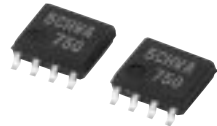


MITSUBISHI Nch POWER MOSFET

FY5ACH-03A

HIGH-SPEED SWITCHING USE

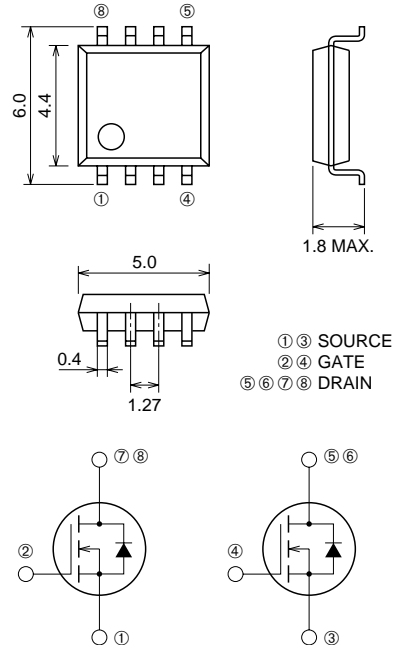
FY5ACH-03A



- 2.5V DRIVE
- V_{DSS} 30V
- $r_{DS(ON)}$ (MAX) 50m Ω
- I_D 5A

OUTLINE DRAWING

Dimensions in mm



SOP-8

APPLICATION

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

MAXIMUM RATINGS (T_c = 25°C)

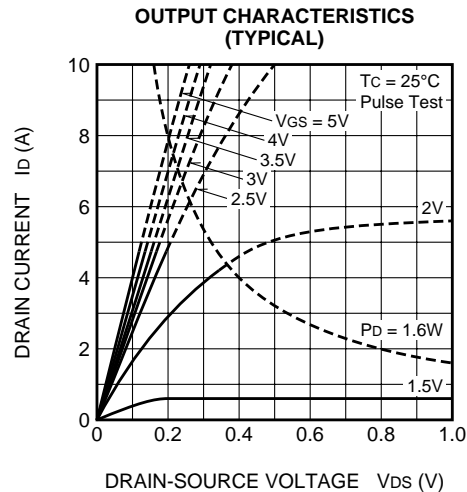
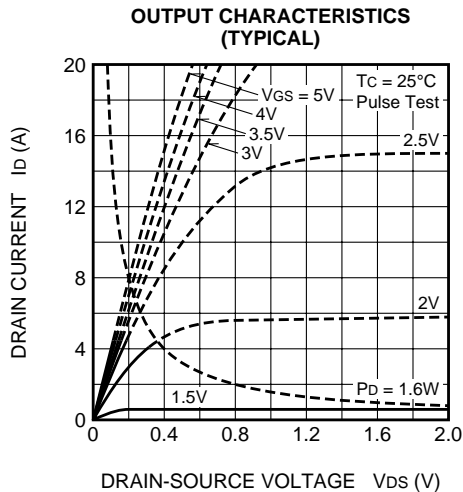
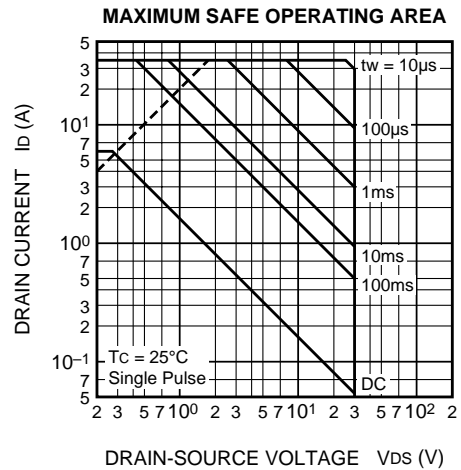
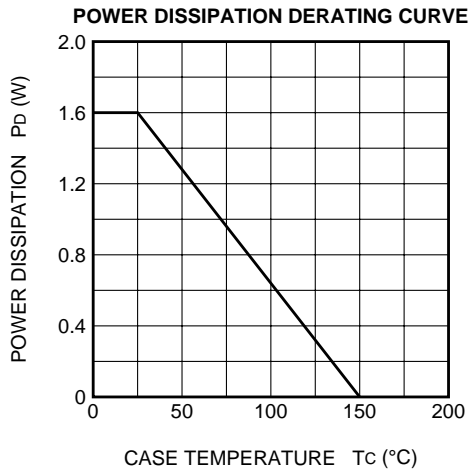
| Symbol | Parameter | Conditions | Ratings | Unit |
|-----------|----------------------------------|---------------|------------|------|
| V_{DSS} | Drain-source voltage | $V_{GS} = 0V$ | 30 | V |
| V_{GSS} | Gate-source voltage | $V_{DS} = 0V$ | ± 10 | V |
| I_D | Drain current | | 5 | A |
| I_{DM} | Drain current (Pulsed) | | 35 | A |
| I_{DA} | Avalanche drain current (Pulsed) | $L = 10\mu H$ | 5 | A |
| I_S | Source current | | 1.7 | A |
| I_{SM} | Source current (Pulsed) | | 6.8 | A |
| P_D | Maximum power dissipation | | 1.6 | W |
| T_{ch} | Channel temperature | | -55 ~ +150 | °C |
| T_{stg} | Storage temperature | | -55 ~ +150 | °C |
| — | Weight | Typical value | 0.07 | g |

