SEME LAB

MECHANICAL DATA
Dimensions in mm (inches)

0.89
(0.035)
min.

3.70 (0.146)   3.70 (0.146)
3.41 (0.134)   3.41 (0.134)

3.60 (0.142)
Max.

4.14 (0.163)
3.84 (0.151)

0.76
(0.030)
min.

1   3

16.02 (0.631)
15.73 (0.619)

10.69 (0.421)
10.39 (0.409)

2

9.67 (0.381)
9.38 (0.369)
11.58 (0.456)
11.28 (0.444)

0.50 (0.020)
0.26 (0.010)

SMD1 (TO-276AB)

Pad 1 – Source   Pad 2 – Drain   Pad 3 – Gate
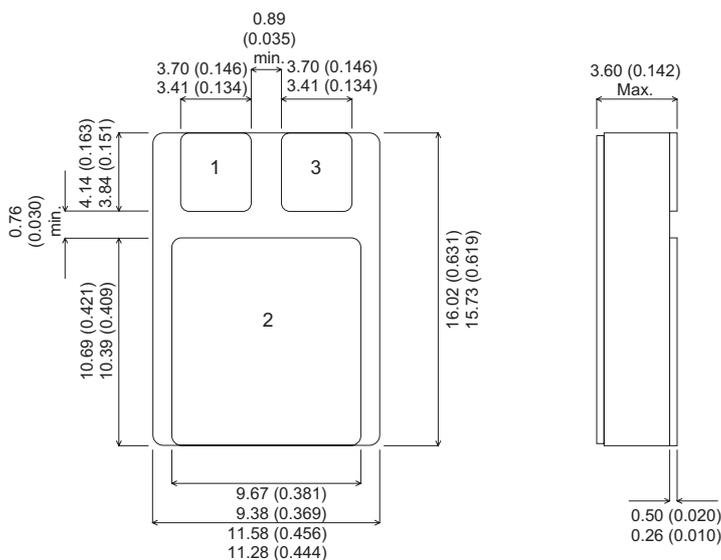
P–CHANNEL POWER MOSFET

V_{DSS}	**−100V**
$I_{D(cont)}$	**−18A**
$R_{DS(on)}$	**0.20Ω**

FEATURES

- **HERMETICALLY SEALED SURFACE MOUNT PACKAGE**

- **SMALL FOOTPRINT – EFFICIENT USE OF PCB SPACE**

- **SIMPLE DRIVE REQUIREMENTS**

- **LIGHTWEIGHT**

- **HIGH PACKING DENSITIES**

Note: IRF9140SMD also available with pins 1 and 3 reversed.

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

V_{GS}	Gate – Source Voltage		±20V
I_D	Continuous Drain Current	(V_{GS} = -10V, T_{case} = 25°C)	−18A
I_D	Continuous Drain Current	(V_{GS} = -10V, T_{case} = 100°C)	−11A
I_{DM}	Pulsed Drain Current [1]		−72A
P_D	Power Dissipation @ T_{case} = 25°C		125W
	Linear Derating Factor		1.0W/°C
E_{AS}	Single Pulse Avalanche Energy [2]		500mJ
dv/dt	Peak Diode Recovery [3]		−5.0V/ns
T_J , T_{stg}	Operating and Storage Temperature Range		300°C
$R_{\theta JC}$	Thermal Resistance Junction to Case		1.0°C/W

Notes

1) Pulse Test: Pulse Width $\leq$ 300ms, $\delta \leq$ 2%

2) @ V_{DD} = −25V , L $\geq$ 3.1mH , R_G = 25Ω , Peak I_L = −18A , V_{GS} = -10V, Starting T_J = 25°C

3) @ $I_{SD} \leq$ −18A , di/dt $\leq$ −100A/µs , $V_{DD} \leq BV_{DSS}$, $T_J \leq$ 150°C , SUGGESTED R_G = 9.1Ω

ELECTRICAL CHARACTERISTICS (T_{amb} = 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 $I_D = -1mA$			−0.087		V/°C
$R_{DS(on)}$	Static Drain – Source On–State Resistance [1]	$V_{GS} = -10V$	$I_D = -11A$			0.20	Ω
		$V_{GS} = -10V$	$I_D = -18A$			0.22	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$	$I_D = -250\mu A$	−2		−4	V
g_{fs}	Forward Transconductance [1]	$V_{DS} \geq -15V$	$I_{DS} = -11A$	6.2			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	$V_{GS} = 0$			1400		pF
C_{oss}	Output Capacitance	$V_{DS} = -25V$			600		
C_{rss}	Reverse Transfer Capacitance	f = 1MHz			200		
Q_g	Total Gate Charge [1]	$V_{GS} = -10V$ $I_D = -18A$ $V_{DS} = 0.5BV_{DSS}$				60	nC
Q_{gs}	Gate – Source Charge [1]	$I_D = -18A$				13	nC
Q_{gd}	Gate – Drain ("Miller") Charge [1]	$V_{DS} = 0.5BV_{DSS}$				35.2	
$t_{d(on)}$	Turn–On Delay Time	$V_{DD} = -50V$ $I_D = -18A$ $R_G = 9.1\Omega$				35	ns
t_r	Rise Time					85	
$t_{d(off)}$	Turn–Off Delay Time					85	
t_f	Fall Time					65	
SOURCE – DRAIN DIODE CHARACTERISTICS							
I_S	Continuous Source Current					−18	A
I_{SM}	Pulse Source Current [2]					−72	
V_{SD}	Diode Forward Voltage	$I_S = -18A$ $T_J = 25°C$ $V_{GS} = 0$				−4.2	V
t_{rr}	Reverse Recovery Time	$I_F = -18A$ $T_J = 25°C$				280	ns
Q_{rr}	Reverse Recovery Charge	$d_i / d_t \leq -100A/\mu s$ $V_{DD} \leq -50V$				3.6	µC
t_{on}	Forward Turn–On Time				negligible		

Notes

1) Pulse Test: Pulse Width ≤ 300ms, δ ≤ 2%

2) Repetitive Rating – Pulse width limited by maximum junction temperature.