

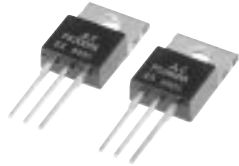
PRELIMINARY
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 Some parametric limits are subject to change.

MITSUBISHI Nch POWER MOSFET

FS20UMA-4A

HIGH-SPEED SWITCHING USE

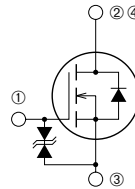
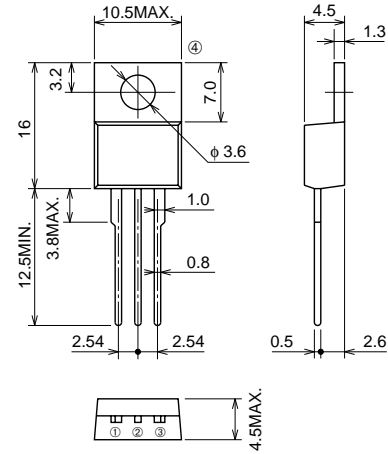
FS20UMA-4A



- 10V DRIVE
- V_{DSS} 200V
- $r_{DS(ON)}$ (MAX) 0.18 Ω
- I_D 20A

OUTLINE DRAWING

Dimensions in mm



- ① GATE
- ② DRAIN
- ③ SOURCE
- ④ DRAIN

TO-220

APPLICATION

Cs Switch for CRT Display monitor, Switch mode power supply, etc.

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

Symbol	Parameter	Conditions	Ratings	Unit
V_{DSS}	Drain-source voltage	$V_{GS} = 0V$	200	V
V_{GSS}	Gate-source voltage	$V_{DS} = 0V$	± 20	V
I_D	Drain current		20	A
I_{DM}	Drain current (Pulsed)		60	A
I_{DA}	Avalanche drain current (Pulsed)	$L = 200\mu\text{H}$	20	A
PD	Maximum power dissipation		80	W
T_{ch}	Channel temperature		-55 ~ +150	$^\circ\text{C}$
T_{stg}	Storage temperature		-55 ~ +150	$^\circ\text{C}$
—	Weight	Typical value	2.0	g

Sep.1998

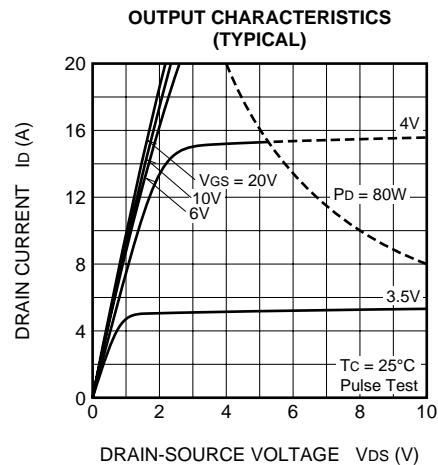
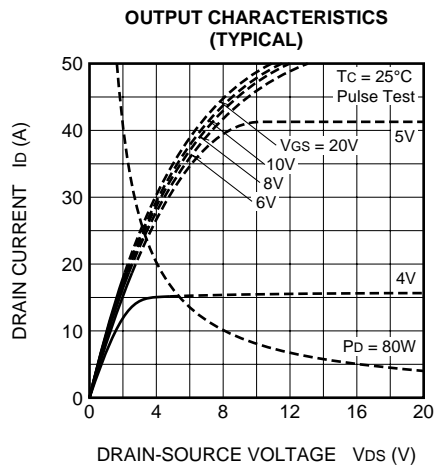
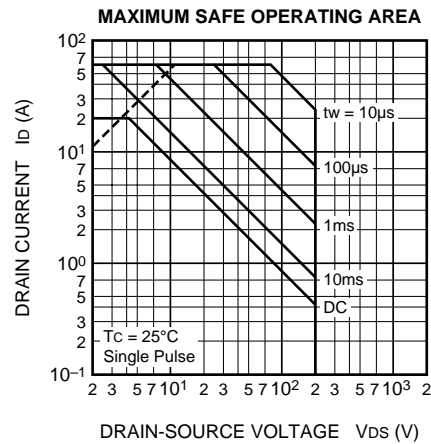
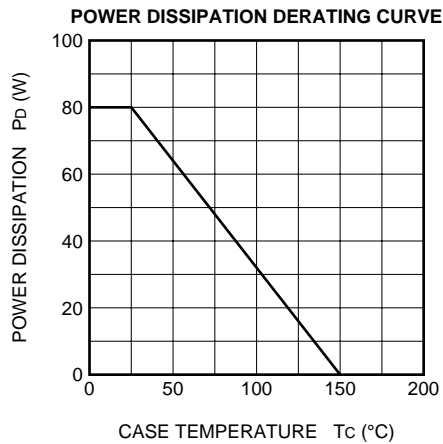