Sep.1998

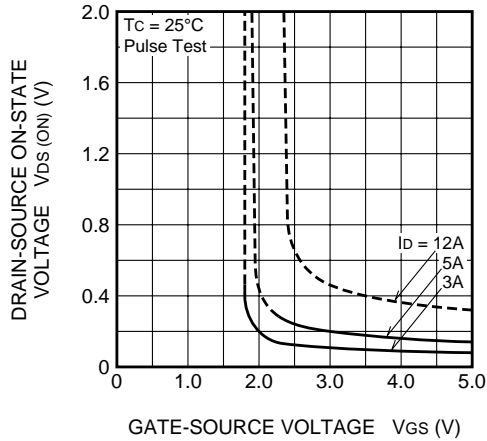
ELECTRICAL CHARACTERISTICS (Tch = 25°C)

| Symbol | Parameter | Test conditions | Limits | | | Unit |
|-----------|----------------------------------|--|--------|------|------|------|
| | | | Min. | Typ. | Max. | |
| V(BR)DSS | Drain-source breakdown voltage | Id = 1mA, Vds = 0V | 30 | — | — | V |
| IGSS | Gate-source leakage current | VGS = ±10V, 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 | 0.5 | 0.9 | 1.3 | V |
| rDS(ON) | Drain-source on-state resistance | Id = 5A, VGS = 4V | — | 40 | 50 | mΩ |
| rDS(ON) | Drain-source on-state resistance | Id = 2.5A, VGS = 2.5V | — | 52 | 80 | mΩ |
| VDS(ON) | Drain-source on-state voltage | Id = 5A, VGS = 4V | — | 0.20 | 0.25 | V |
| yfs | Forward transfer admittance | Id = 5A, VDS = 10V | — | 11 | — | S |
| Ciss | Input capacitance | Vds = 10V, VGS = 0V, f = 1MHz | — | 750 | — | pF |
| Coss | Output capacitance | | — | 180 | — | pF |
| Crss | Reverse transfer capacitance | | — | 80 | — | pF |
| td(on) | Turn-on delay time | VDD = 15V, Id = 2.5A, VGS = 4V, RGEN = RGS = 50Ω | — | 18 | — | ns |
| tr | Rise time | | — | 45 | — | ns |
| td(off) | Turn-off delay time | | — | 52 | — | ns |
| tf | Fall time | | — | 44 | — | ns |
| VSD | Source-drain voltage | Is = 1.7A, VGS = 0V | — | 0.75 | 1.1 | V |
| Rth(ch-a) | Thermal resistance | Channel to ambient | — | — | 78.1 | °C/W |
| trr | Reverse recovery time | Is = 1.7A, dis/dt = -50A/μs | — | 100 | — | ns |

