

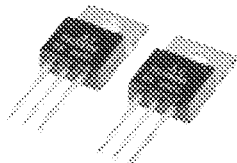
PRELIMINARY
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 Some parametric limits are subject to change.

MITSUBISHI Nch POWER MOSFET

FS20UMA-4A

HIGH-SPEED SWITCHING USE

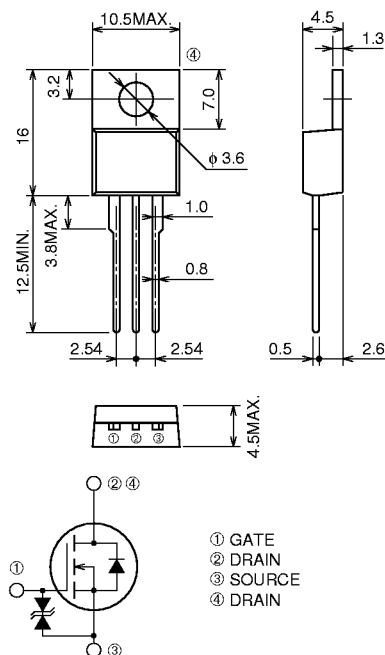
FS20UMA-4A



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

OUTLINE DRAWING

Dimensions in mm



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_{DS}	Drain-source voltage	$V_{GS} = 0V$	200	V
V_{GS}	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)	$L = 200\mu H$	20	A
P_D	Maximum power dissipation		80	W
T_{ch}	Channel temperature		$-55 \sim +150$	$^\circ\text{C}$
T_{stg}	Storage temperature		$-55 \sim +150$	$^\circ\text{C}$
—	Weight	Typical value	2.0	g

Sep.1998

FS20UMA-4A

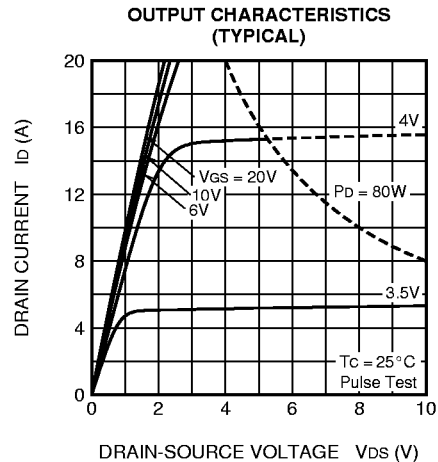
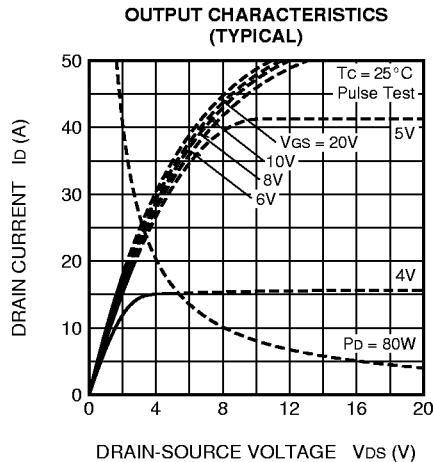
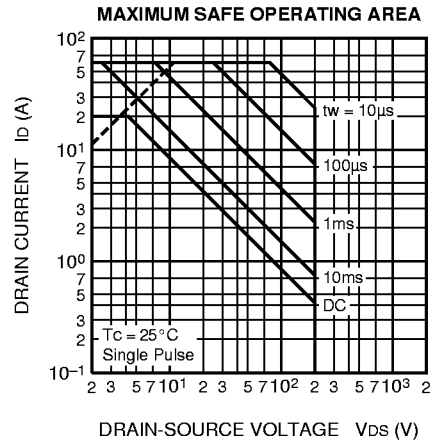
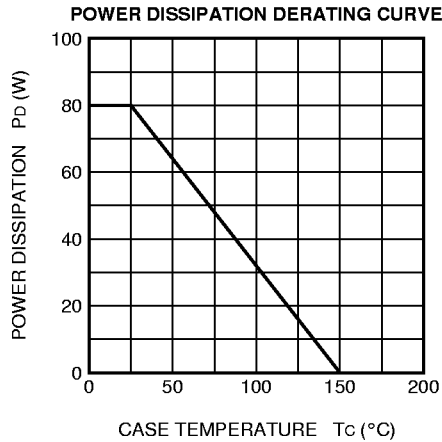
HIGH-SPEED SWITCHING USE

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ELECTRICAL CHARACTERISTICS (T_{ch} = 25°C)

