


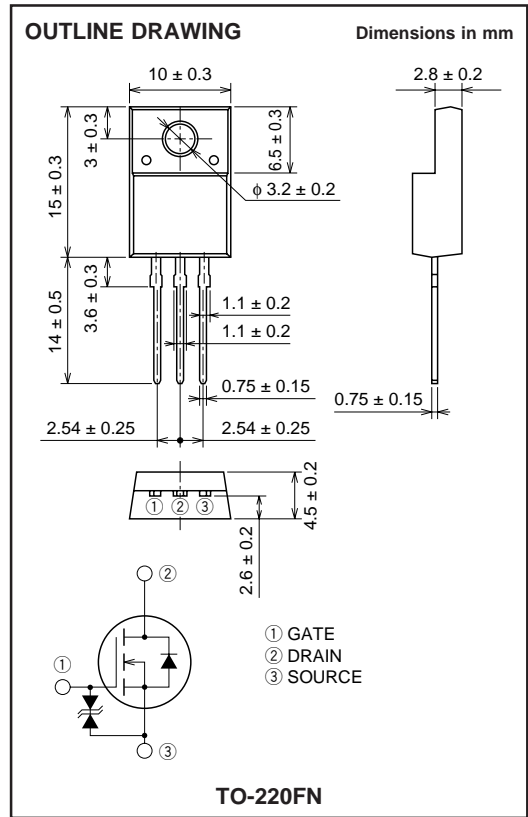
# FS7KM-5

HIGH-SPEED SWITCHING USE

**FS7KM-5**



- $V_{DSS}$  ..... 250V
- $r_{DS(ON)}(MAX)$  .....  $0.80\Omega$
- $I_D$  ..... 7A
- $V_{iso}$  ..... 2000V



## APPLICATION

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

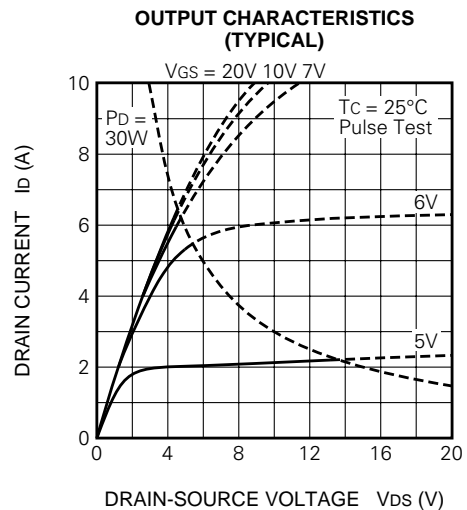
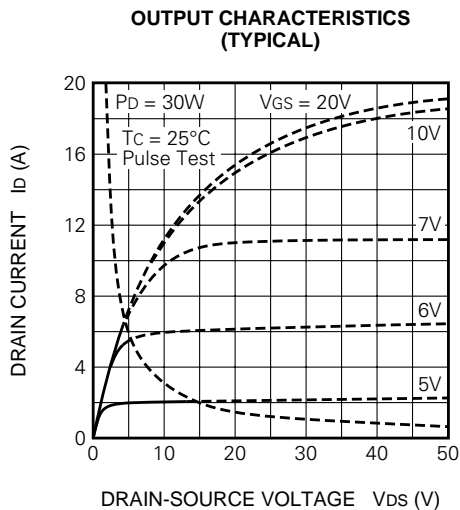
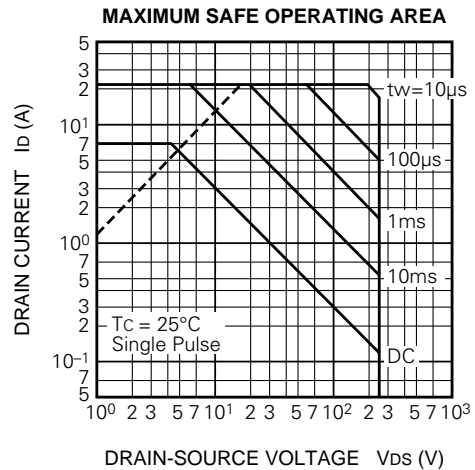
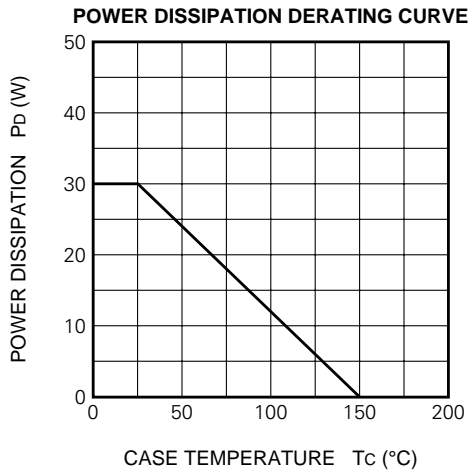
## MAXIMUM RATINGS (T<sub>c</sub> = 25°C)

