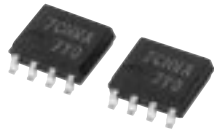


MITSUBISHI Nch POWER MOSFET

# FY7ACH-03A

HIGH-SPEED SWITCHING USE

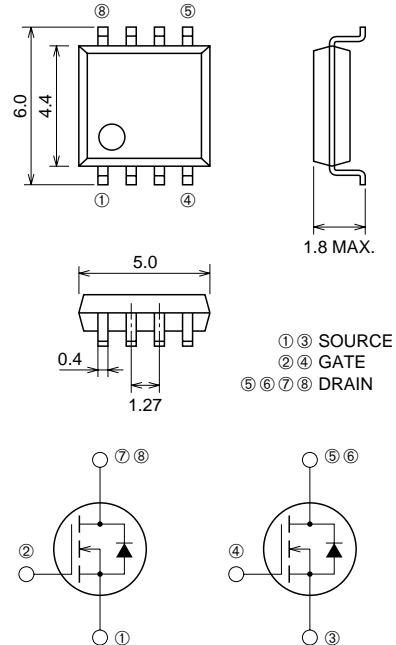
## FY7ACH-03A



- 2.5V DRIVE
- $V_{DSS}$  ..... 30V
- $r_{DS(ON)}(MAX)$  .....  $26m\Omega$
- $I_D$  ..... 7A

## 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
$V_{DSS}$	Drain-source voltage	$V_{GS} = 0V$	30	V
$V_{GSS}$	Gate-source voltage	$V_{DS} = 0V$	$\pm 10$	V
$I_D$	Drain current		7	A
$I_{DM}$	Drain current (Pulsed)		49	A
$I_{DA}$	Avalanche drain current (Pulsed)	$L = 10\mu H$	7	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

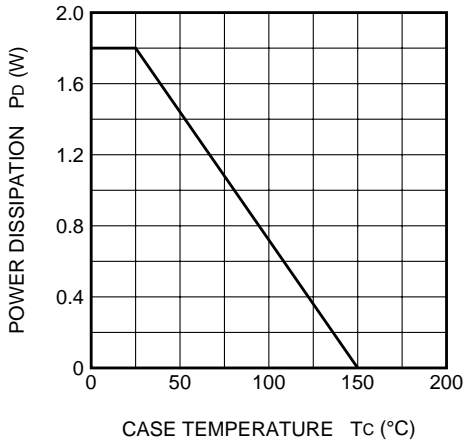
Sep.1998

**ELECTRICAL CHARACTERISTICS** (Tch = 25°C)

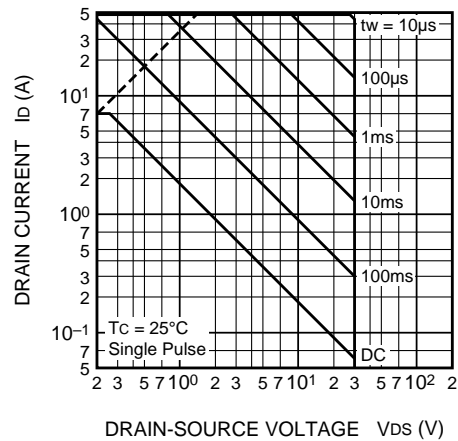
Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
V(BR)DSS	Drain-source breakdown voltage	Id = 1mA, VGS = 0V	30	—	—	V
IGSS	Gate-source leakage current	VGS = ±10V, VDS = 0V	—	—	±0.1	μA
IDSS	Drain-source leakage current	VDS = 20V, VGS = 0V	—	—	0.1	mA
VGS(th)	Gate-source threshold voltage	Id = 1mA, VDS = 10V	0.5	0.9	1.3	V
rDS(ON)	Drain-source on-state resistance	Id = 7A, VGS = 4V	—	20	26	mΩ
rDS(ON)	Drain-source on-state resistance	Id = 3A, VGS = 2.5V	—	28	38	mΩ
VDS(ON)	Drain-source on-state voltage	Id = 7A, VGS = 4V	—	0.14	0.18	V
yfs	Forward transfer admittance	Id = 7A, VDS = 10V	—	18	—	S
Ciss	Input capacitance	VDS = 10V, VGS = 0V, f = 1MHz	—	1450	—	pF
Coss	Output capacitance		—	480	—	pF
Crss	Reverse transfer capacitance		—	230	—	pF
td(on)	Turn-on delay time	VDD = 10V, Id = 3A, VGS = 4V, RGEN = RGS = 50Ω	—	25	—	ns
tr	Rise time		—	55	—	ns
td(off)	Turn-off delay time		—	130	—	ns
tf	Fall time		—	120	—	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**

