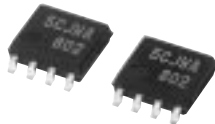


MITSUBISHI Nch POWER MOSFET

# FY5ACJ-03A

HIGH-SPEED SWITCHING USE

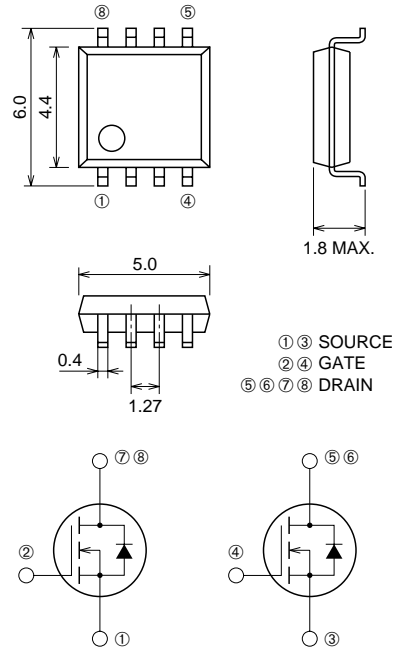
## FY5ACJ-03A



- 4V DRIVE
- V<sub>DSS</sub> ..... 30V
- r<sub>DS (ON)</sub> (MAX) ..... 30mΩ
- I<sub>D</sub> ..... 5A

## OUTLINE DRAWING

Dimensions in mm



SOP-8

## APPLICATION

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

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

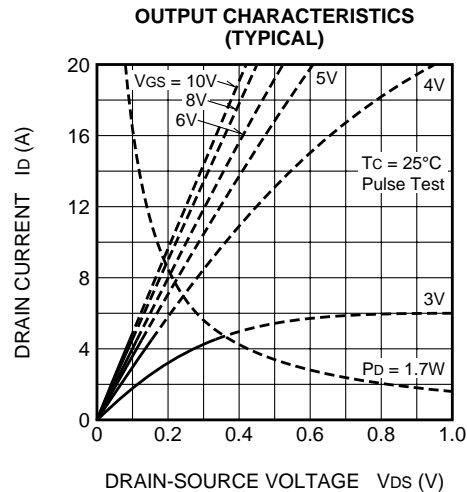
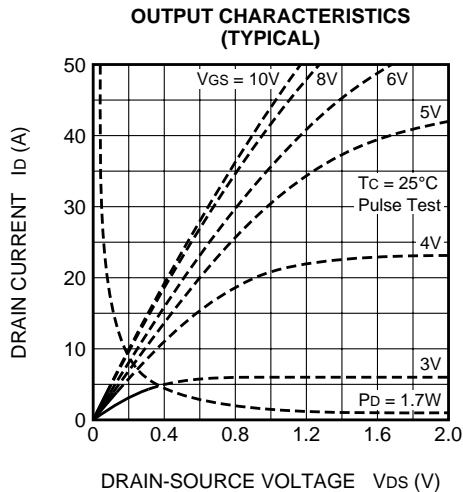
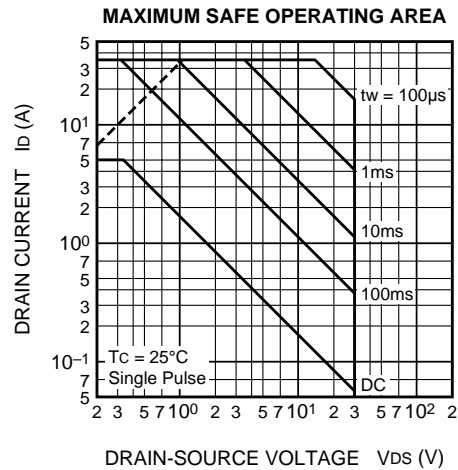
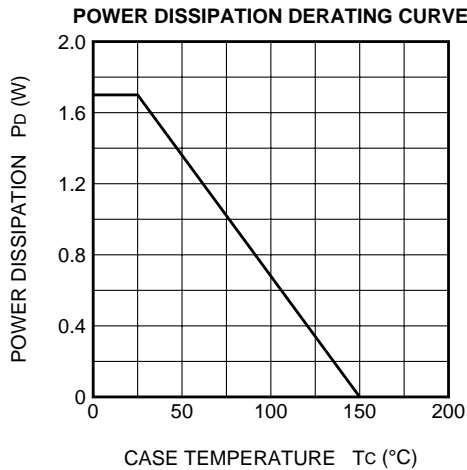
Symbol	Parameter	Conditions	Ratings	Unit
V <sub>DSS</sub>	Drain-source voltage	V <sub>GS</sub> = 0V	30	V
V <sub>GSS</sub>	Gate-source voltage	V <sub>DS</sub> = 0V	±20	V
I <sub>D</sub>	Drain current		5	A
I <sub>DM</sub>	Drain current (Pulsed)		35	A
I <sub>DA</sub>	Avalanche drain current (Pulsed)	L = 10μH	5	A
I <sub>S</sub>	Source current		1.6	A
I <sub>SM</sub>	Source current (Pulsed)		6.4	A
P <sub>D</sub>	Maximum power dissipation		1.7	W
T <sub>ch</sub>	Channel temperature		-55 ~ +150	°C
T <sub>stg</sub>	Storage temperature		-55 ~ +150	°C
—	Weight	Typical value	0.07	g