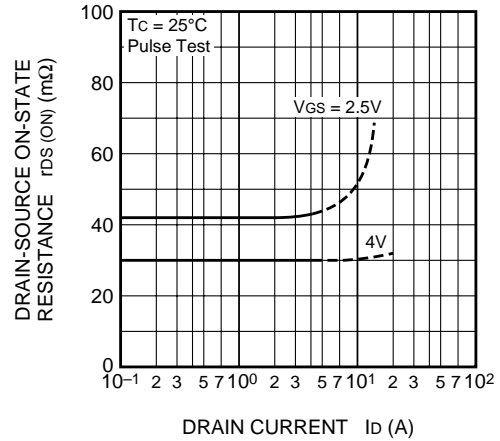
PERFORMANCE CURVES



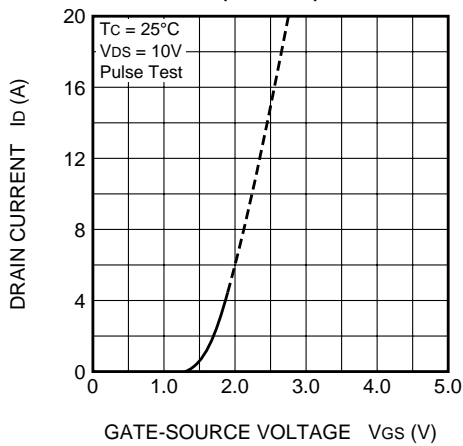
ON-STATE VOLTAGE VS. GATE-SOURCE VOLTAGE (TYPICAL)



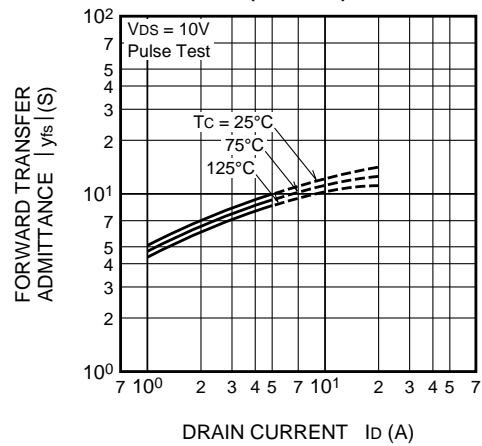
ON-STATE RESISTANCE VS. DRAIN CURRENT (TYPICAL)



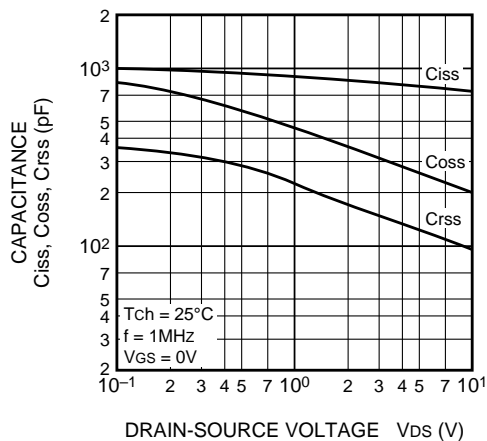
TRANSFER CHARACTERISTICS (TYPICAL)



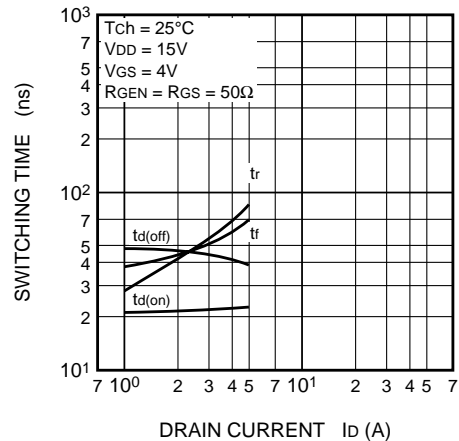
FORWARD TRANSFER ADMITTANCE VS. DRAIN CURRENT (TYPICAL)



