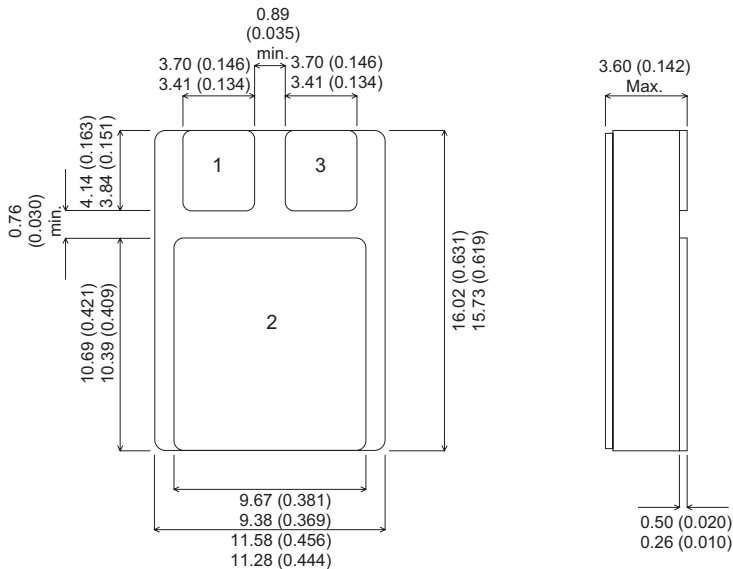


MECHANICAL DATA

Dimensions in mm (inches)



SMD 1 PACKAGE (TO-276AB)

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

Note: IRF250SMD also available with pins 1 and 3 reversed.

**N-CHANNEL
POWER MOSFET**

V_{DSS} **200V**
 $I_{D(cont)}$ **27.4A**
 $R_{DS(on)}$ **0.100Ω**

FEATURES

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

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

V_{GS}	Gate – Source Voltage	$\pm 20V$
I_D	Continuous Drain Current ($V_{GS} = 0, T_{case} = 25^{\circ}C$)	27.4A
I_D	Continuous Drain Current ($V_{GS} = 0, T_{case} = 100^{\circ}C$)	17A
I_{DM}	Pulsed Drain Current ¹	110A
P_D	Power Dissipation @ $T_{case} = 25^{\circ}C$	150W
	Linear Derating Factor	1.2W/ $^{\circ}C$
E_{AS}	Single Pulse Avalanche Energy ²	500mJ
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	0.83 $^{\circ}C/W$

- Notes**
- 1) Pulse Test: Pulse Width $\leq 300ms$, $\delta \leq 2\%$
 - 2) @ $V_{DD} = 25V$, $L \geq 1.3mH$, Peak $I_L = 27.4A$, Starting $T_J = 25^{\circ}C$
 - 3) @ $I_{SD} \leq 27.5A$, $di/dt \leq 190A/\mu s$, $V_{DD} \leq BV_{DSS}$, $T_J \leq 150^{\circ}C$

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		
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	$V_{GS} = 10\text{V}$	$I_D = 17\text{A}$		0.100	Ω	
		$V_{GS} = 10\text{V}$	$I_D = 27.4\text{A}$		0.105		
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$	$I_D = 250\mu\text{A}$	2	4	V	
g_{fs}	Forward Transconductance ¹	$V_{DS} \geq 15\text{V}$	$I_{DS} = 17\text{A}$	9		$\text{S}(\overline{\tau})$	
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	$V_{GS} = 0$			3500	pF	
C_{oss}	Output Capacitance	$V_{DS} = 25\text{V}$			700		
C_{rss}	Reverse Transfer Capacitance	$f = 1\text{MHz}$			110		
Q_g	Total Gate Charge ¹	$V_{GS} = 10\text{V}$	$I_D = 22\text{A}$	55	115	nC	
		$V_{DS} = 0.5BV_{DSS}$					
Q_{gs}	Gate – Source Charge ¹	$I_D = 22\text{A}$		8	22	nC	
Q_{gd}	Gate – Drain (“Miller”) Charge ¹	$V_{DS} = 0.5BV_{DSS}$		30	60		
$t_{d(on)}$	Turn–On Delay Time	$V_{DD} = 100\text{V}$	$V_{GS} = 10\text{V}$		35	ns	
t_r	Rise Time				190		
$t_{d(off)}$	Turn–Off Delay Time			$I_D = 27.4\text{A}$			170
t_f	Fall Time			$R_G = 2.35\Omega$			130
SOURCE – DRAIN DIODE CHARACTERISTICS							
I_S	Continuous Source Current				27.4	A	
I_{SM}	Pulse Source Current ²				110		
V_{SD}	Diode Forward Voltage	$I_S = 27.4\text{A}$	$T_J = 25^{\circ}\text{C}$		1.9	V	
		$V_{GS} = 0$					
t_{rr}	Reverse Recovery Time	$I_F = 27.4\text{A}$	$T_J = 25^{\circ}\text{C}$		950	ns	
Q_{rr}	Reverse Recovery Charge	$d_i / d_t \leq 100\text{A}/\mu\text{s}$		$V_{DD} \leq 30\text{V}$	9.0	μC	
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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