| Symbol    | Parameter                 | Conditions                        | Ratings    | Unit             |
|-----------|---------------------------|-----------------------------------|------------|------------------|
| $V_{DSS}$ | Drain-source voltage      | $V_{GS} = 0V$                     | 250        | V                |
| $V_{GSS}$ | Gate-source voltage       | $V_{DS} = 0V$                     | ±30        | V                |
| $I_D$     | Drain current             |                                   | 7          | A                |
| $I_{DM}$  | Drain current (Pulsed)    |                                   | 21         | A                |
| $P_D$     | Maximum power dissipation |                                   | 30         | W                |
| $T_{ch}$  | Channel temperature       |                                   | -55 ~ +150 | °C               |
| $T_{stg}$ | Storage temperature       |                                   | -55 ~ +150 | °C               |
| $V_{iso}$ | Isolation voltage         | AC for 1 minute, Terminal to case | 2000       | V <sub>rms</sub> |
| —         | Weight                    | Typical value                     | 2.0        | g                |

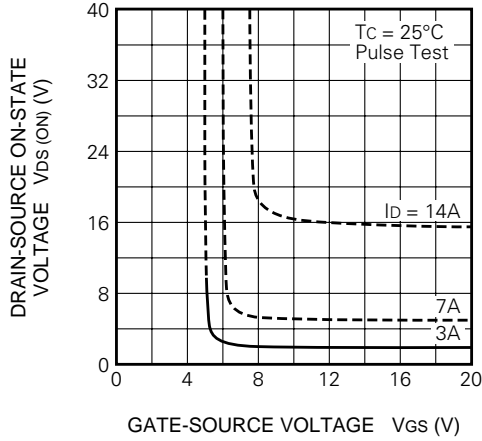
**ELECTRICAL CHARACTERISTICS** (T<sub>ch</sub> = 25°C)

| 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   | 250    | —    | —    | V    |
| V (BR) GSS            | Gate-source breakdown voltage    | I <sub>G</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> = 250V, 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> = 3A, V <sub>GS</sub> = 10V   | —      | 0.63 | 0.80 | Ω    |
| V <sub>DS(ON)</sub>   | Drain-source on-state voltage    | I <sub>D</sub> = 3A, V <sub>GS</sub> = 10V   | —      | 1.90 | 2.40 | V    |
| y <sub>fs</sub>       | Forward transfer admittance      | I <sub>D</sub> = 3A, V <sub>DS</sub> = 10V   | 2.2    | 3.5  | —    | S    |
| C <sub>iss</sub>      | Input capacitance                | V <sub>DS</sub> = 25V, V <sub>GS</sub> = 0V, f = 1MHz  | —      | 370  | —    | pF   |
| C <sub>oss</sub>      | Output capacitance               |  | —      | 80   | —    | pF   |
| C <sub>rss</sub>      | Reverse transfer capacitance     |  | —      | 16   | —    | pF   |
| t <sub>d(on)</sub>    | Turn-on delay time               | V <sub>DD</sub> = 150V, I <sub>D</sub> = 3A, V <sub>GS</sub> = 10V, R <sub>GEN</sub> = R <sub>GS</sub> = 50Ω | —      | 15   | —    | ns   |
| t <sub>r</sub>        | Rise time                        |  | —      | 22   | —    | ns   |
| t <sub>d(off)</sub>   | Turn-off delay time              |  | —      | 50   | —    | ns   |
| t <sub>f</sub>        | Fall time                        |  | —      | 26   | —    | ns   |
| V <sub>SD</sub>       | Source-drain voltage             | I <sub>S</sub> = 3A, V <sub>GS</sub> = 0V  | —      | 1.5  | 2.0  | V    |
| R <sub>th(ch-c)</sub> | Thermal resistance               | Channel to case  | —      | —    | 4.17 | °C/W |