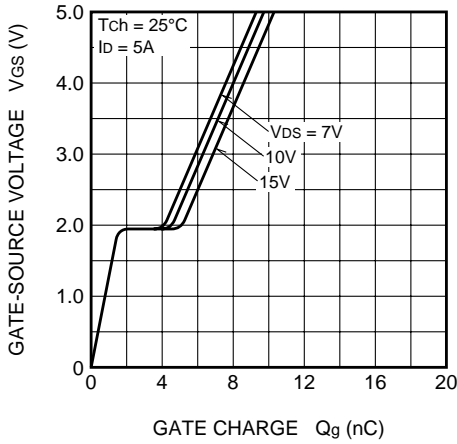
CAPACITANCE VS. DRAIN-SOURCE VOLTAGE (TYPICAL)



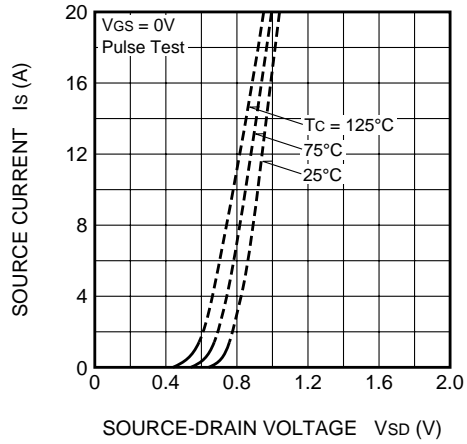
SWITCHING CHARACTERISTICS (TYPICAL)



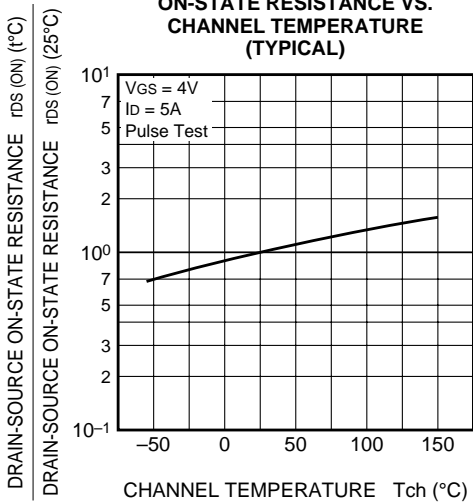
GATE-SOURCE VOLTAGE VS. GATE CHARGE (TYPICAL)



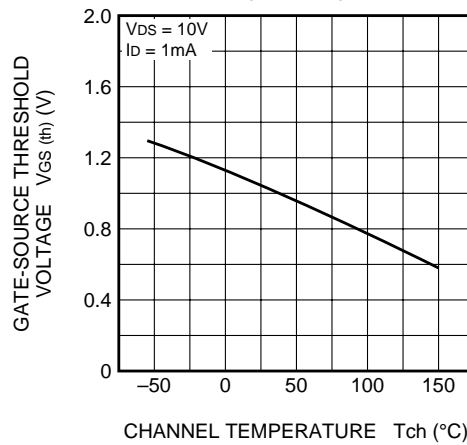
SOURCE-DRAIN DIODE FORWARD CHARACTERISTICS (TYPICAL)



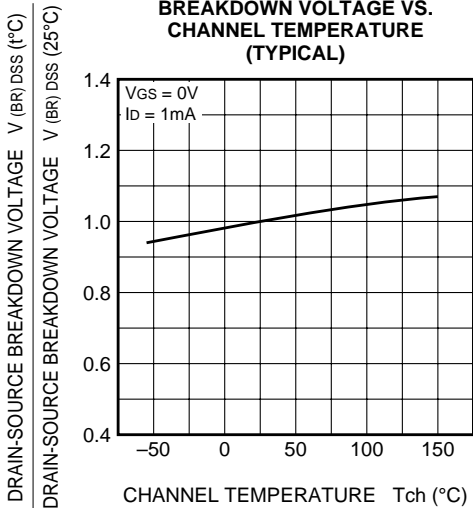
ON-STATE RESISTANCE VS. CHANNEL TEMPERATURE (TYPICAL)



THRESHOLD VOLTAGE VS. CHANNEL TEMPERATURE (TYPICAL)



BREAKDOWN VOLTAGE VS. CHANNEL TEMPERATURE (TYPICAL)



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS

