


# FS2KM-12A

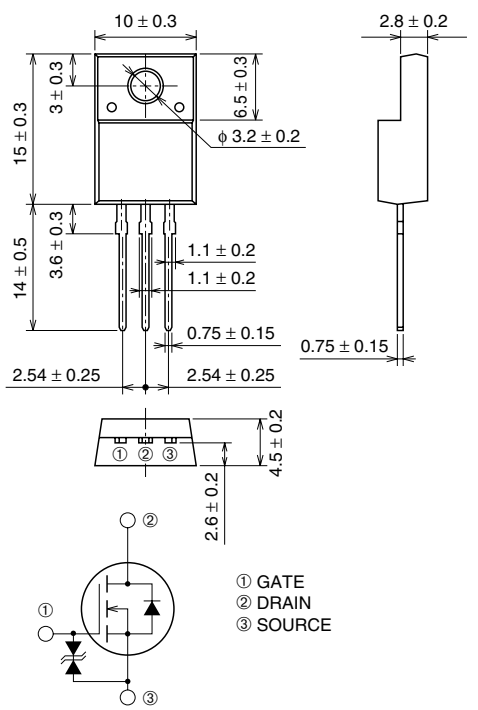
HIGH-SPEED SWITCHING USE

**FS2KM-12A**



- 10V DRIVE
- V<sub>DSS</sub> ..... 600V
- r<sub>DS (ON)</sub> (MAX) ..... 6.4Ω
- I<sub>D</sub> ..... 2A

**OUTLINE DRAWING** Dimensions in mm



① GATE  
② DRAIN  
③ SOURCE

**TO-220FN**

## APPLICATION

SMPS, AC-adapter, Power supply of Printer, Copier, TV, VCR. etc.

### MAXIMUM RATINGS (T<sub>c</sub> = 25°C)

| Symbol           | Parameter                  | Conditions                       | Ratings    | Unit |
|------------------|----------------------------|----------------------------------|------------|------|
| V <sub>DSS</sub> | Drain-source voltage       | V <sub>GS</sub> = 0V             | 600        | V    |
| V <sub>GSS</sub> | Gate-source voltage        | V <sub>DS</sub> = 0V             | ±30        | V    |
| I <sub>D</sub>   | Drain current              |                                  | 2          | A    |
| I <sub>DM</sub>  | Drain current (Pulsed)     |                                  | 6          | A    |
| I <sub>DA</sub>  | Avalanche current (Pulsed) | L = 200μH                        | 2          | A    |
| P <sub>D</sub>   | Maximum power dissipation  |                                  | 25         | W    |
| T <sub>ch</sub>  | Channel temperature        |                                  | -55 ~ +150 | °C   |
| T <sub>stg</sub> | Storage temperature        |                                  | -55 ~ +150 | °C   |
| V <sub>iso</sub> | Isolation voltage          | AC for 1minute, Terminal to case | 2000       | V    |
| —                | Weight                     | Typical value                    | 2.0        | g    |

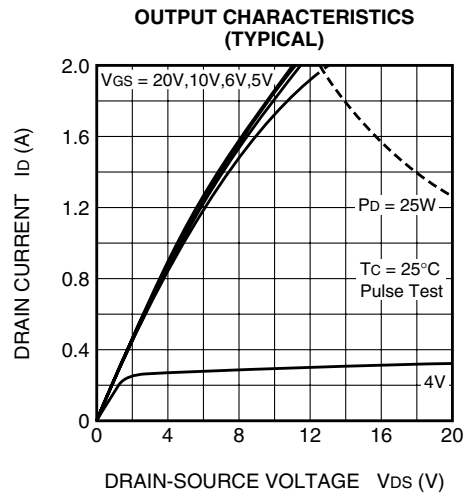
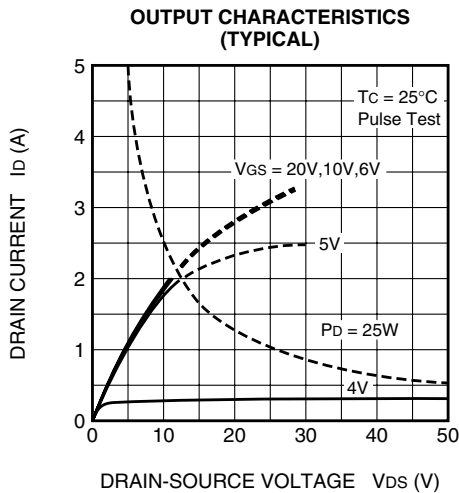
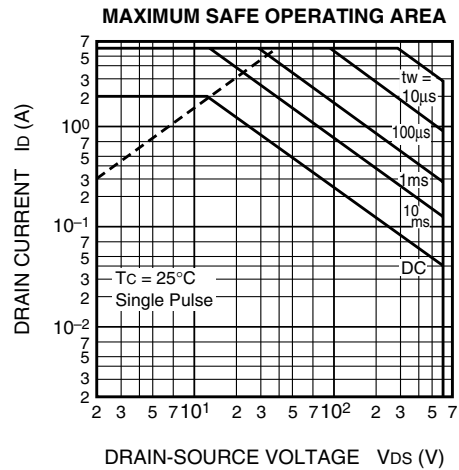
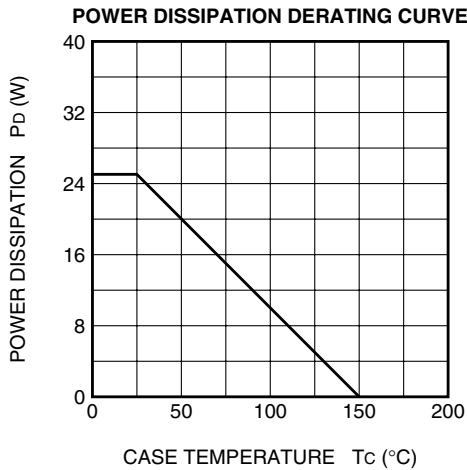
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HIGH-SPEED SWITCHING USE

