

# FY8ACH-02A

HIGH-SPEED SWITCHING USE

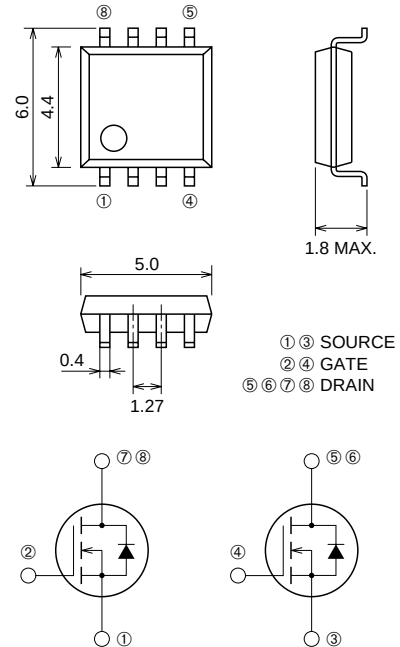
## FY8ACH-02A



- 2.5V DRIVE
- $V_{DS}$  ..... 20V
- $r_{DS(ON)}$  (MAX) ..... 22m $\Omega$
- $I_D$  ..... 8A

## OUTLINE DRAWING

Dimensions in mm



SOP-8

## APPLICATION

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

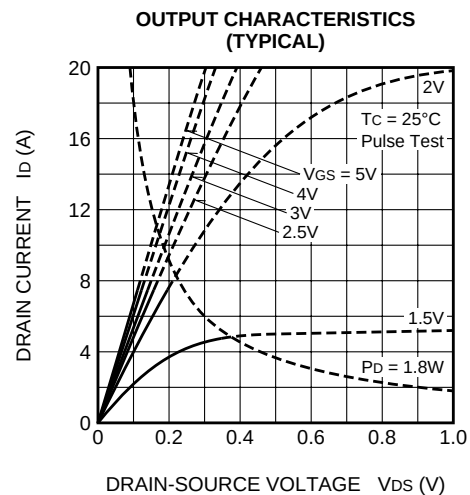
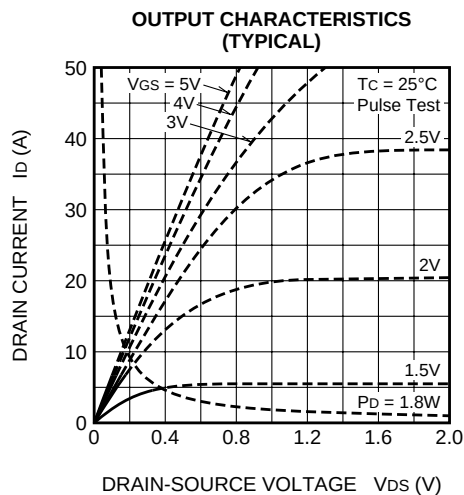
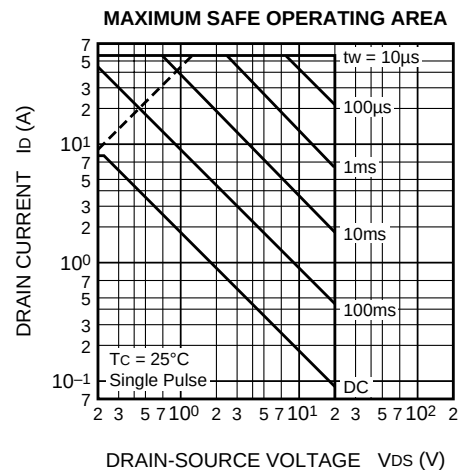
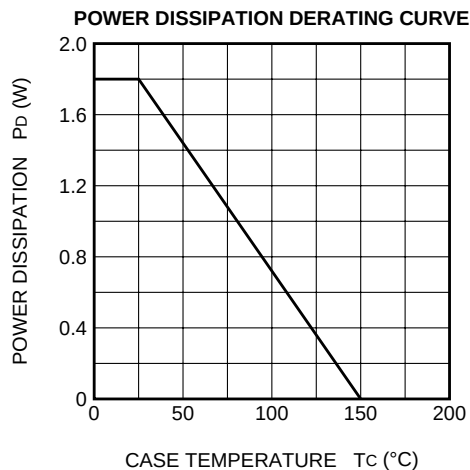
## MAXIMUM RATINGS (Tc = 25°C)