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ELECTRICAL CHARACTERISTICS (Tch = 25°C)

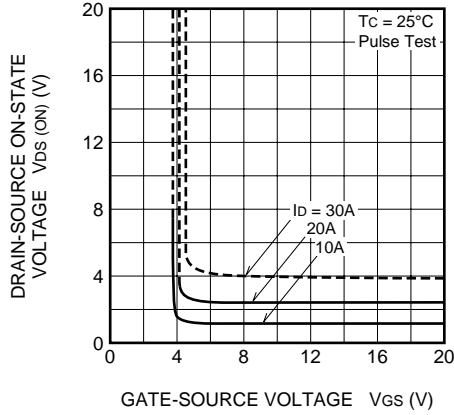
Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
V (BR) DSS	Drain-source breakdown voltage	Id = 1mA, VGS = 0V	200	—	—	V
V (BR) GSS	Gate-source breakdown voltage	IGS = ±10μA, VDS = 0V	±20	—	—	V
IGSS	Gate-source leakage current	VGS = ±20V, VDS = 0V	—	—	±10	μA
IDSS	Drain-source leakage current	VDS = 200V, VGS = 0V	—	—	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 = 10A, VGS = 10V	—	0.14	0.18	Ω
VDS (ON)	Drain-source on-state voltage	Id = 10A, VGS = 10V	—	1.40	1.80	V
yfs	Forward transfer admittance	Id = 10A, VDS = 10V	—	18.0	—	S
Ciss	Input capacitance	VDS = 25V, VGS = 0V, f = 1MHz	—	1650	—	pF
Coss	Output capacitance		—	200	—	pF
Crss	Reverse transfer capacitance		—	65	—	pF
td (on)	Turn-on delay time		VDD = 100V, Id = 10A, VGS = 10V, RGEN = RGS = 50Ω	—	20	—
tr	Rise time	—		40	—	ns
td (off)	Turn-off delay time	—		290	—	ns
tf	Fall time	—		70	—	ns
VSD	Source-drain voltage	Is = 10A, VGS = 0V	—	0.95	—	V
Rth (ch-c)	Thermal resistance	Channel to case	—	—	1.56	°C/W

PERFORMANCE CURVES

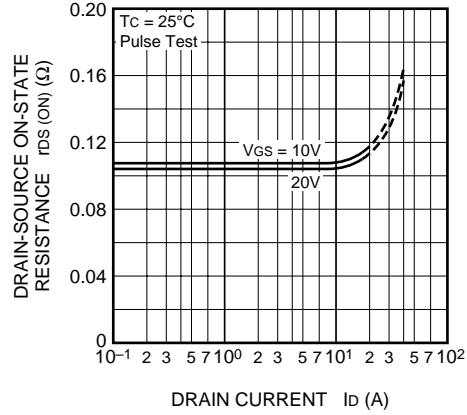


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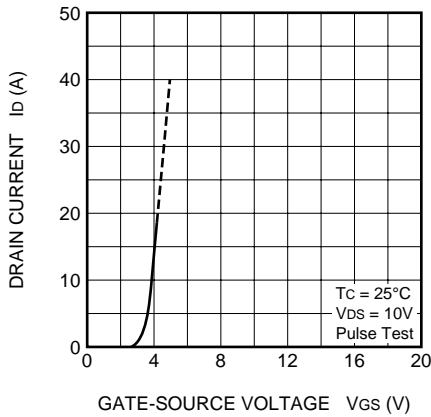
ON-STATE VOLTAGE VS. GATE-SOURCE VOLTAGE (TYPICAL)



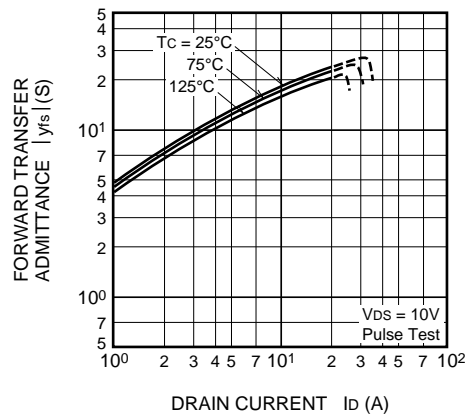
ON-STATE RESISTANCE VS. DRAIN CURRENT (TYPICAL)



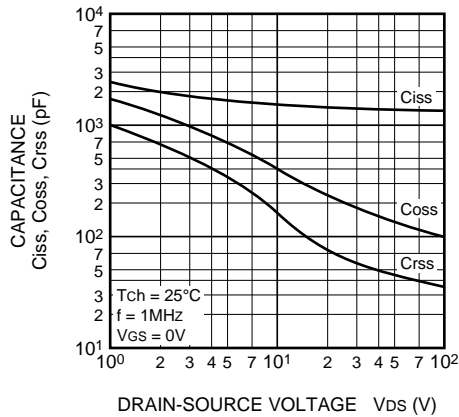
TRANSFER CHARACTERISTICS (TYPICAL)