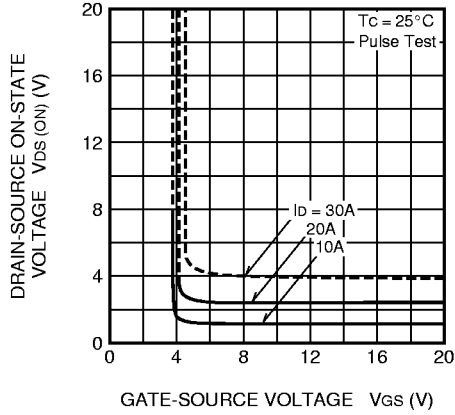
Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
V (BR) DSS	Drain-source breakdown voltage	I _D = 1mA, V _{GS} = 0V	200	—	—	V
V (BR) GSS	Gate-source breakdown voltage	I _{GS} = ±10μA, V _{DS} = 0V	±20	—	—	V
I _{GSS}	Gate-source leakage current	V _{GS} = ±20V, V _{DS} = 0V	—	—	±10	μA
I _{DSS}	Drain-source leakage current	V _{DS} = 200V, V _{GS} = 0V	—	—	1	mA
V _{GS} (th)	Gate-source threshold voltage	I _D = 1mA, V _{DS} = 10V	2.0	3.0	4.0	V
r _{DS} (ON)	Drain-source on-state resistance	I _D = 10A, V _{GS} = 10V	—	0.14	0.18	Ω
V _{DS} (ON)	Drain-source on-state voltage	I _D = 10A, V _{GS} = 10V	—	1.40	1.80	V
y _{fs}	Forward transfer admittance	I _D = 10A, V _{DS} = 10V	—	18.0	—	S
C _{iss}	Input capacitance	V _{DS} = 25V, V _{GS} = 0V, f = 1MHz	—	1650	—	pF
C _{oss}	Output capacitance		—	200	—	pF
C _{rss}	Reverse transfer capacitance		—	65	—	pF
t _d (on)	Turn-on delay time	V _{DD} = 100V, I _D = 10A, V _{GS} = 10V, R _{GEN} = R _{GS} = 50Ω	—	20	—	ns
t _r	Rise time		—	40	—	ns
t _d (off)	Turn-off delay time		—	290	—	ns
t _f	Fall time		—	70	—	ns
V _{SD}	Source-drain voltage	I _S = 10A, V _{GS} = 0V	—	0.95	—	V
R _{th} (ch-c)	Thermal resistance	Channel to case	—	—	1.56	°C/W

PERFORMANCE CURVES

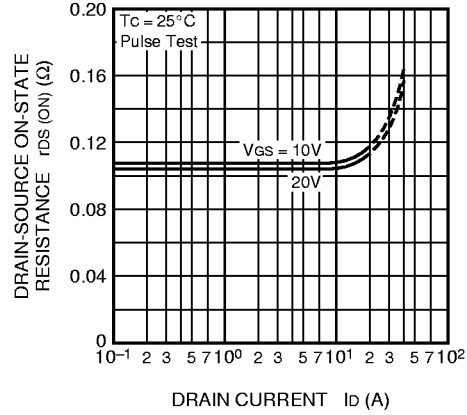


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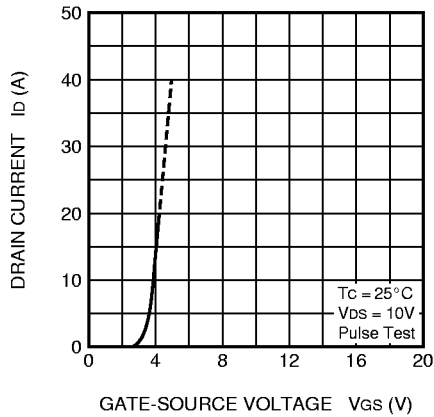
**ON-STATE VOLTAGE VS.
GATE-SOURCE VOLTAGE
(TYPICAL)**



