


FS5ASH-06

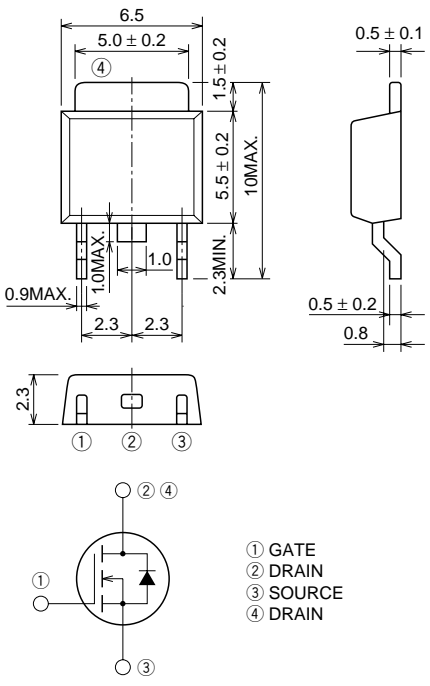
HIGH-SPEED SWITCHING USE

FS5ASH-06



- 2.5V DRIVE
- V_{DSS} 60V
- $r_{DS(ON)}$ (MAX) 0.15Ω
- 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.

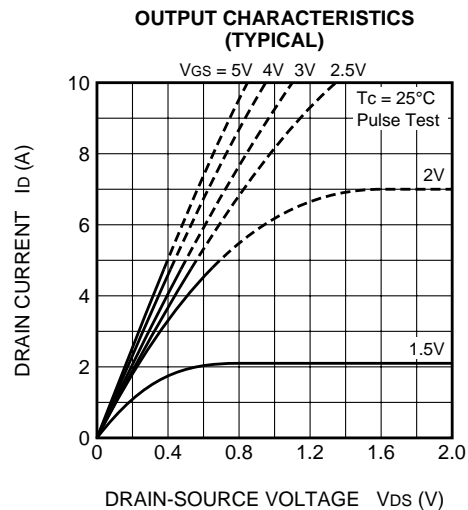
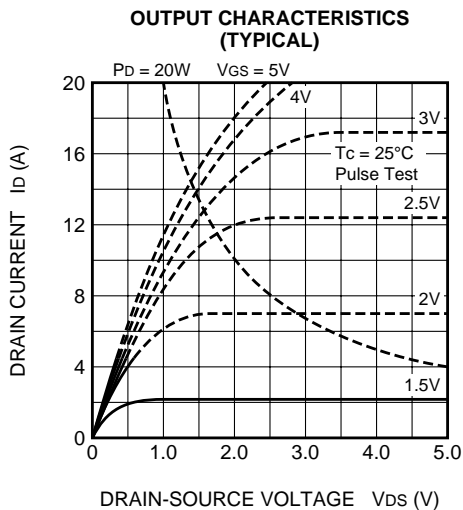
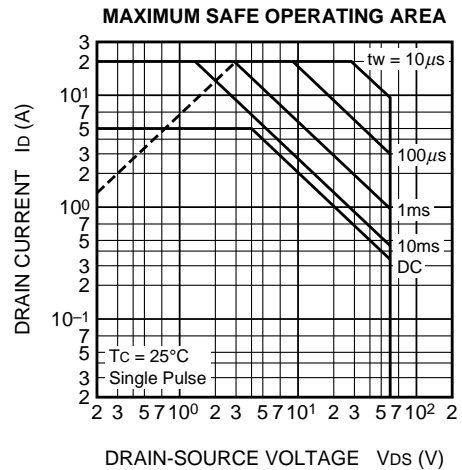
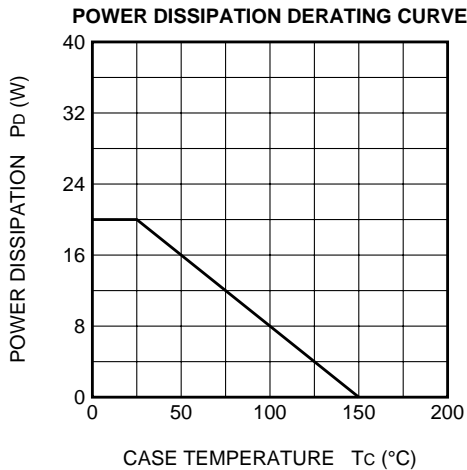
MAXIMUM RATINGS ($T_c = 25^\circ\text{C}$)

