

MITSUBISHI Nch POWER MOSFET

FS50UM-06

HIGH-SPEED SWITCHING USE

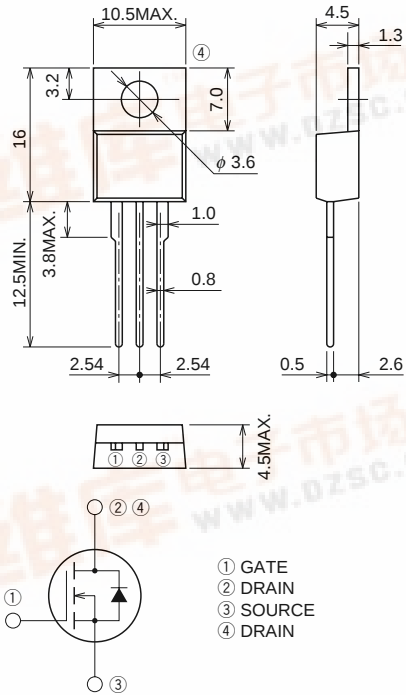
FS50UM-06



- 10V DRIVE
- V_{DS} 60V
- $r_{DS(ON)}$ (MAX) 22m Ω
- I_D 50A
- Integrated Fast Recovery Diode (TYP.) 65ns

OUTLINE DRAWING

Dimensions in mm



APPLICATION

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

MAXIMUM RATINGS (Tc = 25°C)

Symbol	Parameter	Conditions	Ratings	Unit
V_{DS}	Drain-source voltage	$V_{GS} = 0V$	60	V
V_{GS}	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)	$L = 100\mu H$	50	A
I_S	Source current		50	A
I_{SM}	Source current (Pulsed)		200	A
P_D	Maximum power dissipation		70	W
T_{ch}	Channel temperature		$-55 \sim +150$	$^{\circ}C$
T_{stg}	Storage temperature		$-55 \sim +150$	$^{\circ}C$
—	Weight	Typical value	2.0	g

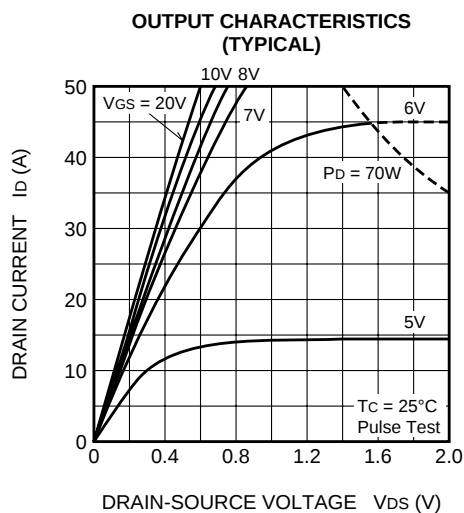
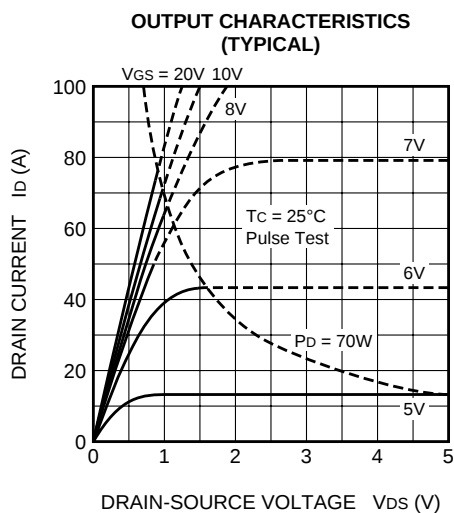
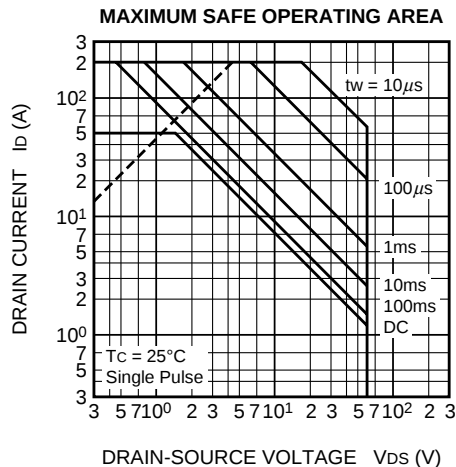
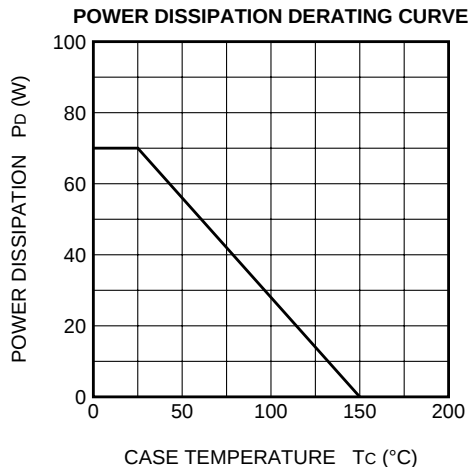
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ELECTRICAL CHARACTERISTICS (Tch = 25°C)