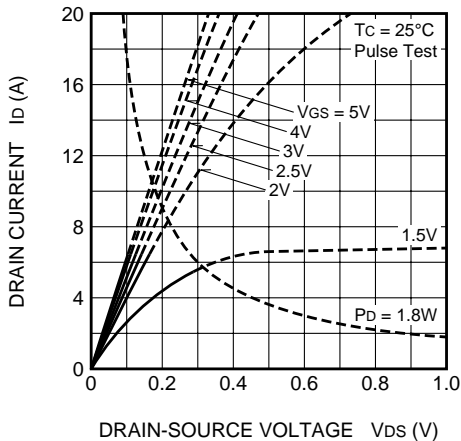
**POWER DISSIPATION DERATING CURVE**



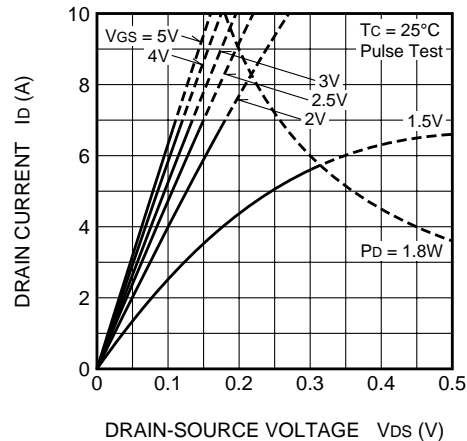
**MAXIMUM SAFE OPERATING AREA**



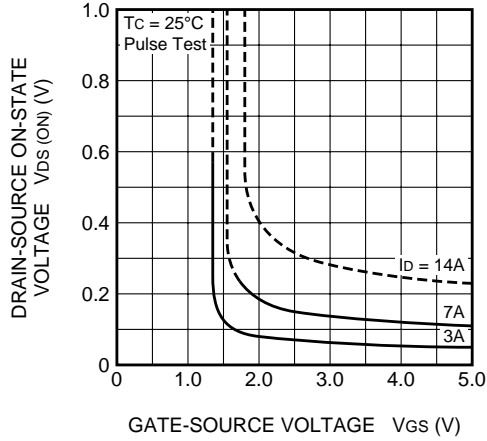
**OUTPUT CHARACTERISTICS (TYPICAL)**



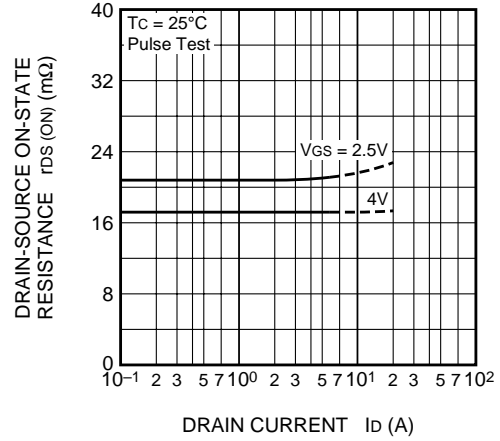
**OUTPUT CHARACTERISTICS (TYPICAL)**



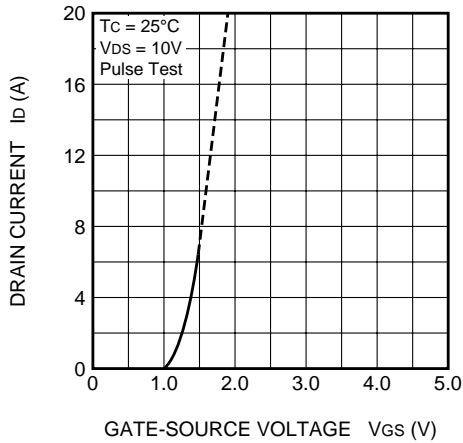
ON-STATE VOLTAGE VS. GATE-SOURCE VOLTAGE (TYPICAL)



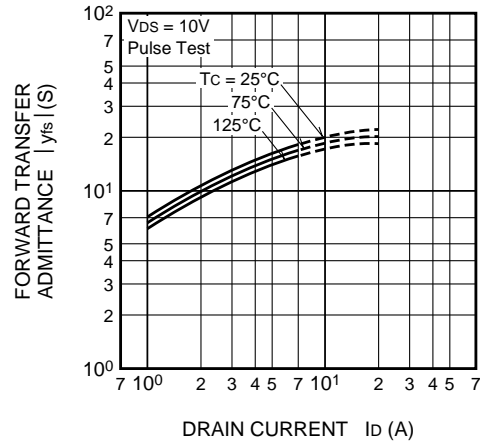
ON-STATE RESISTANCE VS. DRAIN CURRENT (TYPICAL)



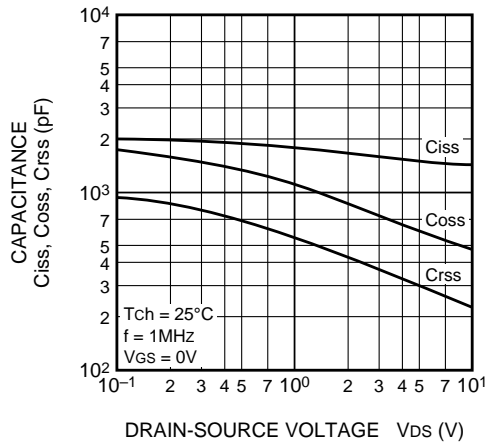
TRANSFER CHARACTERISTICS (TYPICAL)



