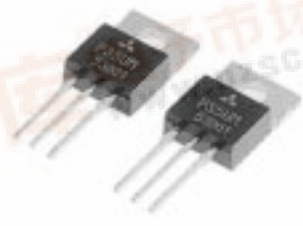


MITSUBISHI Nch POWER MOSFET

FS5UM-5

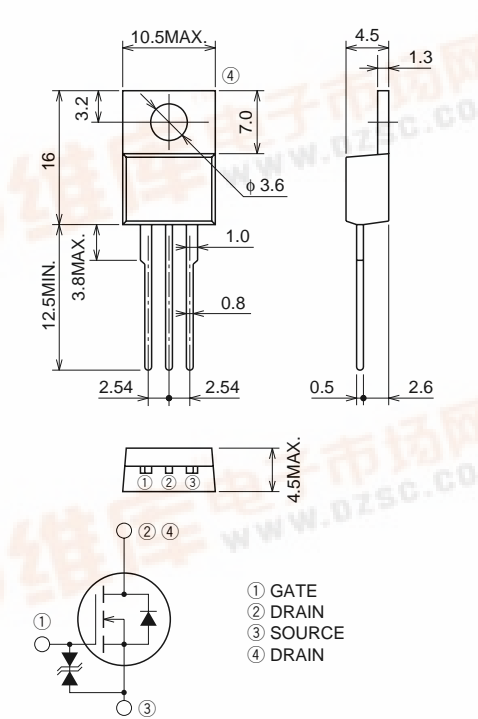
HIGH-SPEED SWITCHING USE

FS5UM-5



- V_{DSS} 250V
- $r_{DS(ON)}(MAX)$ 1.3Ω
- I_D 5A

OUTLINE DRAWING Dimensions in mm



① GATE
② DRAIN
③ SOURCE
④ DRAIN

TO-220

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_{DSS} | Drain-source voltage | $V_{GS} = 0V$ | 250 | V |
| V_{GSS} | Gate-source voltage | $V_{DS} = 0V$ | ± 30 | V |
| I_D | Drain current | | 5 | A |
| I_{DM} | Drain current (Pulsed) | | 15 | A |
| P_D | Maximum power dissipation | | 60 | W |
| T_{ch} | Channel temperature | | -55 ~ +150 | °C |
| T_{stg} | Storage temperature | | -55 ~ +150 | °C |
| — | Weight | Typical value | 2.0 | g |

FS5UM-5

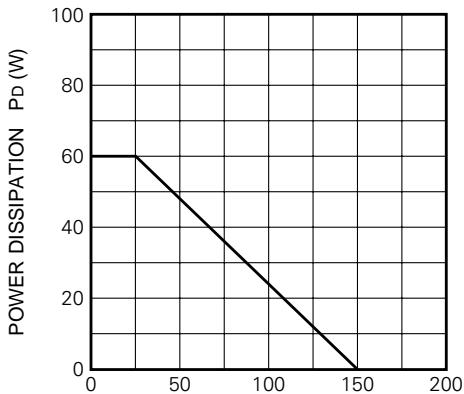
HIGH-SPEED SWITCHING USE

ELECTRICAL CHARACTERISTICS (T_{ch} = 25°C)