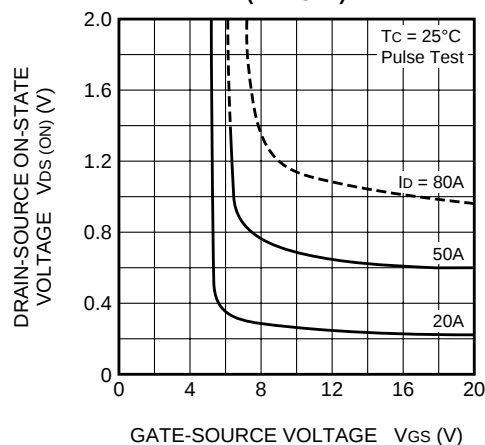
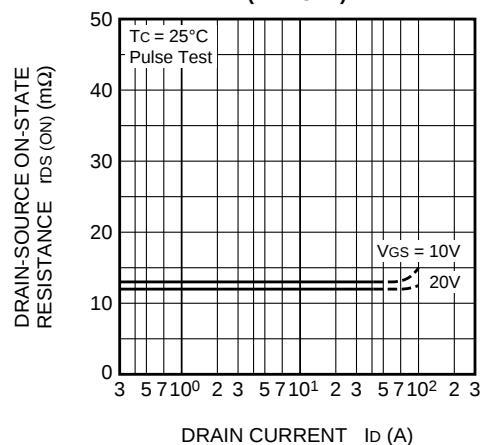
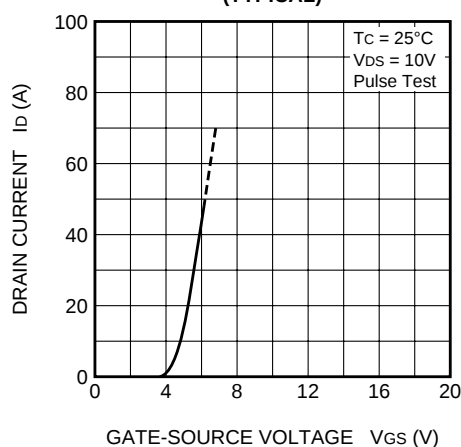
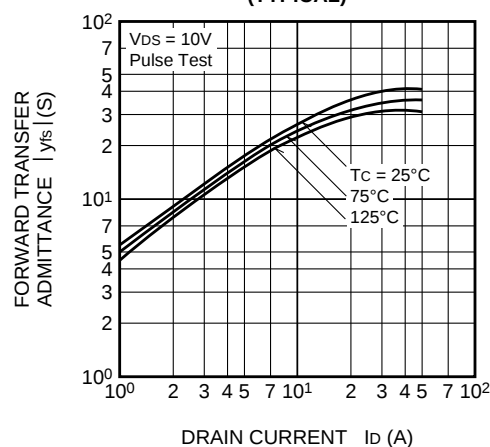
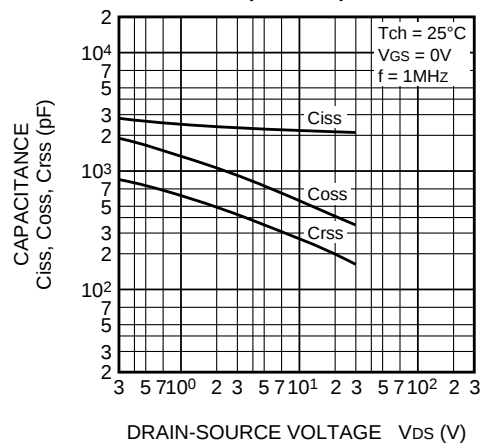
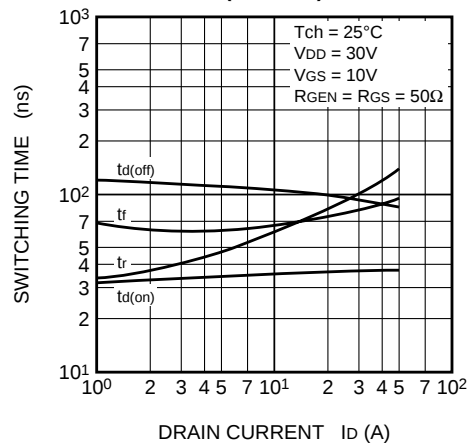
Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
V(BR)DSS	Drain-source breakdown voltage	Id = 1mA, VGS = 0V	60	—	—	V
IGSS	Gate-source leakage current	VGS = ±20V, VDS = 0V	—	—	±0.1	μA
IDSS	Drain-source leakage current	VDS = 60V, VGS = 0V	—	—	0.1	mA
VGS(th)	Gate-source threshold voltage	Id = 2mA, VDS = 10V	2.0	3.0	4.0	V
rDS(ON)	Drain-source on-state resistance	Id = 25A, VGS = 10V	—	17	22	mΩ
VDS(ON)	Drain-source on-state voltage	Id = 25A, VGS = 10V	—	0.43	0.55	V
yfs	Forward transfer admittance	Id = 25A, VDS = 10V	—	32	—	S
Ciss	Input capacitance	VDS = 10V, VGS = 0V, f = 1MHz	—	2300	—	pF
Coss	Output capacitance		—	570	—	pF
Crss	Reverse transfer capacitance		—	280	—	pF
td(on)	Turn-on delay time	VDD = 30V, Id = 25A, VGS = 10V, RGEN = RGS = 50Ω	—	35	—	ns
tr	Rise time		—	95	—	ns
td(off)	Turn-off delay time		—	95	—	ns
tf	Fall time		—	80	—	ns
VSD	Source-drain voltage	Is = 25A, VGS = 0V	—	1.0	1.5	V
Rth(ch-c)	Thermal resistance	Channel to case	—	—	1.78	°C/W
trr	Reverse recovery time	Is = 50A, dis/dt = -100A/μs	—	65	—	ns

