# SEME LAB

## IRF9130SMD05
## IRFN9130SMD05

**MECHANICAL DATA**
Dimensions in mm (inches)

0.89
(0.035)
min.

3.70 (0.146)
3.41 (0.134)

3.70 (0.146)
3.41 (0.134)

3.60 (0.142)
Max.

4.14 (0.163)
3.84 (0.151)

0.76
(0.030)
min.

1    3

16.02 (0.631)
15.73 (0.619)

10.69 (0.421)
10.39 (0.409)

2

9.67 (0.381)
9.38 (0.369)

11.58 (0.456)
11.28 (0.444)

0.50 (0.020)
0.26 (0.010)
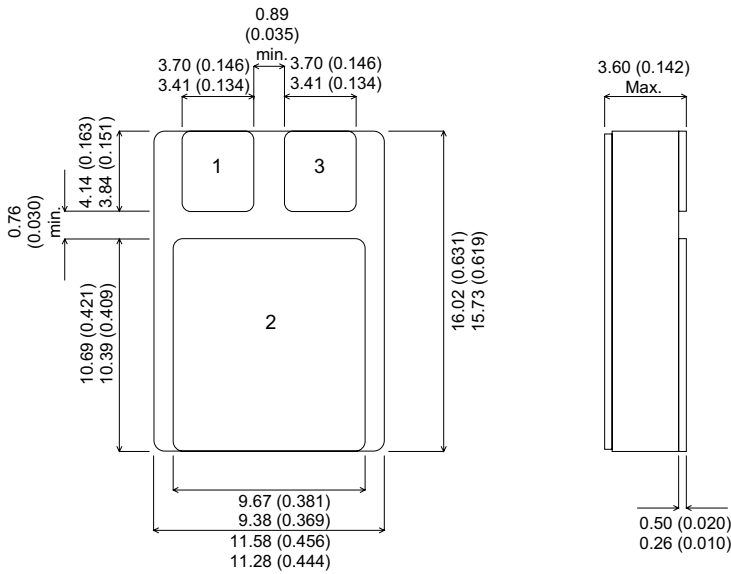
**SMD 5**

### IRF9130SMD05

PAD1 = GATE    PAD 2 DRAIN    PAD3 = SOURCE

### IRFN9130SMD05

PAD1 = SOURCE    PAD 2 = DRAIN    PAD3 = GATE

## P–CHANNEL POWER MOSFET FOR HI–REL APPLICATIONS

| | |
|---|---|
| $V_{DSS}$ | **-100V** |
| $I_{D(cont)}$ | **-8A** |
| $R_{DS(on)}$ | **0.35$\Omega$** |

## FEATURES

- **HERMETICALLY SEALED**
- **SIMPLE DRIVE REQUIREMENTS**
- **LIGHTWEIGHT**
- **SCREENING OPTIONS AVAILABLE**
- **ALL LEADS ISOLATED FROM CASE**

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

| | | |
|---|---|---|
| $V_{GS}$ | Gate – Source Voltage | ±20V |
| $I_D$ | Continuous Drain Current @ $T_{case}$ = 25°C | 8A |
| $I_D$ | Continuous Drain Current @ $T_{case}$ = 100°C | 5A |
| $I_{DM}$ | Pulsed Drain Current | 40A |
| $P_D$ | Power Dissipation @ $T_{case}$ = 25°C | 45W |
| | Linear Derating Factor | 0.36W/°C |
| $T_J$ , $T_{stg}$ | Operating and Storage Temperature Range | –55 to 150°C |
| $R_{\theta JC}$ | Thermal Resistance Junction to Case | 2.8°C/W max. |

## ELECTRICAL CHARACTERISTICS (T$_C$ = 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 | | | 0.1 | | V/°C |
| R$_{DS(on)}$ | Static Drain – Source On–State Resistance | V$_{GS}$ = 10V     I$_D$ = 5A | | | | 0.35 | Ω |
| | | V$_{GS}$ = 10V     I$_D$ = 8A | | | | 0.4 | |
| V$_{GS(th)}$ | Gate Threshold Voltage | V$_{DS}$ = V$_{GS}$     I$_D$ = 250μA | | 2 | | 4 | V |
| g$_{fs}$ | Forward Transconductance | V$_{DS}$ ≥ 15V     I$_{DS}$ = 5A | | 3 | | | S($\mho$) |
| 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 | | | 860 | | pF |
| C$_{oss}$ | Output Capacitance | V$_{DS}$ = 25V | | | 350 | | |
| C$_{rss}$ | Reverse Transfer Capacitance | f = 1MHz | | | 125 | | |
| Q$_g$ | Total Gate Charge | V$_{GS}$ = 10V     I$_D$ = 8A V$_{DS}$ = 0.5BV$_{DSS}$ | | 12.5 | | 29 | nC |
| Q$_{gs}$ | Gate – Source Charge | I$_D$ = 8A | | 1.0 | | 6.3 | nC |
| Q$_{gd}$ | Gate – Drain ("Miller") Charge | V$_{DS}$ = 0.5BV$_{DSS}$ | | 2 | | 27 | |
| t$_{d(on)}$ | Turn–On Delay Time | V$_{DD}$ = 50V I$_D$ = 8A R$_G$ = 7.5Ω | | | | 60 | ns |
| t$_r$ | Rise Time | | | | | 140 | |
| t$_{d(off)}$ | Turn–Off Delay Time | | | | | 140 | |
| t$_f$ | Fall Time | | | | | 140 | |
| **SOURCE – DRAIN DIODE CHARACTERISTICS** | | | | | | | |
| I$_S$ | Continuous Source Current | | | | | 8 | A |
| I$_{SM}$ | Pulse Source Current | | | | | 32 | |
| V$_{SD}$ | Diode Forward Voltage | I$_S$ = 8A     T$_J$ = 25°C V$_{GS}$ = 0 | | | | 4.7 | V |
| t$_{rr}$ | Reverse Recovery Time | I$_S$ = 8A     T$_J$ = 25°C | | | | 300 | ns |
| Q$_{rr}$ | Reverse Recovery Charge | d$_i$ / d$_t$ ≤ 100A/μs  V$_{DD}$ ≤ 50V | | | | 3 | μC |
| **PACKAGE CHARACTERISTICS** | | | | | | | |
| L$_D$ | Internal Drain Inductance (from 6mm down drain lead pad to centre of die) | | | | 8.7 | | nH |
| L$_S$ | Internal Source Inductance (from 6mm down source lead to centre of source bond pad) | | | | 8.7 | | |