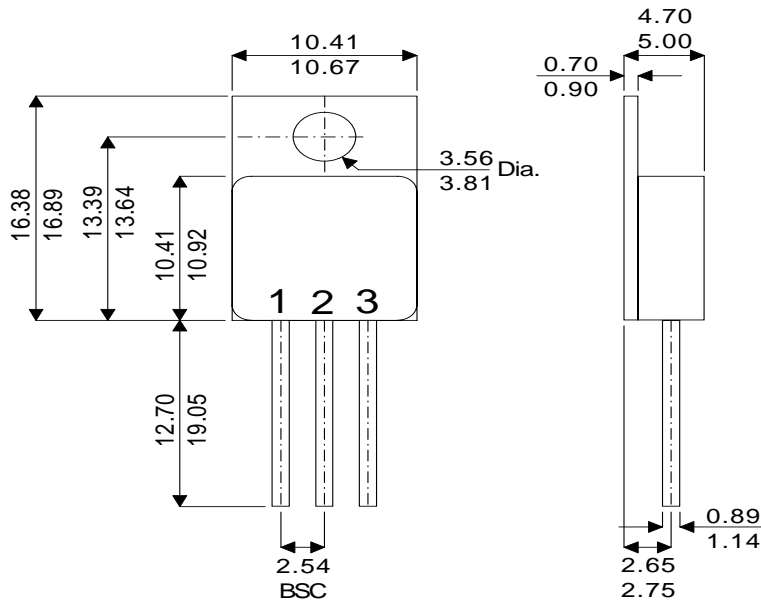


**MECHANICAL DATA**

Dimensions in mm (inches)



**TO-220M – Metal Package**  
**Ceramic Lead Seals**

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
- ALL LEADS ISOLATED FROM CASE

**AVAILABLE SCREENINGS**

FULL ASSESSMENT LEVEL	IRFY044C.MOD	IRFY044CJ
SEQUENCE A	IRFY004C-A	IRFY044CJXV
SEQUENCE B	IRFY004C-B	IRFY044CJTX
SEQUENCE C	IRF044C-C	
SEQUENCE D	IRFY044C-D	

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

$V_{GS}$	Gate – Source Voltage	±20V
$I_D$	Continuous Drain Current @ $T_C = 25^\circ\text{C}$	20A
$I_D$	Continuous Drain Current @ $T_C = 100^\circ\text{C}$	20A
$I_{DM}$	Pulsed Drain Current	128A
$P_D$	Power Dissipation @ $T_C = 25^\circ\text{C}$	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
<b>STATIC ELECTRICAL RATINGS</b>					
$BV_{DSS}$	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 $25^\circ\text{C}$ $I_D = 1\text{mA}$		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 $\Omega$
$V_{GS(th)}$	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 $\mu\text{A}$
					250 $\mu\text{A}$
$I_{GSS}$	Forward Gate – Source Leakage	$V_{GS} = 20\text{V}$			100 nA
$I_{GSS}$	Reverse Gate – Source Leakage	$V_{GS} = -20\text{V}$			-100 nA
<b>DYNAMIC CHARACTERISTICS</b>					
$C_{iss}$	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	nC
$Q_{gs}$	Gate – Source Charge	$I_D = 20\text{A}$		6.7	
$Q_{gd}$	Gate – Drain (“Miller”) Charge	$V_{DS} = 0.5BV_{DSS}$		18	
$t_{d(on)}$	Turn–On Delay Time	$V_{GS} = 10\text{V}$			ns
$t_r$	Rise Time	$V_{DD} = 30\text{V}$			
$t_{d(off)}$	Turn–Off Delay Time	$I_D = 20\text{A}$			
$t_f$	Fall Time	$R_G = 9.1\Omega$			
<b>SOURCE – DRAIN DIODE CHARACTERISTICS</b>					
$I_S$	Continuous Source Current				20 A
$I_{SM}$	Pulse Source Current				128 A
$V_{SD}$	Diode Forward Voltage	$I_S = 20\text{A}$	$T_J = 25^\circ\text{C}$		2.5 V
		$V_{GS} = 0$			
$t_{rr}$	Reverse Recovery Time	$I_F = 20\text{A}$	$T_J = 25^\circ\text{C}$		220 ns
$Q_{rr}$	Reverse Recovery Charge	$d_i / d_t \leq 100\text{A}/\mu\text{s}$			1.6 $\mu\text{C}$
		$V_{DD} \leq 50\text{V}$			
<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	