

**PRELIMINARY**  
 Notice: This is not a final specification.  
 Some parametric limits are subject to change.

MITSUBISHI Pch POWER MOSFET

**FX6ASJ-2**

HIGH-SPEED SWITCHING USE

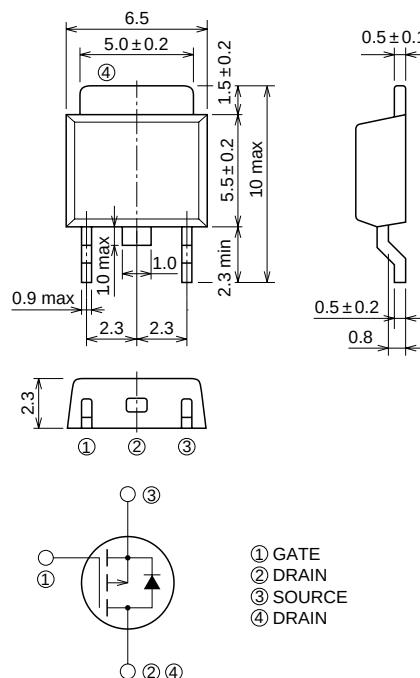
## FX6ASJ-2



- 4V DRIVE
- $V_{DS}$  ..... -100V
- $r_{DS(ON)}$  (MAX) .....  $0.58\Omega$
- $I_D$  ..... -6A
- Integrated Fast Recovery Diode (TYP.) ..... 80ns

## OUTLINE DRAWING

Dimensions in mm



MP-3

## APPLICATION

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

## MAXIMUM RATINGS (Tc = 25°C)

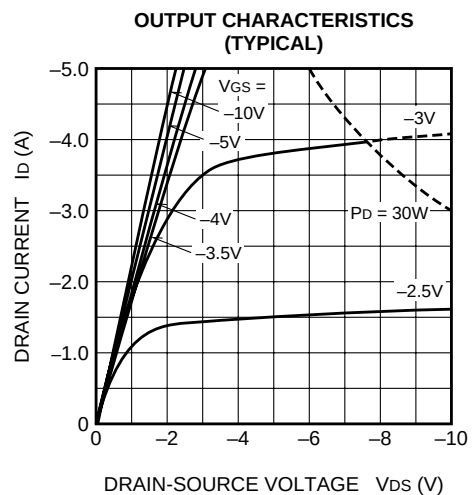
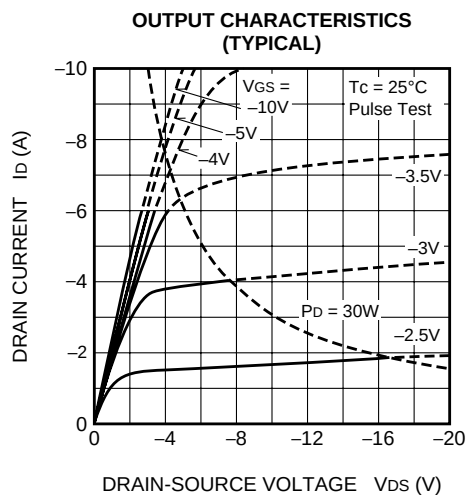
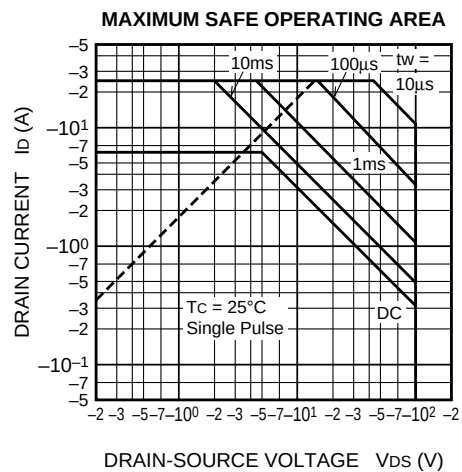
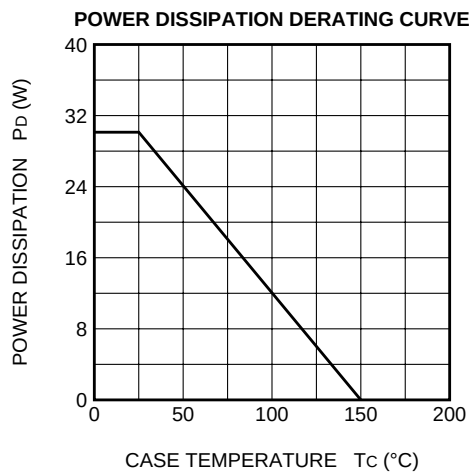
| Symbol    | Parameter                        | Conditions     | Ratings    | Unit |
|-----------|----------------------------------|----------------|------------|------|
| $V_{DS}$  | Drain-source voltage             | $V_{GS} = 0V$  | -100       | V    |
| $V_{GS}$  | Gate-source voltage              | $V_{DS} = 0V$  | ±20        | V    |
| $I_D$     | Drain current                    |                | -6         | A    |
| $I_{DM}$  | Drain current (Pulsed)           |                | -24        | A    |
| $I_{DA}$  | Avalanche drain current (Pulsed) | $L = 100\mu H$ | -6         | A    |
| $I_S$     | Source current                   |                | -6         | A    |
| $I_{SM}$  | Source current (Pulsed)          |                | -24        | A    |
| $P_D$     | Maximum power dissipation        |                | 30         | W    |
| $T_{ch}$  | Channel temperature              |                | -55 ~ +150 | °C   |
| $T_{stg}$ | Storage temperature              |                | -55 ~ +150 | °C   |
| —         | Weight                           | Typical value  | 0.26       | g    |

