

# FS5ASH-06

HIGH-SPEED SWITCHING USE

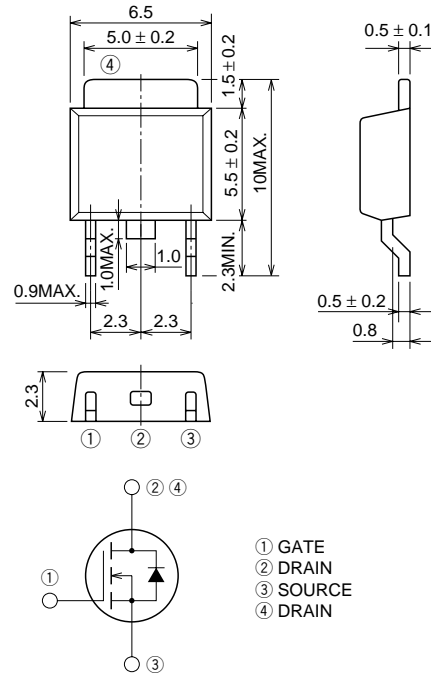
## FS5ASH-06



- 2.5V DRIVE
- $V_{DSS}$  ..... 60V
- $r_{DS(ON)}$  (MAX) .....  $0.15\Omega$
- $I_D$  ..... 5A
- Integrated Fast Recovery Diode (TYP.) ..... 45ns

## OUTLINE DRAWING

Dimensions in mm



MP-3

## APPLICATION

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

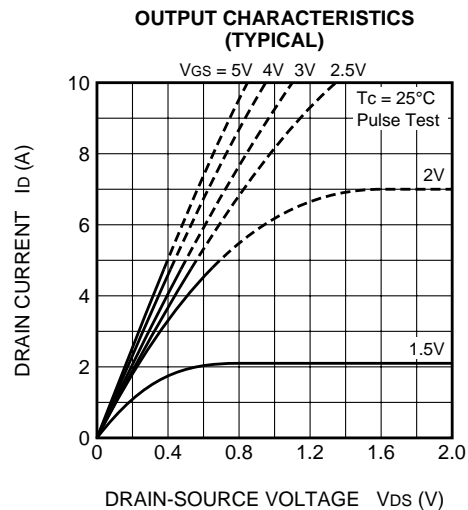
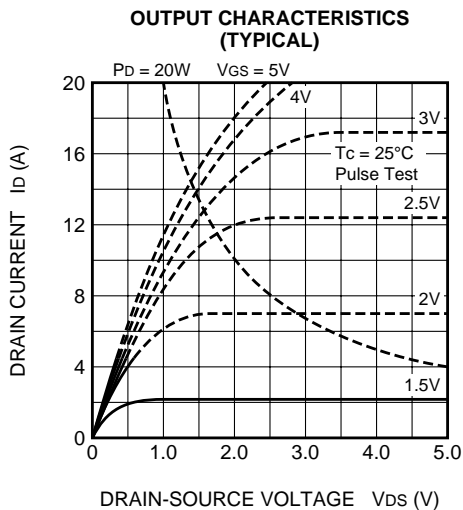
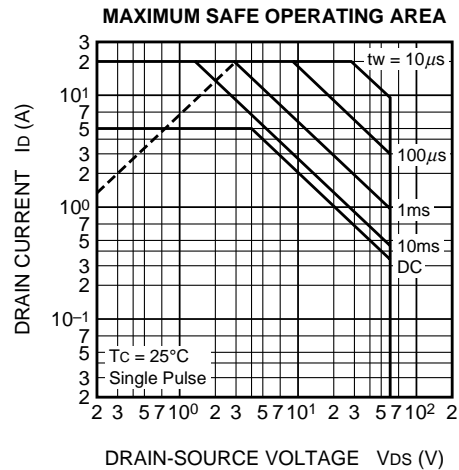
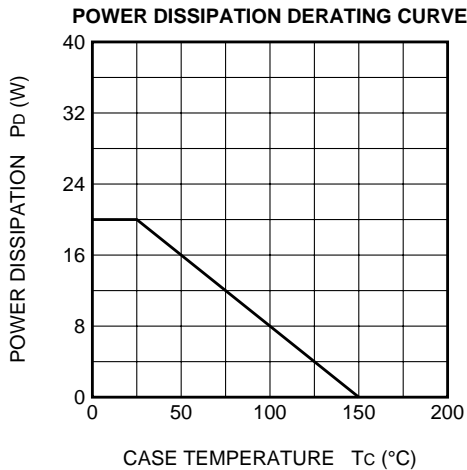
## MAXIMUM RATINGS (Tc = 25°C)

Symbol	Parameter	Conditions	Ratings	Unit
$V_{DSS}$	Drain-source voltage	$V_{GS} = 0V$	60	V
$V_{GSS}$	Gate-source voltage	$V_{DS} = 0V$	$\pm 10$	V
$I_D$	Drain current		5	A
$I_{DM}$	Drain current (Pulsed)		20	A
$I_{DA}$	Avalanche drain current (Pulsed)	$L = 100\mu H$	5	A
$I_S$	Source current		5	A
$I_{SM}$	Source current (Pulsed)		20	A
$P_D$	Maximum power dissipation		20	W
$T_{ch}$	Channel temperature		$-55 \sim +150$	°C
$T_{stg}$	Storage temperature		$-55 \sim +150$	°C
—	Weight	Typical value	0.26	g

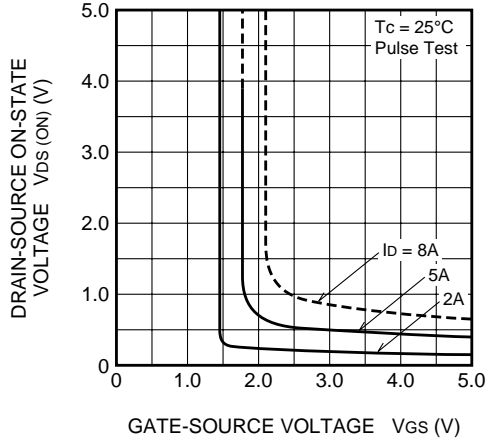
**ELECTRICAL CHARACTERISTICS** (Tch = 25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
V (BR) DSS	Drain-source breakdown voltage	ID = 1mA, VGS = 0V	60	—	—	V
IGSS	Gate-source leakage current	VGS = ±10V, VDS = 0V	—	—	±0.1	μA
IDSS	Drain-source leakage current	VDS = 60V, VGS = 0V	—	—	0.1	mA
VGS (th)	Gate-source threshold voltage	ID = 1mA, VDS = 10V	0.6	0.9	1.2	V
rDS (ON)	Drain-source on-state resistance	ID = 2A, VGS = 4V	—	0.11	0.15	Ω
rDS (ON)	Drain-source on-state resistance	ID = 2A, VGS = 2.5V	—	0.13	0.20	Ω
VDS (ON)	Drain-source on-state voltage	ID = 2A, VGS = 4V	—	0.22	0.3	V
yfs	Forward transfer admittance	ID = 2A, VDS = 5V	—	10	—	S
Ciss	Input capacitance	VDS = 10V, VGS = 0V, f = 1MHz	—	540	—	pF
Coss	Output capacitance		—	120	—	pF
Crss	Reverse transfer capacitance		—	40	—	pF
td (on)	Turn-on delay time	VDD = 30V, ID = 2A, VGS = 4V, RGEN = RGS = 50Ω	—	12	—	ns
tr	Rise time		—	20	—	ns
td (off)	Turn-off delay time		—	50	—	ns
tf	Fall time		—	32	—	ns
VSD	Source-drain voltage	IS = 2A, VGS = 0V	—	1.0	1.5	V
Rth (ch-c)	Thermal resistance	Channel to case	—	—	6.25	°C/W
trr	Reverse recovery time	IS = 5A, dis/dt = -100A/μs	—	45	—	ns

