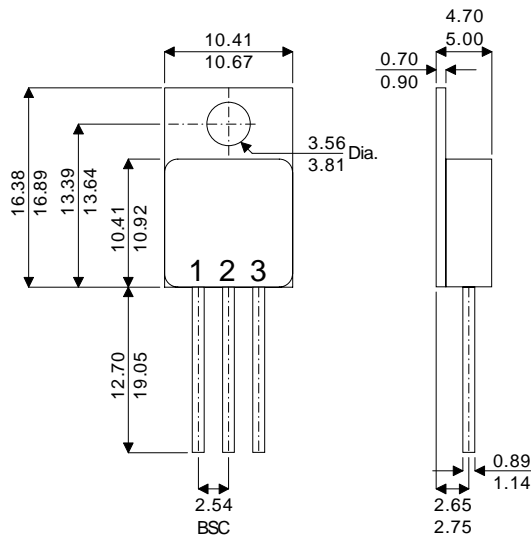


MECHANICAL DATA

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} **60V**
 $I_{D(cont)}$ **20A**
 $R_{DS(on)}$ **0.035Ω**

FEATURES

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

ABSOLUTE MAXIMUM RATINGS ($T_C = 25^\circ C$ unless otherwise stated)

V_{GS}	Gate – Source Voltage	±20V
I_D	Continuous Drain Current @ $T_C = 25^\circ C$	20A
I_D	Continuous Drain Current @ $T_C = 100^\circ C$	20A
I_{DM}	Pulsed Drain Current	128A
P_D	Power Dissipation @ $T_C = 25^\circ C$	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	
STATIC ELECTRICAL RATINGS						
BV_{DSS}	Drain – Source Breakdown Voltage	$V_{GS} = 0$	$I_D = 1\text{mA}$	60	V	
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Temperature Coefficient of Breakdown Voltage	Reference to 25°C $I_D = 1\text{mA}$		0.68	$\text{V}/^\circ\text{C}$	
$R_{DS(on)}$	Static Drain – Source On–State Resistance	$V_{GS} = 10\text{V}$	$I_D = 20\text{A}$		0.035 Ω	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$	$I_D = 250\mu\text{A}$	2	4 V	
g_{fs}	Forward Transconductance	$V_{DS} \geq 15\text{V}$	$I_D = 20\text{A}$	17	$\text{S}(\bar{\omega})$	
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 nA	
DYNAMIC CHARACTERISTICS						
C_{iss}	Input Capacitance	$V_{GS} = 0$		2400	pF	
C_{oss}	Output Capacitance	$V_{DS} = 25\text{V}$		1100		
C_{rss}	Reverse Transfer Capacitance	$f = 1\text{MHz}$		230		
Q_g	Total Gate Charge	$V_{GS} = 10\text{V}$		39	88	nC
Q_{gs}	Gate – Source Charge	$I_D = 20\text{A}$		6.7	15	
Q_{gd}	Gate – Drain (“Miller”) Charge	$V_{DS} = 0.5BV_{DSS}$		18	52	
$t_{d(on)}$	Turn–On Delay Time	$V_{GS} = 10\text{V}$			23	ns
t_r	Rise Time	$V_{DD} = 30\text{V}$			130	
$t_{d(off)}$	Turn–Off Delay Time	$I_D = 20\text{A}$			81	
t_f	Fall Time	$R_G = 9.1\Omega$			79	
SOURCE – DRAIN DIODE CHARACTERISTICS						
I_S	Continuous Source Current				20	A
I_{SM}	Pulse Source Current				128	
V_{SD}	Diode Forward Voltage	$I_S = 20\text{A}$ $V_{GS} = 0$	$T_J = 25^\circ\text{C}$		2.5	V
t_{rr}	Reverse Recovery Time	$I_F = 20\text{A}$	$T_J = 25^\circ\text{C}$		220	ns
Q_{rr}	Reverse Recovery Charge	$d_i / d_t \leq 100\text{A}/\mu\text{s}$	$V_{DD} \leq 50\text{V}$		1.6	μC
PACKAGE CHARACTERISTICS						
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		