

# FS3UM-18A

HIGH-SPEED SWITCHING USE

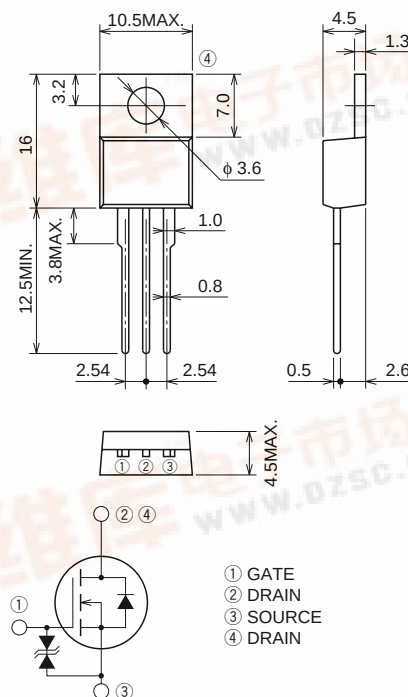
## FS3UM-18A



- $V_{DS}$  ..... 900V
- $r_{DS(ON)}$  (MAX) .....  $4.0\Omega$
- $I_D$  ..... 3A

## OUTLINE DRAWING

Dimensions in mm



## APPLICATION

SMPS, DC-DC Converter, battery charger, power supply of printer, copier, HDD, FDD, TV, VCR, personal computer etc.

## MAXIMUM RATINGS (Tc = 25°C)

| Symbol    | Parameter                 | Conditions    | Ratings         | Unit |
|-----------|---------------------------|---------------|-----------------|------|
| $V_{DS}$  | Drain-source voltage      | $V_{GS} = 0V$ | 900             | V    |
| $V_{GS}$  | Gate-source voltage       | $V_{DS} = 0V$ | $\pm 30$        | V    |
| $I_D$     | Drain current             |               | 3               | A    |
| $I_{DM}$  | Drain current (Pulsed)    |               | 9               | A    |
| $P_D$     | Maximum power dissipation |               | 100             | W    |
| $T_{ch}$  | Channel temperature       |               | $-55 \sim +150$ | °C   |
| $T_{stg}$ | Storage temperature       |               | $-55 \sim +150$ | °C   |
| —         | Weight                    | Typical value | 2               | g    |

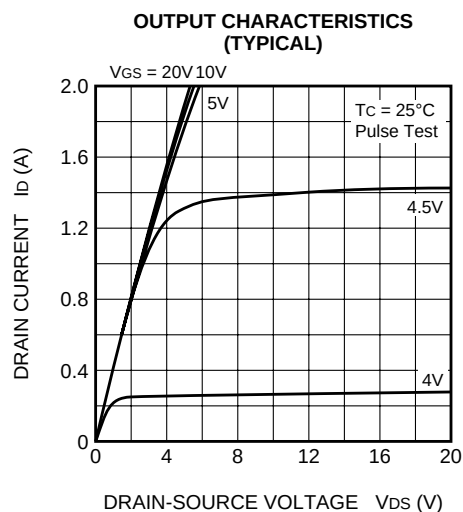
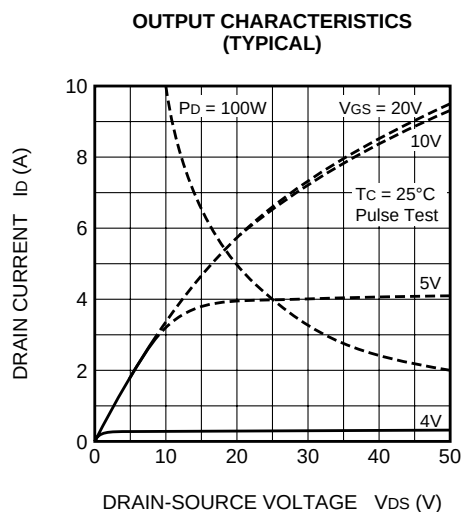
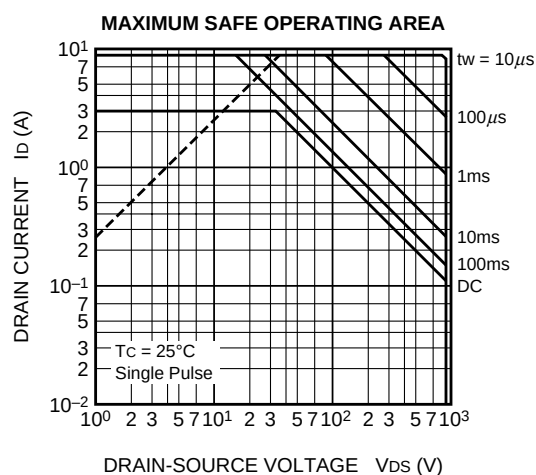
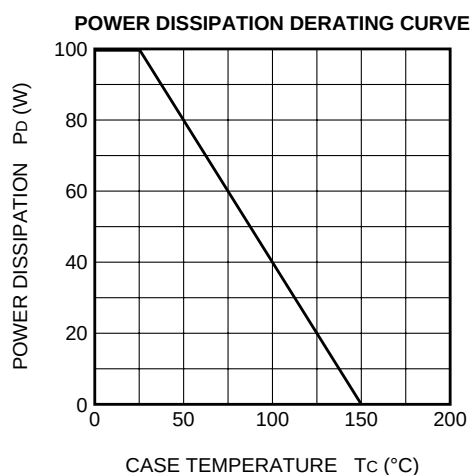
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ELECTRICAL CHARACTERISTICS (T<sub>ch</sub> = 25°C)

