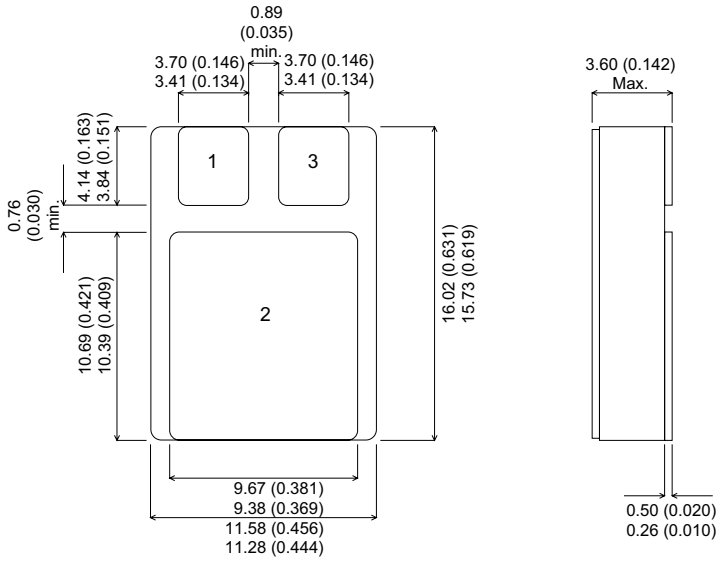


MECHANICAL DATA

Dimensions in mm (inches)

**SMD1**

Pad 1 – Source

Pad 2 – Drain

Pad 3 – Gate

**N-CHANNEL
POWER MOSFET** V_{DSS} **60V** $I_{D(cont)}$ **45A** $R_{DS(on)}$ **0.027 Ω** **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 ($V_{GS} = 0$, $T_{case} = 25^{\circ}C$)	45A
I_D	Continuous Drain Current ($V_{GS} = 0$, $T_{case} = 100^{\circ}C$)	28A
I_{DM}	Pulsed Drain Current ¹	180A
P_D	Power Dissipation @ $T_{case} = 25^{\circ}C$	100W
	Linear Derating Factor	0.8W/ $^{\circ}C$
E_{AS}	Single Pulse Avalanche Energy ²	480mJ
dv/dt	Peak Diode Recovery ³	4.5V/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	1.25 $^{\circ}C/W$
$R_{\theta J-PCB}$	Thermal Resistance Junction to PCB (Typical)	3 $^{\circ}C/W$

Notes1) Pulse Test: Pulse Width $\leq 300ms$, $\delta \leq 2\%$ 2) @ $V_{DD} = 25V$, $L \geq 0.3mH$, $R_G = 25\Omega$, Peak $I_L = 45A$, Starting $T_J = 25^{\circ}C$ 3) @ $I_{SD} \leq 45A$, $di/dt \leq 200A/\mu s$, $V_{DD} \leq BV_{DSS}$, $T_J \leq 125^{\circ}C$, SUGGESTED $R_G = 2.35\Omega$ **Semelab plc.** Telephone +44(0)1455 556565. Fax +44(0)1455 552612.E-mail: sales@semelab.co.ukWebsite: <http://www.semelab.co.uk>

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	$V_{GS} = 0$	$I_D = 1\text{mA}$	60	V	
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Temperature Coefficient of Breakdown Voltage	Reference to 25°C $I_D = 1\text{mA}$		0.68	$\text{V}/^{\circ}\text{C}$	
$R_{DS(on)}$	Static Drain – Source On–State Resistance ¹	$V_{GS} = 10\text{V}$	$I_D = 28\text{A}$		0.027	Ω
		$V_{GS} = 10\text{V}$	$I_D = 45\text{A}$		0.031	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$	$I_D = 250\mu\text{A}$	2	4	V
g_{fs}	Forward Transconductance ¹	$V_{DS} \geq 15\text{V}$	$I_{DS} = 28\text{A}$	20		$\text{S}(\bar{v})$
I_{DSS}	Zero Gate Voltage Drain Current	$V_{GS} = 0$	$V_{DS} = 0.8BV_{DSS}$		25	μA
			$T_J = 125^{\circ}\text{C}$		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	$V_{GS} = 0$		4600	pF	
C_{oss}	Output Capacitance	$V_{DS} = 25\text{V}$		2000		
C_{rss}	Reverse Transfer Capacitance	$f = 1\text{MHz}$		340		
Q_g	Total Gate Charge ¹	$V_{GS} = 10\text{V}$	$I_D = 45\text{A}$	80	180	nC
		$V_{DS} = 0.5BV_{DSS}$				
Q_{gs}	Gate – Source Charge ¹	$I_D = 45\text{A}$		20	45	nC
Q_{gd}	Gate – Drain (“Miller”) Charge ¹	$V_{DS} = 0.5BV_{DSS}$		34	105	
$t_{d(on)}$	Turn–On Delay Time	$V_{DD} = 30\text{V}$			33	ns
t_r	Rise Time	$I_D = 45\text{A}$			180	
$t_{d(off)}$	Turn–Off Delay Time	$R_G = 2.35\Omega$			100	
t_f	Fall Time				100	
SOURCE – DRAIN DIODE CHARACTERISTICS						
I_S	Continuous Source Current				45	A
I_{SM}	Pulse Source Current ²				180	
V_{SD}	Diode Forward Voltage	$I_S = 45\text{A}$	$T_J = 25^{\circ}\text{C}$		2.5	V
		$V_{GS} = 0$				
t_{rr}	Reverse Recovery Time	$I_F = 45\text{A}$	$T_J = 25^{\circ}\text{C}$		280	ns
Q_{rr}	Reverse Recovery Charge	$d_i / d_t \leq 100\text{A}/\mu\text{s}$		$V_{DD} \leq 50\text{V}$	2.2	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.