

MITSUBISHI Nch POWER MOSFET

FS50AS-03

HIGH-SPEED SWITCHING USE

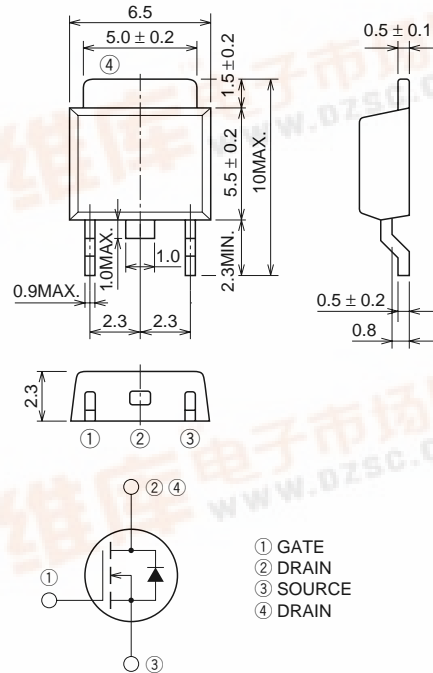
FS50AS-03



- 10V DRIVE
- V_{DSS} 30V
- r_{DS (ON)} (MAX) 23mΩ
- I_D 50A
- Integrated Fast Recovery Diode (TYP.) 60ns

OUTLINE DRAWING

Dimensions in mm



MP-3

APPLICATION

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

MAXIMUM RATINGS (T_c = 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	±20	V
I _D	Drain current		50	A
I _{DM}	Drain current (Pulsed)		200	A
I _{DA}	Avalanche drain current (Pulsed)	L = 30μH	50	A
I _S	Source current		50	A
I _{SM}	Source current (Pulsed)		200	A
P _D	Maximum power dissipation		35	W
T _{ch}	Channel temperature		-55 ~ +150	°C
T _{stg}	Storage temperature		-55 ~ +150	°C
—	Weight	Typical value	0.26	g

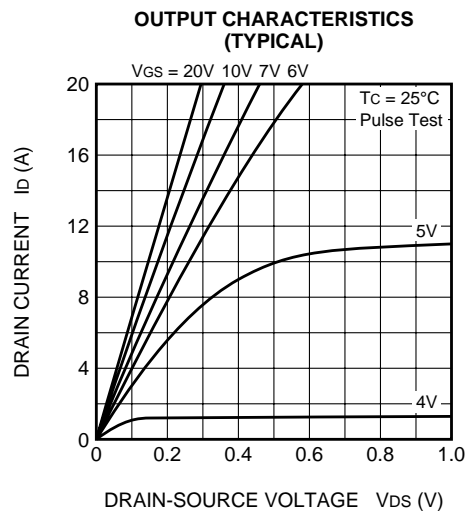
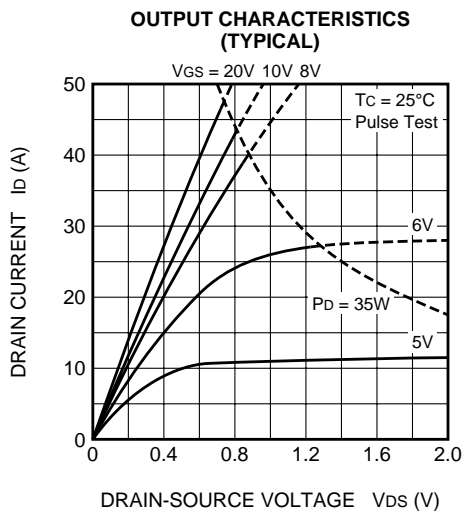
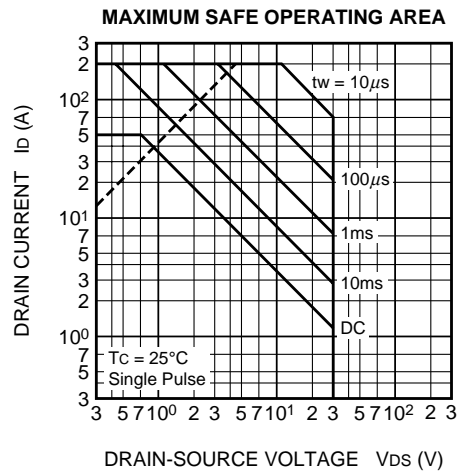
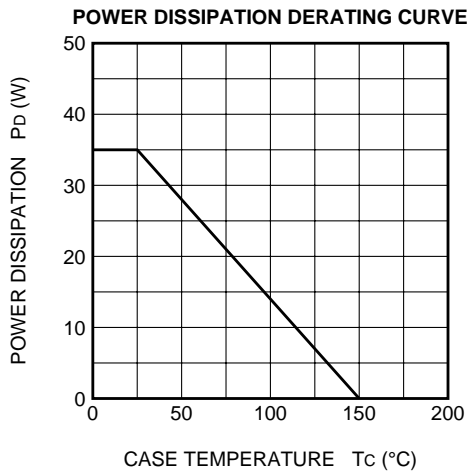
FS50AS-03