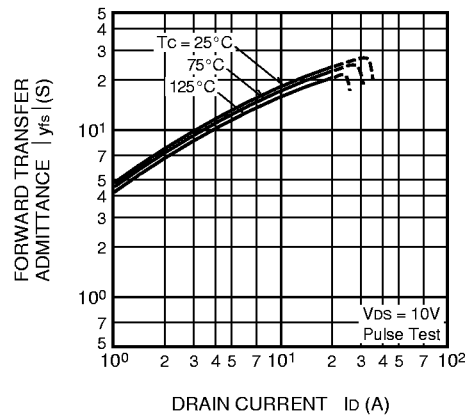
**ON-STATE RESISTANCE VS.
DRAIN CURRENT
(TYPICAL)**



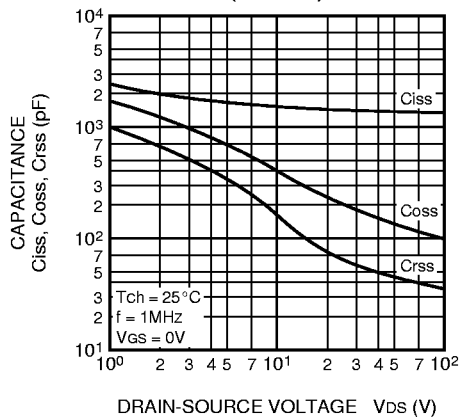
**TRANSFER CHARACTERISTICS
(TYPICAL)**



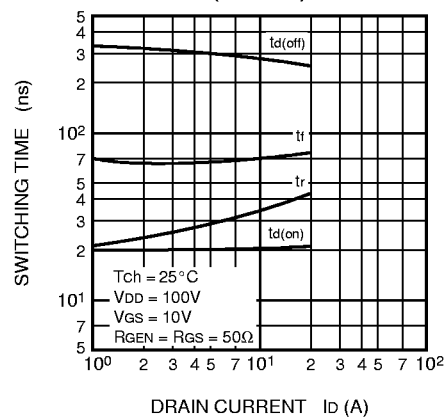
**FORWARD TRANSFER ADMITTANCE
VS. DRAIN CURRENT
(TYPICAL)**



**CAPACITANCE VS.
DRAIN-SOURCE VOLTAGE
(TYPICAL)**



**SWITCHING CHARACTERISTICS
(TYPICAL)**

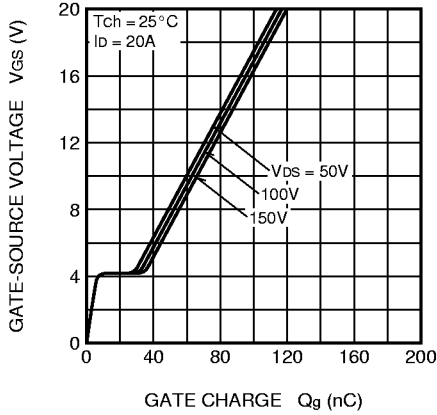


FS20UMA-4A

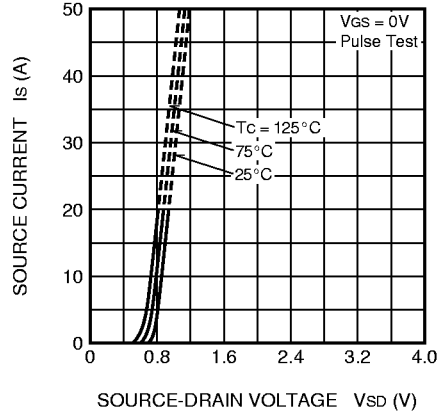
HIGH-SPEED SWITCHING USE

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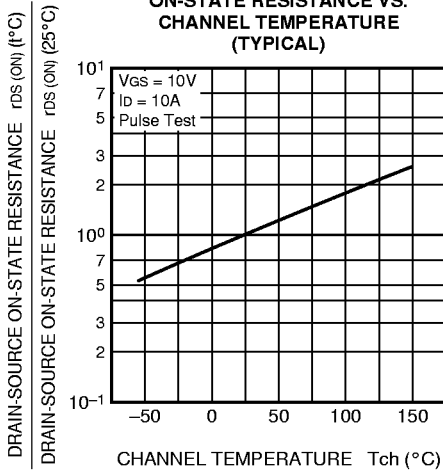
**GATE-SOURCE VOLTAGE
VS. GATE CHARGE
(TYPICAL)**



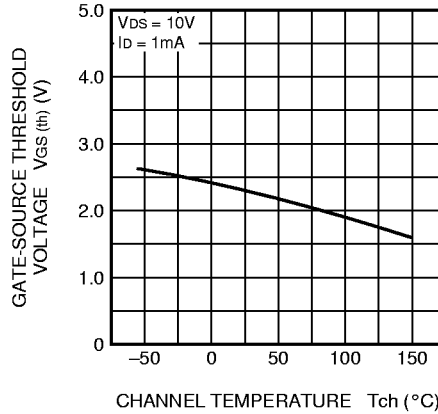
**SOURCE-DRAIN DIODE
FORWARD CHARACTERISTICS
(TYPICAL)**



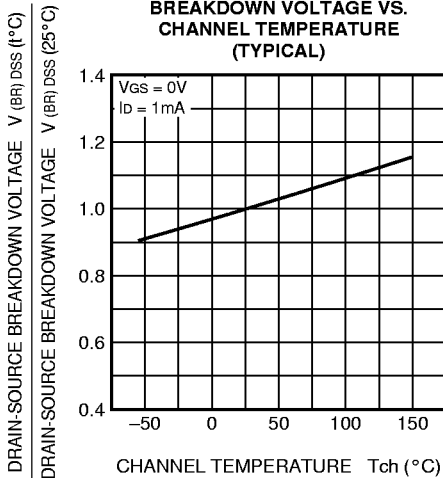
**ON-STATE RESISTANCE VS.
CHANNEL TEMPERATURE
(TYPICAL)**



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



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



**TRANSIENT THERMAL IMPEDANCE
CHARACTERISTICS**

