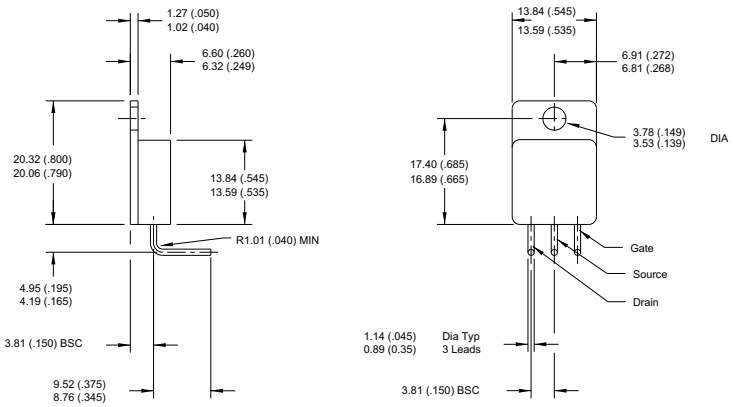
SEME LAB

# IRFM

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




# N–CHANNEL POWER MOSFET

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

## FEATURES

- **N–CHANNEL MOSFET**
- **HIGH VOLTAGE**
- **INTEGRAL PROTECTION DIODE**
- **HERMETIC ISOLATED TO-254 PAC**
- **CERAMIC SURFACE MOUNT PACK OPTION**

**TO–254 Metal Package**

Pin 1 – Drain  Pin 2 – Source  Pin 3 – Gate

## ABSOLUTE MAXIMUM RATINGS ($T_C$ = 25°C unless otherwise stated)

| | | | |
|---|---|---|---|
| $V_{GS}$ | Gate – Source Voltage | | ±20V |
| $I_D$ | Continuous Drain Current | @ $V_{GS}$ = 10V , $T_C$ = 25°C | 27.4A |
| | | @ $V_{GS}$ = 10V , $T_C$ = 100°C | 17A |
| $I_{DM}$ | Pulsed Drain Current | | 110A |
| $P_D$ | Max. Power Dissipation | @ $T_C$ = 25°C | 150W |
| | Linear Derating Factor | | 1.2W / °C |
| $I_L$ | Avalanche Current , Clamped [1] | | 27.4A |
| dv / dt | Peak Diode Recovery [2] | | 5.5V / ns |
| $R_{\theta JC}$ | Thermal Resistance Junction – Case | | 0.83°C / W |
| $R_{\theta JA}$ | Thermal Resistance Junction – Ambient | | 48°C / W |
| $R_{\theta CS}$ | Thermal Resistance Case – Sink | | 0.21°C / W typ. |
| $T_J$ , $T_{STG}$ | Operating Junction and Storage Temperature Range | | –55 to 150°C |
| $T_L$ | Lead Temperature (1.6mm from case for 10s) | | 300°C |

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## ELECTRICAL CHARACTERISTICS ($T_J$ = 25°C unless otherwise stated)

| | Parameter | Test Conditions | Min. | Typ. | Max |
|---|---|---|---|---|---|
| | **STATIC ELECTRICAL RATINGS** | | | | |
| $BV_{DSS}$ | Drain – Source Breakdown Voltage | $V_{GS}$ = 0 $I_D$ = 1mA | 200 | | |
| $\frac{\Delta BV_{DSS}}{\Delta T_J}$ | Temperature Coefficient of Breakdown Voltage | Reference to 25°C $I_D$ = 1mA | | 0.28 | |
| $R_{DS(on)}$ | Static Drain – Source On–State Resistance [2] | $V_{GS}$ = 10V $I_D$ = 17A | | | 0.100 |
| | | $V_{GS}$ = 10V $I_D$ = 27.4A | | | 0.105 |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS}$ = $V_{GS}$ $I_D$ = 250µA | 2 | | 4 |
| $g_{fs}$ | Forward Transconductance [2] | $V_{DS}$ ≥ 15V $I_{DS}$ = 27.4A | 9 | | |
| $I_{DSS}$ | Zero Gate Voltage Drain Current | $V_{GS}$ = 0 $V_{DS}$ = 0.8$BV_{DSS}$ | | | 25 |
| | | $T_J$ = 125°C | | | 250 |
| $I_{GSS}$ | Forward Gate – Source Leakage | $V_{GS}$ = 20V | | | 100 |
| $I_{GSS}$ | Reverse Gate – Source Leakage | $V_{GS}$ = –20V | | | –100 |
| | **DYNAMIC CHARACTERISTICS** | | | | |
| $C_{iss}$ | Input Capacitance | $V_{GS}$ = 0 $V_{DS}$ = 25V f = 1MHz | | 3500 | |
| $C_{oss}$ | Output Capacitance | | | 700 | |
| $C_{rss}$ | Reverse Transfer Capacitance | | | 110 | |
| $C_{DC}$ | Drain – Case Capacitance | | | 12 | |
| $Q_g$ | Total Gate Charge | $V_{GS}$ = 10V $I_D$ = 27.4A $V_{DS}$ = 0.5$BV_{DSS}$ | 55 | | 115 |
| $Q_{gs}$ | Gate – Source Charge | | 8 | | 22 |
| $Q_{gd}$ | Gate – Drain (“Miller”) Charge | | 30 | | 60 |
| $t_{d(on)}$ | Turn– On Delay Time | $V_{DD}$ = 100V $I_D$ = 27.4A $R_G$ = 2.35Ω | | | 35 |
| $t_r$ | Rise Time | | | | 190 |
| $t_{d(off)}$ | Turn–Off Delay Time | | | | 170 |
| $t_f$ | Fall Time | | | | 130 |
| | **SOURCE – DRAIN DIODE CHARACTERISTICS** | | | | |
| $I_S$ | Continuous Source Current | | | | 27.4 |
| $I_{SM}$ | Pulse Source Current [1] | | | | 110 |
| $V_{SD}$ | Diode Forward Voltage [2] | $I_S$ = 27.4A $T_J$ = 25°C $V_{GS}$ = 0 | | | 1.9 |
| $t_{rr}$ | Reverse Recovery Time [2] | $I_F$ = 27.4A $T_J$ = 25°C | | | 950 |
| $Q_{rr}$ | Reverse Recovery Charge [2] | $d_i$ / $d_t$ ≤ 100A/µs $V_{DD}$ ≤ 50V | | | 9.0 |
| $t_{on}$ | Forward Turn–On Time | | | Negligible | |
| | **PACKAGE CHARACTERISTICS** | | | | |
| $L_D$ | Internal Drain Inductance Measured from 6mm down drain lead to centre of die | | | 8.7 | |
| $L_S$ | Internal Source Inductance Measured from 6mm down source lead to source bond pad | | | 8.7 | |

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