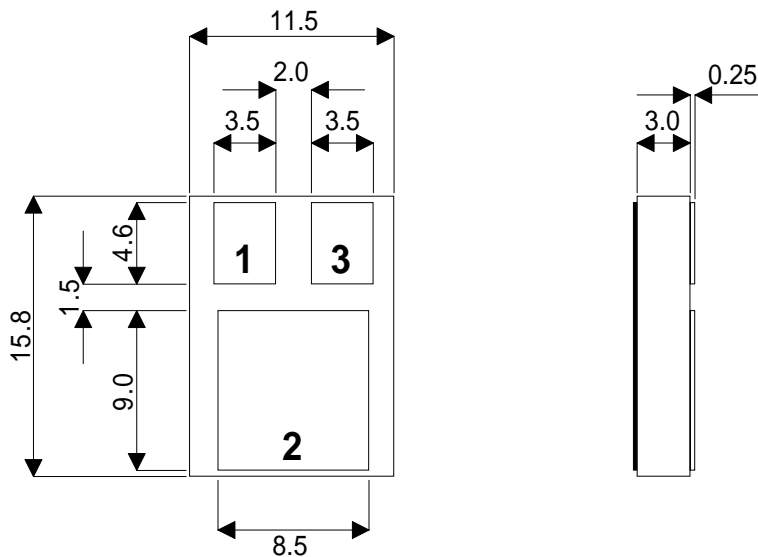


MECHANICAL DATA

Dimensions in mm (inches)



TO-220SM

Pad 1 – Source Pad 2 – Drain Pad 3 – Gate

**P-CHANNEL
POWER MOSFET
FOR HI-REL
APPLICATIONS**

V_{DSS} -100V
 $I_{D(cont)}$ -9.3A
 $R_{DS(on)}$ 0.31Ω

FEATURES

- HERMETICALLY SEALED • SIMPLE DRIVE REQUIREMENTS
- LIGHTWEIGHT
- SCREENING OPTIONS AVAILABLE
- ALL LEADS ISOLATED FROM CASE

* Also available as IRF9130SM with Pin 1(source) and Pin 3 Gate Reversed

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

V_{GS}	Gate – Source Voltage	±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/°C
T_J, T_{stg}	Operating and Storage Temperature Range	-55 to 150°C
$R_{\theta JC}$	Thermal Resistance Junction to Case	2.8°C/W

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	$V_{GS} = 0$ $I_D = 1\text{mA}$	-100		V
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Temperature Coefficient of Breakdown Voltage	Reference to 25°C $I_D = 1\text{mA}$		-0.1	$\text{V}/^\circ\text{C}$
$R_{DS(on)}$	Static Drain – Source On–State Resistance	$V_{GS} = 10\text{V}$ $I_D = -5.8\text{A}$		0.31	Ω
		$V_{GS} = 10\text{V}$ $I_D = -9.3\text{A}$		0.36	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$ $I_D = 250\mu\text{A}$	-2	-4	V
g_{fs}	Forward Transconductance	$V_{DS} \geq 15\text{V}$ $I_{DS} = -5.8\text{A}$	2.5		$\text{S}(\bar{v})$
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	
DYNAMIC CHARACTERISTICS					
C_{iss}	Input Capacitance	$V_{GS} = 0$		800	pF
C_{oss}	Output Capacitance	$V_{DS} = 25\text{V}$		350	
C_{rss}	Reverse Transfer Capacitance	$f = 1\text{MHz}$		125	
Q_g	Total Gate Charge	$V_{GS} = 10\text{V}$ $I_D = -9.3\text{A}$ $V_{DS} = 0.5BV_{DSS}$	14.7	30	nC
Q_{gs}	Gate – Source Charge	$I_D = -9.3\text{A}$	1	7.1	nC
Q_{gd}	Gate – Drain (“Miller”) Charge	$V_{DS} = 0.5BV_{DSS}$	2	21	
$t_{d(on)}$	Turn–On Delay Time	$V_{DD} = -50\text{V}$ $I_D = -9.3\text{A}$ $R_G = 7.5\Omega$		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	$I_S = -9.3\text{A}$ $T_J = 25^\circ\text{C}$ $V_{GS} = 0$		-4.7	V
t_{rr}	Reverse Recovery Time	$I_S = -9.3\text{A}$ $T_J = 25^\circ\text{C}$		250	ns
Q_{rr}	Reverse Recovery Charge	$d_i / d_t \leq 100\text{A}/\mu\text{s}$ $V_{DD} \leq 50\text{V}$		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	