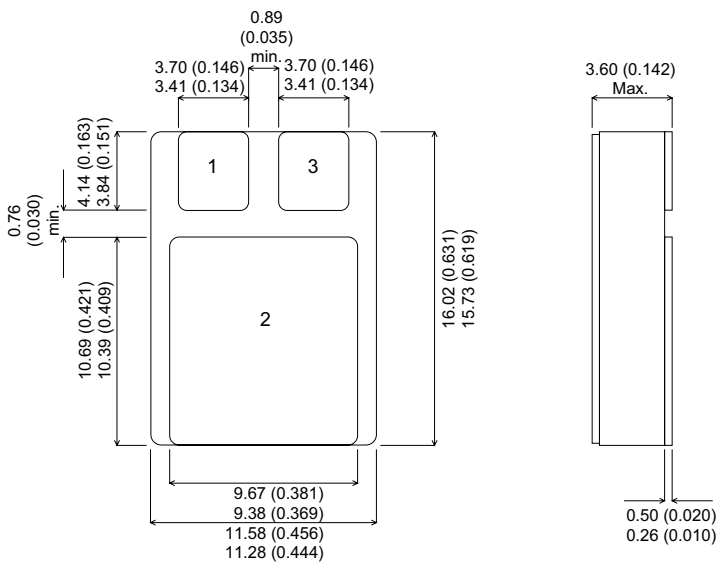


MECHANICAL DATA

Dimensions in mm (inches)


SMD1 PACKAGE

Pad 1 – Source

Pad 2 – Drain

Pad 3 – Gate

**N-CHANNEL
POWER MOSFET**
 BV_{DSS} **400V**
 $I_{D(cont)}$ **10A**
 $R_{DS(on)}$ **0.55Ω**
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 ($V_{GS} = 0$, $T_{case} = 25^{\circ}C$)	10A
I_D	Continuous Drain Current ($V_{GS} = 0$, $T_{case} = 100^{\circ}C$)	6A
I_{DM}	Pulsed Drain Current ¹	40A
P_D	Power Dissipation @ $T_{case} = 25^{\circ}C$	125W
	Linear Derating Factor	1.0W/ $^{\circ}C$
E_{AS}	Single Pulse Avalanche Energy ²	650mJ
I_{AR}	Avalanche Energy ¹	10A
E_{AR}	Repetitive Avalanche Energy ¹	12.5mJ
dv/dt	Peak Diode Recovery ³	4.0V/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	1.0 $^{\circ}C/W$
$R_{\theta J-PCB}$	Thermal Resistance Junction to PCB (Typical)	TBD

- Notes**
- 1) Repetitive Rating – Pulse width limited by maximum junction temperature.
 - 2) @ $V_{DD} = 50V$, Starting $T_J = 25^{\circ}C$, $E_{AS} = [0.5 * L * (I_L^2) * [BV_{DSS}/(BV_{DSS}-V_{DD})]]$, Peak $I_L = 10A$, $V_{GS} = 10V$, $25 \leq R_G \leq 200\Omega$
 - 3) $I_{SD} \leq 10A$, $di/dt \leq 120A/\mu s$, $V_{DD} \leq BV_{DSS}$, $T_J \leq 150^{\circ}C$
 - 4) Pulse Test: Pulse Width $\leq 300ms$, $\delta \leq 2\%$

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

Parameter	Test Conditions	Min.	Typ.	Max.	Unit	
STATIC ELECTRICAL RATINGS						
BV_{DSS}	Drain – Source Breakdown Voltage	$V_{GS} = 0$	$I_D = 1\text{mA}$	400	V	
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Temperature Coefficient of Breakdown Voltage	Reference to 25°C $I_D = 1\text{mA}$		0.46	$\text{V}/^\circ\text{C}$	
$R_{DS(on)}$	Static Drain – Source On–State Resistance ⁴	$V_{GS} = 10\text{V}$	$I_D = 6\text{A}$		0.55	
		$V_{GS} = 10\text{V}$	$I_D = 10\text{A}$		0.70	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$	$I_D = 250\mu\text{A}$	2	4	
g_{fs}	Forward Transconductance ⁴	$V_{DS} \geq 15\text{V}$	$I_{DS} = 6\text{A}$	4.9	$\text{S}(\bar{v})$	
I_{DSS}	Zero Gate Voltage Drain Current	$V_{GS} = 0$	$V_{DS} = 0.8BV_{DSS}$ $T_J = 125^\circ\text{C}$		25	
					250	
I_{GSS}	Forward Gate – Source Leakage	$V_{GS} = 20\text{V}$			100	
I_{GSS}	Reverse Gate – Source Leakage	$V_{GS} = -20\text{V}$			-100	
DYNAMIC CHARACTERISTICS						
C_{iss}	Input Capacitance	$V_{GS} = 0$		1400	pF	
C_{oss}	Output Capacitance	$V_{DS} = 25\text{V}$		3500		
C_{rss}	Reverse Transfer Capacitance	$f = 1\text{MHz}$		2300		
Q_g	Total Gate Charge ¹	$V_{GS} = 10\text{V}$	$I_D = 10\text{A}$		32	
Q_{gs}	Gate – Source Charge ¹			$V_{DS} = 0.5BV_{DSS}$	2.2	10.0
Q_{gd}	Gate – Drain (“Miller”) Charge ¹				13.8	40.5
$t_{d(on)}$	Turn–On Delay Time	$V_{DD} = 200\text{V}$	$I_D = 10\text{A}$		2.5	
t_r	Rise Time			$R_G = 9.1\Omega$	$V_{GS} = 10\text{V}$	92
$t_{d(off)}$	Turn–Off Delay Time					79
t_f	Fall Time					58
SOURCE – DRAIN DIODE CHARACTERISTICS						
I_S	Continuous Source Current				10	
I_{SM}	Pulse Source Current ¹				40	
V_{SD}	Diode Forward Voltage ⁴	$I_S = 10\text{A}$	$T_J = 25^\circ\text{C}$		1.5	
t_{rr}	Reverse Recovery Time ⁴	$I_F = 10\text{A}$	$T_J = 25^\circ\text{C}$		600	
Q_{rr}	Reverse Recovery Charge ⁴	$d_i / d_t \leq 100\text{A}/\mu\text{s}$		$V_{DD} \leq 50\text{V}$	5.6	
t_{on}	Forward Turn–On Time			Negligible		
PACKAGE CHARACTERISTICS						
L_D	Internal Drain Inductance (from centre of drain pad to die)			2.0	nH	
L_S	Internal Source Inductance (from centre of source pad to end of source bond wire)			6.5		