## ELECTRICAL CHARACTERISTICS (T<sub>ch</sub> = 25°C)

| Symbol                 | Parameter                        | Test conditions  | Limits |      |      | Unit |
|------------------------|----------------------------------|--|--------|------|------|------|
|                        |                                  |  | Min.   | Typ. | Max. |      |
| V (BR) DSS             | Drain-source breakdown voltage   | I <sub>D</sub> = 1mA, V <sub>GS</sub> = 0V   | 600    | —    | —    | V    |
| V (BR) GSS             | Gate-source breakdown voltage    | I <sub>GS</sub> = ±100μA, V <sub>DS</sub> = 0V   | ±30    | —    | —    | V    |
| I <sub>GSS</sub>       | Gate-source leakage current      | V <sub>GS</sub> = ±25V, V <sub>DS</sub> = 0V   | —      | —    | ±10  | μA   |
| I <sub>DSS</sub>       | Drain-source leakage current     | V <sub>DS</sub> = 600V, V <sub>GS</sub> = 0V   | —      | —    | 1    | mA   |
| V <sub>GS</sub> (th)   | Gate-source threshold voltage    | I <sub>D</sub> = 1mA, V <sub>DS</sub> = 10V  | 2.5    | 3.0  | 3.5  | V    |
| r <sub>DS</sub> (ON)   | Drain-source on-state resistance | I <sub>D</sub> = 1A, V <sub>GS</sub> = 10V   | —      | 5.0  | 6.4  | Ω    |
| V <sub>DS</sub> (ON)   | Drain-source on-state voltage    | I <sub>D</sub> = 1A, V <sub>GS</sub> = 10V   | —      | 5.0  | 6.4  | V    |
| y <sub>fs</sub>        | Forward transfer admittance      | I <sub>D</sub> = 1A, V <sub>DS</sub> = 10V   | 1.2    | 2.0  | —    | S    |
| C <sub>iss</sub>       | Input capacitance                | V <sub>DS</sub> = 25V, V <sub>GS</sub> = 0V, f = 1MHz  | —      | 280  | —    | pF   |
| C <sub>oss</sub>       | Output capacitance               |  | —      | 30   | —    | pF   |
| C <sub>rss</sub>       | Reverse transfer capacitance     |  | —      | 7    | —    | pF   |
| t <sub>d</sub> (on)    | Turn-on delay time               | V <sub>DD</sub> = 200V, I <sub>D</sub> = 1A, V <sub>GS</sub> = 10V, R <sub>GEN</sub> = R <sub>GS</sub> = 50Ω | —      | 10   | —    | ns   |
| t <sub>r</sub>         | Rise time                        |  | —      | 10   | —    | ns   |
| t <sub>d</sub> (off)   | Turn-off delay time              |  | —      | 45   | —    | ns   |
| t <sub>f</sub>         | Fall time                        |  | —      | 25   | —    | ns   |
| V <sub>SD</sub>        | Source-drain voltage             | I <sub>S</sub> = 1A, V <sub>GS</sub> = 0V  | —      | 1.5  | 2.0  | V    |
| R <sub>th</sub> (ch-c) | Thermal resistance               | Channel to case  | —      | —    | 5.00 | °C/W |

