

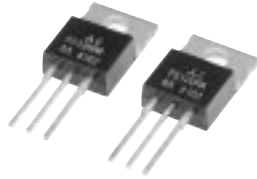
PRELIMINARY
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MITSUBISHI Nch POWER MOSFET

FS12UMA-4A

HIGH-SPEED SWITCHING USE

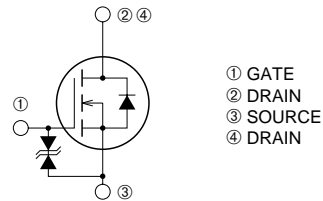
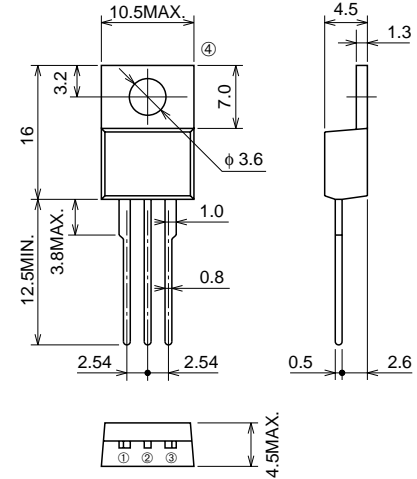
FS12UMA-4A



- 10V DRIVE
- V_{DSS} 200V
- $r_{DS(ON)}(MAX)$ 0.40Ω
- I_D 12A

OUTLINE DRAWING

Dimensions in mm



TO-220

APPLICATION

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

MAXIMUM RATINGS (Tc = 25°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		12	A
I_{DM}	Drain current (Pulsed)		36	A
I_{DA}	Avalanche drain current (Pulsed)	$L = 200\mu H$	12	A
P_D	Maximum power dissipation		50	W
T_{ch}	Channel temperature		-55 ~ +150	°C
T_{stg}	Storage temperature		-55 ~ +150	°C
—	Weight	Typical value	2.0	g

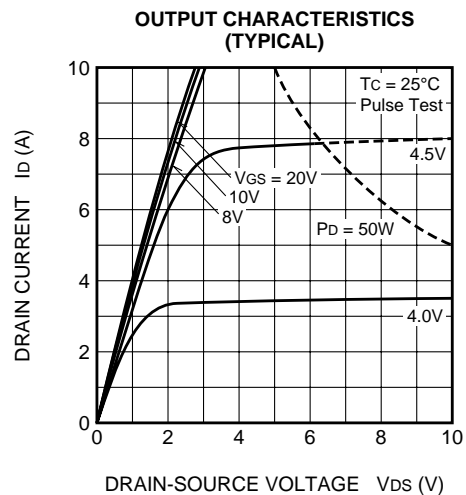
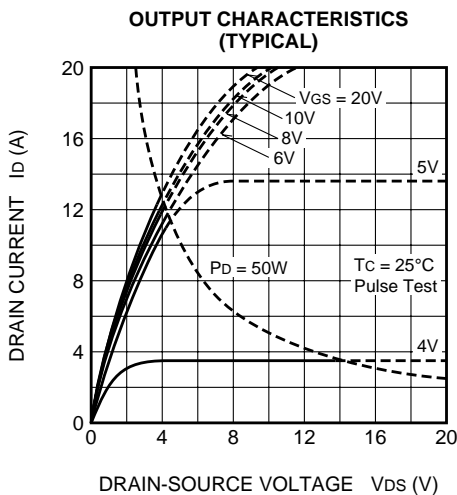
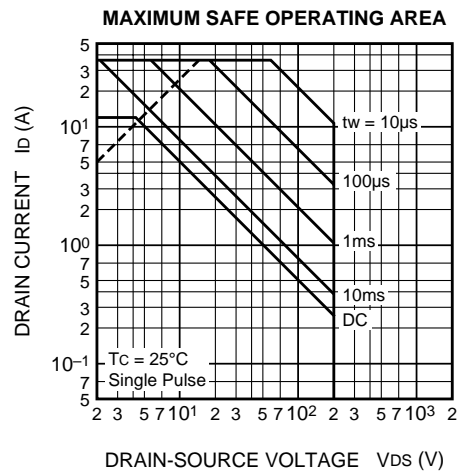
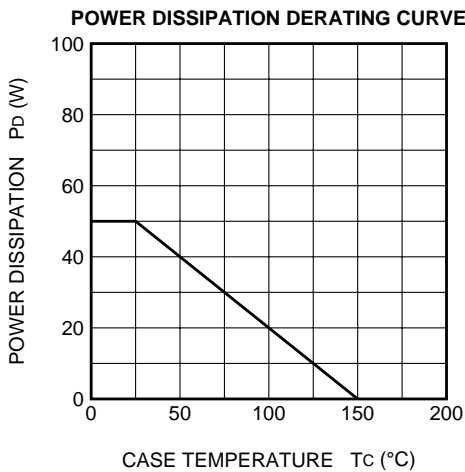
Sep.1998