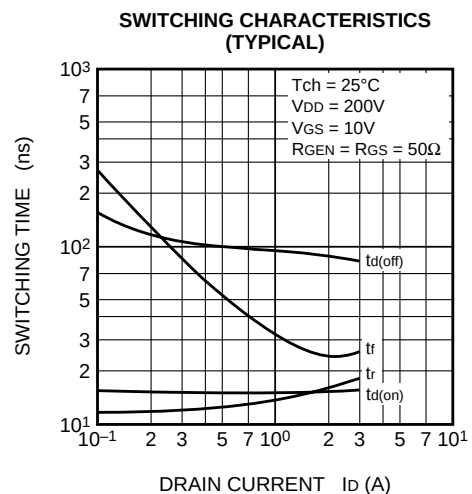
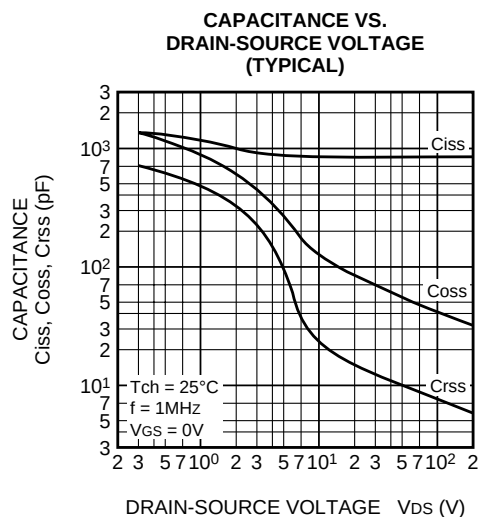
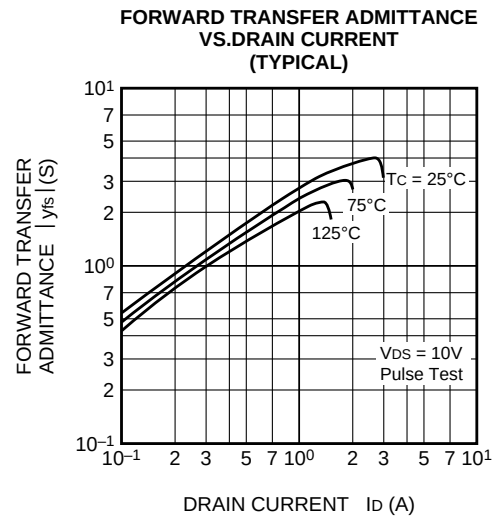
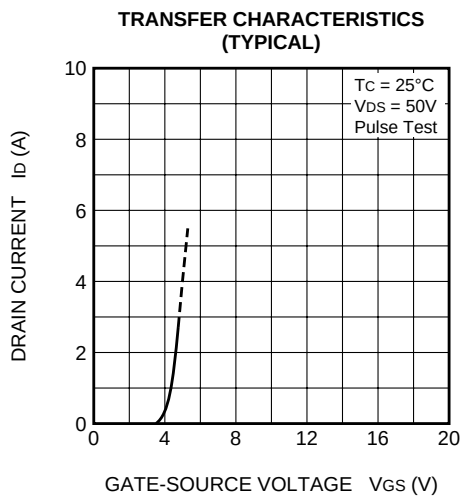
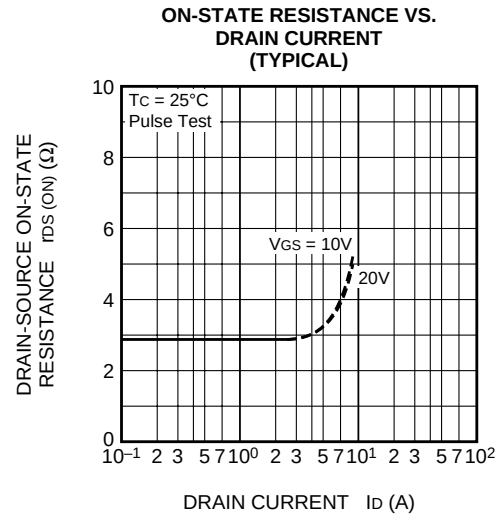
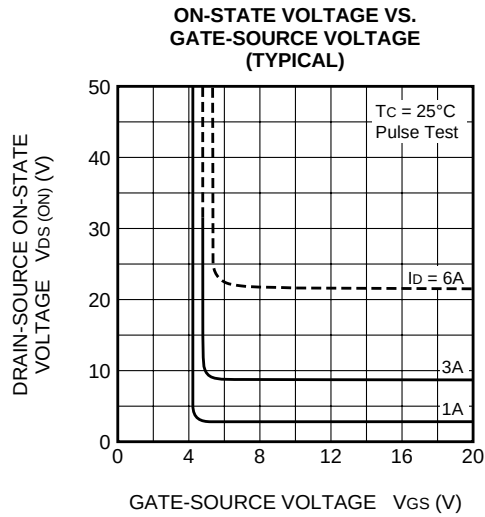
| Symbol                | Parameter                        | Test conditions                                                                                                   | Limits |      |      | Unit |
|-----------------------|----------------------------------|-------------------------------------------------------------------------------------------------------------------|--------|------|------|------|
|                       |                                  |                                                                                                                   | Min.   | Typ. | Max. |      |
| V <sub>(BR)DSS</sub>  | Drain-source breakdown voltage   | I <sub>D</sub> = 1mA, V <sub>GS</sub> = 0V                                                                        | 900    | —    | —    | V    |
| V <sub>(BR)GSS</sub>  | 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> = 900V, V <sub>GS</sub> = 0V                                                                      | —      | —    | 1    | mA   |
| V <sub>GS(th)</sub>   | Gate-source threshold voltage    | I <sub>D</sub> = 1mA, V <sub>DS</sub> = 10V                                                                       | 2      | 3    | 4    | V    |
| r <sub>DS(ON)</sub>   | Drain-source on-state resistance | I <sub>D</sub> = 1.5A, V <sub>GS</sub> = 10V                                                                      | —      | 3.08 | 4.00 | Ω    |
| V <sub>DS(ON)</sub>   | Drain-source on-state voltage    | I <sub>D</sub> = 1.5A, V <sub>GS</sub> = 10V                                                                      | —      | 4.62 | 6.00 | V    |