| Symbol | Parameter | Test conditions | Limits | | | Unit |
|------------------------|----------------------------------|--|---|------|------|------|
| | | | Min. | Typ. | Max. | |
| V (BR) DSS | Drain-source breakdown voltage | I _D = 1mA, V _{GS} = 0V | 250 | — | — | V |
| V (BR) GSS | Gate-source breakdown voltage | I _G = ±100μA, V _{DS} = 0V | ±30 | — | — | V |
| I _{GSS} | Gate-source leakage current | V _{GS} = ±25V, V _{DS} = 0V | — | — | ±10 | mA |
| I _{DSS} | Drain-source leakage current | V _{DS} = 250V, V _{GS} = 0V | — | — | 1 | mA |
| V _{GS} (th) | Gate-source threshold voltage | I _D = 1mA, V _{DS} = 10V | 2 | 3 | 4 | V |
| r _{DS} (ON) | Drain-source on-state resistance | I _D = 2A, V _{GS} = 10V | — | 1.0 | 1.3 | W |
| V _{DS} (ON) | Drain-source on-state voltage | I _D = 2A, V _{GS} = 10V | — | 2.0 | 2.6 | V |
| y _{fs} | Forward transfer admittance | I _D = 2A, V _{DS} = 10V | 1.6 | 2.5 | — | S |
| C _{iss} | Input capacitance | V _{DS} = 25V, V _{GS} = 0V, f = 1MHz | — | 270 | — | pF |
| C _{oss} | Output capacitance | | — | 55 | — | pF |
| C _{rss} | Reverse transfer capacitance | | — | 10 | — | pF |
| t _d (on) | Turn-on delay time | V _{DD} = 150V, I _D = 2A, V _{GS} = 10V, R _{GEN} = R _{GS} = 50Ω | — | 11 | — | ns |
| t _r | Rise time | | — | 13 | — | ns |
| t _d (off) | Turn-off delay time | | — | 32 | — | ns |
| t _f | Fall time | | — | 22 | — | ns |
| V _{SD} | Source-drain voltage | | I _S = 2A, V _{GS} = 0V | — | 1.5 | 2.0 |
| R _{th} (ch-c) | Thermal resistance | Channel to case | — | — | 2.08 | °C/W |

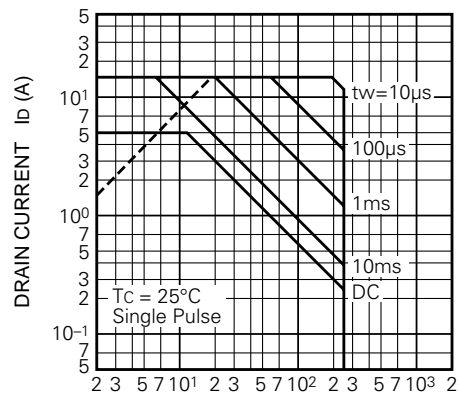
PERFORMANCE CURVES

POWER DISSIPATION DERATING CURVE



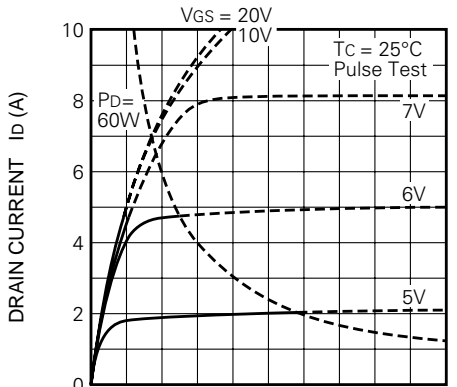
CASE TEMPERATURE T_c (°C)

MAXIMUM SAFE OPERATING AREA



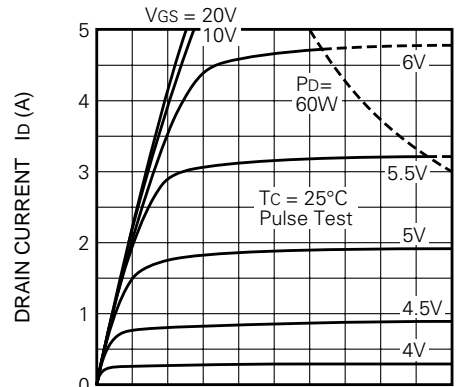
DRAIN-SOURCE VOLTAGE V_{DS} (V)

OUTPUT CHARACTERISTICS (TYPICAL)



DRAIN-SOURCE VOLTAGE V_{DS} (V)

OUTPUT CHARACTERISTICS (TYPICAL)

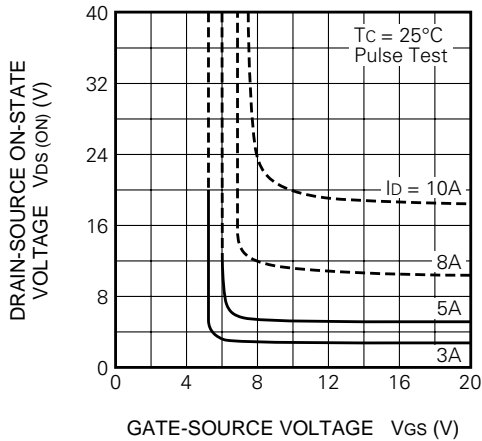


DRAIN-SOURCE VOLTAGE V_{DS} (V)