Sep.1998

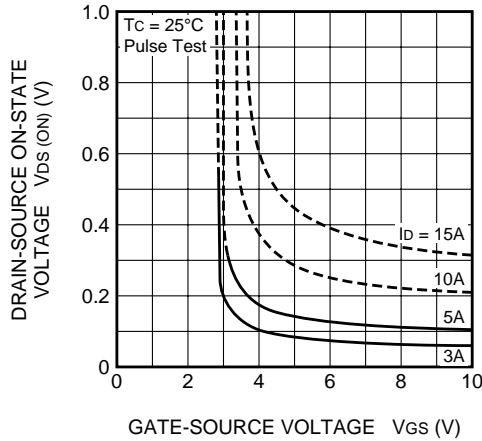
**ELECTRICAL CHARACTERISTICS** (T<sub>ch</sub> = 25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
V <sub>(BR)DSS</sub>	Drain-source breakdown voltage	I <sub>D</sub> = 1mA, V <sub>GS</sub> = 0V	30	—	—	V
I <sub>GSS</sub>	Gate-source leakage current	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V	—	—	±0.1	μA
I <sub>DSS</sub>	Drain-source leakage current	V <sub>DS</sub> = 30V, V <sub>GS</sub> = 0V	—	—	0.1	mA
V <sub>GS(th)</sub>	Gate-source threshold voltage	I <sub>D</sub> = 1mA, V <sub>DS</sub> = 10V	1.0	1.5	2.0	V
r <sub>DS(ON)</sub>	Drain-source on-state resistance	I <sub>D</sub> = 5A, V <sub>GS</sub> = 10V	—	22	30	mΩ
r <sub>DS(ON)</sub>	Drain-source on-state resistance	I <sub>D</sub> = 2.5A, V <sub>GS</sub> = 4V	—	34	55	mΩ
V <sub>DS(ON)</sub>	Drain-source on-state voltage	I <sub>D</sub> = 5A, V <sub>GS</sub> = 10V	—	110	150	mV
y <sub>fs</sub>	Forward transfer admittance	I <sub>D</sub> = 5A, V <sub>DS</sub> = 10V	—	10	—	S
C <sub>iss</sub>	Input capacitance	V <sub>DS</sub> = 10V, V <sub>GS</sub> = 0V, f = 1MHz	—	760	—	pF
C <sub>oss</sub>	Output capacitance		—	270	—	pF
C <sub>rss</sub>	Reverse transfer capacitance		—	125	—	pF
t <sub>d(on)</sub>	Turn-on delay time	V <sub>DD</sub> = 15V, I <sub>D</sub> = 2.5A, V <sub>GS</sub> = 10V, R <sub>GEN</sub> = R <sub>GS</sub> = 50Ω	—	15	—	ns
t <sub>r</sub>	Rise time		—	20	—	ns
t <sub>d(off)</sub>	Turn-off delay time		—	50	—	ns
t <sub>f</sub>	Fall time		—	40	—	ns
V <sub>SD</sub>	Source-drain voltage	I <sub>S</sub> = 1.6A, V <sub>GS</sub> = 0V	—	0.75	1.10	V
R <sub>th(ch-a)</sub>	Thermal resistance	Channel to ambient	—	—	73.5	°C/W
t <sub>rr</sub>	Reverse recovery time	I <sub>S</sub> = 1.6A, di <sub>s</sub> /dt = -50A/μs	—	40	—	ns

