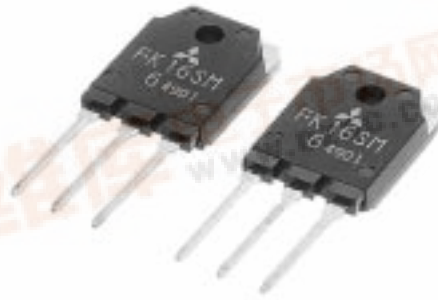


MITSUBISHI Nch POWER MOSFET

# FK16SM-6

HIGH-SPEED SWITCHING USE

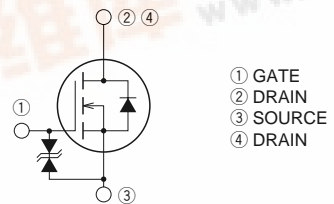
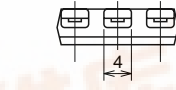
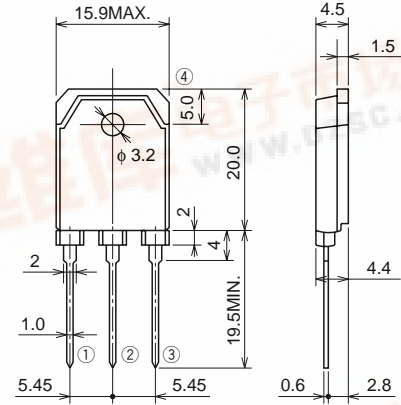
## FK16SM-6



- V<sub>DSS</sub> ..... 300V
- r<sub>DS</sub> (ON) (MAX) ..... 0.41Ω
- I<sub>D</sub> ..... 16A
- Integrated Fast Recovery Diode (MAX.) ..... 150ns

## OUTLINE DRAWING

Dimensions in mm



- ① GATE
- ② DRAIN
- ③ SOURCE
- ④ DRAIN

TO-3P

## APPLICATION

Servo motor drive, Robot, UPS, Inverter Fluorecent lamp, etc.

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

| Symbol           | Parameter                 | Conditions           | Ratings    | Unit |
|------------------|---------------------------|----------------------|------------|------|
| V <sub>DSS</sub> | Drain-source voltage      | V <sub>GS</sub> = 0V | 300        | V    |
| V <sub>GSS</sub> | Gate-source voltage       | V <sub>DS</sub> = 0V | ±30        | V    |
| I <sub>D</sub>   | Drain current             |                      | 16         | A    |
| I <sub>DM</sub>  | Drain current (Pulsed)    |                      | 48         | A    |
| I <sub>S</sub>   | Source current            |                      | 16         | A    |
| I <sub>SM</sub>  | Source current (Pulsed)   |                      | 48         | A    |
| P <sub>D</sub>   | Maximum power dissipation |                      | 125        | W    |
| T <sub>ch</sub>  | Channel temperature       |                      | -55 ~ +150 | °C   |
| T <sub>stg</sub> | Storage temperature       |                      | -55 ~ +150 | °C   |
| —                | Weight                    | Typical value        | 4.8        | g    |

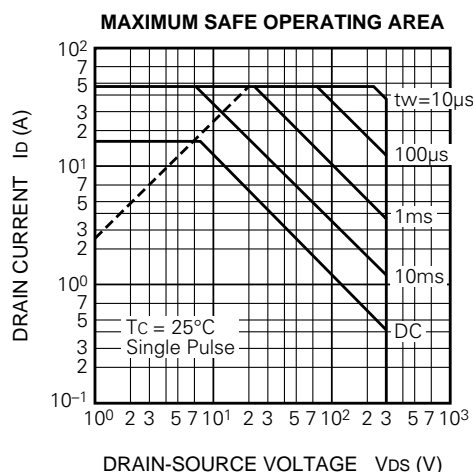
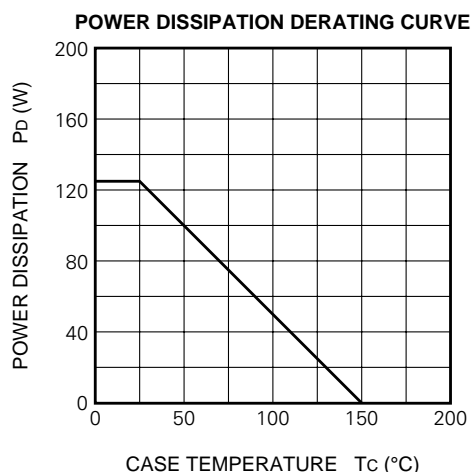
# FK16SM-6