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ELECTRICAL CHARACTERISTICS (Tch = 25°C)

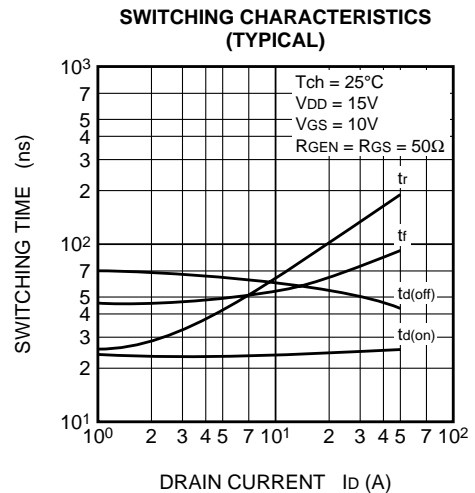
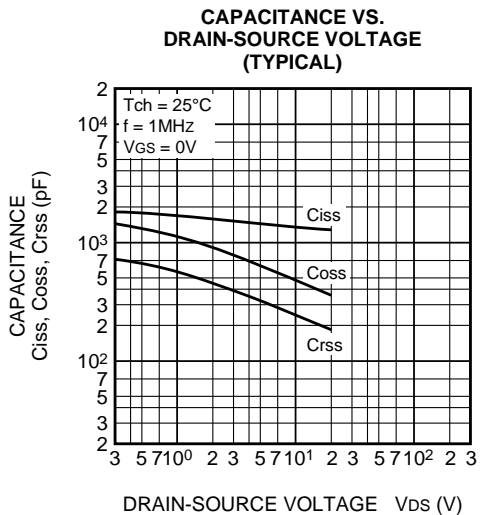
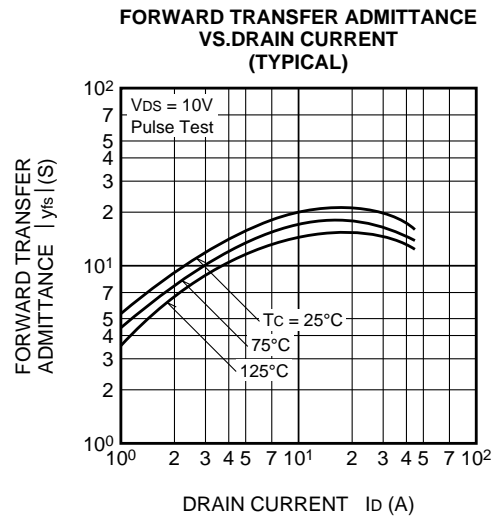
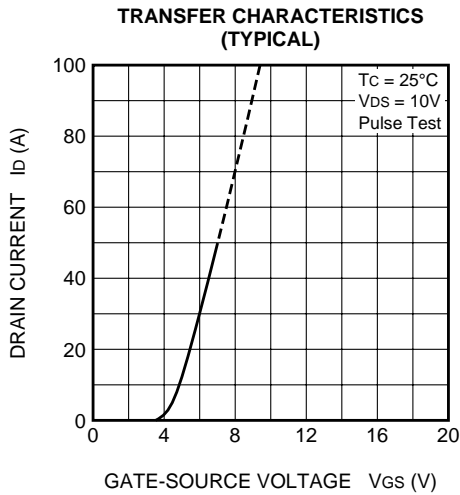
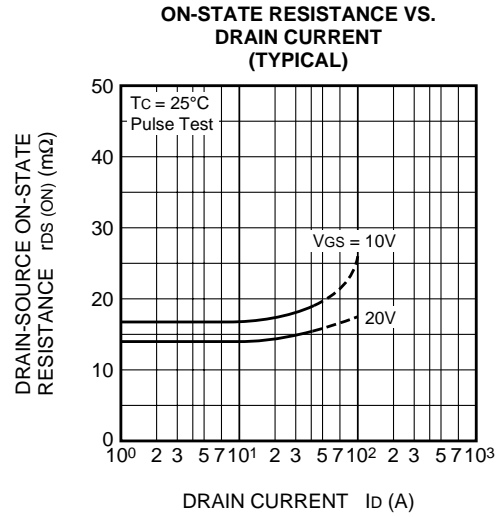
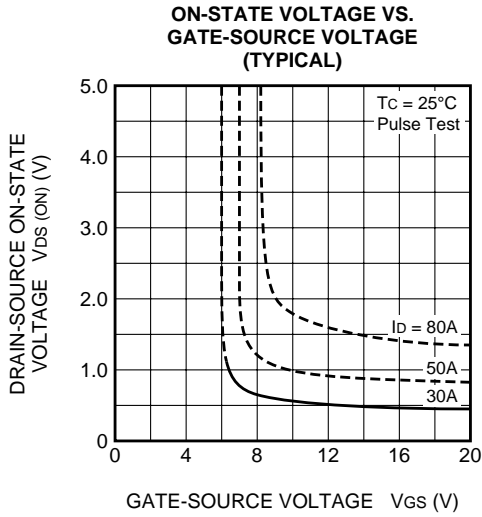
Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
V(BR)DSS	Drain-source breakdown voltage	ID = 1mA, VGS = 0V	30	—	—	V
IGSS	Gate-source leakage current	VGS = ±20V, VDS = 0V	—	—	±0.1	μA
IDSS	Drain-source leakage current	VDS = 30V, VGS = 0V	—	—	0.1	mA
VGS(th)	Gate-source threshold voltage	ID = 1mA, VDS = 10V	2.0	3.0	4.0	V
rDS(ON)	Drain-source on-state resistance	ID = 25A, VGS = 10V	—	17	23	mΩ
VDS(ON)	Drain-source on-state voltage	ID = 25A, VGS = 10V	—	0.425	0.575	V
yfs	Forward transfer admittance	ID = 25A, VDS = 10V	—	23	—	S
Ciss	Input capacitance	Vbs = 10V, VGS = 0V, f = 1MHz	—	1300	—	pF
Coss	Output capacitance		—	500	—	pF
Crss	Reverse transfer capacitance		—	240	—	pF
td(on)	Turn-on delay time	VDD = 15V, ID = 25A, VGS = 10V, RGEN = RGS = 50Ω	—	25	—	ns
tr	Rise time		—	120	—	ns
td(off)	Turn-off delay time		—	55	—	ns
tf	Fall time		—	68	—	ns
VSD	Source-drain voltage	IS = 25A, VGS = 0V	—	1.0	1.5	V
Rth(ch-c)	Thermal resistance	Channel to case	—	—	3.57	°C/W
trr	Reverse recovery time	IS = 25A, dis/dt = -50A/μs	—	60	—	ns