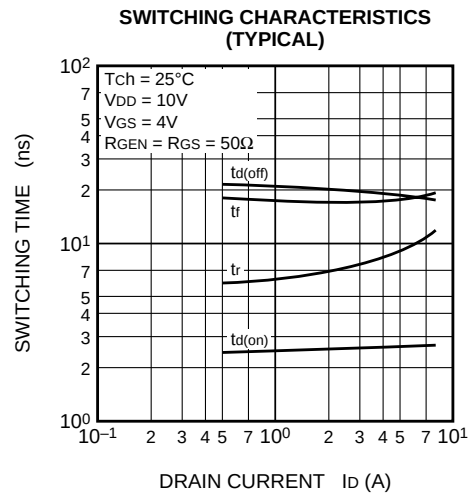
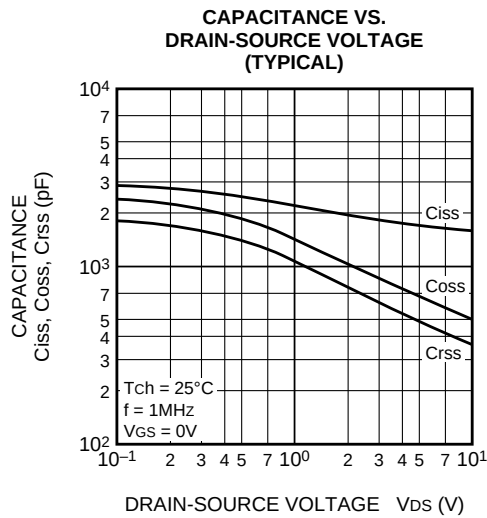
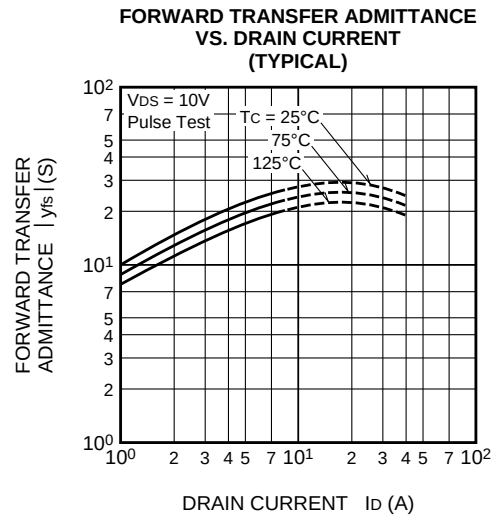
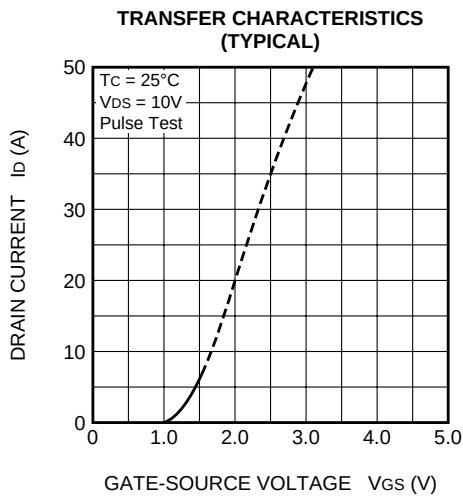
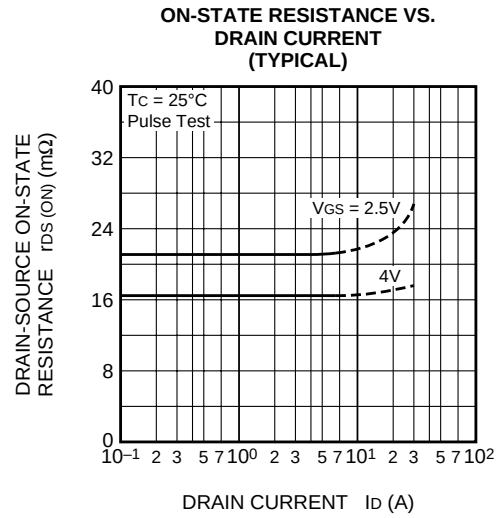
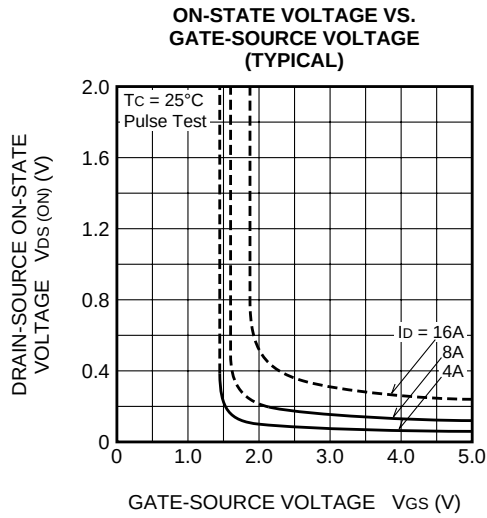
| Symbol    | Parameter                        | Conditions    | Ratings    | Unit |
|-----------|----------------------------------|---------------|------------|------|
| $V_{DS}$  | Drain-source voltage             | $V_{GS} = 0V$ | 20         | V    |
| $V_{GS}$  | Gate-source voltage              | $V_{DS} = 0V$ | $\pm 10$   | V    |
| $I_D$     | Drain current                    |               | 8          | A    |
| $I_{DM}$  | Drain current (Pulsed)           |               | 56         | A    |
| $I_{DA}$  | Avalanche drain current (Pulsed) | $L = 10\mu H$ | 8          | A    |
| $I_S$     | Source current                   |               | 1.7        | A    |
| $I_{SM}$  | Source current (Pulsed)          |               | 6.8        | A    |
| $P_D$     | Maximum power dissipation        |               | 1.8        | W    |
| $T_{ch}$  | Channel temperature              |               | -55 ~ +150 | °C   |
| $T_{stg}$ | Storage temperature              |               | -55 ~ +150 | °C   |
| —         | Weight                           | Typical value | 0.07       | g    |

