

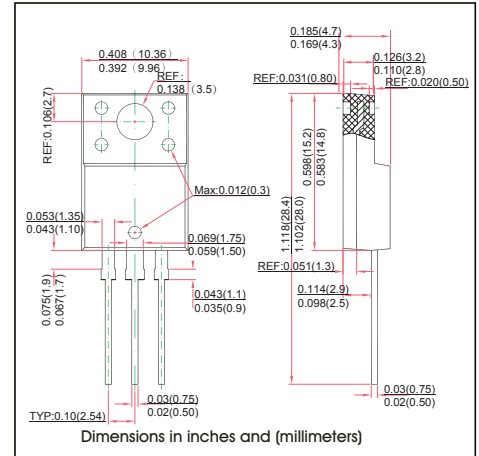
## TO-220F Plastic-Encapsulate MOSFETS

### FEATURE

- Excellent package for good heat dissipation
- Ultra low gate charge
- Low reverse transfer capacitance
- Fast switching capability
- Avalanche energy specified
- N-Channel Power MOSFET

### MECHANICAL DATA

- Case style:TO-220F molded plastic
- Mounting position:any



## MAXIMUM RATINGS AND CHARACTERISTICS

@ 25°C Ambient Temperature (unless otherwise noted)

| Parameter  | Symbol          | Value      | Unit |
|--|-----------------|------------|------|
| Drain-Source Voltage   | $V_{DS}$        | 800        | V    |
| Gate-Source Voltage  | $V_{GS}$        | $\pm 30$   |      |
| Continuous Drain Current   | $I_D$           | 3          | A    |
| Pulsed Drain Current   | $I_{DM}$        | 10         |      |
| Single Pulsed Avalanche Energy (note1)   | $E_{AS}$        | 170        | mJ   |
| Thermal Resistance from Junction to Ambient                                    | $R_{\theta JA}$ | 62.5       | °C/W |
| Junction Temperature   | $T_J$           | 150        | °C   |
| Storage Temperature Range  | $T_{STG}$       | -55 ~ +150 |      |
| Maximum lead temperature for soldering purposes , 1/8" from case for 5 seconds | $T_L$           | 260        |      |

## MOSFET ELECTRICAL CHARACTERISTICS $T_A=25^\circ\text{C}$ unless otherwise specified

| Parameter                                     | Symbol        | Test Condition   | Min | Typ  | Max      | Unit     |
|---|---------------|--|-----|------|----------|----------|
| <b>Off characteristics</b>                    |               |  |     |      |          |          |
| Drain-source breakdown voltage                | $V_{(BR)DSS}$ | $V_{GS} = 0V, I_D = 250\mu A$                            | 8   |      |          | V        |
| Zero gate voltage drain current               | $I_{DSS}$     | $V_{DS} = 800V, V_{GS} = 0V$                             | 0   |      | 1        | $\mu A$  |
| Gate-body leakage current                     | $I_{GSS}$     | $V_{DS} = 0V, V_{GS} = \pm 30V$                          |     |      | $\pm 10$ | $\mu A$  |
| <b>On characteristics (note2)</b>             |               |  |     |      |          |          |
| Gate-threshold voltage                        | $V_{GS(th)}$  | $V_{DS} = V_{GS}, I_D = 250\mu A$                        | 3   | 3.7  | 4.5      | V        |
| Static drain-source on-resistance             | $R_{DS(on)}$  | $V_{GS} = 10V, I_D = 1.5A$                               |     | 3.2  | 4.2      | $\Omega$ |
| Forward transconductance                      | $g_{fs}$      | $V_{DS} = 15V, I_D = 1.5A$                               |     | 2.1  |          | S        |
| <b>Dynamic characteristics (note 3)</b>       |               |  |     |      |          |          |
| Input capacitance                             | $C_{iss}$     | $V_{DS} = 25V, V_{GS} = 0V, f = 1MHz$                    |     | 485  |          | pF       |
| Output capacitance                            | $C_{oss}$     |  |     | 57   |          |          |
| Reverse transfer capacitance                  | $C_{riss}$    |  |     | 11   |          |          |
| <b>Switching characteristics (note 2,3)</b>   |               |  |     |      |          |          |
| Turn-on delay time                            | $t_{d(on)}$   | $V_{DD} = 400V, R_G = 4.7\Omega, I_D = 3A, V_{GS} = 10V$ |     | 17   |          | ns       |
| Turn-on rise time                             | $t_r$         |  |     | 27   |          |          |
| Turn-off delay time                           | $t_{d(off)}$  |  |     | 36   |          |          |
| Turn-off fall time                            | $t_f$         |  |     | 40   |          |          |
| Total Gate Charge                             | $Q_g$         | $V_{DS} = 640V, V_{GS} = 10V, I_D = 3A$                  |     | 19   |          | nC       |
| Gate-Source Charge                            | $Q_{gs}$      |  |     | 3.2  |          | nC       |
| Gate-Drain Charge                             | $Q_{gd}$      |  |     | 10.8 |          | nC       |
| <b>Drain-Source Diode Characteristics</b>     |               |  |     |      |          |          |
| Drain-source diode forward voltage            | $V_{SD}$      | $I_S = 0V, I_S = 3A$                                     |     |      | 1.6      | V        |
| Continuous drain-source diode forward current | $I_S$         |  |     |      | 3        | A        |
| Pulsed drain-source diode forward current     | $I_{SM}$      |  |     |      | 10       | A        |

### Notes :

1.  $I_L = 3A, V_{DD} = 50V, R_G = 25\Omega, \text{Starting } T_J = 25^\circ\text{C}.$
2. Pulse Test : Pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .
3. Guaranteed by design, not subject to production

# RATINGS AND CHARACTERISTIC CURVES