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

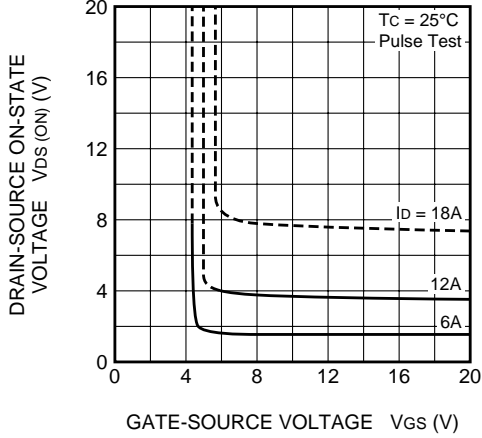
Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
V (BR) DSS	Drain-source breakdown voltage	I _D = 1mA, V _{GS} = 0V	200	—	—	V
V (BR) GSS	Gate-source breakdown voltage	I _{GS} = ±10μA, V _{DS} = 0V	±20	—	—	V
I _{GSS}	Gate-source leakage current	V _{GS} = ±20V, V _{DS} = 0V	—	—	±10	μA
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 = 6A, V _{GS} = 10V	—	0.30	0.40	Ω
V _{DS} (ON)	Drain-source on-state voltage	I _D = 6A, V _{GS} = 10V	—	1.80	2.40	V
y _{fs}	Forward transfer admittance	I _D = 6A, V _{DS} = 10V	—	8.0	—	S
C _{iss}	Input capacitance	V _{DS} = 25V, V _{GS} = 0V, f = 1MHz	—	700	—	pF
C _{oss}	Output capacitance		—	95	—	pF
C _{rss}	Reverse transfer capacitance		—	30	—	pF
t _d (on)	Turn-on delay time	V _{DD} = 100V, I _D = 6A, V _{GS} = 10V, R _{GEN} = R _{GS} = 50Ω	—	15	—	ns
t _r	Rise time		—	20	—	ns
t _d (off)	Turn-off delay time		—	110	—	ns
t _f	Fall time		—	35	—	ns
V _{SD}	Source-drain voltage	I _S = 6A, V _{GS} = 0V	—	0.95	—	V
R _{th} (ch-c)	Thermal resistance	Channel to case	—	—	2.50	°C/W

PERFORMANCE CURVES

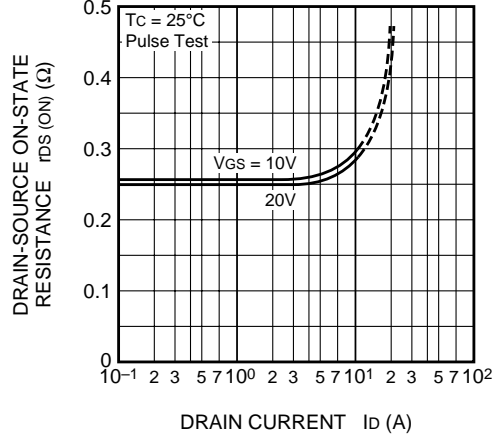


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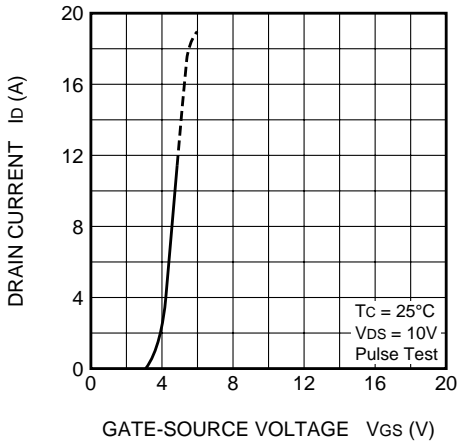
ON-STATE VOLTAGE VS. GATE-SOURCE VOLTAGE (TYPICAL)



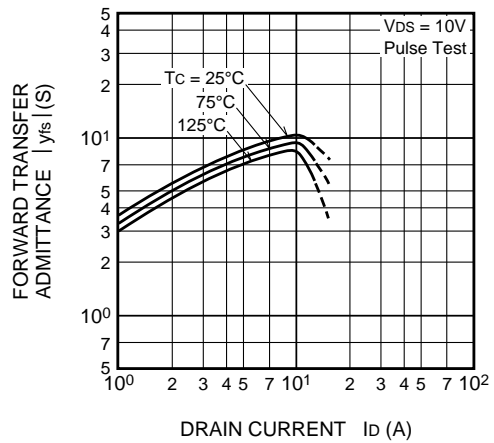
ON-STATE RESISTANCE VS. DRAIN CURRENT (TYPICAL)