PERFORMANCE CURVES



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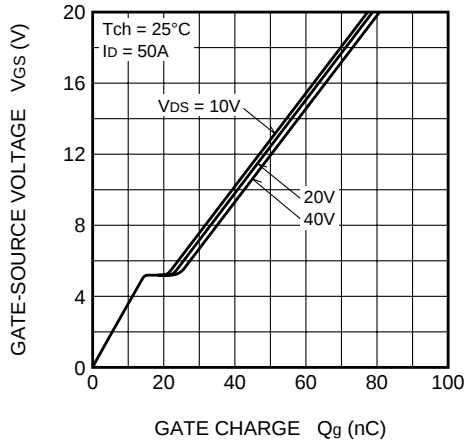
HIGH-SPEED SWITCHING USE

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)

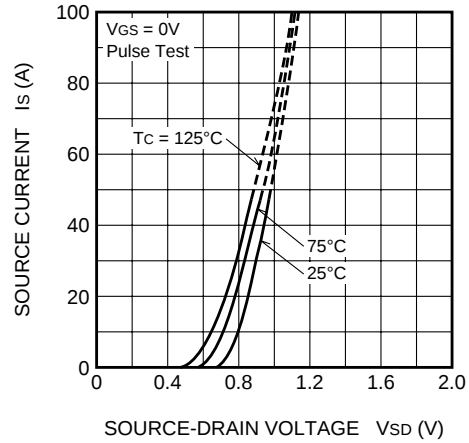
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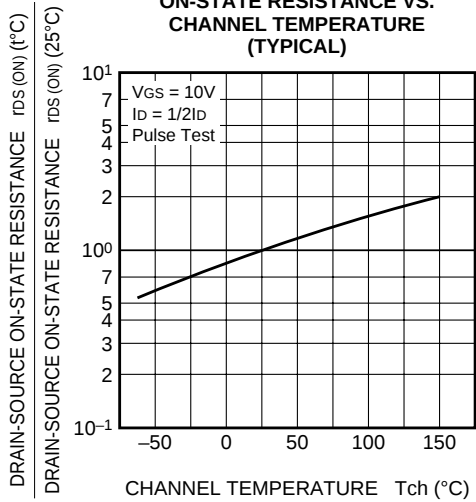
**GATE-SOURCE VOLTAGE
VS. GATE CHARGE
(TYPICAL)**



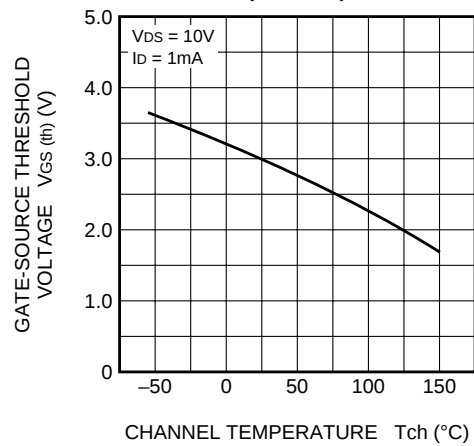
**SOURCE-DRAIN DIODE
FORWARD CHARACTERISTICS
(TYPICAL)**



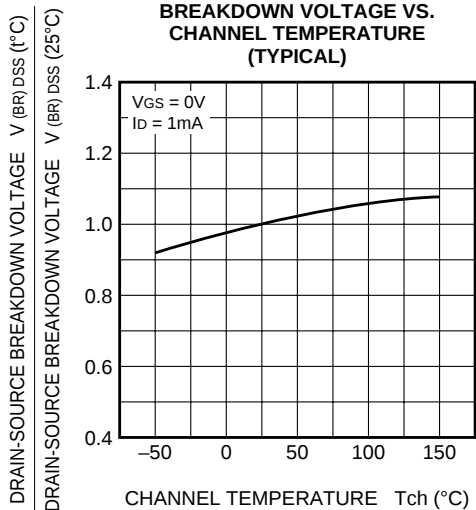
**ON-STATE RESISTANCE VS.
CHANNEL TEMPERATURE
(TYPICAL)**



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



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



**TRANSIENT THERMAL IMPEDANCE
CHARACTERISTICS**