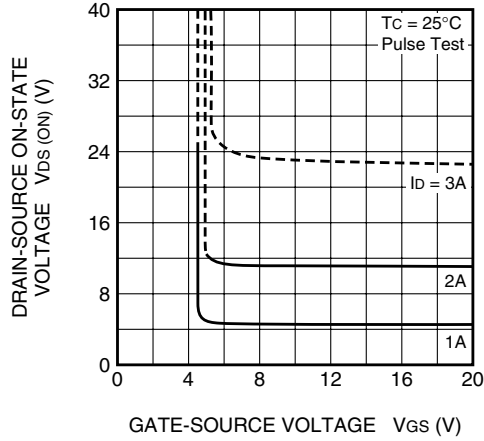
## PERFORMANCE CURVES



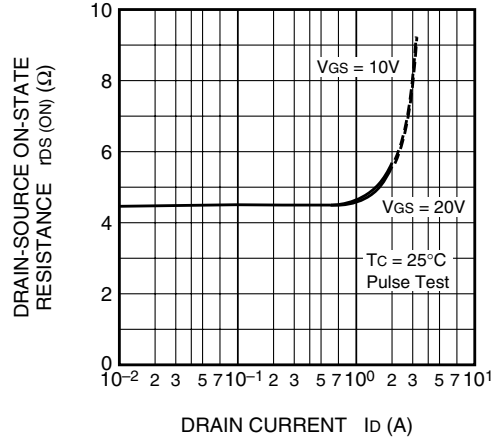
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HIGH-SPEED SWITCHING USE