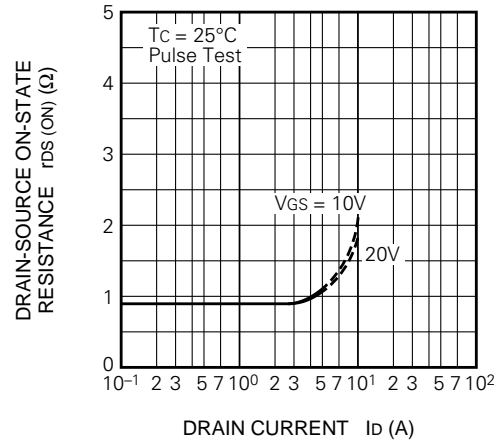
FS5UM-5

HIGH-SPEED SWITCHING USE

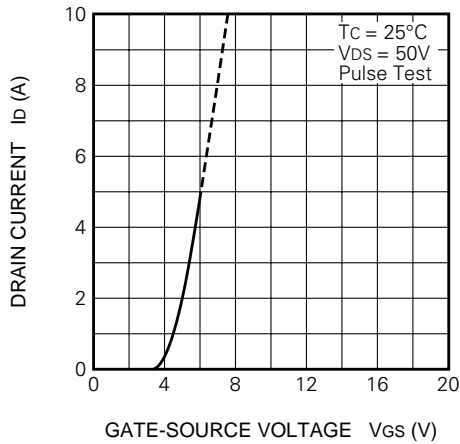
ON-STATE VOLTAGE VS. GATE-SOURCE VOLTAGE (TYPICAL)



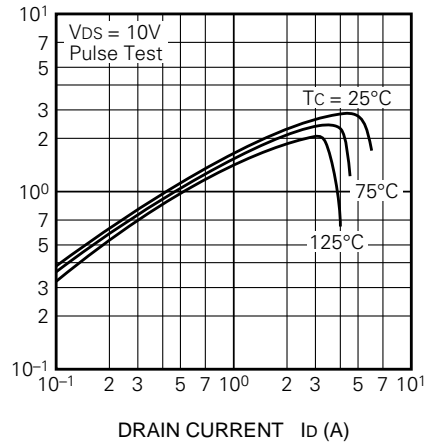
ON-STATE RESISTANCE VS. DRAIN CURRENT (TYPICAL)



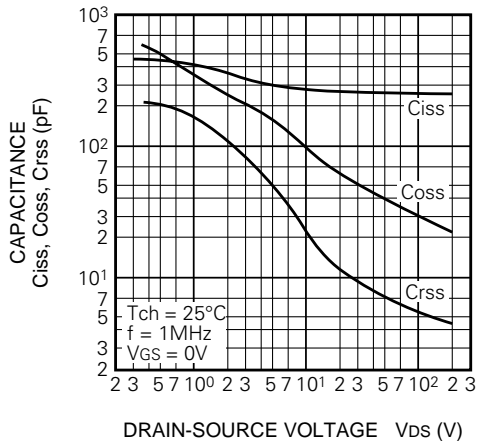
TRANSFER CHARACTERISTICS (TYPICAL)



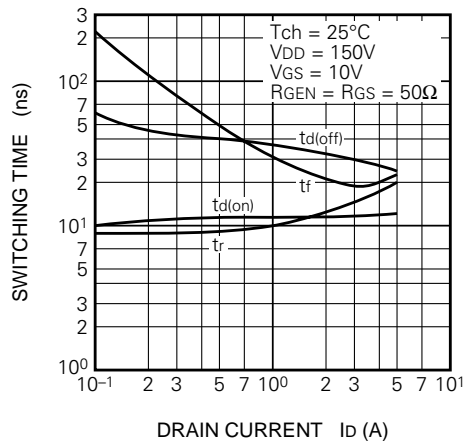
FORWARD TRANSFER ADMITTANCE VS. DRAIN CURRENT (TYPICAL)



CAPACITANCE VS. DRAIN-SOURCE VOLTAGE (TYPICAL)