ELECTRICAL CHARACTERISTICS (Tch = 25°C)

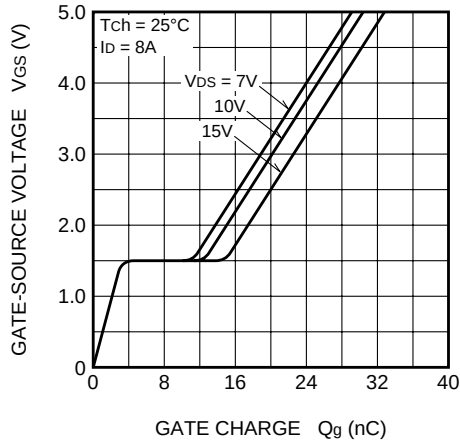
| Symbol    | Parameter                        | Test conditions                                | Limits |       |       | Unit |
|-----------|----------------------------------|------------------------------------------------|--------|-------|-------|------|
|           |                                  |                                                | Min.   | Typ.  | Max.  |      |
| V(BR)DSS  | Drain-source breakdown voltage   | Id = 1mA, VGS = 0V                             | 20     | —     | —     | V    |
| IGSS      | Gate-source leakage current      | VGS = ±10V, VDS = 0V                           | —      | —     | ±0.1  | μA   |
| IDSS      | Drain-source leakage current     | VDS = 20V, 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 = 8A, VGS = 4V                              | —      | 17    | 22    | mΩ   |
| rDS(ON)   | Drain-source on-state resistance | Id = 4A, VGS = 2.5V                            | —      | 23    | 36    | mΩ   |
| VDS(ON)   | Drain-source on-state voltage    | Id = 8A, VGS = 4V                              | —      | 0.140 | 0.176 | V    |
| yfs       | Forward transfer admittance      | Id = 8A, VDS = 10V                             | —      | 22    | —     | S    |
| Ciss      | Input capacitance                | VDS = 10V, VGS = 0V, f = 1MHz                  | —      | 1700  | —     | pF   |
| Coss      | Output capacitance               |                                                | —      | 510   | —     | pF   |
| Crss      | Reverse transfer capacitance     |                                                | —      | 360   | —     | pF   |
| td(on)    | Turn-on delay time               | VDD = 10V, Id = 4A, VGS = 4V, RGEN = RGS = 50Ω | —      | 26    | —     | ns   |
| tr        | Rise time                        |                                                | —      | 85    | —     | ns   |
| td(off)   | Turn-off delay time              |                                                | —      | 190   | —     | ns   |
| tf        | Fall time                        |                                                | —      | 180   | —     | ns   |
| VSD       | Source-drain voltage             | IS = 1.7A, VGS = 0V                            | —      | 0.75  | 1.1   | V    |
| Rth(ch-a) | Thermal resistance               | Channel to ambient                             | —      | —     | 69.4  | °C/W |
| trr       | Reverse recovery time            | IS = 1.7A, dis/dt = -50A/μs                    | —      | 100   | —     | ns   |

