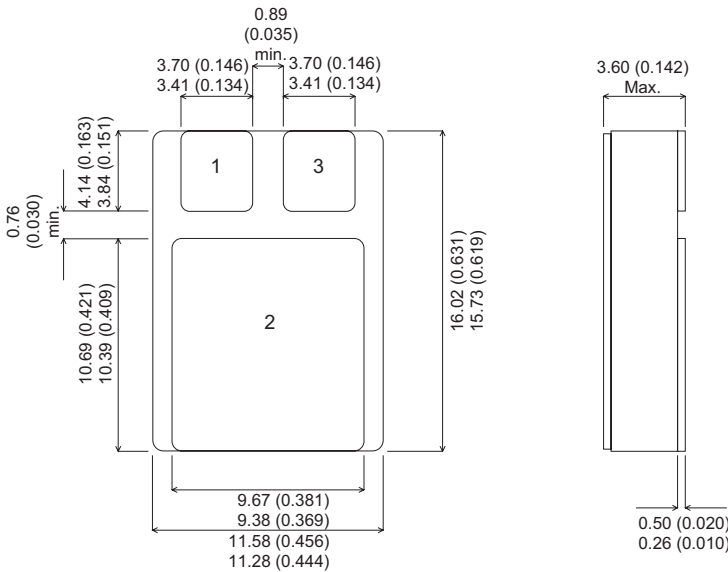


**MECHANICAL DATA**

Dimensions in mm (inches)



**P-CHANNEL  
POWER MOSFET**

$V_{DSS}$             **-100V**  
 $I_{D(cont)}$         **-31A**  
 $R_{DS(on)}$         **0.060Ω**

**FEATURES**

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

**SMD 1 PACKAGE (TO-276AB)**

Pad 1 – Source      Pad 2 – Drain      Pad 3 – Gate

**Note:** IRF5210SMD 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 ( $V_{GS} = 0, T_{case} = 25^{\circ}C$ )	-31A
$I_D$	Continuous Drain Current ( $V_{GS} = 0, T_{case} = 100^{\circ}C$ )	-19A
$I_{DM}$	Pulsed Drain Current <sup>1</sup>	-124A
$P_D$	Power Dissipation @ $T_{case} = 25^{\circ}C$	125W
	Linear Derating Factor	1.0W/ $^{\circ}C$
$E_{AS}$	Single Pulse Avalanche Energy <sup>2</sup>	340mJ
dv/dt	Peak Diode Recovery <sup>3</sup>	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 $^{\circ}C/W$

- Notes**
- 1) Pulse Test: Pulse Width  $\leq 300ms, \delta \leq 2\%$
  - 2) @  $V_{DD} = -25V, L = 1.9mH, Peak I_{AS} = -19A, V_{GS} = -10V, R_G = 25\Omega, Starting T_J = 25^{\circ}C$
  - 3) @  $I_{SD} \leq -19A, di/dt \leq -390A/\mu s, V_{DD} \leq -100V, T_J \leq 150^{\circ}C$

Semelab Plc reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders.

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

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
<b>STATIC ELECTRICAL RATINGS</b>					
$BV_{DSS}$	Drain – Source Breakdown Voltage	$V_{GS} = 0$	$I_D = -250\mu\text{A}$	-100	V
$\Delta BV_{DSS}$	Temperature Coefficient of Breakdown Voltage	Reference to $25^{\circ}\text{C}$ $I_D = -1\text{mA}$		-0.11	$\text{V}/^{\circ}\text{C}$
$R_{DS(on)}$	Static Drain – Source On–State Resistance <sup>1</sup>	$V_{GS} = -10\text{V}$	$I_D = -19\text{A}$		0.06 $\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$	$I_D = -250\mu\text{A}$	-2.0	-4.0 V
$g_{fs}$	Forward Transconductance <sup>1</sup>	$V_{DS} = -50\text{V}$	$I_{DS} = -19\text{A}$	10	$\text{S}(\bar{\nu})$
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{GS} = 0$	$V_{DS} = -80\text{V}$ $T_J = 125^{\circ}\text{C}$		-25 $\mu\text{A}$ -250 $\mu\text{A}$
$I_{GSS}$	Forward Gate – Source Leakage	$V_{GS} = -20\text{V}$			-100 nA
$I_{GSS}$	Reverse Gate – Source Leakage	$V_{GS} = 20\text{V}$			100 nA
<b>DYNAMIC CHARACTERISTICS</b>					
$C_{iss}$	Input Capacitance	$V_{GS} = 0$		2700	pF
$C_{oss}$	Output Capacitance	$V_{DS} = -25\text{V}$		830	
$C_{riss}$	Reverse Transfer Capacitance	$f = 1\text{MHz}$		470	
$Q_g$	Total Gate Charge <sup>1</sup>	$V_{GS} = -10\text{V}$	$I_D = -19\text{A}$		215 nC
$Q_{gs}$	Gate – Source Charge <sup>1</sup>	$V_{GS} = -10\text{V}$	$I_D = -19\text{A}$		30 nC
$Q_{gd}$	Gate – Drain (“Miller”) Charge <sup>1</sup>	$V_{DS} = -80\text{V}$			115 nC
$t_{d(on)}$	Turn–On Delay Time	$V_{DD} = -50\text{V}$ $I_D = -19\text{A}$ $R_G = 2.5\Omega$	$V_{GS} = -10\text{V}$		28 ns
$t_r$	Rise Time				150 ns
$t_{d(off)}$	Turn–Off Delay Time				103 ns
$t_f$	Fall Time				116 ns
<b>SOURCE – DRAIN DIODE CHARACTERISTICS</b>					
$I_S$	Continuous Source Current				-31 A
$I_{SM}$	Pulse Source Current <sup>2</sup>				-124 A
$V_{SD}$	Diode Forward Voltage	$I_S = -19\text{A}$	$T_J = 25^{\circ}\text{C}$		-1.6 V
$t_{rr}$	Reverse Recovery Time	$I_F = -19\text{A}$	$T_J = 25^{\circ}\text{C}$		290 ns
$Q_{rr}$	Reverse Recovery Charge	$d_i / d_t \leq 100\text{A}/\mu\text{s}$			2.1 $\mu\text{C}$
$t_{on}$	Forward Turn–On Time			Negligible	

**Notes**

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

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