

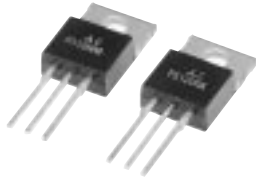
**PRELIMINARY**  
 Notice: This is not a final specification.  
 Some parametric limits are subject to change.

MITSUBISHI Nch POWER MOSFET

# FS12UMA-5A

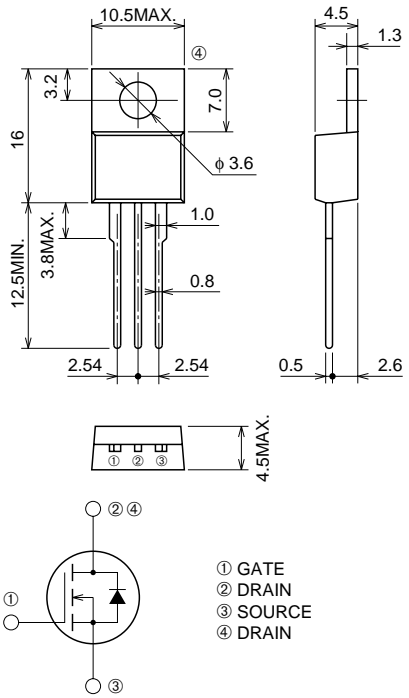
HIGH-SPEED SWITCHING USE

**FS12UMA-5A**



- 10V DRIVE
- $V_{DSS}$  ..... 250V
- $r_{DS(ON)}(MAX)$  .....  $0.40\Omega$
- $I_D$  ..... 12A

**OUTLINE DRAWING** Dimensions in mm



① GATE  
 ② DRAIN  
 ③ SOURCE  
 ④ DRAIN

**TO-220**

## APPLICATION

Cs Switch for CRT Display monitor

### MAXIMUM RATINGS (Tc = 25°C)

| Symbol    | Parameter                        | Conditions     | Ratings    | Unit |
|-----------|----------------------------------|----------------|------------|------|
| $V_{DSS}$ | Drain-source voltage             | $V_{GS} = 0V$  | 250        | V    |
| $V_{GSS}$ | Gate-source voltage              | $V_{DS} = 0V$  | $\pm 20$   | V    |
| $I_D$     | Drain current                    |                | 12         | A    |
| $I_{DM}$  | Drain current (Pulsed)           |                | 36         | A    |
| $I_{DA}$  | Avalanche drain current (Pulsed) | $L = 200\mu H$ | 12         | A    |
| $P_D$     | Maximum power dissipation        |                | 65         | W    |
| $T_{ch}$  | Channel temperature              |                | -55 ~ +150 | °C   |
| $T_{stg}$ | Storage temperature              |                | -55 ~ +150 | °C   |
| —         | Weight                           | Typical value  | 2.0        | g    |

**PRELIMINARY**  
 Notice: This is not a final specification.  
 Some parametric limits are subject to change.

**ELECTRICAL CHARACTERISTICS** ( $T_{ch} = 25^{\circ}\text{C}$ )

| Symbol                 | Parameter                        | Test conditions   | Limits |      |          | Unit                 |
|------------------------|----------------------------------|---|--------|------|----------|----------------------|
|                        |                                  |   | Min.   | Typ. | Max.     |                      |
| V (BR) DSS             | Drain-source breakdown voltage   | $I_D = 1\text{mA}, V_{GS} = 0\text{V}$  | 250    | —    | —        | V                    |
| I <sub>GSS</sub>       | Gate-source leakage current      | $V_{GS} = \pm 20\text{V}, V_{DS} = 0\text{V}$   | —      | —    | $\pm 10$ | $\mu\text{A}$        |
| I <sub>DSS</sub>       | Drain-source leakage current     | $V_{DS} = 250\text{V}, V_{GS} = 0\text{V}$  | —      | —    | 1        | mA                   |
| V <sub>GS</sub> (th)   | Gate-source threshold voltage    | $I_D = 1\text{mA}, V_{DS} = 10\text{V}$   | 2.0    | 3.0  | 4.0      | V                    |
| r <sub>DS</sub> (ON)   | Drain-source on-state resistance | $I_D = 6\text{A}, V_{GS} = 10\text{V}$  | —      | 0.27 | 0.40     | $\Omega$             |
| V <sub>DS</sub> (ON)   | Drain-source on-state voltage    | $I_D = 6\text{A}, V_{GS} = 10\text{V}$  | —      | 1.62 | 2.40     | V                    |
| y <sub>fs</sub>        | Forward transfer admittance      | $I_D = 6\text{A}, V_{DS} = 10\text{V}$  | —      | 11.0 | —        | S                    |
| C <sub>iss</sub>       | Input capacitance                | $V_{DS} = 25\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$                                | —      | 1200 | —        | pF                   |
| C <sub>oss</sub>       | Output capacitance               |   | —      | 120  | —        | pF                   |
| C <sub>rss</sub>       | Reverse transfer capacitance     |   | —      | 30   | —        | pF                   |
| t <sub>d</sub> (on)    | Turn-on delay time               |   | —      | 20   | —        | ns                   |
| t <sub>r</sub>         | Rise time                        | $V_{DD} = 150\text{V}, I_D = 6\text{A}, V_{GS} = 10\text{V}, R_{GEN} = R_{GS} = 50\Omega$ | —      | 30   | —        | ns                   |
| t <sub>d</sub> (off)   | Turn-off delay time              |   | —      | 190  | —        | ns                   |
| t <sub>f</sub>         | Fall time                        |   | —      | 45   | —        | ns                   |
| V <sub>SD</sub>        | Source-drain voltage             | $I_S = 6\text{A}, V_{GS} = 0\text{V}$   | —      | 0.95 | —        | V                    |
| R <sub>th</sub> (ch-c) | Thermal resistance               | Channel to case   | —      | —    | 1.92     | $^{\circ}\text{C/W}$ |