# SEME LAB

**IRFY044C**

## MECHANICAL DATA
Dimensions in mm (inches)



10.41 / 10.67

16.38 / 16.89

13.39 / 13.64

10.41 / 10.92

3.56 / 3.81 Dia.

1  2  3

12.70 / 19.05

2.54 BSC
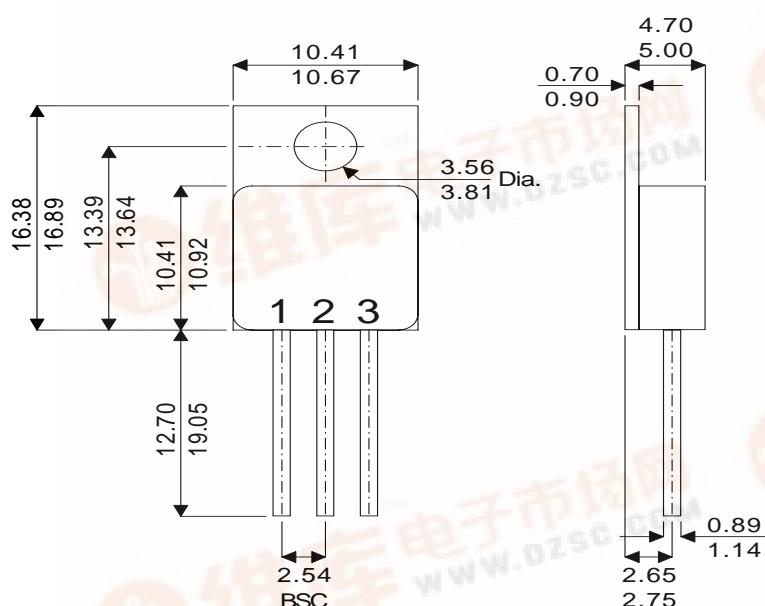
**TO–220M – Metal Package**

**Ceramic Lead Seals**

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

4.70 / 5.00

0.70 / 0.90

0.89 / 1.14

2.65 / 2.75

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

| | |
|---|---|
| $V_{DSS}$ | **60V** |
| $I_{D(cont)}$ | **20A** |
| $R_{DS(on)}$ | **0.035Ω** |

### FEATURES

- **HERMETICALLY SEALED TO–220 METAL PACKAGE**
- **SIMPLE DRIVE REQUIREMENTS**
- **LIGHTWEIGHT**
- **ALL LEADS ISOLATED FROM CASE**

## AVAILABLE SCREENINGS

| | | |
|---|---|---|
| FULL ASSESSMENT LEVEL | IRFY044C.MOD | IRFY044CJ |
| SEQUENCE A | IRFY004C-A | IRFY044CJXV |
| SEQUENCE B | IRFY004C-B | IRFY044CJTX |
| SEQUENCE C | IRF044C-C | |
| SEQUENCE D | IRFY044C-D | |

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

| | | |
|---|---|---|
| $V_{GS}$ | Gate – Source Voltage | ±20V |
| $I_D$ | Continuous Drain Current @ $T_C$ = 25°C | 20A |
| $I_D$ | Continuous Drain Current @ $T_C$ = 100°C | 20A |
| $I_{DM}$ | Pulsed Drain Current | 128A |
| $P_D$ | Power Dissipation @ $T_C$ = 25°C | 60W |
| | Linear Derating Factor | 0.48W/°C |
| $T_J$ , $T_{stg}$ | Operating and Storage Temperature Range | −55 to 150°C |
| $R_{θJC}$ | Thermal Resistance Junction to Case | 2.1°C/W max. |
| $R_{θJA}$ | Thermal Resistance Junction to Ambient | 80°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 | $V_{GS} = 0$ | $I_D = 1mA$ | 60 | | | V |
| $\dfrac{\Delta BV_{DSS}}{\Delta T_J}$ | Temperature Coefficient of Breakdown Voltage | Reference to 25°C $I_D = 1mA$ | | | 0.68 | | V/°C |
| $R_{DS(on)}$ | Static Drain – Source On–State Resistance | $V_{GS} = 10V$ | $I_D = 20A$ | | | 0.035 | Ω |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS} = V_{GS}$ | $I_D = 250\mu A$ | 2 | | 4 | V |
| $g_{fs}$ | Forward Transconductance | $V_{DS} \geq 15V$ | $I_D = 20A$ | 17 | | | 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 | $V_{GS} = 0$ | | | 2400 | | pF |
| $C_{oss}$ | Output Capacitance | $V_{DS} = 25V$ | | | 1100 | | |
| $C_{rss}$ | Reverse Transfer Capacitance | f = 1MHz | | | 230 | | |
| $Q_g$ | Total Gate Charge | $V_{GS} = 10V$ | | 39 | | 88 | nC |
| $Q_{gs}$ | Gate – Source Charge | $I_D = 20A$ | | 6.7 | | 15 | |
| $Q_{gd}$ | Gate – Drain ("Miller") Charge | $V_{DS} = 0.5BV_{DSS}$ | | 18 | | 52 | |
| $t_{d(on)}$ | Turn–On Delay Time | $V_{GS} = 10V$ | | | | 23 | ns |
| $t_r$ | Rise Time | $V_{DD} = 30V$ | | | | 130 | |
| $t_{d(off)}$ | Turn–Off Delay Time | $I_D = 20A$ | | | | 81 | |
| $t_f$ | Fall Time | $R_G = 9.1Ω$ | | | | 79 | |
| **SOURCE – DRAIN DIODE CHARACTERISTICS** | | | | | | | |
| $I_S$ | Continuous Source Current | | | | | 20 | A |
| $I_{SM}$ | Pulse Source Current | | | | | 128 | |
| $V_{SD}$ | Diode Forward Voltage | $I_S = 20A$ $V_{GS} = 0$ | $T_J = 25°C$ | | | 2.5 | V |
| $t_{rr}$ | Reverse Recovery Time | $I_F = 20A$ | $T_J = 25°C$ | | | 220 | ns |
| $Q_{rr}$ | Reverse Recovery Charge | $d_i / d_t \leq 100A/\mu s$ $V_{DD} \leq 50V$ | | | | 1.6 | 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 | | |