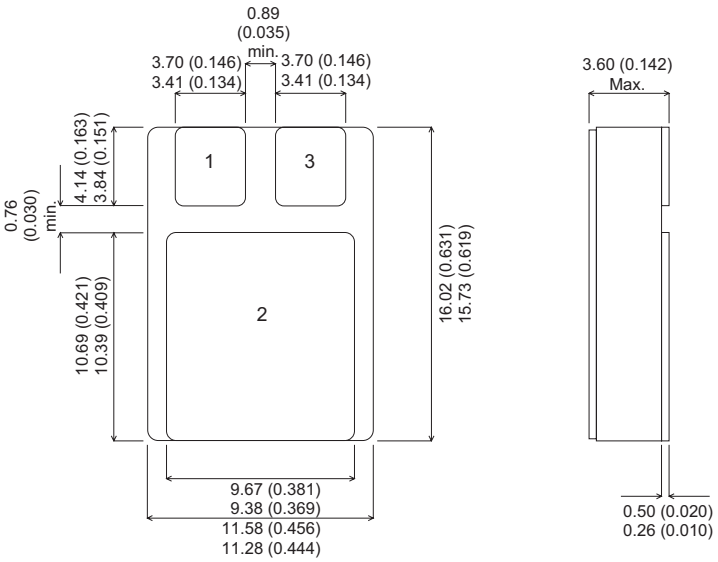
IRFN9140
2N7236U

MECHANICAL DATA
Dimensions in mm (inches)



SMD1 (TO-276AB)

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

P–CHANNEL POWER MOSFET

V_{DSS}	–100V
$I_{D(cont)}$	–18A
$R_{DS(on)}$	0.20Ω

FEATURES

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

Note: Also available with pins 1 and 3 reversed upon request.

ABSOLUTE MAXIMUM RATINGS (T_{case} = 25°C unless otherwise stated)

V_{GS}	Gate – Source Voltage		±20V
I_D	Continuous Drain Current	(V_{GS} = -10V, T_{case} = 25°C)	–18A
I_D	Continuous Drain Current	(V_{GS} = -10V, T_{case} = 100°C)	–11A
I_{DM}	Pulsed Drain Current [1]		–72A
P_D	Power Dissipation @ T_{case} = 25°C		125W
	Linear Derating Factor		1.0W/°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		300°C
$R_{\theta JC}$	Thermal Resistance Junction to Case		1.0°C/W

Notes

1) Pulse Test: Pulse Width ≤ 300ms, δ ≤ 2%
2) @ V_{DD} = –25V , L ≥ 3.1mH , R_G = 25Ω , Peak I_L = –18A , V_{GS} = -10V, Starting T_J = 25°C
3) @ I_{SD} ≤ –18A , di/dt ≤ –100A/µs , V_{DD} ≤ BV_{DSS} , T_J ≤ 150°C , SUGGESTED R_G = 9.1Ω

Semelab plc. Telephone +44(0)1455 556565. Fax +44(0)1455 552612.
E-mail: sales@semelab.co.uk Website: http://www.semelab.co.uk

Document Number 4020
Issue 2

ELECTRICAL CHARACTERISTICS (T_{amb} = 25°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 = –1mA	–100			V
$\frac{\Delta BV_{DSS}}{\Delta T_J}$	Temperature Coefficient of Breakdown Voltage	Reference to 25°C I_D = –1mA		–0.087		V/°C
$R_{DS(on)}$	Static Drain – Source On–State Resistance [1]	V_{GS} = –10V I_D = –11A			0.20	Ω
		V_{GS} = –10V I_D = –18A			0.22	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS} I_D = –250µA	–2		–4	V
g_{fs}	Forward Transconductance [1]	V_{DS} ≥ –15V I_{DS} = –11A	6.2			S(℧)
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS} = 0 V_{DS} = 0.8BV_{DSS}			–25	µA
		T_J = 125°C			–250	
I_{GSS}	Forward Gate – Source Leakage	V_{GS} = –20V			–100	nA
I_{GSS}	Reverse Gate – Source Leakage	V_{GS} = 20V			100	
	DYNAMIC CHARACTERISTICS					
C_{iss}	Input Capacitance	V_{GS} = 0		1400		pF
C_{oss}	Output Capacitance	V_{DS} = –25V		600		
C_{rss}	Reverse Transfer Capacitance	f = 1MHz		200		
Q_g	Total Gate Charge [1]	V_{GS} = –10V I_D = –18A V_{DS} = 0.5BV_{DSS}			60	nC
Q_{gs}	Gate – Source Charge [1]	I_D = –18A V_{DS} = 0.5BV_{DSS}			13	nC
Q_{gd}	Gate – Drain (“Miller”) Charge [1]				35.2	
$t_{d(on)}$	Turn–On Delay Time	V_{DD} = –50V I_D = –18A R_G = 9.1Ω			35	ns
t_r	Rise Time				85	
$t_{d(off)}$	Turn–Off Delay Time				85	
t_f	Fall Time				65	
	SOURCE – DRAIN DIODE CHARACTERISTICS					
I_S	Continuous Source Current				–18	A
I_{SM}	Pulse Source Current [2]				–72	
V_{SD}	Diode Forward Voltage	I_S = –18A T_J = 25°C V_{GS} = 0			–4.2	V
t_{rr}	Reverse Recovery Time	I_F = –18A T_J = 25°C			280	ns
Q_{rr}	Reverse Recovery Charge	d_i / d_t ≤ –100A/µs V_{DD} ≤ –50V			3.6	µC
t_{on}	Forward Turn–On Time		negligible			

Notes

1) Pulse Test: Pulse Width ≤ 300ms, δ ≤ 2%

2) Repetitive Rating – Pulse width limited by maximum junction temperature.

Semelab plc. Telephone +44(0)1455 556565. Fax +44(0)1455 552612.
E-mail: sales@semelab.co.uk Website: http://www.semelab.co.uk