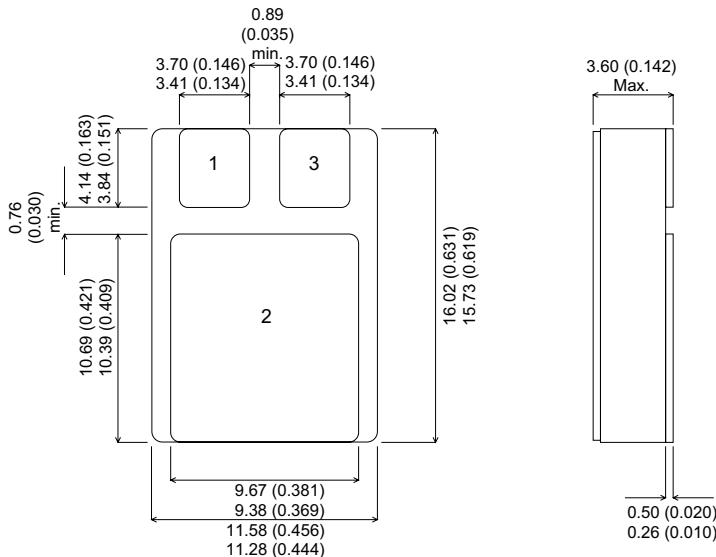


## MECHANICAL DATA

Dimensions in mm (inches)



**SMD1 Package**

Pad 1 – Gate

Pad 2 – Drain

Pad 3 – Source

## N-CHANNEL POWER MOSFET

<b>V<sub>DSS</sub></b>	<b>100V</b>
<b>I<sub>D(cont)</sub></b>	<b>13.9A</b>
<b>R<sub>DS(on)</sub></b>	<b>0.077Ω</b>

## FEATURES

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

**Note:** IRFNxxx also available with pins 1 and 3 reversed.

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

$V_{GS}$	Gate – Source Voltage	$\pm 20\text{V}$
$I_D$	Continuous Drain Current ( $V_{GS} = 0, T_{case} = 25^\circ\text{C}$ )	22A
$I_D$	Continuous Drain Current ( $V_{GS} = 0, T_{case} = 100^\circ\text{C}$ )	13.9A
$I_{DM}$	Pulsed Drain Current <sup>1</sup>	88A
$P_D$	Power Dissipation @ $T_{case} = 25^\circ\text{C}$	75W
	Linear Derating Factor	0.6W/ $^\circ\text{C}$
$E_{AS}$	Single Pulse Avalanche Energy <sup>2</sup>	250mJ
$dv/dt$	Peak Diode Recovery <sup>3</sup>	5.5V/ns
$T_J, T_{stg}$	Operating and Storage Temperature Range	-55 to 150 $^\circ\text{C}$
$T_L$	Package Mounting Surface Temperature (for 5 sec)	300 $^\circ\text{C}$
$R_{\theta JC}$	Thermal Resistance Junction to Case	1.67 $^\circ\text{C}/\text{W}$
$R_{\theta J-PCB}$	Thermal Resistance Junction to PCB (Typical)	4 $^\circ\text{C}/\text{W}$

### Notes

- 1) Pulse Test: Pulse Width  $\leq 300\text{ms}$ ,  $\delta \leq 2\%$
- 2) @  $V_{DD} = 25\text{V}$ ,  $L \geq 0.8\text{mH}$ ,  $R_G = 25\Omega$ , Peak  $I_L = 22\text{A}$ , Starting  $T_J = 25^\circ\text{C}$
- 3) @  $I_{SD} \leq 22\text{A}$ ,  $di/dt \leq 170\text{A}/\mu\text{s}$ ,  $V_{DD} \leq BV_{DSS}$ ,  $T_J \leq 150^\circ\text{C}$ , SUGGESTED  $R_G = 9.1\Omega$

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

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
<b>STATIC ELECTRICAL RATINGS</b>					
$BV_{DSS}$	Drain – Source Breakdown Voltage $V_{GS} = 0$ $I_D = 1mA$	100			V
$\Delta BV_{DSS}$	Temperature Coefficient of $\Delta T_J$ Breakdown Voltage Reference to $25^\circ C$ $I_D = 1mA$		0.13		$V/^\circ C$
$R_{DS(on)}$	Static Drain – Source On-State Resistance 1 $V_{GS} = 10V$ $I_D = 13.9A$		0.077		$\Omega$
	$V_{GS} = 10V$ $I_D = 22A$		0.125		
$V_{GS(th)}$	Gate Threshold Voltage $V_{DS} = V_{GS}$ $I_D = 250\mu A$	2		4	V
$g_{fs}$	Forward Transconductance 1 $V_{DS} \geq 15V$ $I_{DS} = 13.9A$	9.1			S(Ω)
$I_{DSS}$	Zero Gate Voltage Drain Current $V_{GS} = 0$ $V_{DS} = 0.8BV_{DSS}$			25	$\mu A$
	$T_J = 125^\circ C$			250	
$I_{GSS}$	Forward Gate – Source Leakage $V_{GS} = 20V$			100	nA
$I_{GSS}$	Reverse Gate – Source Leakage $V_{GS} = -20V$			-100	
<b>DYNAMIC CHARACTERISTICS</b>					
$C_{iss}$	Input Capacitance $V_{GS} = 0$		1660		pF
$C_{oss}$	Output Capacitance $V_{DS} = 25V$		550		
$C_{rss}$	Reverse Transfer Capacitance $f = 1MHz$		120		
$Q_g$	Total Gate Charge 1 $V_{GS} = 10V$ $I_D = 22A$ $V_{DS} = 0.5BV_{DSS}$	30		59	nC
$Q_{gs}$	Gate – Source Charge 1 $I_D = 22A$	2.4		12	nC
$Q_{gd}$	Gate – Drain (“Miller”) Charge 1 $V_{DS} = 0.5BV_{DSS}$	12		30.7	
$t_{d(on)}$	Turn-On Delay Time $V_{DD} = 50V$			21	ns
$t_r$	Rise Time $I_D = 22A$			145	
$t_{d(off)}$	Turn-Off Delay Time $R_G = 9.1\Omega$			64	
$t_f$	Fall Time			105	
<b>SOURCE – DRAIN DIODE CHARACTERISTICS</b>					
$I_S$	Continuous Source Current			22	A
$I_{SM}$	Pulse Source Current 2			88	
$V_{SD}$	Diode Forward Voltage $I_S = 22A$ $T_J = 25^\circ C$ $V_{GS} = 0$			1.5	V
$t_{rr}$	Reverse Recovery Time $I_F = 22A$ $T_J = 25^\circ C$			400	ns
$Q_{rr}$	Reverse Recovery Charge $d_i / d_t \leq 100A/\mu s$ $V_{DD} \leq 50V$			2.9	$\mu C$
$t_{on}$	Forward Turn-On Time		Negligible		
<b>PACKAGE CHARACTERISTICS</b>					
$L_D$	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  $\leq 300ms$ ,  $\delta \leq 2\%$
- 2) Repetitive Rating – Pulse width limited by maximum junction temperature.