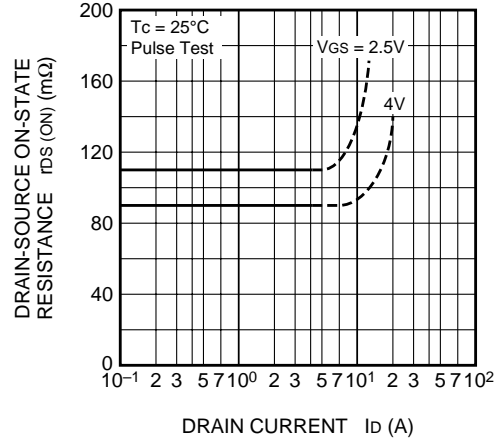
**PERFORMANCE CURVES**



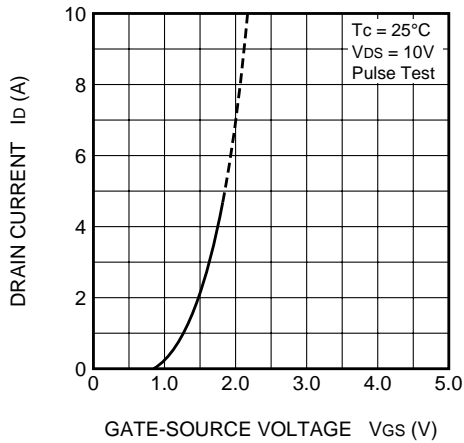
ON-STATE VOLTAGE VS. GATE-SOURCE VOLTAGE (TYPICAL)



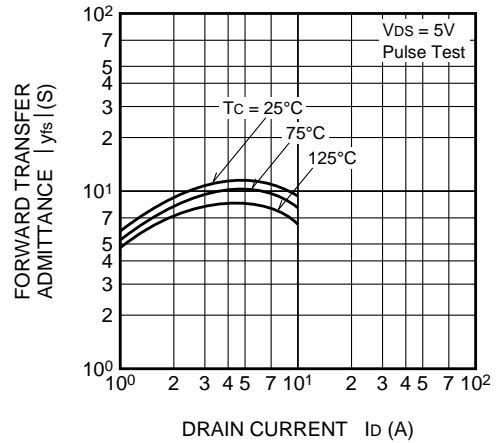
ON-STATE RESISTANCE VS. DRAIN CURRENT (TYPICAL)



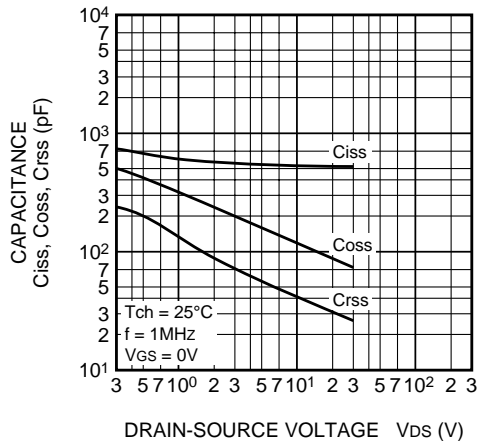
TRANSFER CHARACTERISTICS (TYPICAL)



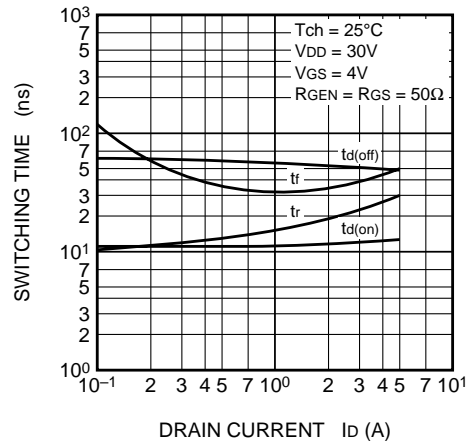
FORWARD TRANSFER ADMITTANCE VS. DRAIN CURRENT (TYPICAL)



