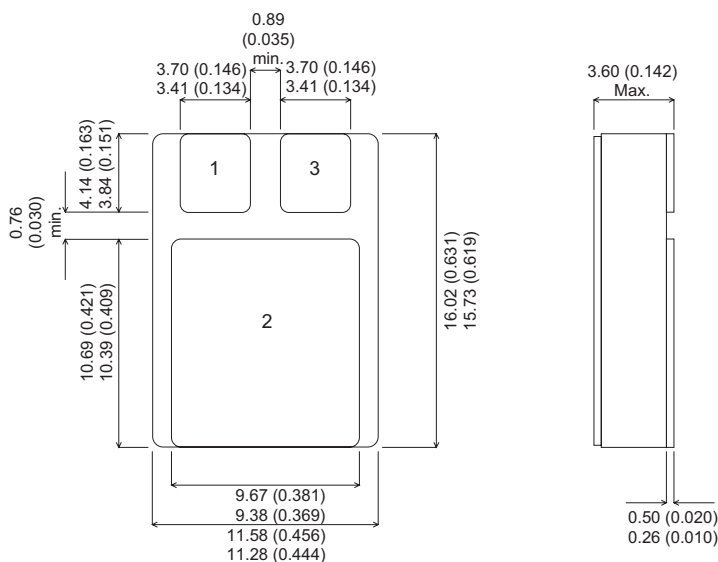


**MECHANICAL DATA**

Dimensions in mm (inches)



**SMD1 (TO-276AB) – Surface Mount Package**

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

**N-CHANNEL  
POWER MOSFET**

**$V_{DSS}$             100V**  
 **$I_{D(cont)}$         28A**  
 **$R_{DS(on)}$         0.077 $\Omega$**

**FEATURES**

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

**Note:** IRF140SMD 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 ( $V_{GS} = 0, T_{case} = 25^{\circ}C$ )	28A
$I_D$	Continuous Drain Current ( $V_{GS} = 0, T_{case} = 100^{\circ}C$ )	20A
$I_{DM}$	Pulsed Drain Current	112A
$P_D$	Power Dissipation @ $T_{case} = 25^{\circ}C$	125W
	Linear Derating Factor	1.0W/ $^{\circ}C$
$E_{AS}$	Single Pulse Avalanche Energy	250mJ
dv/dt	Peak Diode Recovery	5.5V/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	1.0 $^{\circ}C/W$
$R_{\theta J-PCB}$	Thermal Resistance Junction to PCB (Typical)	4 $^{\circ}C/W$

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	$V_{GS} = 0$	$I_D = 1\text{mA}$	100	V
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Temperature Coefficient of Breakdown Voltage	Reference to $25^{\circ}\text{C}$ $I_D = 1\text{mA}$		0.13	$\text{V}/^{\circ}\text{C}$
$R_{DS(on)}$	Static Drain – Source On–State Resistance <sup>1</sup>	$V_{GS} = 10\text{V}$	$I_D = 20\text{A}$		0.077
		$V_{GS} = 10\text{V}$	$I_D = 28\text{A}$		0.125
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$	$I_D = 250\mu\text{A}$	2	4
$g_{fs}$	Forward Transconductance <sup>1</sup>	$V_{DS} \geq 15\text{V}$	$I_{DS} = 20\text{A}$	9.0	$\text{S}(\overline{\tau})$
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{GS} = 0$	$V_{DS} = 0.8BV_{DSS}$		25
			$T_J = 125^{\circ}\text{C}$		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
<b>DYNAMIC CHARACTERISTICS</b>					
$C_{iss}$	Input Capacitance	$V_{GS} = 0$		1660	pF
$C_{oss}$	Output Capacitance	$V_{DS} = 25\text{V}$		550	
$C_{rss}$	Reverse Transfer Capacitance	$f = 1\text{MHz}$		120	
$Q_g$	Total Gate Charge	$V_{GS} = 10\text{V}$	$I_D = 28\text{A}$		59
		$V_{DS} = 0.5BV_{DSS}$			nC
$Q_{gs}$	Gate – Source Charge	$I_D = 28\text{A}$			12
$Q_{gd}$	Gate – Drain (“Miller”) Charge	$V_{DS} = 0.5BV_{DSS}$			30.7
$t_{d(on)}$	Turn–On Delay Time	$V_{GS} = 0$			21
$t_r$	Rise Time	$V_{DD} = 50\text{V}$			105
$t_{d(off)}$	Turn–Off Delay Time	$I_D = 28\text{A}$			64
$t_f$	Fall Time	$R_G = 9.1\Omega$			65
<b>SOURCE – DRAIN DIODE CHARACTERISTICS</b>					
$I_S$	Continuous Source Current				28
$I_{SM}$	Pulse Source Current				112
$V_{SD}$	Diode Forward Voltage	$I_S = 28\text{A}$	$T_J = 25^{\circ}\text{C}$		1.5
		$V_{GS} = 0$			V
$t_{rr}$	Reverse Recovery Time	$I_F = 28\text{A}$	$T_J = 25^{\circ}\text{C}$		400
$Q_{rr}$	Reverse Recovery Charge	$d_i / d_t \leq 100\text{A}/\mu\text{s}$	$V_{DD} \leq 30\text{V}$		2.9
$t_{on}$	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  $\leq 300\text{ms}$ ,  $\delta \leq 2\%$
- 2) Repetitive Rating – Pulse width limited by maximum junction temperature.