| y <sub>fs</sub>       | Forward transfer admittance      | I <sub>D</sub> = 1.5A, V <sub>DS</sub> = 10V                                                                      | 2.1    | 3.5  | —    | S    |
| C <sub>iss</sub>      | Input capacitance                | V <sub>DS</sub> = 25V, V <sub>GS</sub> = 0V, f = 1MHz                                                             | —      | 770  | —    | pF   |
| C <sub>oss</sub>      | Output capacitance               |                                                                                                                   | —      | 77   | —    | pF   |
| C <sub>rss</sub>      | Reverse transfer capacitance     |                                                                                                                   | —      | 13   | —    | pF   |
| t <sub>d(on)</sub>    | Turn-on delay time               | V <sub>DD</sub> = 200V, I <sub>D</sub> = 1.5A, V <sub>GS</sub> = 10V,<br>R <sub>GEN</sub> = R <sub>GS</sub> = 50Ω | —      | 15   | —    | ns   |
| t <sub>r</sub>        | Rise time                        |                                                                                                                   | —      | 15   | —    | ns   |
| t <sub>d(off)</sub>   | Turn-off delay time              |                                                                                                                   | —      | 90   | —    | ns   |
| t <sub>f</sub>        | Fall time                        |                                                                                                                   | —      | 25   | —    | ns   |
| V <sub>SD</sub>       | Source-drain voltage             | I <sub>S</sub> = 1.5A, V <sub>GS</sub> = 0V                                                                       | —      | 1.0  | 1.5  | V    |
| R <sub>th(ch-c)</sub> | Thermal resistance               | Channel to case                                                                                                   | —      | —    | 1.25 | °C/W |

## PERFORMANCE CURVES

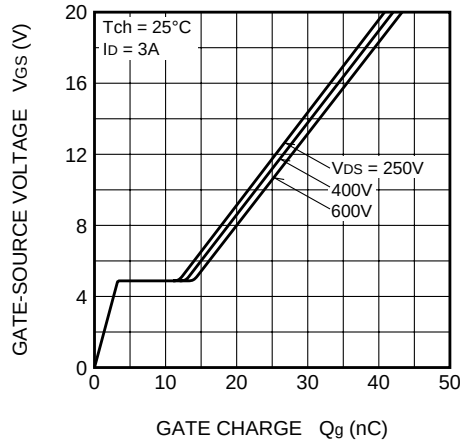


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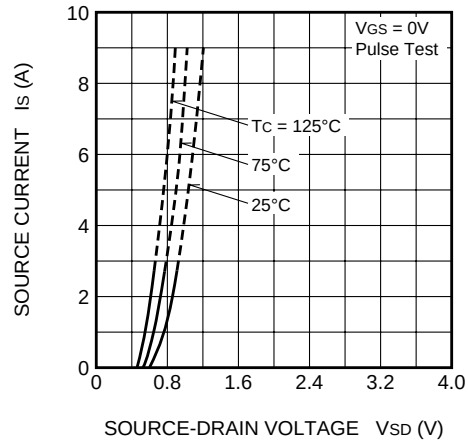
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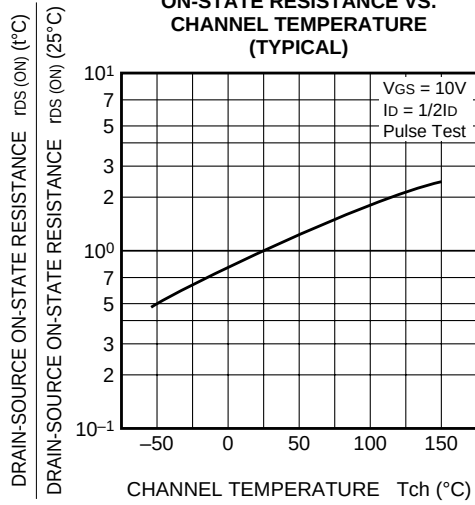
GATE-SOURCE VOLTAGE  
VS. GATE CHARGE  
(TYPICAL)



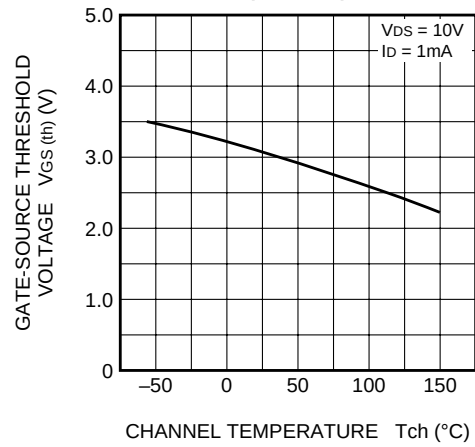
SOURCE-DRAIN DIODE  
FORWARD CHARACTERISTICS  
(TYPICAL)



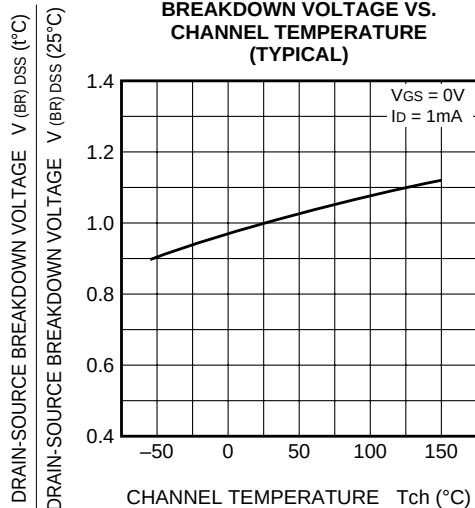
ON-STATE RESISTANCE VS.  
CHANNEL TEMPERATURE  
(TYPICAL)



THRESHOLD VOLTAGE VS.  
CHANNEL TEMPERATURE  
(TYPICAL)



BREAKDOWN VOLTAGE VS.  
CHANNEL TEMPERATURE  
(TYPICAL)



TRANSIENT THERMAL IMPEDANCE  
CHARACTERISTICS