Symbol	Parameter	Conditions	Ratings	Unit
V_{DSS}	Drain-source voltage	$V_{GS} = 0V$	60	V
V_{GSS}	Gate-source voltage	$V_{DS} = 0V$	± 10	V
I_D	Drain current		5	A
I_{DM}	Drain current (Pulsed)		20	A
I_{DA}	Avalanche drain current (Pulsed)	$L = 100\mu\text{H}$	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		$-55 \sim +150$	$^\circ\text{C}$
T_{stg}	Storage temperature		$-55 \sim +150$	$^\circ\text{C}$
—	Weight	Typical value	0.26	g

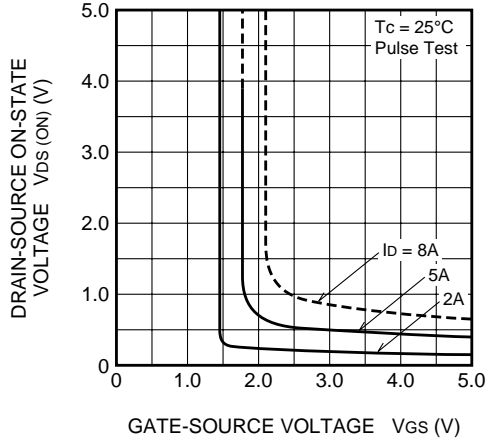
ELECTRICAL CHARACTERISTICS (Tch = 25°C)

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

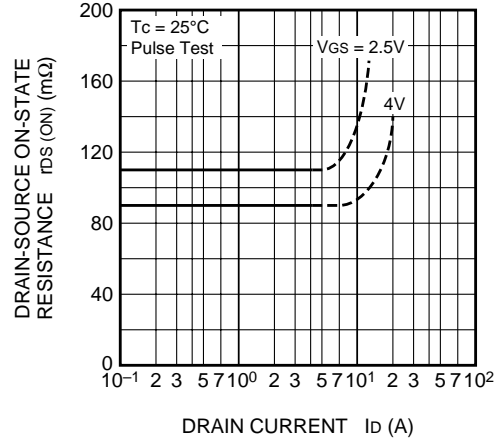
PERFORMANCE CURVES



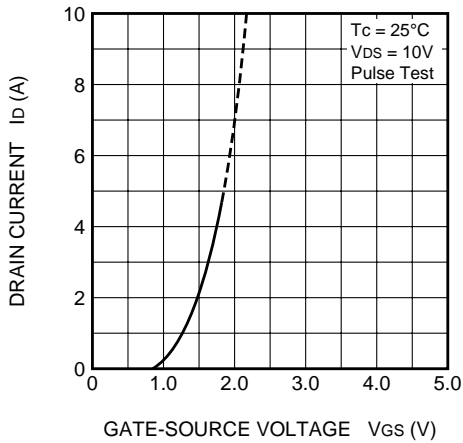
ON-STATE VOLTAGE VS. GATE-SOURCE VOLTAGE (TYPICAL)



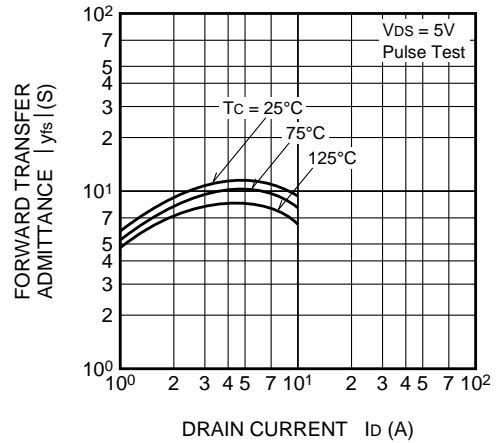
ON-STATE RESISTANCE VS. DRAIN CURRENT (TYPICAL)



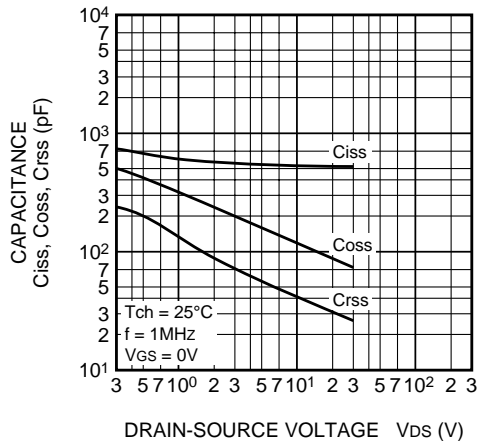
TRANSFER CHARACTERISTICS (TYPICAL)



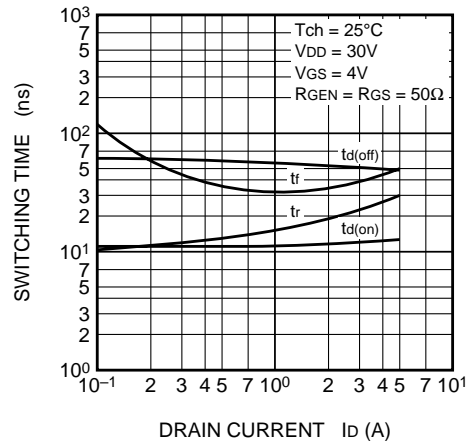
FORWARD TRANSFER ADMITTANCE VS. DRAIN CURRENT (TYPICAL)



