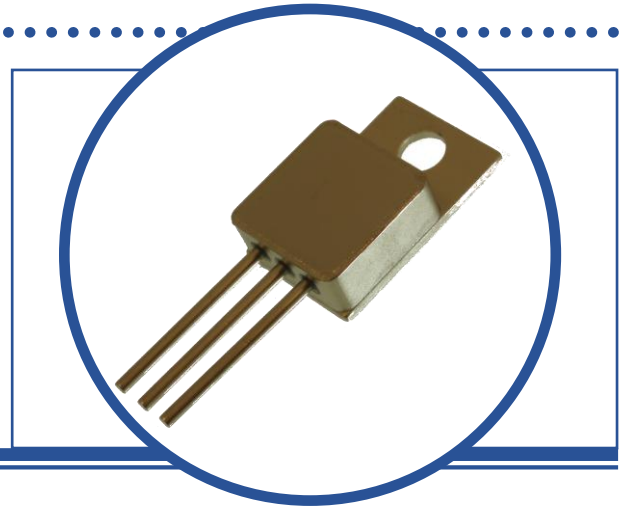


P-CHANNEL POWER MOSFET

IRF9530-220M

- Hermetically Sealed TO-220 Metal Package
- Dynamic dv/dt Rating
- Avalanche Energy Rating
- Simple Drive Requirements
- Screening Options Available



ABSOLUTE MAXIMUM RATINGS ($T_{case} = 25^{\circ}C$ unless otherwise stated)

V_{DS}	Drain – Source Voltage	-100V
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 ¹	-24A
P_D	Total Power Dissipation @ $T_{case} = 25^{\circ}C$	45W
	Linear De-rating Factor @ $T_{case} \geq 25^{\circ}C$	0.36W/ $^{\circ}C$
E_{AS}	Single Pulse Avalanche Energy ²	92mJ
dv/dt	Peak Diode Recovery dv/dt ³	-5.5V/ns
T_J, T_{stg}	Operating and Storage Temperature Range	-55 $^{\circ}C$ to +150 $^{\circ}C$

THERMAL CHARACTERISTICS

Symbol	Parameters	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction To Case	2.8	$^{\circ}C/W$
$R_{\theta PCB}$	Thermal Resistance, Junction To PCB	80	$^{\circ}C/W$

Notes:

- 1) Repetitive Rating; Pulse width limited by maximum junction temperature
- 2) $V_{DD} = -25V$, starting $T_J = 25^{\circ}C$, Peak $I_L = -6.1A$
- 3) $I_{SD} \leq -9.3A$, $di/dt \leq -390A/\mu s$, $V_{DD} \leq -100V$, $T_J \leq 150^{\circ}C$, Suggested $R_G = 7.5\Omega$
- 4) Pulse width $\leq 300 \mu s$; Duty Cycle $\leq 2\%$

P-CHANNEL POWER MOSFET IRF9530-220M

ELECTRICAL CHARACTERISTICS (T_{case} = 25°C unless otherwise stated)

Symbol	Parameters	Test Conditions	Min	Typ	Max	Units
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0 I _D = -1.0mA	-100			V
$\frac{\Delta BV_{DSS}}{\Delta T_j}$	Temperature Coefficient of Breakdown Voltage	Reference to 25°C I _D = -1.0mA		-0.1		V/°C
R _{DS(on)} ⁴	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} ⁴	Forward Transconductance	V _{DS} ≥ -15V I _{DS} = -5.8A	2.5			S(Ω)
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} = 0 V _{DS} = 0.8BV _{DSS} T _j = 125°C			-25	μA
					-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 = 1.0MHz		125		
Q _g	Total Gate Charge	V _{GS} = -10V	14.7		30	nC
Q _{gs}	Gate-Source Charge	I _D = -9.3A	1.0		7.1	
Q _{gd}	Gate-Drain Charge	V _{DS} = 0.5BV _{DSS}	2.0		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				-9.1	A
I _{SM}	Pulse Source Current				-37	
V _{SD} ⁴	Diode Forward Voltage	I _S = -9.3A V _{GS} = 0			-4.7	V
t _{rr} ⁴	Reverse Recovery Time	I _F = -9.3A V _{DD} ≤ -50V			250	ns
Q _{rr} ⁴	Reverse Recovery Charge	di/dt ≤ -100A/μs			3.0	μC
t _{on}	Forward Turn - on Time		Negligible			

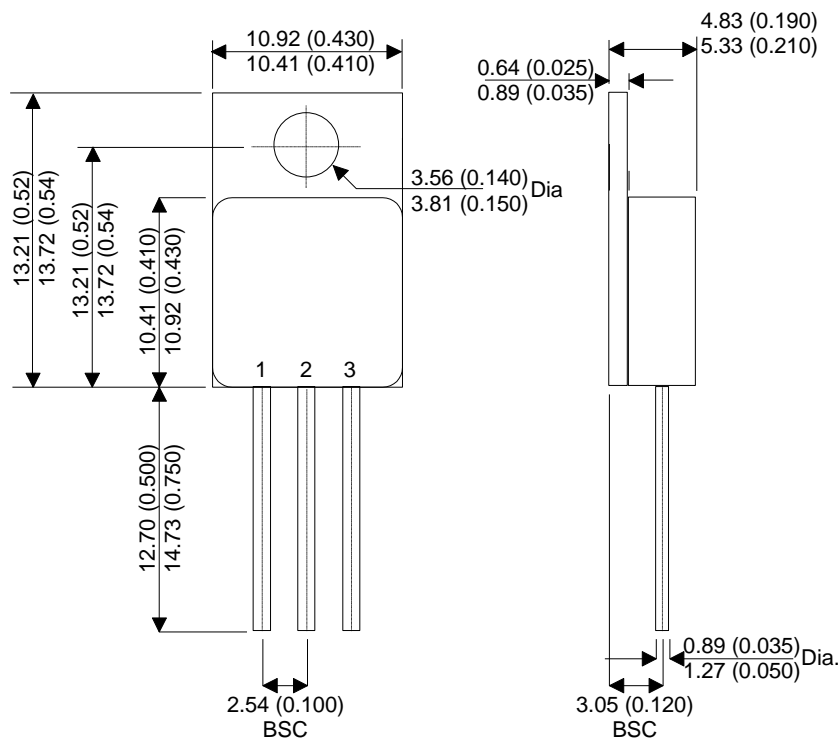
PACKAGE CHARACTERISTICS

L _D	Internal Drain Inductance			8.7		nH
L _S	Internal Source Inductance			8.7		

P-CHANNEL POWER MOSFET IRF9530-220M

MECHANICAL DATA

Dimensions in mm (inches)



TO220M (TO-257AB)

Pin 1 - Gate

Pin 2 - Drain

Pin 3 - Source