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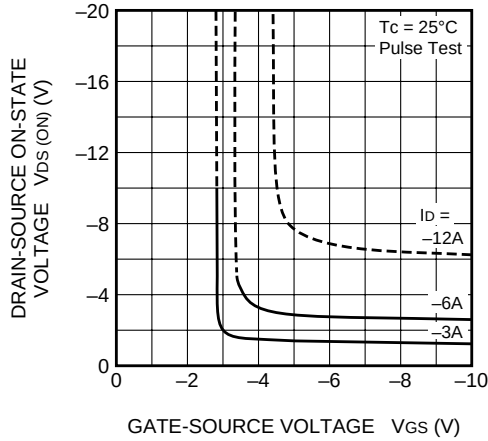
**ELECTRICAL CHARACTERISTICS** ( $T_{ch} = 25^{\circ}\text{C}$ )

| Symbol         | Parameter                        | Test conditions                                                                                      | Limits |       |           | Unit                 |
|----------------|----------------------------------|------------------------------------------------------------------------------------------------------|--------|-------|-----------|----------------------|
|                |                                  |                                                                                                      | Min.   | Typ.  | Max.      |                      |
| $V_{(BR)DSS}$  | Drain-source breakdown voltage   | $I_D = -1\text{mA}$ , $V_{GS} = 0\text{V}$                                                           | -100   | —     | —         | V                    |
| $I_{GSS}$      | Gate-source leakage current      | $V_{GS} = \pm 20\text{V}$ , $V_{DS} = 0\text{V}$                                                     | —      | —     | $\pm 0.1$ | $\mu\text{A}$        |
| $I_{DSS}$      | Drain-source leakage current     | $V_{DS} = -100\text{V}$ , $V_{GS} = 0\text{V}$                                                       | —      | —     | -0.1      | mA                   |
| $V_{GS(th)}$   | Gate-source threshold voltage    | $I_D = -1\text{mA}$ , $V_{DS} = -10\text{V}$                                                         | -1.0   | -1.5  | -2.0      | V                    |
| $r_{DS(on)}$   | Drain-source on-state resistance | $I_D = -3\text{A}$ , $V_{GS} = -10\text{V}$                                                          | —      | 0.46  | 0.58      | $\Omega$             |
| $r_{DS(on)}$   | Drain-source on-state resistance | $I_D = -3\text{A}$ , $V_{GS} = -4\text{V}$                                                           | —      | 0.55  | 0.72      | $\Omega$             |
| $V_{DS(on)}$   | Drain-source on-state voltage    | $I_D = -3\text{A}$ , $V_{GS} = -10\text{V}$                                                          | —      | -1.38 | -1.74     | V                    |
| $ y_{fs} $     | Forward transfer admittance      | $I_D = -3\text{A}$ , $V_{DS} = -5\text{V}$                                                           | —      | 4.7   | —         | S                    |
| $C_{iss}$      | Input capacitance                | $V_{DS} = -10\text{V}$ , $V_{GS} = 0\text{V}$ , $f = 1\text{MHz}$                                    | —      | 1110  | —         | pF                   |
| $C_{oss}$      | Output capacitance               |                                                                                                      | —      | 108   | —         | pF                   |
| $C_{rss}$      | Reverse transfer capacitance     |                                                                                                      | —      | 44    | —         | pF                   |
| $t_d(on)$      | Turn-on delay time               | $V_{DD} = -50\text{V}$ , $I_D = -3\text{A}$ , $V_{GS} = -10\text{V}$ , $R_{GEN} = R_{GS} = 50\Omega$ | —      | 9     | —         | ns                   |
| $t_r$          | Rise time                        |                                                                                                      | —      | 8     | —         | ns                   |
| $t_d(off)$     | Turn-off delay time              |                                                                                                      | —      | 72    | —         | ns                   |
| $t_f$          | Fall time                        |                                                                                                      | —      | 33    | —         | ns                   |
| $V_{SD}$       | Source-drain voltage             | $I_S = -3\text{A}$ , $V_{GS} = 0\text{V}$                                                            | —      | -1.0  | -1.5      | V                    |
| $R_{th(ch-c)}$ | Thermal resistance               | Channel to case                                                                                      | —      | —     | 4.17      | $^{\circ}\text{C/W}$ |
| $t_{rr}$       | Reverse recovery time            | $I_S = -6\text{A}$ , $di/dt = 100\text{A}/\mu\text{s}$                                               | —      | 80    | —         | ns                   |

