**$I_{D(cont)}$                       7.3A**

 $R_{DS(on)} \quad 0.31\Omega$ 

## 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 @ $T_{case} = 25^\circ C$	7.3A
$I_D$	Continuous Drain Current @ $T_{case} = 100^\circ C$	4.6A
$I_{DM}$	Pulsed Drain Current	29A
$P_D$	Power Dissipation @ $T_{case} = 25^\circ C$	30W
	Linear Derating Factor	0.24W/ $^\circ C$
$T_J, T_{stg}$	Operating and Storage Temperature Range	$-55$ to $150^\circ C$
$R_{\theta JC}$	Thermal Resistance Junction to Case	4.1 $^\circ C/W$ max.
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	80 $^\circ C/W$ max.

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

Parameter		Test Conditions		Min.	Typ.	Max.	Unit
STATIC ELECTRICAL RATINGS							
BV <sub>DSS</sub>	Drain – Source Breakdown Voltage	V <sub>GS</sub> = 0	I <sub>D</sub> = 1mA	100			V
ΔBV <sub>DSS</sub>	Temperature Coefficient of Breakdown Voltage	Reference to 25°C I <sub>D</sub> = 1mA			0.1		V/°C
R <sub>DS(on)</sub>	Static Drain – Source On–State Resistance	V <sub>GS</sub> = 10V	I <sub>D</sub> = 4.6A			0.31	Ω
		V <sub>GS</sub> = 10V	I <sub>D</sub> = 7.3A			0.36	
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> = V <sub>GS</sub>	I <sub>D</sub> = 250μA	2		4	V
g <sub>fs</sub>	Forward Transconductance	V <sub>DS</sub> ≥ 15V	I <sub>DS</sub> = 4.6A	1.5			S(Ω)
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>GS</sub> = 0	V <sub>DS</sub> = 0.8BV <sub>DSS</sub>			25	μA
			T <sub>J</sub> = 125°C			250	
I <sub>GSS</sub>	Forward Gate – Source Leakage	V <sub>GS</sub> = 20V				100	nA
I <sub>GSS</sub>	Reverse Gate – Source Leakage	V <sub>GS</sub> = –20V				-100	
DYNAMIC CHARACTERISTICS							
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> = 0			350		pF
C <sub>oss</sub>	Output Capacitance	V <sub>DS</sub> = 25V			150		
C <sub>rss</sub>	Reverse Transfer Capacitance	f = 1MHz			24		
Q <sub>g</sub>	Total Gate Charge	V <sub>GS</sub> = 10V	I <sub>D</sub> = 7.3A	7.7		17	nC
		V <sub>DS</sub> = 0.5BV <sub>DSS</sub>					
Q <sub>gs</sub>	Gate – Source Charge	I <sub>D</sub> = 7.3A		0.7		4	nC
Q <sub>gd</sub>	Gate – Drain (“Miller”) Charge	V <sub>DS</sub> = 0.5BV <sub>DSS</sub>		2		8	
t <sub>d(on)</sub>	Turn–On Delay Time	V <sub>DD</sub> = 50V I <sub>D</sub> = 7.3A R <sub>G</sub> = 7.5Ω				15	ns
t <sub>r</sub>	Rise Time					70	
t <sub>d(off)</sub>	Turn–Off Delay Time					40	
t <sub>f</sub>	Fall Time					70	
SOURCE – DRAIN DIODE CHARACTERISTICS							
I <sub>S</sub>	Continuous Source Current					7.3	A
I <sub>SM</sub>	Pulse Source Current					29	
V <sub>SD</sub>	Diode Forward Voltage	I <sub>S</sub> = 7.3A	T <sub>J</sub> = 25°C			1.8	V
		V <sub>GS</sub> = 0					
t <sub>rr</sub>	Reverse Recovery Time	I <sub>S</sub> = 7.3A	T <sub>J</sub> = 25°C			240	ns
Q <sub>rr</sub>	Reverse Recovery Charge	d <sub>i</sub> / d <sub>t</sub> ≤ 100A/μs V <sub>DD</sub> ≤ 50V					
PACKAGE CHARACTERISTICS							
L <sub>D</sub>	Internal Drain Inductance	(from 6mm down drain lead pad to centre of die)			8.7		nH
L <sub>S</sub>	Internal Source Inductance	(from 6mm down source lead to centre of source bond pad)			8.7		