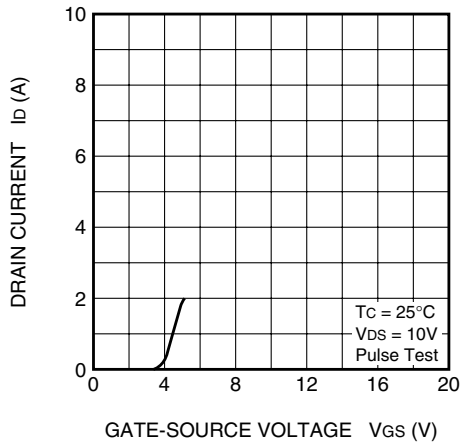
**ON-STATE VOLTAGE VS. GATE-SOURCE VOLTAGE (TYPICAL)**



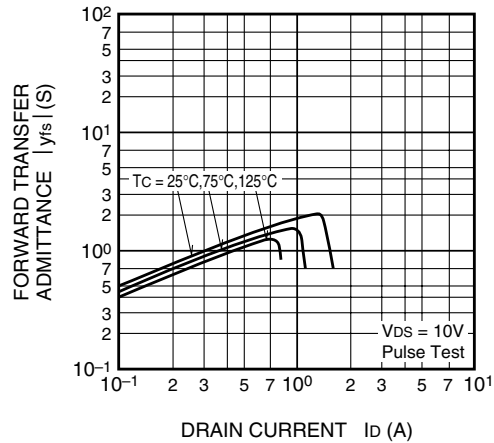
**ON-STATE RESISTANCE VS. DRAIN CURRENT (TYPICAL)**



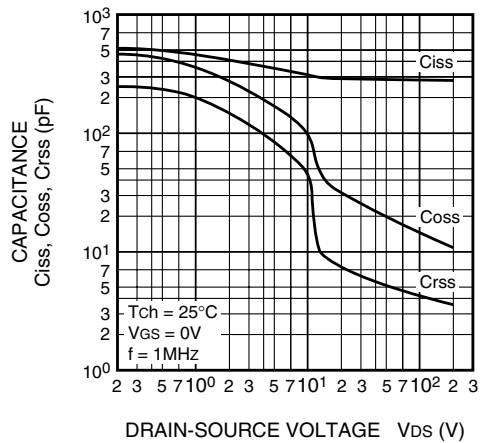
**TRANSFER CHARACTERISTICS (TYPICAL)**



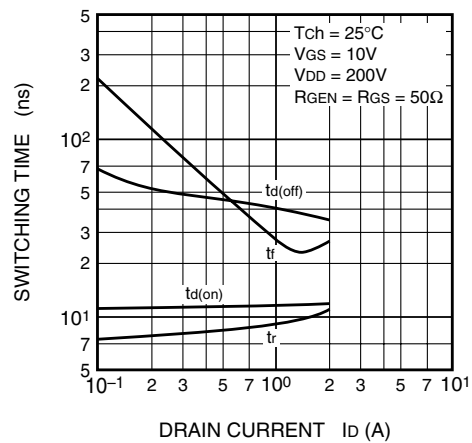
**FORWARD TRANSFER ADMITTANCE VS. DRAIN CURRENT (TYPICAL)**



**CAPACITANCE VS. DRAIN-SOURCE VOLTAGE (TYPICAL)**



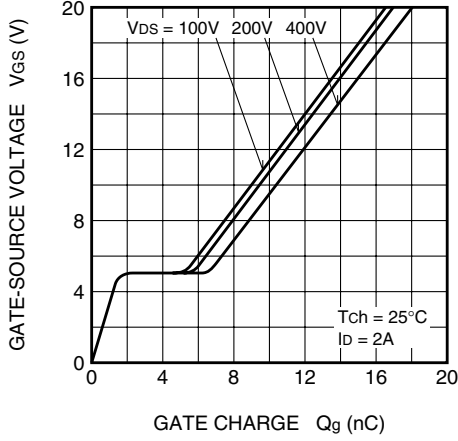
**SWITCHING CHARACTERISTICS (TYPICAL)**



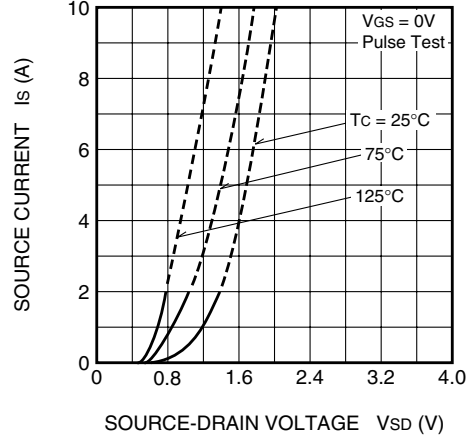
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HIGH-SPEED SWITCHING USE

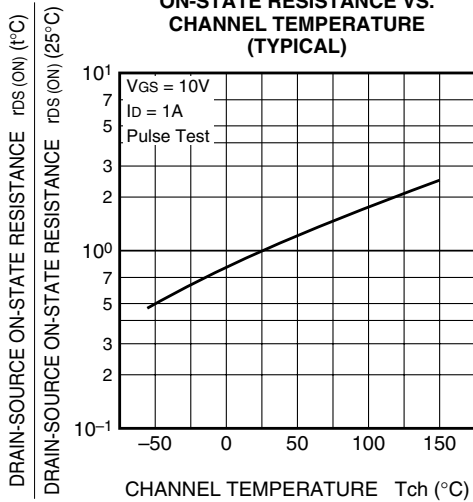
**GATE-SOURCE VOLTAGE VS. GATE CHARGE (TYPICAL)**



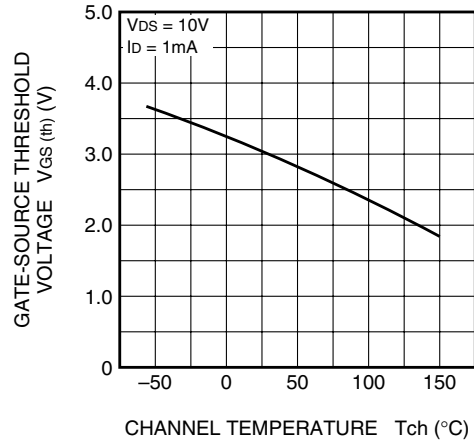
**SOURCE-DRAIN DIODE FORWARD CHARACTERISTICS (TYPICAL)**



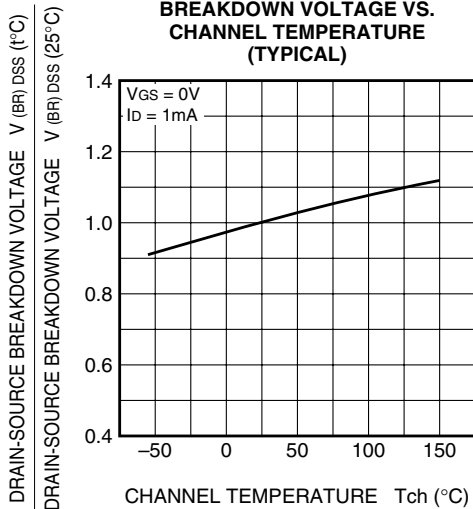
**ON-STATE RESISTANCE VS. CHANNEL TEMPERATURE (TYPICAL)**



**THRESHOLD VOLTAGE VS. CHANNEL TEMPERATURE (TYPICAL)**



**BREAKDOWN VOLTAGE VS. CHANNEL TEMPERATURE (TYPICAL)**



**TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS**

