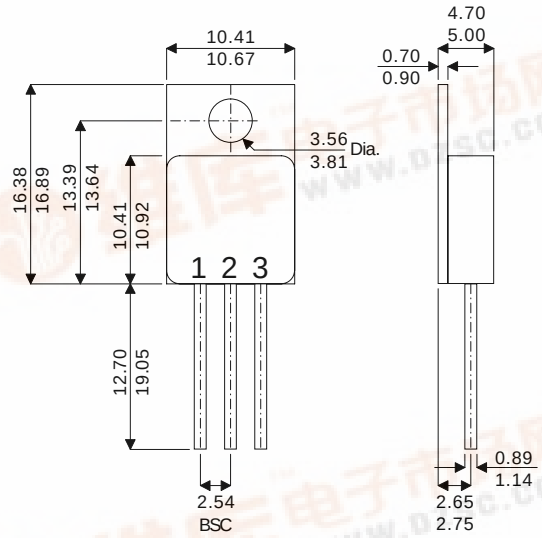
SEME LAB

IRFY044

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°C unless otherwise stated)

V_{GS}	Gate – Source Voltage	±20V
I_D	Continuous Drain Current @ T_C = 25°C	20A
I_D	Continuous Drain Current @ T_C = 100°C	20A
I_{DM}	Pulsed Drain Current	128A
P_D	Power Dissipation @ T_C = 25°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.

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ELECTRICAL CHARACTERISTICS (T_C = 25°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 = 1mA	60			V
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Temperature Coefficient of Breakdown Voltage	Reference to 25°C I_D = 1mA			0.68		V/°C
$R_{DS(on)}$	Static Drain – Source On–State Resistance	V_{GS} = 10V	I_D = 20A			0.035	Ω
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}	I_D = 250µA	2		4	V
g_{fs}	Forward Transconductance	V_{DS} ≥ 15V	I_D = 20A	17			S(℧)
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS} = 0	V_{DS} = 0.8BV_{DSS}			25	µA
			T_J = 125°C			250	
I_{GSS}	Forward Gate – Source Leakage	V_{GS} = 20V				100	nA
I_{GSS}	Reverse Gate – Source Leakage	V_{GS} = –20V				–100	
	DYNAMIC CHARACTERISTICS						
C_{iss}	Input Capacitance	V_{GS} = 0			2400		pF
C_{oss}	Output Capacitance	V_{DS} = 25V			1100		
C_{rss}	Reverse Transfer Capacitance	f = 1MHz			230		
Q_g	Total Gate Charge	V_{GS} = 10V		39		88	nC
Q_{gs}	Gate – Source Charge	I_D = 20A		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} = 10V				23	ns
t_r	Rise Time	V_{DD} = 30V				130	
$t_{d(off)}$	Turn–Off Delay Time	I_D = 20A				81	
t_f	Fall Time	R_G = 9.1Ω				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 = 20A V_{GS} = 0	T_J = 25°C			2.5	V
t_{rr}	Reverse Recovery Time	I_F = 20A	T_J = 25°C			220	ns
Q_{rr}	Reverse Recovery Charge	d_i / d_t ≤ 100A/µs	V_{DD} ≤ 50V			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		