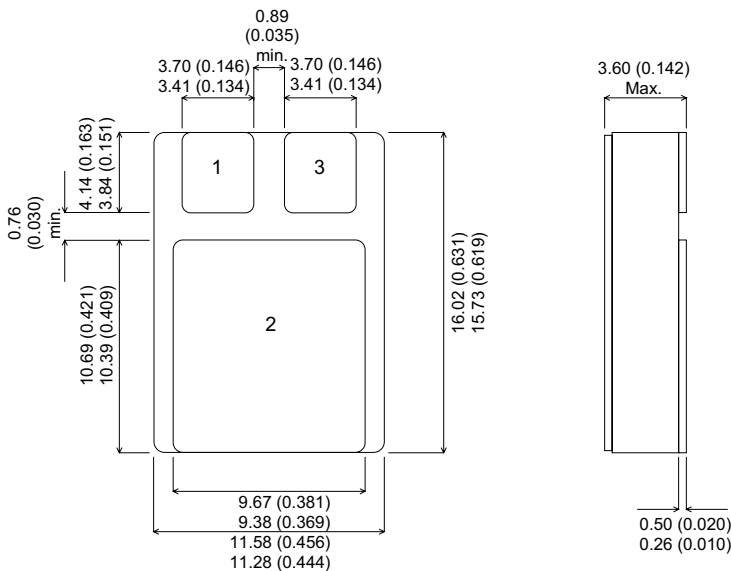


MECHANICAL DATA

Dimensions in mm (inches)


**N-CHANNEL
POWER MOSFET**

| | |
|---------------|---------------|
| V_{DSS} | 200V |
| $I_{D(cont)}$ | 14A |
| $R_{DS(on)}$ | 0.100Ω |

FEATURES

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

SMD PACKAGE

Pad 1 – Source

Pad 2 – Drain

Pad 3 – Gate

Note: IRFxxxSM 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 ($V_{GS} = 0, T_{case} = 25^{\circ}C$) | 22A |
| I_D | Continuous Drain Current ($V_{GS} = 0, T_{case} = 100^{\circ}C$) | 14A |
| I_{DM} | Pulsed Drain Current ¹ | 88A |
| P_D | Power Dissipation @ $T_{case} = 25^{\circ}C$ | 100W |
| | Linear Derating Factor | 0.8W/ $^{\circ}C$ |
| 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 | 1.25 $^{\circ}C/W$ |
| $R_{\theta J-PCB}$ | Thermal Resistance Junction to PCB (Typical) | 3 $^{\circ}C/W$ |

Notes

 1) Pulse Test: Pulse Width $\leq 300ms, \delta \leq 2\%$

 2) @ $V_{DD} = 50V, L \geq 1.5mH, R_G = 25\Omega, Peak I_L = 22A, Starting T_J = 25^{\circ}C$

 3) @ $I_{SD} \leq 22A, di/dt \leq 190A/\mu s, V_{DD} \leq BV_{DSS}, T_J \leq 150^{\circ}C, SUGGESTED R_G = 2.35\Omega$
Semelab plc. Telephone +44(0)1455 556565. Fax +44(0)1455 552612.

 E-mail: sales@semelab.co.uk Website: <http://www.semelab.co.uk>

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 | $V_{GS} = 10\text{V}$ | $I_D = 14\text{A}$ | | 0.100 | |
| | | $V_{GS} = 10\text{V}$ | $I_D = 22\text{A}$ | | 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 | $V_{DS} \geq 15\text{V}$ | $I_{DS} = 14\text{A}$ | 9 | | $\text{S}(\bar{v})$ |
| I_{DSS} | Zero Gate Voltage Drain Current | $V_{GS} = 0$ | $V_{DS} = 0.8BV_{DSS}$ $T_J = 125^{\circ}\text{C}$ | | 25 | μA |
| | | | | | 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 | nA |
| 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 | $V_{DD} = 100\text{V}$ | | | 35 | ns |
| t_r | Rise Time | $I_D = 22\text{A}$ | | | 190 | |
| $t_{d(off)}$ | Turn–Off Delay Time | $R_G = 2.35\Omega$ | | | 170 | |
| t_f | Fall Time | | | | 130 | |
| SOURCE – DRAIN DIODE CHARACTERISTICS | | | | | | |
| I_S | Continuous Source Current | | | | 22 | A |
| I_{SM} | Pulse Source Current ² | | | | 88 | |
| V_{SD} | Diode Forward Voltage | $I_S = 22\text{A}$ | $T_J = 25^{\circ}\text{C}$ | | 1.9 | V |
| | | $V_{GS} = 0$ | | | | |
| t_{rr} | Reverse Recovery Time | $I_F = 22\text{A}$ | $T_J = 25^{\circ}\text{C}$ | | 950 | ns |
| Q_{rr} | Reverse Recovery Charge | $d_i / d_t \leq 100\text{A}/\mu\text{s}$ | | $V_{DD} \leq 50\text{V}$ | 9.0 | μC |
| t_{on} | Forward Turn–On Time | | | Negligible | | |
| PACKAGE CHARACTERISTICS | | | | | | |
| 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.