

FS30KM-3

HIGH-SPEED SWITCHING USE

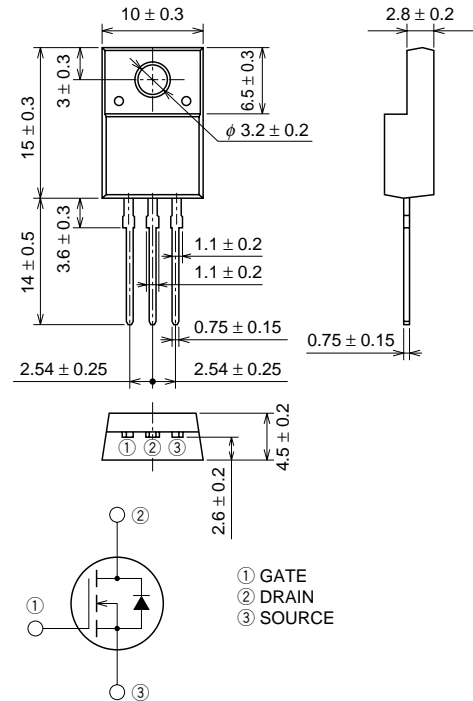
FS30KM-3



- 10V DRIVE
- V_{DSS} 150V
- r_{DS (ON)} (MAX) 92mΩ
- I_D 30A
- Integrated Fast Recovery Diode (TYP.) 110ns
- V_{iso} 2000V

OUTLINE DRAWING

Dimensions in mm



TO-220FN

APPLICATION

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

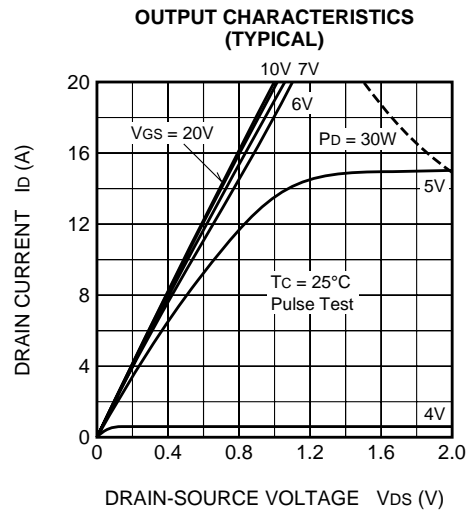
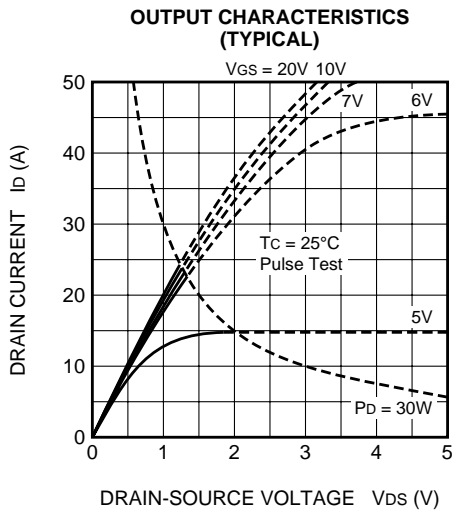
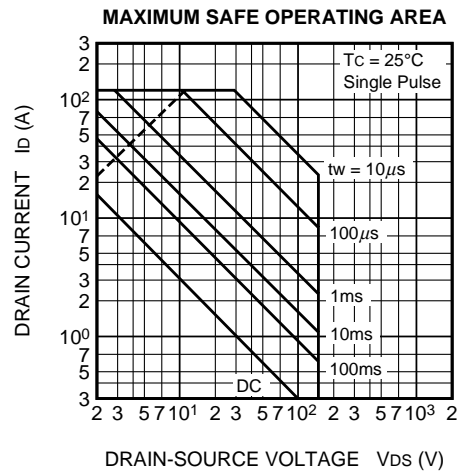
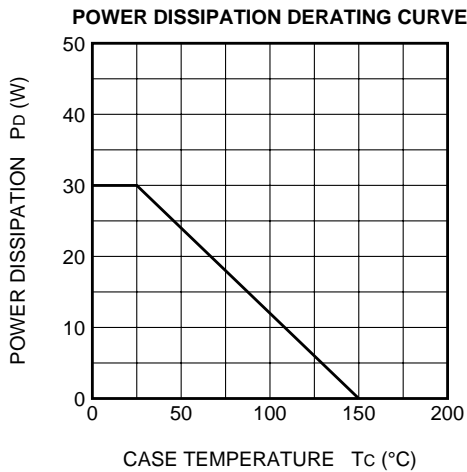
MAXIMUM RATINGS (T_c = 25°C)