HIGH-SPEED SWITCHING USE

## 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                               | 300    | —    | —    | V    |
| V (BR) GSS | Gate-source breakdown voltage    | IG = ±100μA, VDS = 0V                            | ±30    | —    | —    | V    |
| IGSS       | Gate-source leakage current      | VGS = ±25V, VDS = 0V                             | —      | —    | ±10  | μA   |
| IDSS       | Drain-source leakage current     | VDS = 300V, VGS = 0V                             | —      | —    | 1    | mA   |
| VGS (th)   | Gate-source threshold voltage    | ID = 1mA, VDS = 10V                              | 2      | 3    | 4    | V    |
| rDS (ON)   | Drain-source on-state resistance | ID = 8A, VGS = 10V                               | —      | 0.31 | 0.41 | Ω    |
| VDS (ON)   | Drain-source on-state voltage    | ID = 8A, VGS = 10V                               | —      | 2.48 | 3.28 | V    |
| yfs        | Forward transfer admittance      | ID = 8A, VDS = 10V                               | 6.5    | 10.0 | —    | S    |
| Ciss       | Input capacitance                | VDS = 25V, VGS = 0V, f = 1MHz                    | —      | 1050 | —    | pF   |
| Coss       | Output capacitance               |  | —      | 220  | —    | pF   |
| Crss       | Reverse transfer capacitance     |  | —      | 45   | —    | pF   |
| td (on)    | Turn-on delay time               | VDD = 150V, ID = 8A, VGS = 10V, RGEN = RGS = 50Ω | —      | 20   | —    | ns   |
| tr         | Rise time                        |  | —      | 40   | —    | ns   |
| td (off)   | Turn-off delay time              |  | —      | 110  | —    | ns   |
| tf         | Fall time                        |  | —      | 50   | —    | ns   |
| VSD        | Source-drain voltage             | IS = 8A, VGS = 0V                                | —      | 1.5  | 2.0  | V    |
| Rth (ch-c) | Thermal resistance               | Channel to case                                  | —      | —    | 1.00 | °C/W |
| trr        | Reverse recovery time            | IS = 16A, dis/dt = -100A/μs                      | —      | —    | 150  | ns   |

