

FS100UM-03

HIGH-SPEED SWITCHING USE

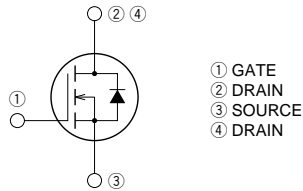
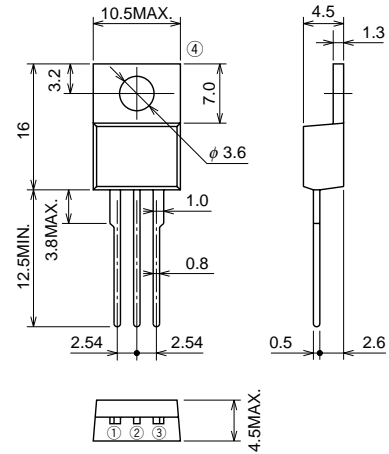
FS100UM-03



- 10V DRIVE
- V_{DSS} 30V
- $r_{DS(ON)}$ (MAX) 5.4m Ω
- I_D 100A
- Integrated Fast Recovery Diode (TYP.) 100ns

OUTLINE DRAWING

Dimensions in mm



TO-220

APPLICATION

Motor control, Lamp control, Solenoid control
DC-DC converter, etc.

MAXIMUM RATINGS (T_c = 25°C)

| Symbol | Parameter | Conditions | Ratings | Unit |
|------------------|----------------------------------|---------------|------------|------|
| V_{DSS} | Drain-source voltage | $V_{GS} = 0V$ | 30 | V |
| V_{GSS} | Gate-source voltage | $V_{DS} = 0V$ | ± 20 | V |
| I_D | Drain current | | 100 | A |
| I_{DM} | Drain current (Pulsed) | | 400 | A |
| I_{DA} | Avalanche drain current (Pulsed) | $L = 30\mu H$ | 100 | A |
| I_S | Source current | | 100 | A |
| I_{SM} | Source current (Pulsed) | | 400 | A |
| PD | Maximum power dissipation | | 125 | W |
| T _{ch} | Channel temperature | | -55 ~ +150 | °C |
| T _{stg} | Storage temperature | | -55 ~ +150 | °C |
| — | Weight | Typical value | 2.0 | g |

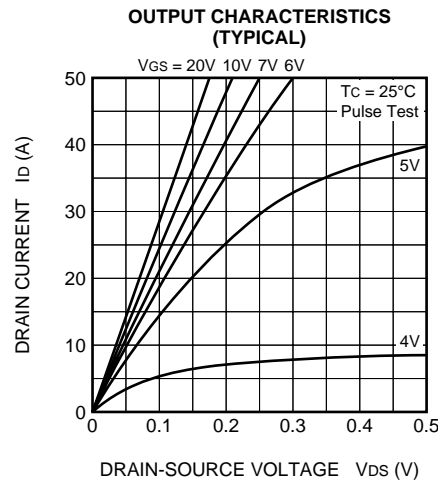
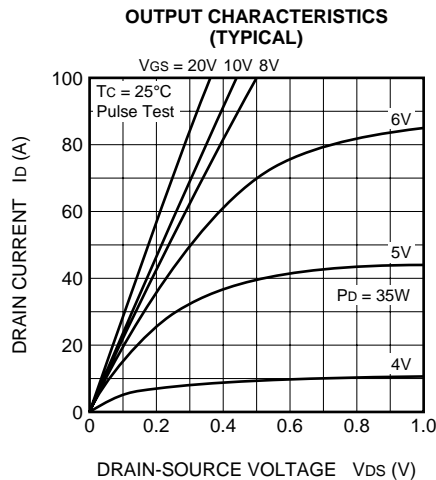
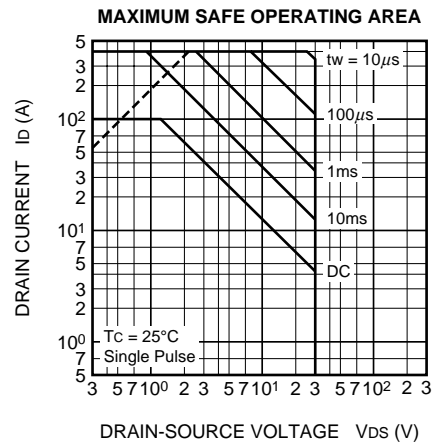
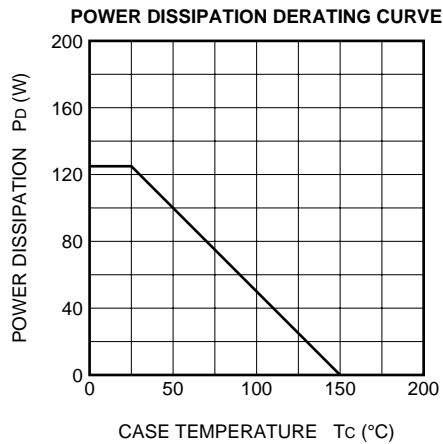
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ELECTRICAL CHARACTERISTICS (Tch = 25°C)

| Symbol | Parameter | Test conditions | Limits | | | Unit |
|-----------|----------------------------------|--|--------|------|------|------|
| | | | Min. | Typ. | Max. | |
| V(BR)DSS | Drain-source breakdown voltage | Id = 1mA, Vgs = 0V | 30 | — | — | V |
| IGSS | Gate-source leakage current | Vgs = ±20V, Vds = 0V | — | — | ±0.1 | μA |
| IDSS | Drain-source leakage current | Vds = 30V, Vgs = 0V | — | — | 0.1 | mA |
| VGS(th) | Gate-source threshold voltage | Id = 1mA, Vds = 10V | 2.0 | 3.0 | 4.0 | V |
| rDS(ON) | Drain-source on-state resistance | Id = 50A, Vgs = 10V | — | 4.0 | 5.4 | mΩ |
| VDS(ON) | Drain-source on-state voltage | Id = 50A, Vgs = 10V | — | 0.20 | 0.27 | V |
| yfs | Forward transfer admittance | Id = 50A, Vds = 10V | — | 80 | — | S |
| Ciss | Input capacitance | Vds = 10V, Vgs = 0V, f = 1MHz | — | 6600 | — | pF |
| Coss | Output capacitance | | — | 2250 | — | pF |
| Crss | Reverse transfer capacitance | | — | 1300 | — | pF |
| td(on) | Turn-on delay time | VDD = 15V, Id = 50A, Vgs = 10V, RGEN = RGS = 50Ω | — | 90 | — | ns |
| tr | Rise time | | — | 260 | — | ns |
| td(off) | Turn-off delay time | | — | 350 | — | ns |
| tf | Fall time | | — | 280 | — | ns |
| VSD | Source-drain voltage | Is = 50A, Vgs = 0V | — | 1.0 | 1.5 | V |
| Rth(ch-c) | Thermal resistance | Channel to case | — | — | 1.00 | °C/W |
| trr | Reverse recovery time | Is = 50A, dis/dt = -50A/μs | — | 100 | — | ns |

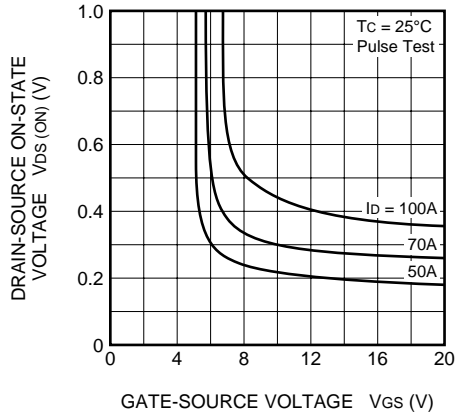
PERFORMANCE CURVES



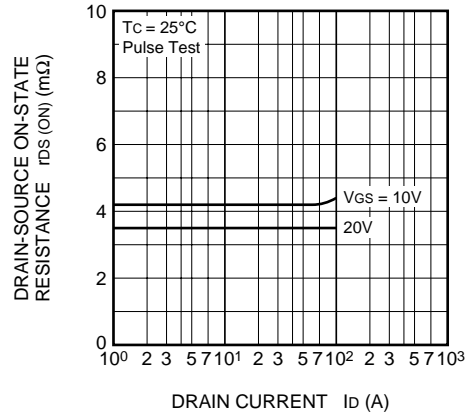
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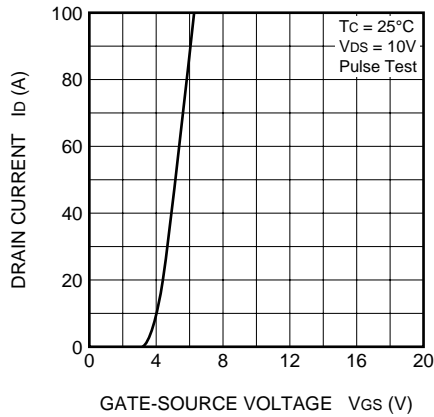
ON-STATE VOLTAGE VS. GATE-SOURCE VOLTAGE (TYPICAL)



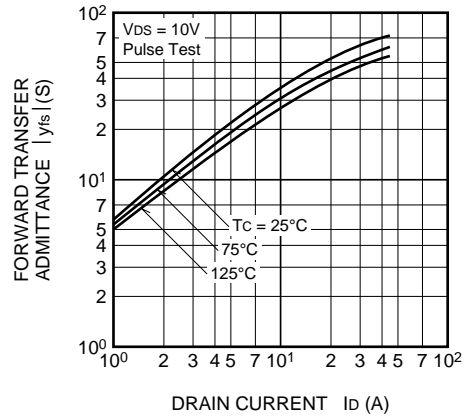
ON-STATE RESISTANCE VS. DRAIN CURRENT (TYPICAL)



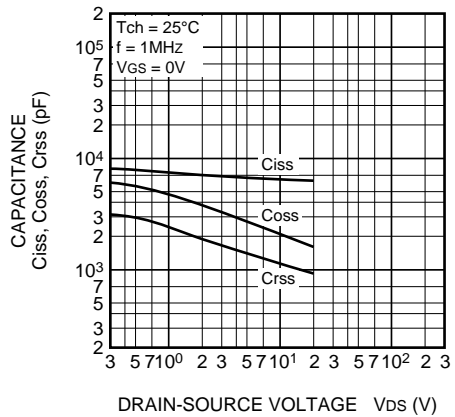
TRANSFER CHARACTERISTICS (TYPICAL)



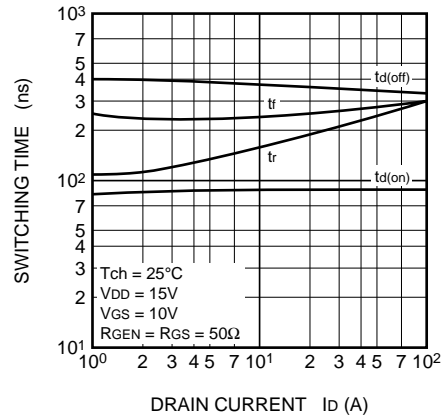
FORWARD TRANSFER ADMITTANCE VS. DRAIN CURRENT (TYPICAL)



CAPACITANCE VS. DRAIN-SOURCE VOLTAGE (TYPICAL)



SWITCHING CHARACTERISTICS (TYPICAL)



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