PERFORMANCE CURVES

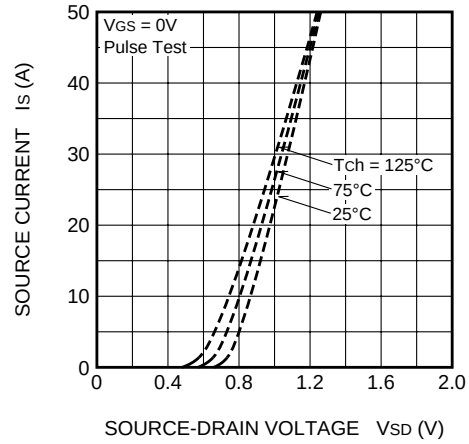




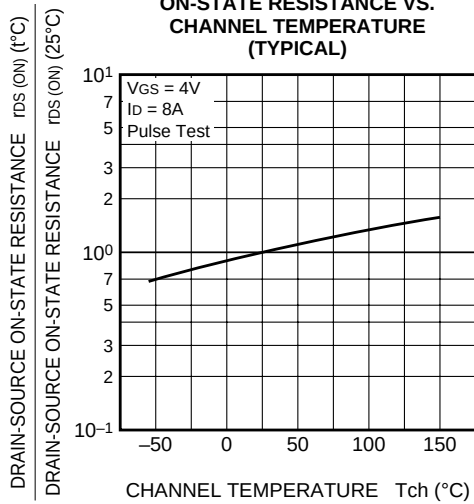
GATE-SOURCE VOLTAGE  
VS. GATE CHARGE  
(TYPICAL)



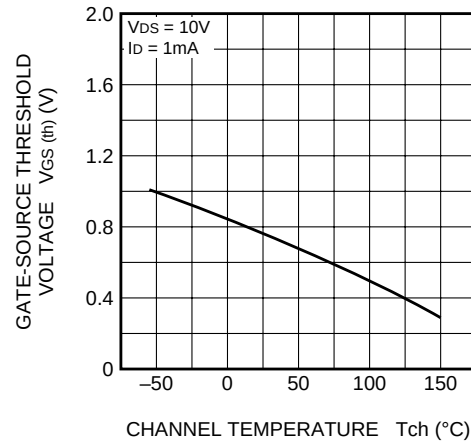
SOURCE-DRAIN DIODE  
FORWARD CHARACTERISTICS  
(TYPICAL)



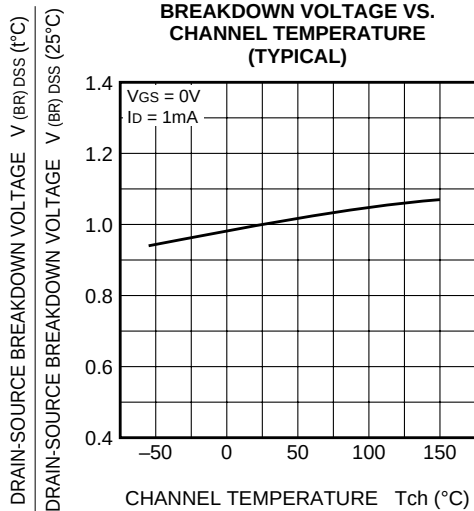
ON-STATE RESISTANCE VS.  
CHANNEL TEMPERATURE  
(TYPICAL)



THRESHOLD VOLTAGE VS.  
CHANNEL TEMPERATURE  
(TYPICAL)



BREAKDOWN VOLTAGE VS.  
CHANNEL TEMPERATURE  
(TYPICAL)



TRANSIENT THERMAL IMPEDANCE  
CHARACTERISTICS