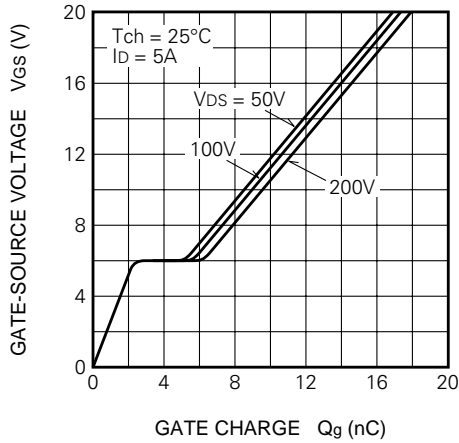
SWITCHING CHARACTERISTICS (TYPICAL)



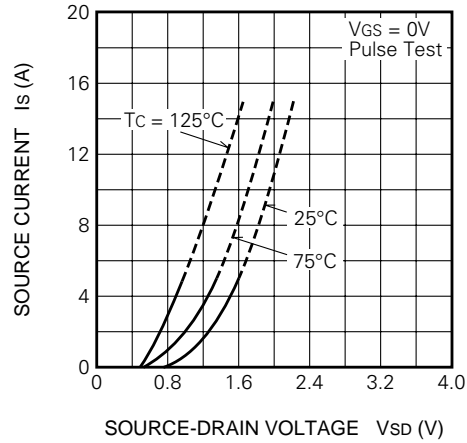
FS5UM-5

HIGH-SPEED SWITCHING USE

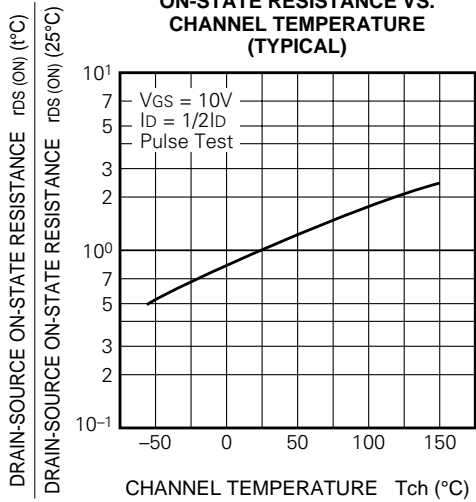
GATE-SOURCE VOLTAGE VS. GATE CHARGE (TYPICAL)



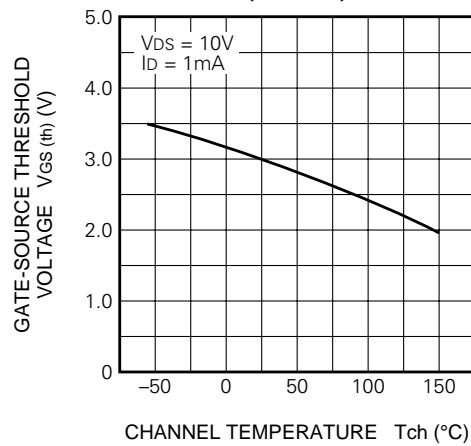
SOURCE-DRAIN DIODE FORWARD CHARACTERISTICS (TYPICAL)



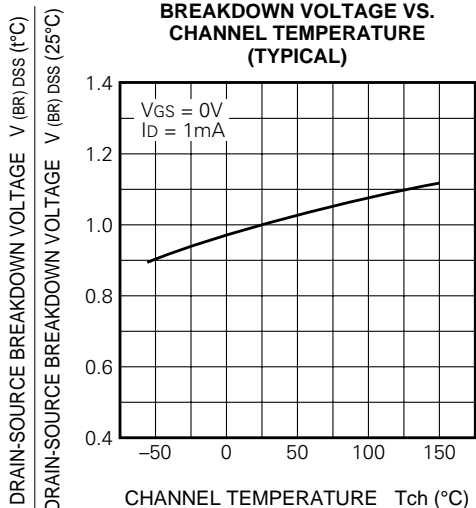
ON-STATE RESISTANCE VS. CHANNEL TEMPERATURE (TYPICAL)



THRESHOLD VOLTAGE VS. CHANNEL TEMPERATURE (TYPICAL)



BREAKDOWN VOLTAGE VS. CHANNEL TEMPERATURE (TYPICAL)



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS