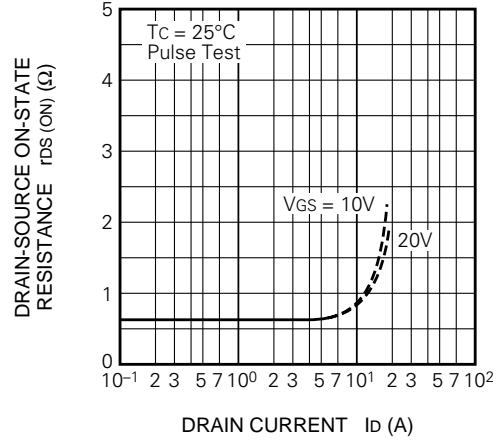
**PERFORMANCE CURVES**



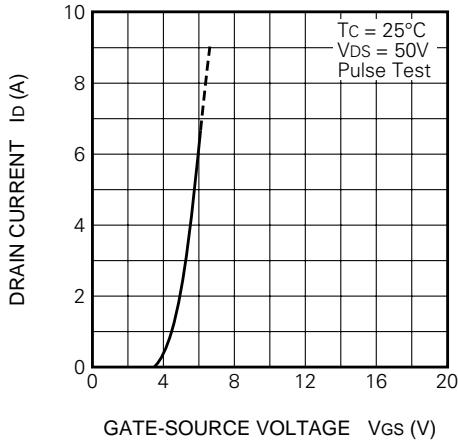
ON-STATE VOLTAGE VS. GATE-SOURCE VOLTAGE (TYPICAL)



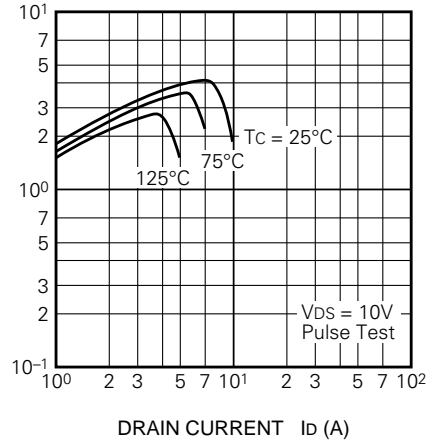
ON-STATE RESISTANCE VS. DRAIN CURRENT (TYPICAL)



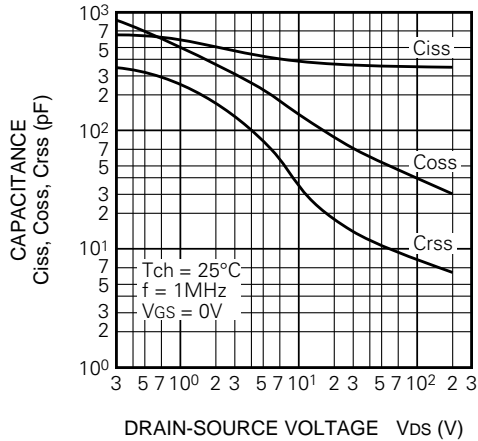
TRANSFER CHARACTERISTICS (TYPICAL)



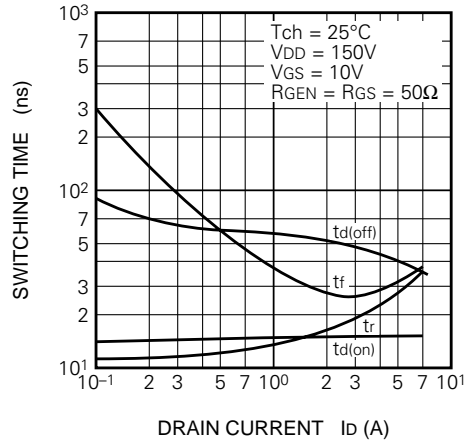
FORWARD TRANSFER ADMITTANCE VS. DRAIN CURRENT (TYPICAL)