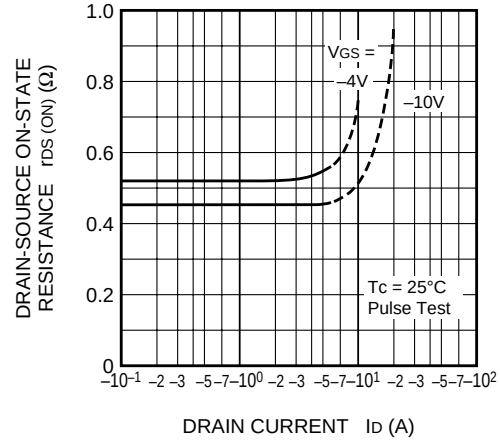
**PERFORMANCE CURVES**



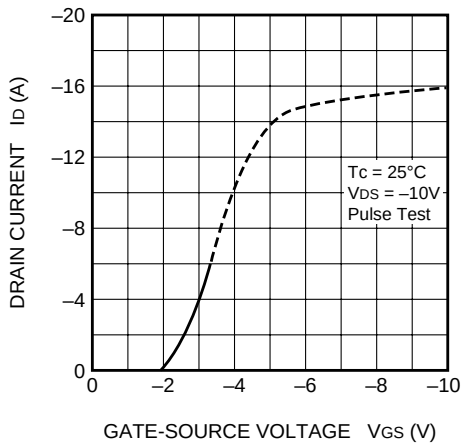
**ON-STATE VOLTAGE VS.  
GATE-SOURCE VOLTAGE  
(TYPICAL)**



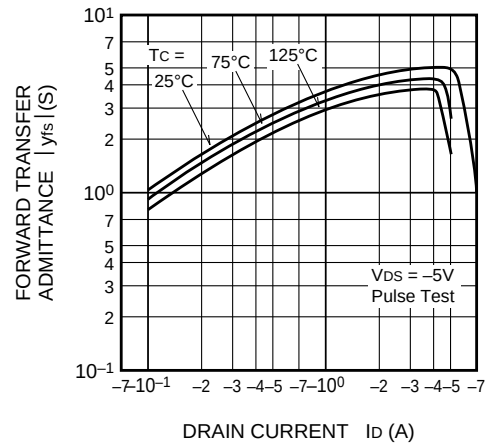
**ON-STATE RESISTANCE VS.  
DRAIN CURRENT  
(TYPICAL)**



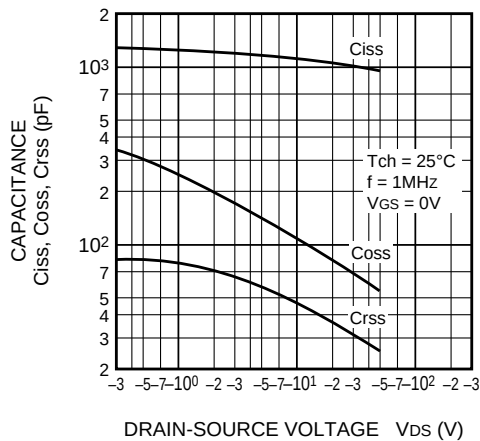
**TRANSFER CHARACTERISTICS  
(TYPICAL)**