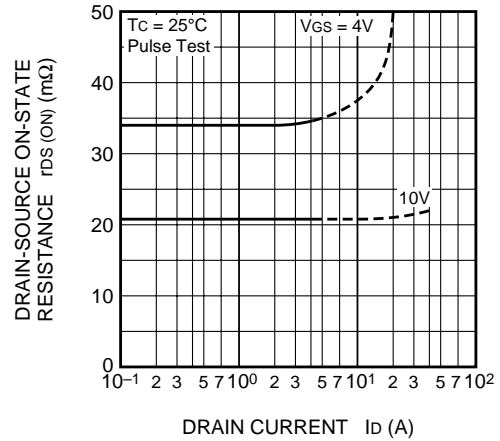
**PERFORMANCE CURVES**



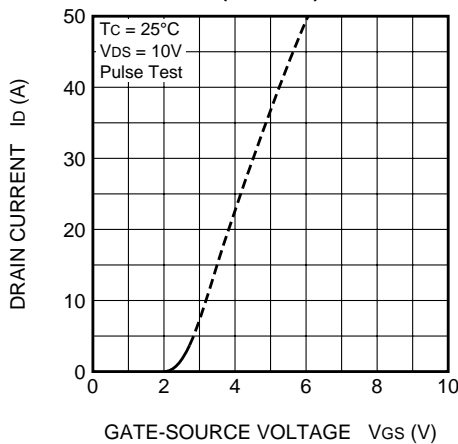
ON-STATE VOLTAGE VS. GATE-SOURCE VOLTAGE (TYPICAL)



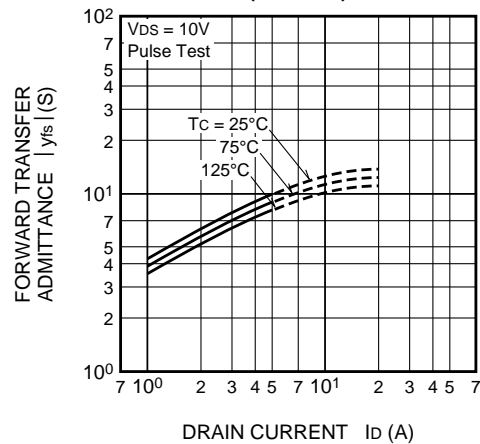
ON-STATE RESISTANCE VS. DRAIN CURRENT (TYPICAL)



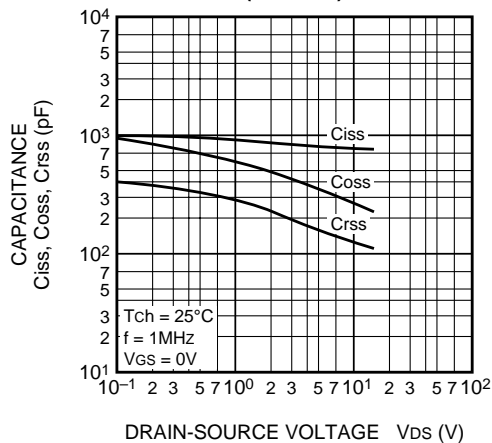
TRANSFER CHARACTERISTICS (TYPICAL)



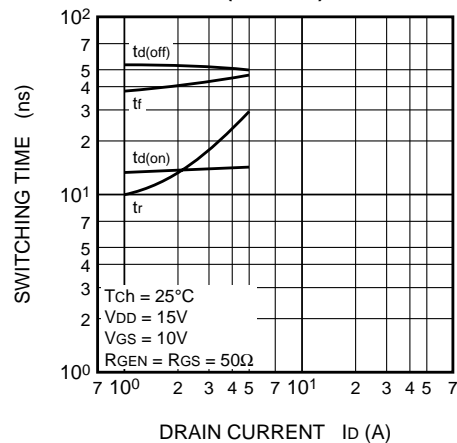
FORWARD TRANSFER ADMITTANCE VS. DRAIN CURRENT (TYPICAL)