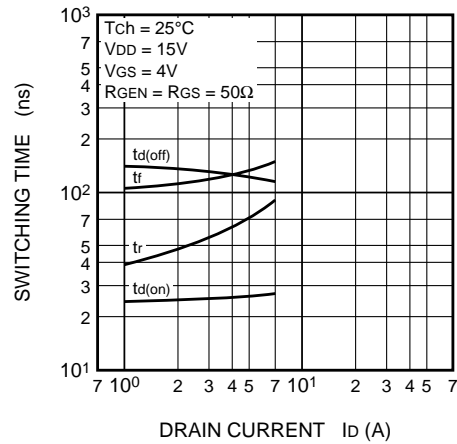
FORWARD TRANSFER ADMITTANCE VS. DRAIN CURRENT (TYPICAL)



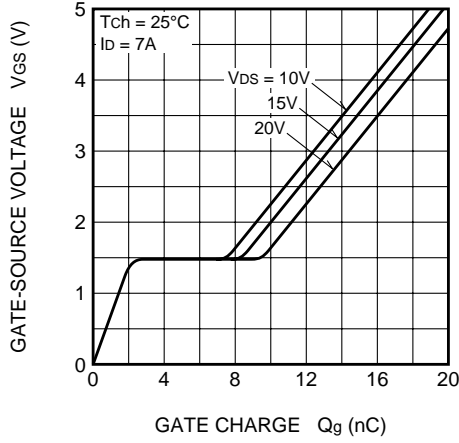
CAPACITANCE VS. DRAIN-SOURCE VOLTAGE (TYPICAL)



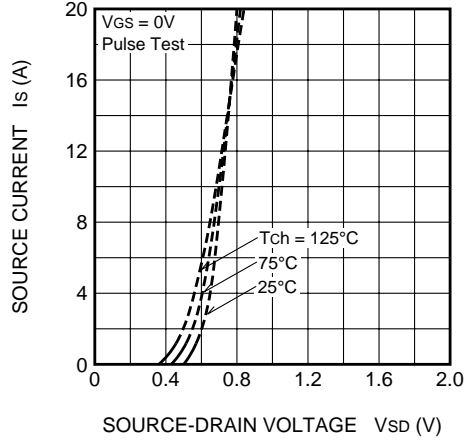
SWITCHING CHARACTERISTICS (TYPICAL)



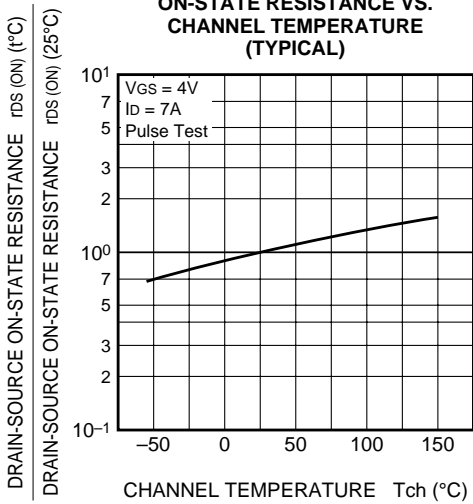
**GATE-SOURCE VOLTAGE VS. GATE CHARGE (TYPICAL)**



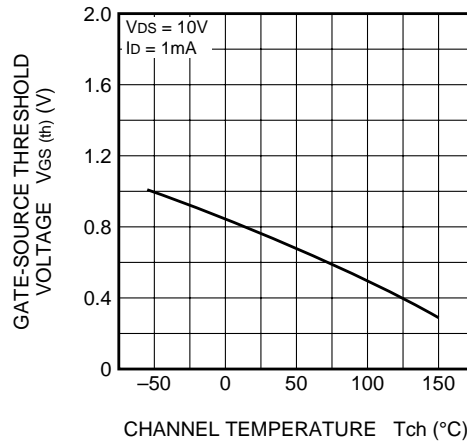
**SOURCE-DRAIN DIODE FORWARD CHARACTERISTICS (TYPICAL)**



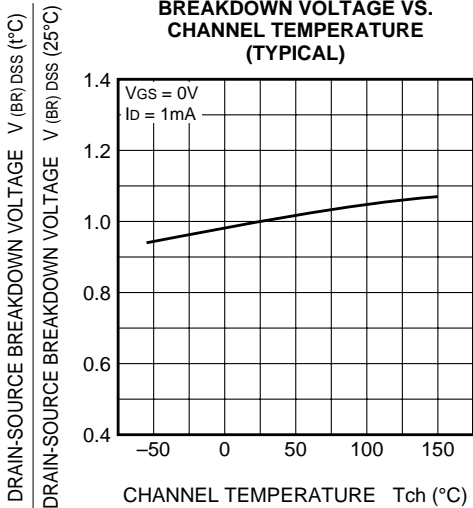
**ON-STATE RESISTANCE VS. CHANNEL TEMPERATURE (TYPICAL)**



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



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



**TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS**