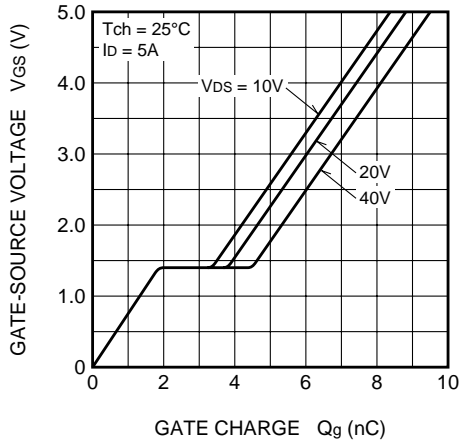
CAPACITANCE VS. DRAIN-SOURCE VOLTAGE (TYPICAL)



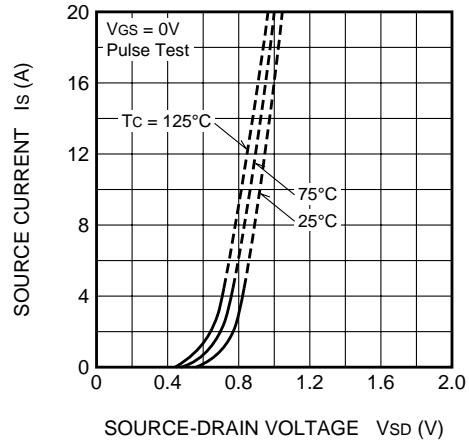
SWITCHING CHARACTERISTICS (TYPICAL)



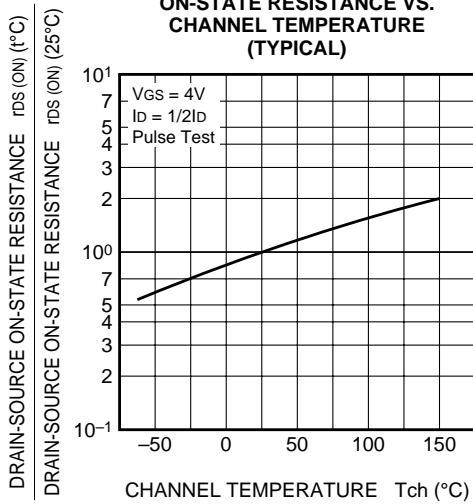
GATE-SOURCE VOLTAGE VS. GATE CHARGE (TYPICAL)



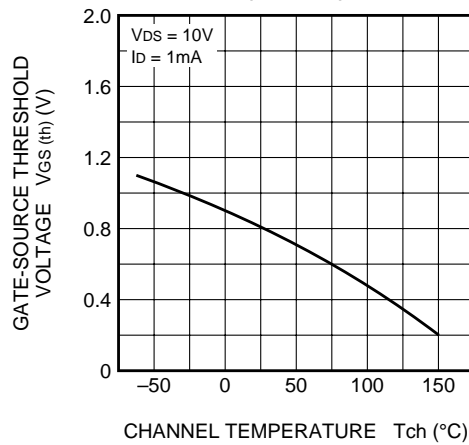
SOURCE-DRAIN DIODE FORWARD CHARACTERISTICS (TYPICAL)



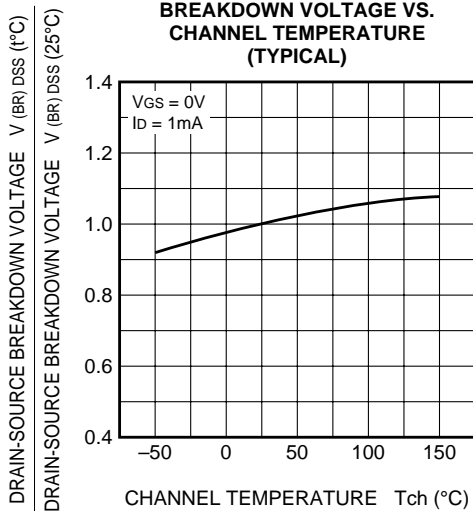
ON-STATE RESISTANCE VS. CHANNEL TEMPERATURE (TYPICAL)



THRESHOLD VOLTAGE VS. CHANNEL TEMPERATURE (TYPICAL)



BREAKDOWN VOLTAGE VS. CHANNEL TEMPERATURE (TYPICAL)



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS