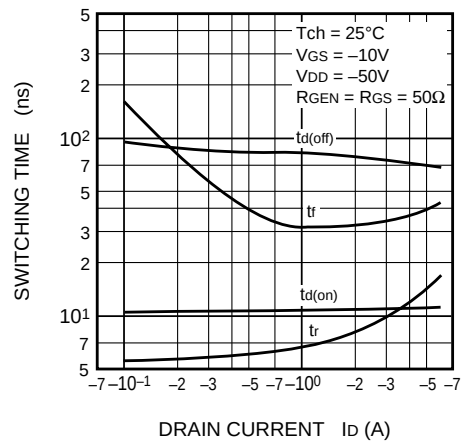
**FORWARD TRANSFER ADMITTANCE  
VS.DRAIN CURRENT  
(TYPICAL)**



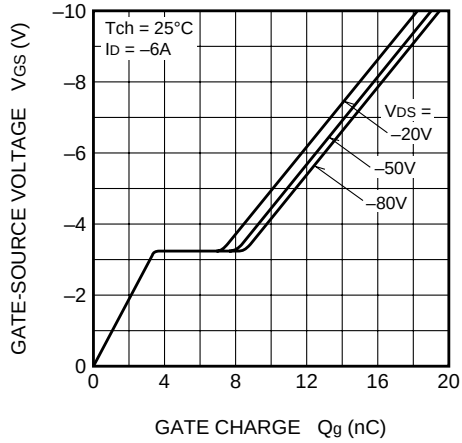
**CAPACITANCE VS.  
DRAIN-SOURCE VOLTAGE  
(TYPICAL)**



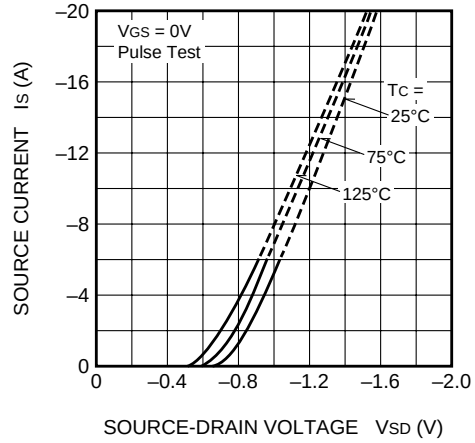
**SWITCHING CHARACTERISTICS  
(TYPICAL)**



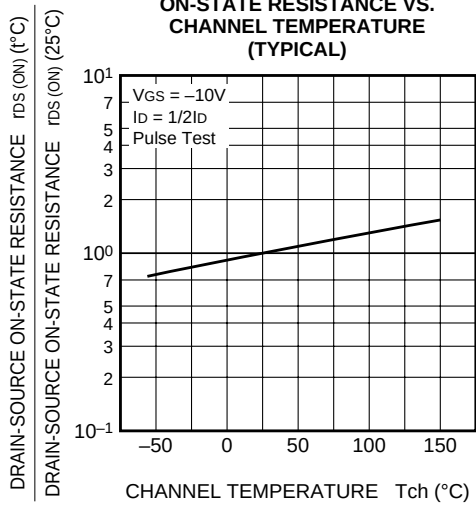
**GATE-SOURCE VOLTAGE  
 VS. GATE CHARGE  
 (TYPICAL)**



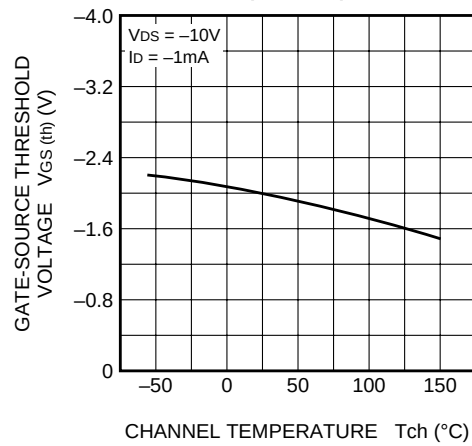
**SOURCE-DRAIN DIODE  
 FORWARD CHARACTERISTICS  
 (TYPICAL)**



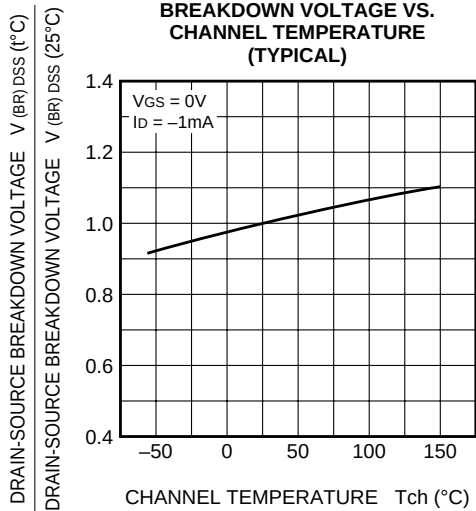
**ON-STATE RESISTANCE VS.  
 CHANNEL TEMPERATURE  
 (TYPICAL)**



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



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



**TRANSIENT THERMAL IMPEDANCE  
 CHARACTERISTICS**

