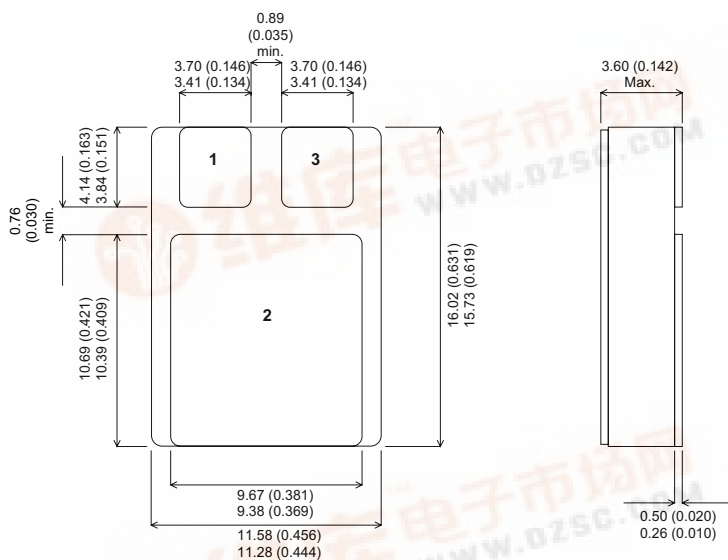# SEME LAB

IRF130SMD

MECHANICAL DATA
Dimensions in mm (inches)

SMD 1

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

N–CHANNEL POWER MOSFET FOR HI–REL APPLICATIONS

V_{DSS}	**100V**
$I_{D(cont)}$	**11A**
$R_{DS(on)}$	**0.19Ω**

FEATURES

• HERMETICALLY SEALED

• SIMPLE DRIVE REQUIREMENTS

• LIGHTWEIGHT

• SCREENING OPTIONS AVAILABLE

• ALL LEADS ISOLATED FROM CASE

ABSOLUTE MAXIMUM RATINGS (T_{case} = 25°C unless otherwise stated)

V_{GS}	Gate – Source Voltage	±20V
I_D	Continuous Drain Current @ T_{case} = 25°C	11A
I_D	Continuous Drain Current @ T_{case} = 100°C	7A
I_{DM}	Pulsed Drain Current	44A
P_D	Power Dissipation @ T_{case} = 25°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 max.

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	$V_{GS} = 0$	$I_D = 1mA$	100			V
$\dfrac{\Delta BV_{DSS}}{\Delta T_J}$	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	$V_{GS} = 10V$	$I_D = 7A$			0.19	Ω
		$V_{GS} = 10V$	$I_D = 11A$			0.22	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$	$I_D = 250\mu A$	2		4	V
g_{fs}	Forward Transconductance	$V_{DS} \geq 15V$	$I_{DS} = 7A$	3			S($\mho$)
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	$V_{GS} = 0$			650		pF
C_{oss}	Output Capacitance	$V_{DS} = 25V$			240		
C_{rss}	Reverse Transfer Capacitance	$f = 1MHz$			44		
Q_g	Total Gate Charge	$V_{GS} = 10V$ $V_{DS} = 0.5BV_{DSS}$	$I_D = 11A$	12.8		28.5	nC
Q_{gs}	Gate – Source Charge	$I_D = 11A$		1.0		6.3	nC
Q_{gd}	Gate – Drain (“Miller”) Charge	$V_{DS} = 0.5BV_{DSS}$		3.8		16.6	
$t_{d(on)}$	Turn–On Delay Time	$V_{DD} = 50V$ $I_D = 11A$ $R_G = 7.5Ω$				30	ns
t_r	Rise Time					75	
$t_{d(off)}$	Turn–Off Delay Time					40	
t_f	Fall Time					45	
SOURCE – DRAIN DIODE CHARACTERISTICS							
I_S	Continuous Source Current					11	A
I_{SM}	Pulse Source Current					43	
V_{SD}	Diode Forward Voltage	$I_S = 11A$ $V_{GS} = 0$	$T_J = 25°C$			1.5	V
t_{rr}	Reverse Recovery Time	$I_S = 11A$	$T_J = 25°C$			300	ns
Q_{rr}	Reverse Recovery Charge	$d_i / d_t \leq 100A/\mu s$ $V_{DD} \leq 50V$				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		