| Symbol | Parameter | Conditions | Ratings | Unit |
|------------------|----------------------------------|----------------------------------|------------|------|
| V _{DSS} | Drain-source voltage | V _{GS} = 0V | 150 | V |
| V _{GSS} | Gate-source voltage | V _{DS} = 0V | ±20 | V |
| I _D | Drain current | | 30 | A |
| I _{DM} | Drain current (Pulsed) | | 120 | A |
| I _{DA} | Avalanche drain current (Pulsed) | L = 100μH | 30 | A |
| I _S | Source current | | 30 | A |
| I _{SM} | Source current (Pulsed) | | 120 | 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 1minute, Terminal to case | 2000 | V |
| — | Weight | Typical value | 2.0 | g |

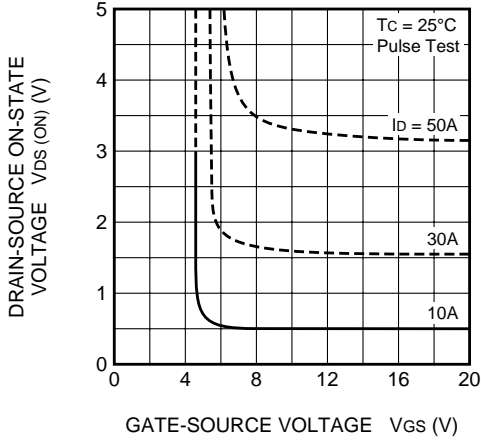
ELECTRICAL CHARACTERISTICS (Tch = 25°C)

| Symbol | Parameter | Test conditions | Limits | | | Unit |
|-----------|----------------------------------|--|--------|------|------|------|
| | | | Min. | Typ. | Max. | |
| V(BR)DSS | Drain-source breakdown voltage | Id = 1mA, Vgs = 0V | 150 | — | — | V |
| IgSS | Gate-source leakage current | Vgs = ±20V, Vds = 0V | — | — | ±0.1 | µA |
| IbSS | Drain-source leakage current | Vds = 150V, 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 = 15A, Vgs = 10V | — | 68 | 92 | mΩ |
| VDS(ON) | Drain-source on-state voltage | Id = 15A, Vgs = 10V | — | 1.02 | 1.38 | V |
| yfs | Forward transfer admittance | Id = 15A, Vds = 10V | — | 29 | — | S |
| Ciss | Input capacitance | Vds = 10V, Vgs = 0V, f = 1MHz | — | 2300 | — | pF |
| Coss | Output capacitance | | — | 320 | — | pF |
| Crss | Reverse transfer capacitance | | — | 130 | — | pF |
| td(on) | Turn-on delay time | VDD = 80V, Id = 15A, Vgs = 10V, RGEN = RGS = 50Ω | — | 35 | — | ns |
| tr | Rise time | | — | 58 | — | ns |
| td(off) | Turn-off delay time | | — | 110 | — | ns |
| tf | Fall time | | — | 65 | — | ns |
| VSD | Source-drain voltage | Is = 15A, Vgs = 0V | — | 1.0 | 1.5 | V |
| Rth(ch-c) | Thermal resistance | Channel to case | — | — | 4.17 | °C/W |
| trr | Reverse recovery time | Is = 30A, dis/dt = -100A/µs | — | 110 | — | ns |