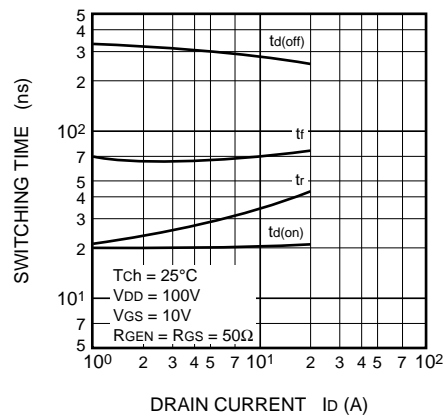
FORWARD TRANSFER ADMITTANCE VS. DRAIN CURRENT (TYPICAL)



CAPACITANCE VS. DRAIN-SOURCE VOLTAGE (TYPICAL)

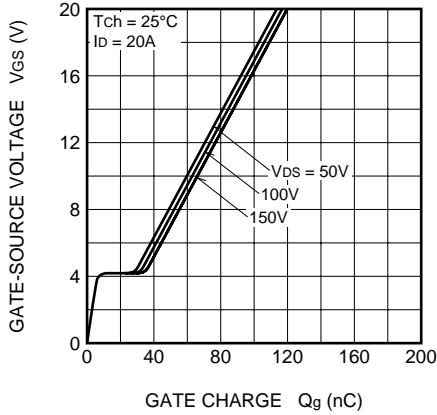


SWITCHING CHARACTERISTICS (TYPICAL)

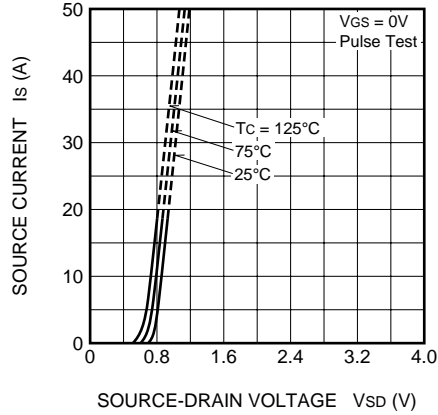


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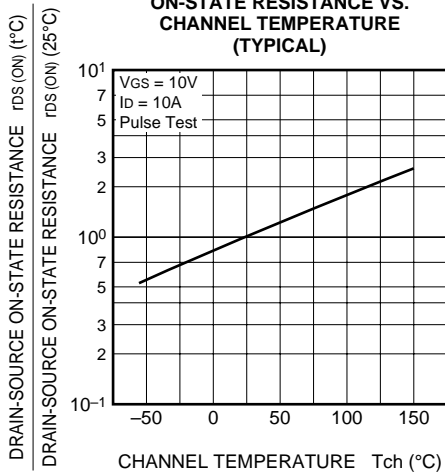
GATE-SOURCE VOLTAGE VS. GATE CHARGE (TYPICAL)



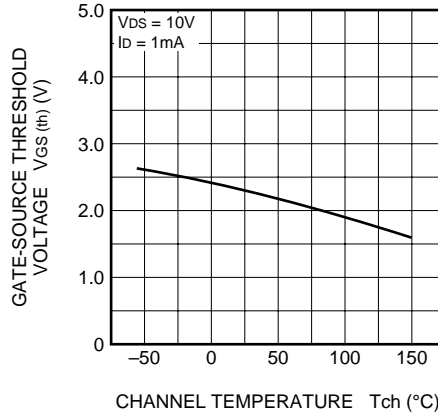
SOURCE-DRAIN DIODE FORWARD CHARACTERISTICS (TYPICAL)



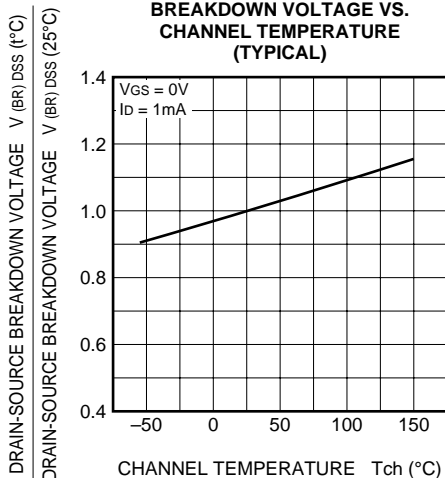
ON-STATE RESISTANCE VS. CHANNEL TEMPERATURE (TYPICAL)



THRESHOLD VOLTAGE VS. CHANNEL TEMPERATURE (TYPICAL)



BREAKDOWN VOLTAGE VS. CHANNEL TEMPERATURE (TYPICAL)



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS

