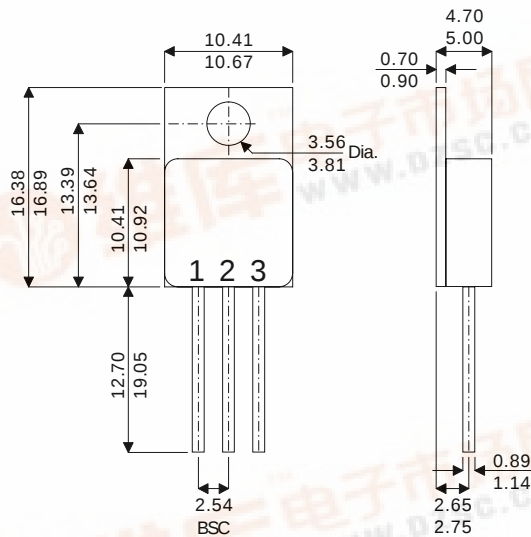


IRF9530-220M

MECHANICAL DATA

Dimensions in mm (inches)



TO-220M – Metal Package

Pad 1 – Gate

Pad 2 – Drain

Pad 3 – Source

P-CHANNEL POWER MOSFET FOR HI-REL APPLICATIONS

V_{DS} -100V

$I_{D(cont)}$ -9.3A

$R_{DS(on)}$ 0.31 Ω

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 @ $T_{case} = 25^{\circ}C$	-9.3A
I_D	Continuous Drain Current @ $T_{case} = 100^{\circ}C$	-5.8A
I_{DM}	Pulsed Drain Current	-37A
P_D	Power Dissipation @ $T_{case} = 25^{\circ}C$	45W
	Linear Derating Factor	0.36W/ $^{\circ}C$
T_J, T_{stg}	Operating and Storage Temperature Range	-55 to 150 $^{\circ}C$
$R_{\theta JC}$	Thermal Resistance Junction to Case	2.8 $^{\circ}C/W$ 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 _{DSS}	Drain – Source Breakdown Voltage	V _{GS} = 0	I _D = 1mA	-100			V
ΔBV _{DSS}	Temperature Coefficient of Breakdown Voltage	Reference to 25°C I _D = 1mA			-0.1		V/°C
R _{DS(on)}	Static Drain – Source On–State Resistance	V _{GS} = 10V	I _D = -5.8A			0.31	Ω
		V _{GS} = 10V	I _D = -9.3A			0.36	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS}	I _D = 250μA	-2		-4	V
g _{fs}	Forward Transconductance	V _{DS} ≥ 15V	I _{DS} = -5.8A	2.5			S(ṽ)
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			800		pF
C _{oss}	Output Capacitance	V _{DS} = 25V			350		
C _{rss}	Reverse Transfer Capacitance	f = 1MHz			125		
Q _g	Total Gate Charge	V _{GS} = 10V	I _D = -9.3A	14.7		30	nC
		V _{DS} = 0.5BV _{DSS}					
Q _{gs}	Gate – Source Charge	I _D = -9.3A		1		7.1	nC
Q _{gd}	Gate – Drain (“Miller”) Charge	V _{DS} = 0.5BV _{DSS}		2		21	
t _{d(on)}	Turn–On Delay Time	V _{DD} = -50V I _D = -9.3A R _G = 7.5Ω				60	ns
t _r	Rise Time					140	
t _{d(off)}	Turn–Off Delay Time					140	
t _f	Fall Time					140	
SOURCE – DRAIN DIODE CHARACTERISTICS							
I _S	Continuous Source Current					-9.3	A
I _{SM}	Pulse Source Current					-37	
V _{SD}	Diode Forward Voltage	I _S = -9.3A	T _J = 25°C			-4.7	V
		V _{GS} = 0					
t _{rr}	Reverse Recovery Time	I _S = -9.3A	T _J = 25°C			250	ns
Q _{rr}	Reverse Recovery Charge	d _i / d _t ≤ 100A/μs V _{DD} ≤ 50V				3	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		