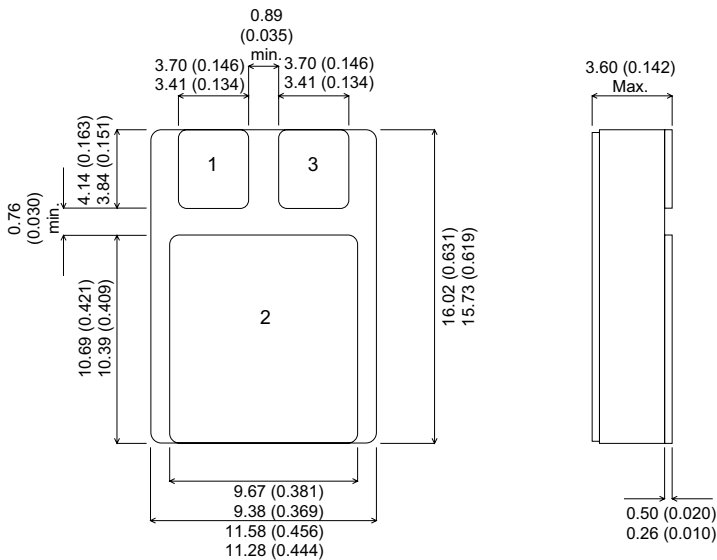


MECHANICAL DATA

Dimensions in mm (inches)


SMD1

Pad 1 – Source

Pad 2 – Drain

Pad 3 – Gate

**N-CHANNEL
POWER MOSFET**
 V_{DSS} **200V**
 $I_{D(cont)}$ **13.9A**
 $R_{DS(on)}$ **0.180Ω**
FEATURES

- HERMETICALLY SEALED SURFACE MOUNT PACKAGE
- SMALL FOOTPRINT – EFFICIENT USE OF PCB SPACE.
- SIMPLE DRIVE REQUIREMENTS
- LIGHTWEIGHT
- HIGH PACKING DENSITIES

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

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

V_{GS}	Gate – Source Voltage	$\pm 20V$
I_D	Continuous Drain Current ($V_{GS} = 0, T_{case} = 25^{\circ}C$)	13.9A
I_D	Continuous Drain Current ($V_{GS} = 0, T_{case} = 100^{\circ}C$)	8.8A
I_{DM}	Pulsed Drain Current ¹	56A
P_D	Power Dissipation @ $T_{case} = 25^{\circ}C$	75W
	Linear Derating Factor	0.6W/ $^{\circ}C$
E_{AS}	Single Pulse Avalanche Energy ²	450mJ
dv/dt	Peak Diode Recovery ³	5.0V/ns
T_J, T_{stg}	Operating and Storage Temperature Range	-55 to 150 $^{\circ}C$
T_L	Package Mounting Surface Temperature (for 5 sec)	300 $^{\circ}C$
$R_{\theta JC}$	Thermal Resistance Junction to Case	1.67 $^{\circ}C/W$
$R_{\theta J-PCB}$	Thermal Resistance Junction to PCB (Typical)	4 $^{\circ}C/W$

Notes

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

 2) @ $V_{DD} = 50V$, $L \geq 1.5mH$, $R_G = 25\Omega$, Peak $I_L = 22A$, Starting $T_J = 25^{\circ}C$

 3) @ $I_{SD} \leq 13.9A$, $di/dt \leq 150A/\mu s$, $V_{DD} \leq BV_{DSS}$, $T_J \leq 150^{\circ}C$, SUGGESTED $R_G = 9.1\Omega$
Semelab plc. Telephone +44(0)1455 556565. Fax +44(0)1455 552612.

 E-mail: sales@semelab.co.uk

 Website: <http://www.semelab.co.uk>

Prelim. 7/00

ELECTRICAL CHARACTERISTICS ($T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated)

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
STATIC ELECTRICAL RATINGS					
BV_{DSS}	Drain – Source Breakdown Voltage	$V_{GS} = 0$ $I_D = 1\text{mA}$	200		V
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Temperature Coefficient of Breakdown Voltage	Reference to 25°C $I_D = 1\text{mA}$		0.29	$\text{V}/^{\circ}\text{C}$
$R_{DS(on)}$	Static Drain – Source On–State Resistance ¹	$V_{GS} = 10\text{V}$ $I_D = 8.8\text{A}$		0.180	Ω
		$V_{GS} = 10\text{V}$ $I_D = 13.9\text{A}$		0.250	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$ $I_D = 250\mu\text{A}$	2	4	V
g_{fs}	Forward Transconductance ¹	$V_{DS} \geq 15\text{V}$ $I_{DS} = 8.8\text{A}$	6.1		$\text{S}(\bar{v})$
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	$V_{GS} = 0$		1300	pF
C_{oss}	Output Capacitance	$V_{DS} = 25\text{V}$		400	
C_{rss}	Reverse Transfer Capacitance	$f = 1\text{MHz}$		130	
Q_g	Total Gate Charge ¹	$V_{GS} = 10\text{V}$ $I_D = 13.9\text{A}$ $V_{DS} = 0.5BV_{DSS}$	32	60	nC
Q_{gs}	Gate – Source Charge ¹	$I_D = 13.9\text{A}$	2.2	10.6	nC
Q_{gd}	Gate – Drain (“Miller”) Charge ¹	$V_{DS} = 0.5BV_{DSS}$	14.2	37.6	
$t_{d(on)}$	Turn–On Delay Time	$V_{DD} = 100\text{V}$ $I_D = 13.9\text{A}$ $R_G = 9.1\Omega$		20	ns
t_r	Rise Time			152	
$t_{d(off)}$	Turn–Off Delay Time			58	
t_f	Fall Time			67	
SOURCE – DRAIN DIODE CHARACTERISTICS					
I_S	Continuous Source Current			13.9	A
I_{SM}	Pulse Source Current ²			56	
V_{SD}	Diode Forward Voltage	$I_S = 13.9\text{A}$ $T_J = 25^{\circ}\text{C}$ $V_{GS} = 0$		1.5	V
t_{rr}	Reverse Recovery Time	$I_F = 13.9\text{A}$ $T_J = 25^{\circ}\text{C}$		500	ns
Q_{rr}	Reverse Recovery Charge	$d_i / d_t \leq 100\text{A}/\mu\text{s}$ $V_{DD} \leq 50\text{V}$		5.3	μC
t_{on}	Forward Turn–On Time		Negligible		
PACKAGE CHARACTERISTICS					
L_D	Internal Drain Inductance (from centre of drain pad to die)		0.8		nH
L_S	Internal Source Inductance (from centre of source pad to end of source bond wire)		2.8		

Notes

- 1) Pulse Test: Pulse Width $\leq 300\text{ms}$, $\delta \leq 2\%$
- 2) Repetitive Rating – Pulse width limited by maximum junction temperature.