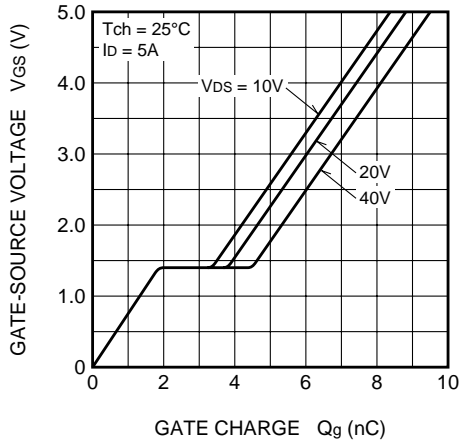
CAPACITANCE VS. DRAIN-SOURCE VOLTAGE (TYPICAL)



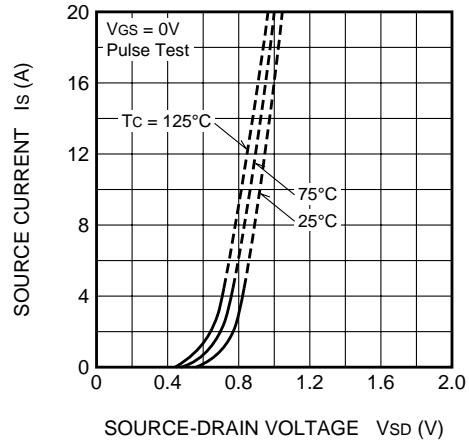
SWITCHING CHARACTERISTICS (TYPICAL)



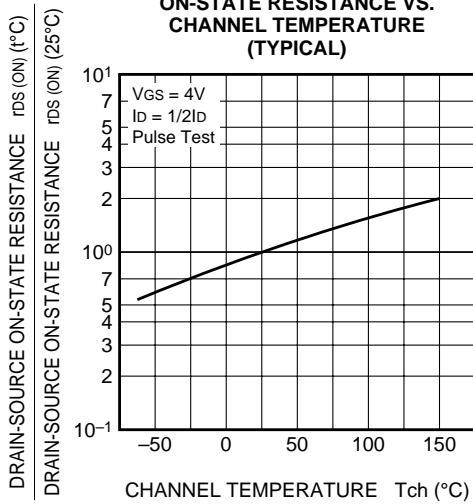
**GATE-SOURCE VOLTAGE VS. GATE CHARGE (TYPICAL)**



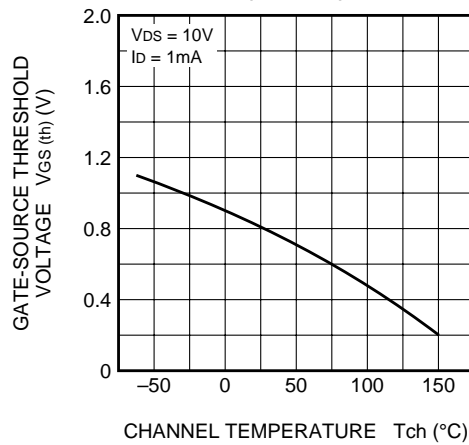
**SOURCE-DRAIN DIODE FORWARD CHARACTERISTICS (TYPICAL)**



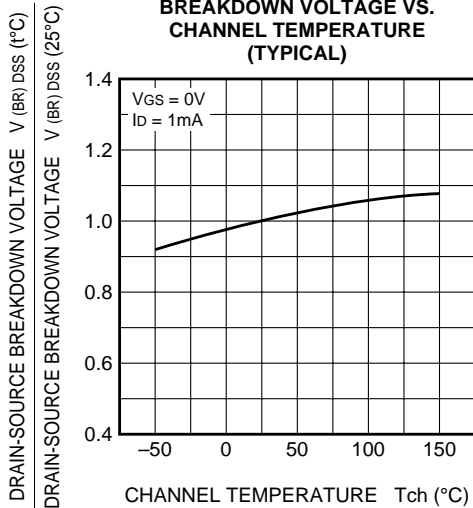
**ON-STATE RESISTANCE VS. CHANNEL TEMPERATURE (TYPICAL)**



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



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



**TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS**