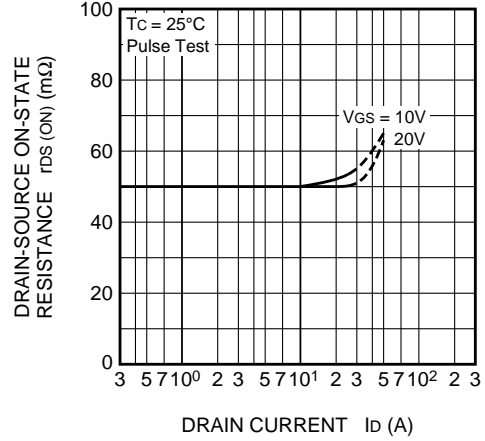
PERFORMANCE CURVES



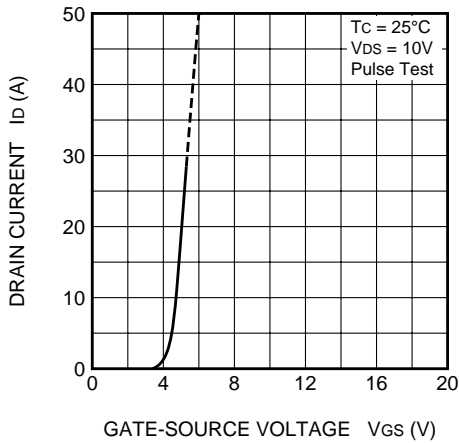
ON-STATE VOLTAGE VS. GATE-SOURCE VOLTAGE (TYPICAL)



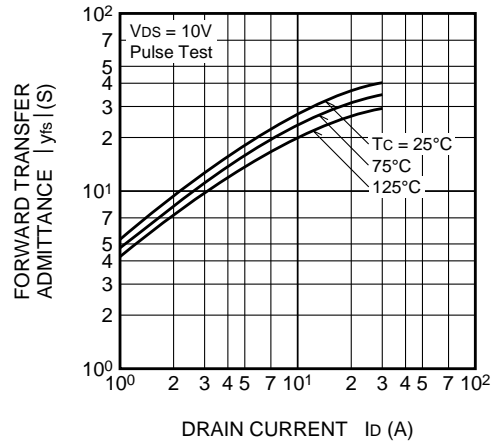
ON-STATE RESISTANCE VS. DRAIN CURRENT (TYPICAL)



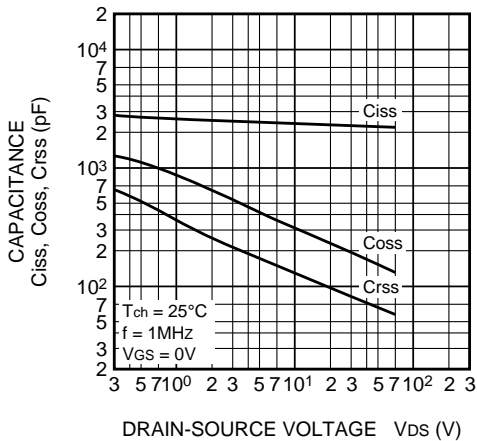
TRANSFER CHARACTERISTICS (TYPICAL)



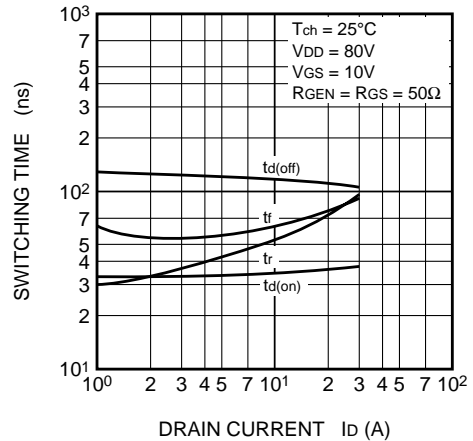
FORWARD TRANSFER ADMITTANCE VS. DRAIN CURRENT (TYPICAL)