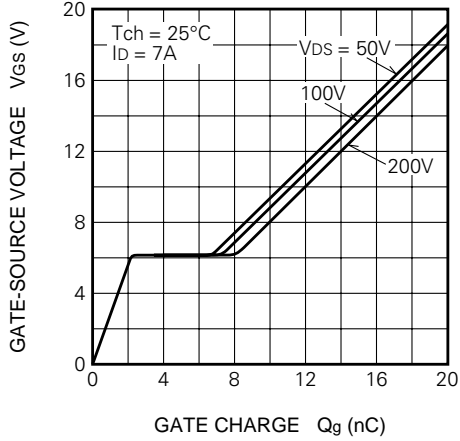
CAPACITANCE VS. DRAIN-SOURCE VOLTAGE (TYPICAL)



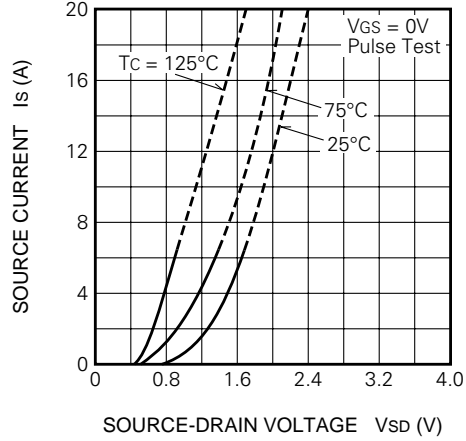
SWITCHING CHARACTERISTICS (TYPICAL)



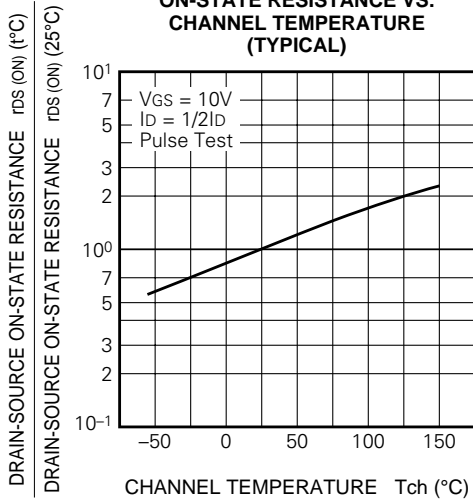
**GATE-SOURCE VOLTAGE VS. GATE CHARGE (TYPICAL)**



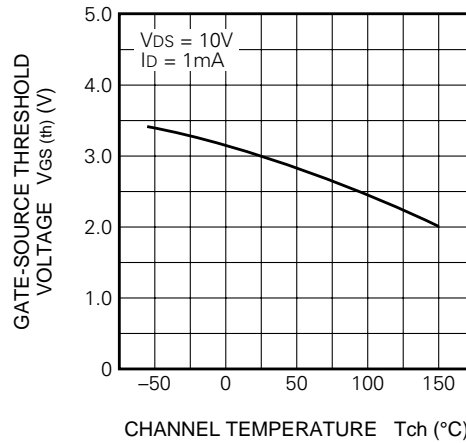
**SOURCE-DRAIN DIODE FORWARD CHARACTERISTICS (TYPICAL)**



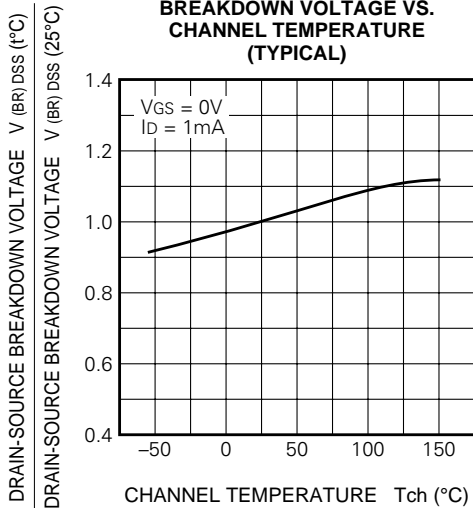
**ON-STATE RESISTANCE VS. CHANNEL TEMPERATURE (TYPICAL)**



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



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



**TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS**