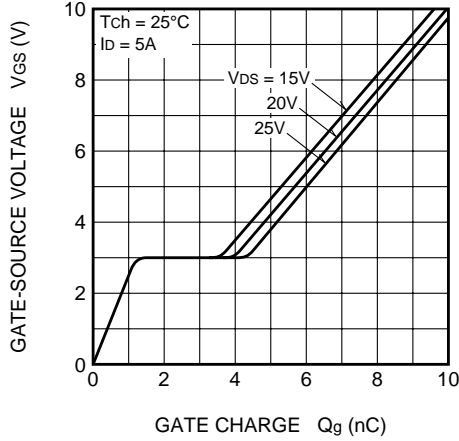
CAPACITANCE VS. DRAIN-SOURCE VOLTAGE (TYPICAL)



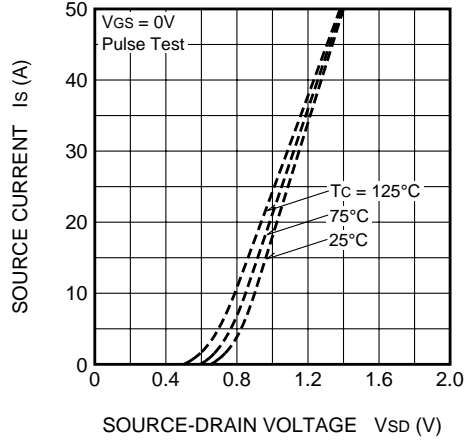
SWITCHING CHARACTERISTICS (TYPICAL)



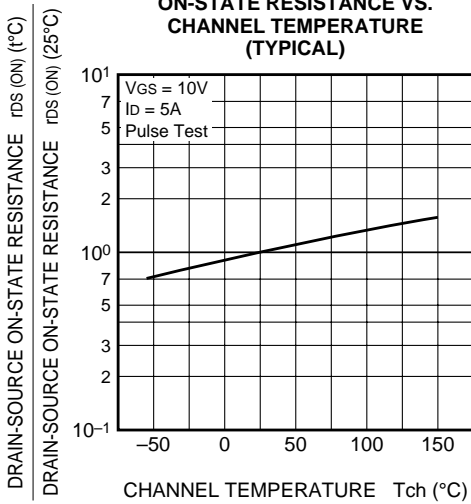
**GATE-SOURCE VOLTAGE VS. GATE CHARGE (TYPICAL)**



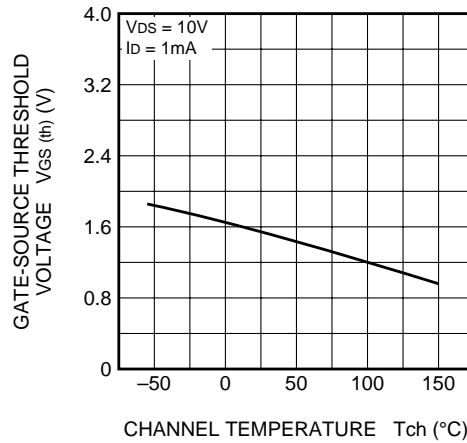
**SOURCE-DRAIN DIODE FORWARD CHARACTERISTICS (TYPICAL)**



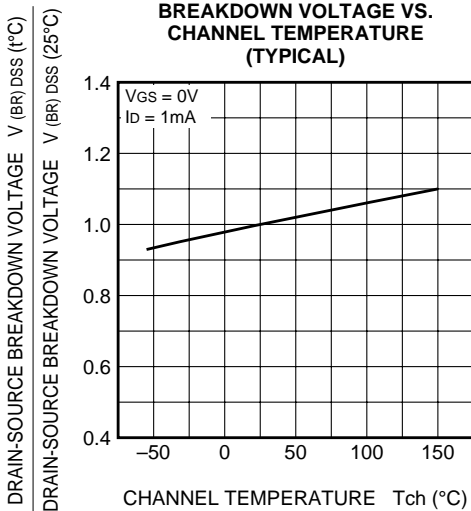
**ON-STATE RESISTANCE VS. CHANNEL TEMPERATURE (TYPICAL)**



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



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



**TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS**