PERFORMANCE CURVES



FS50AS-03

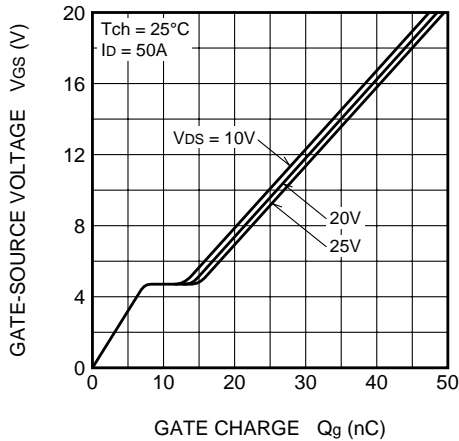
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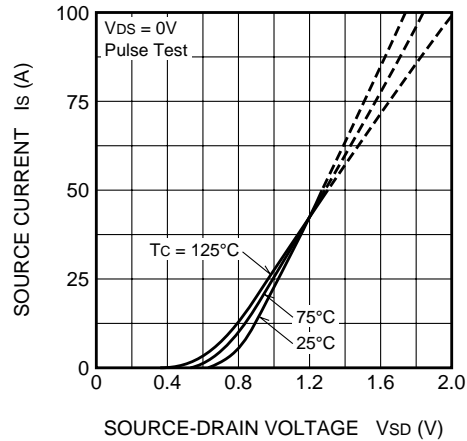
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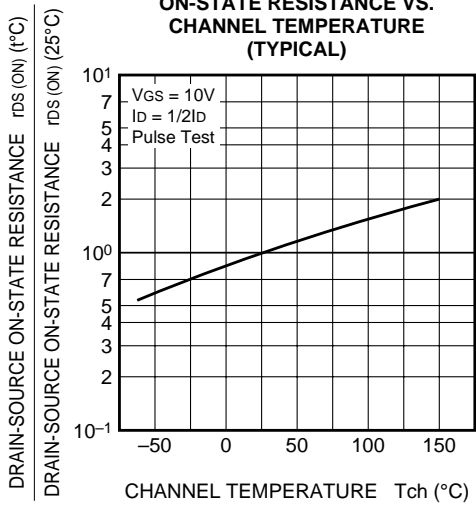
GATE-SOURCE VOLTAGE VS. GATE CHARGE (TYPICAL)



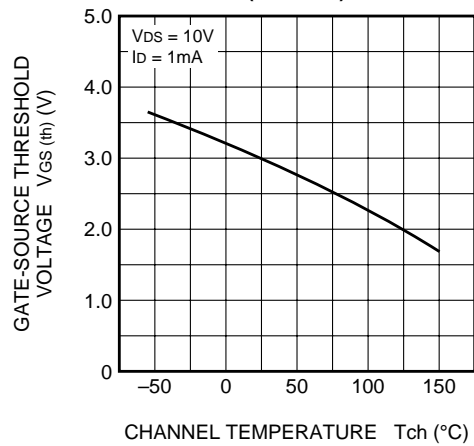
SOURCE-DRAIN DIODE FORWARD CHARACTERISTICS (TYPICAL)



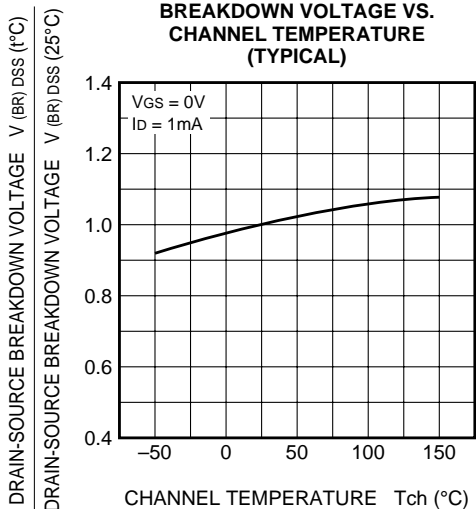
ON-STATE RESISTANCE VS. CHANNEL TEMPERATURE (TYPICAL)



THRESHOLD VOLTAGE VS. CHANNEL TEMPERATURE (TYPICAL)



BREAKDOWN VOLTAGE VS. CHANNEL TEMPERATURE (TYPICAL)



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS