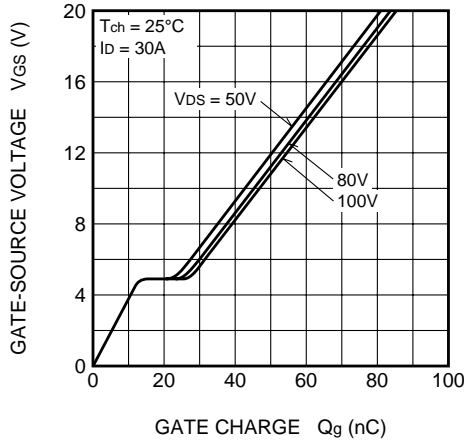
CAPACITANCE VS. DRAIN-SOURCE VOLTAGE (TYPICAL)



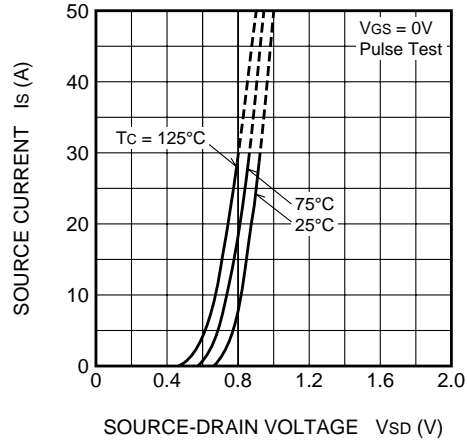
SWITCHING CHARACTERISTICS (TYPICAL)



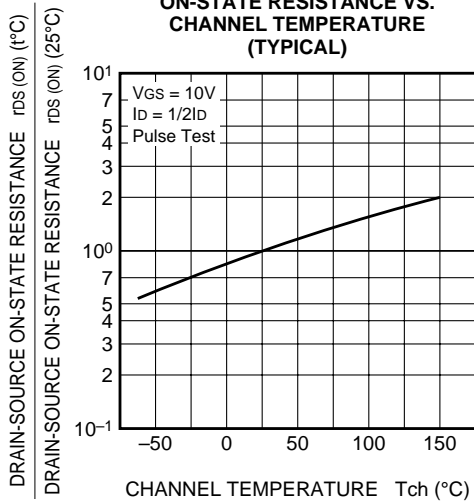
GATE-SOURCE VOLTAGE VS. GATE CHARGE (TYPICAL)



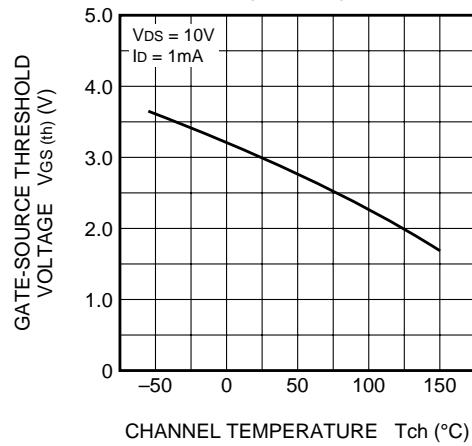
SOURCE-DRAIN DIODE FORWARD CHARACTERISTICS (TYPICAL)



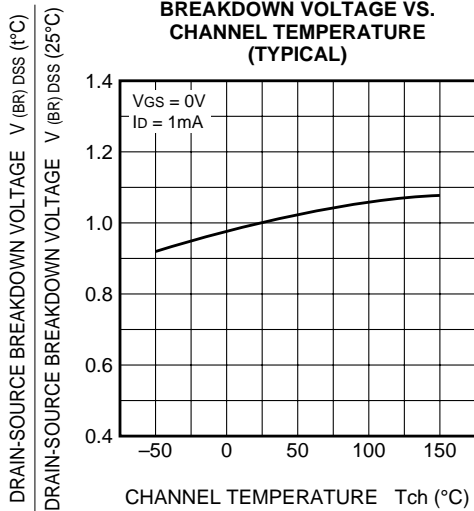
ON-STATE RESISTANCE VS. CHANNEL TEMPERATURE (TYPICAL)



THRESHOLD VOLTAGE VS. CHANNEL TEMPERATURE (TYPICAL)



BREAKDOWN VOLTAGE VS. CHANNEL TEMPERATURE (TYPICAL)



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS