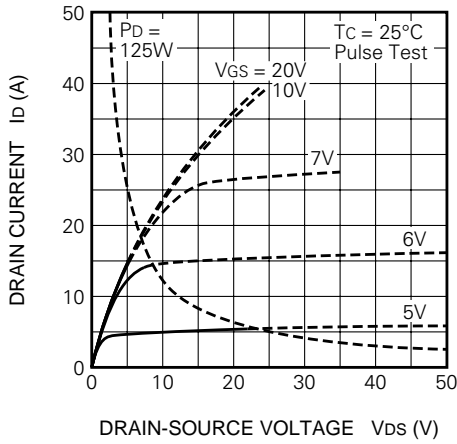
## PERFORMANCE CURVES



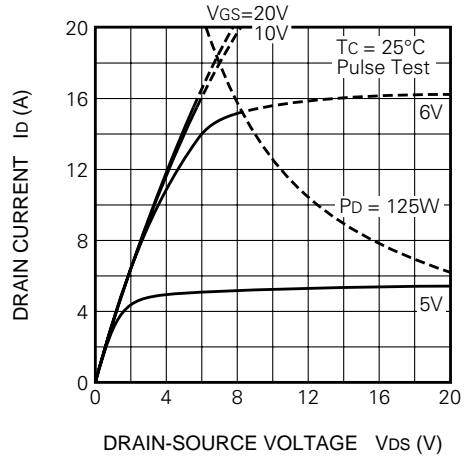
# FK16SM-6

HIGH-SPEED SWITCHING USE

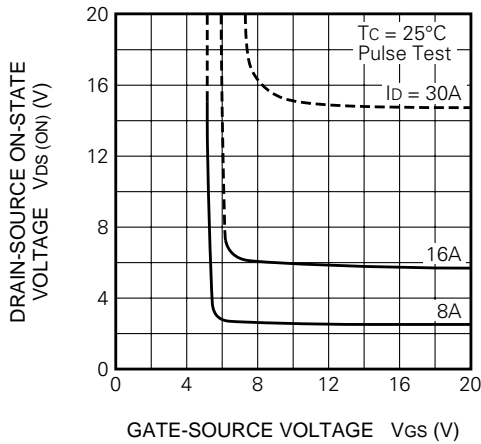
**OUTPUT CHARACTERISTICS (TYPICAL)**



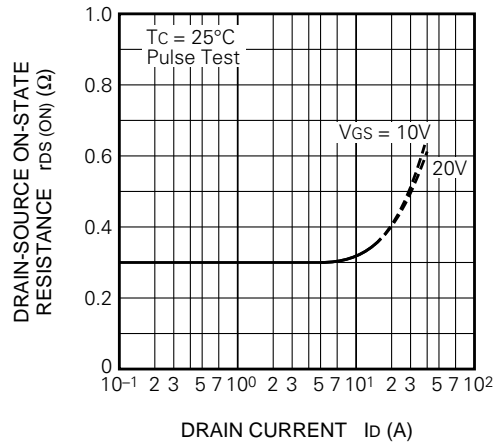
**OUTPUT CHARACTERISTICS (TYPICAL)**



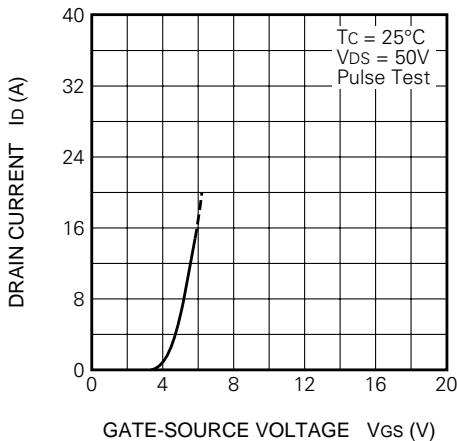
**ON-STATE VOLTAGE VS. GATE-SOURCE VOLTAGE (TYPICAL)**



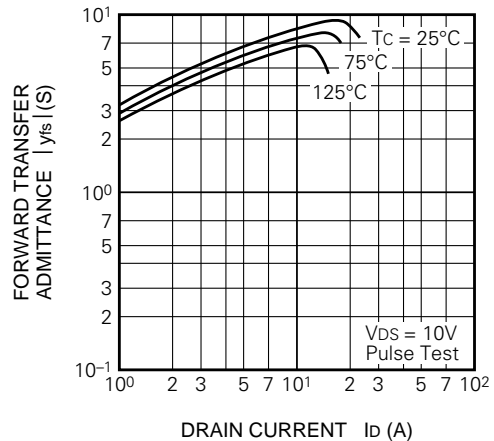
**ON-STATE RESISTANCE VS. DRAIN CURRENT (TYPICAL)**



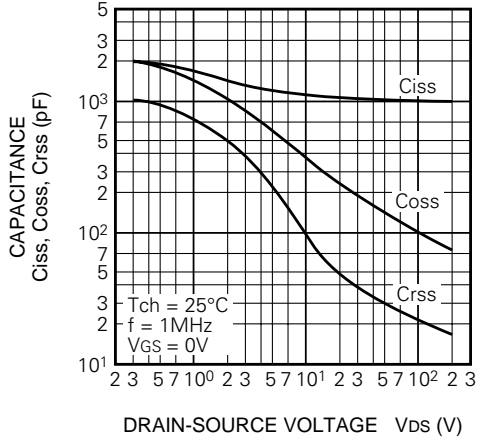
**TRANSFER CHARACTERISTICS (TYPICAL)**



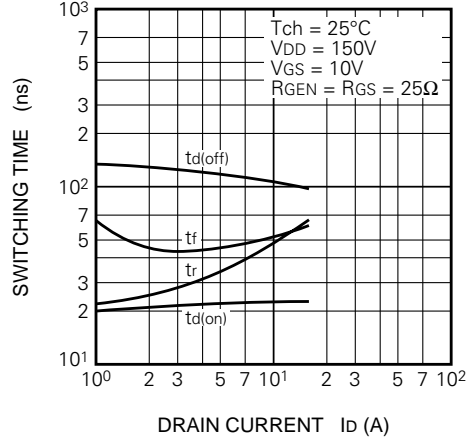
**FORWARD TRANSFER ADMITTANCE VS. DRAIN CURRENT (TYPICAL)**



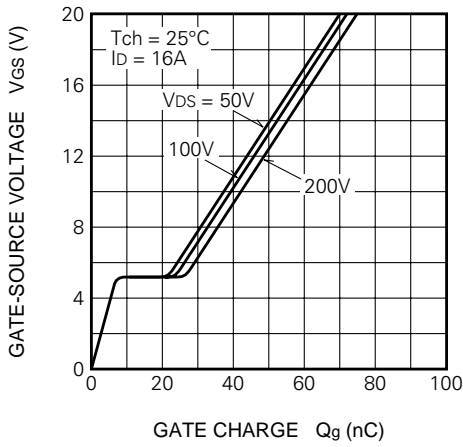
**CAPACITANCE VS. DRAIN-SOURCE VOLTAGE (TYPICAL)**



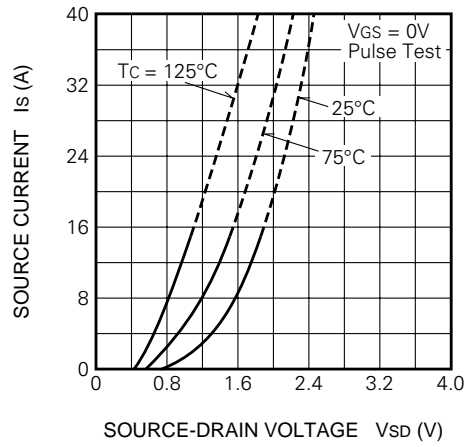
**SWITCHING CHARACTERISTICS (TYPICAL)**



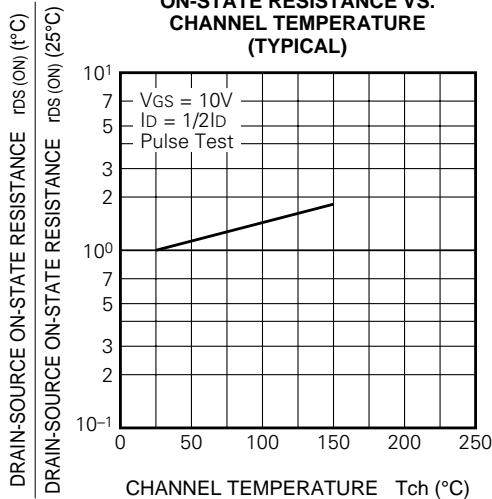
**GATE-SOURCE VOLTAGE VS. GATE CHARGE (TYPICAL)**



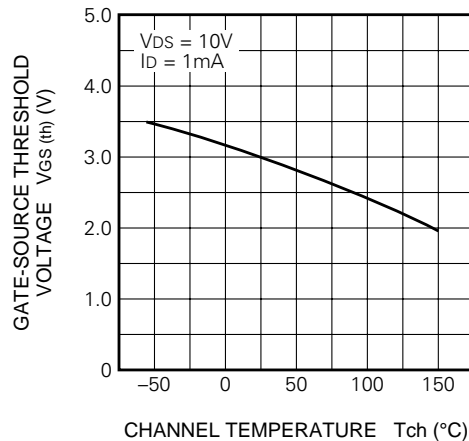
**SOURCE-DRAIN DIODE FORWARD CHARACTERISTICS (TYPICAL)**



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



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



# FK16SM-6

## HIGH-SPEED SWITCHING USE