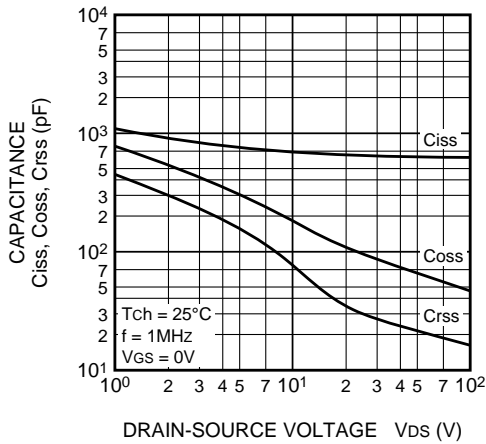
TRANSFER CHARACTERISTICS (TYPICAL)



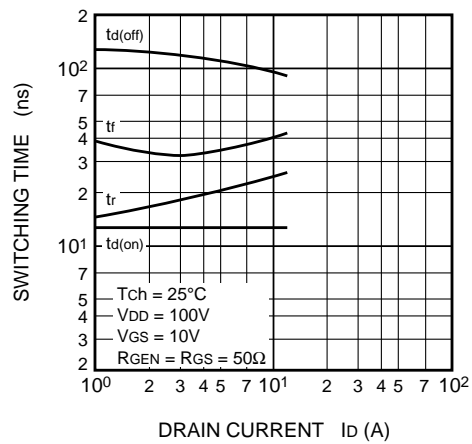
FORWARD TRANSFER ADMITTANCE VS. DRAIN CURRENT (TYPICAL)



CAPACITANCE VS. DRAIN-SOURCE VOLTAGE (TYPICAL)

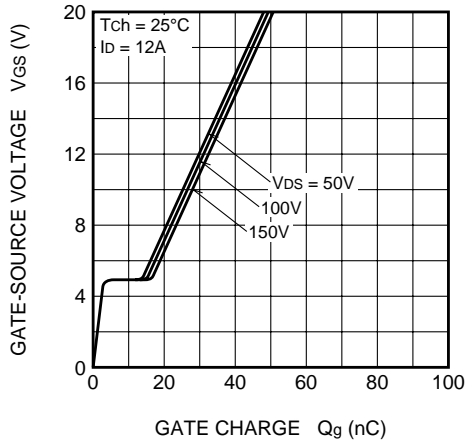


SWITCHING CHARACTERISTICS (TYPICAL)

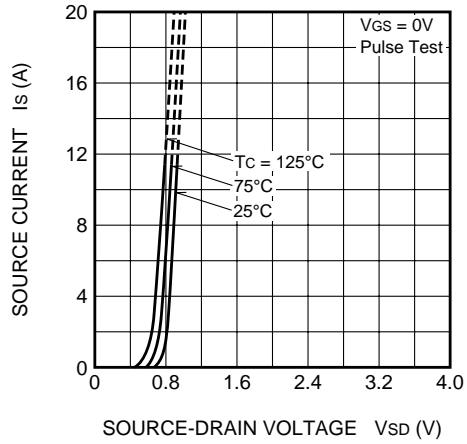


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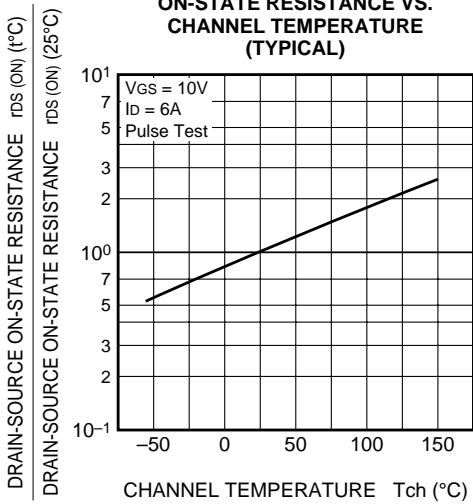
GATE-SOURCE VOLTAGE VS. GATE CHARGE (TYPICAL)



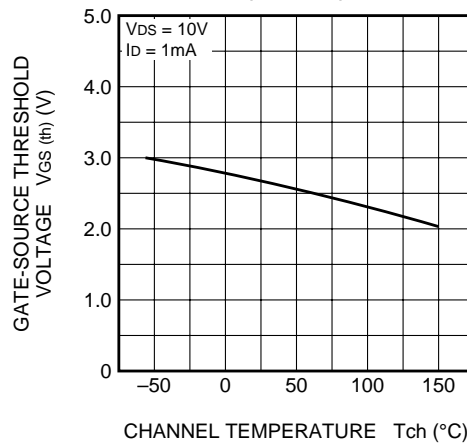
SOURCE-DRAIN DIODE FORWARD CHARACTERISTICS (TYPICAL)



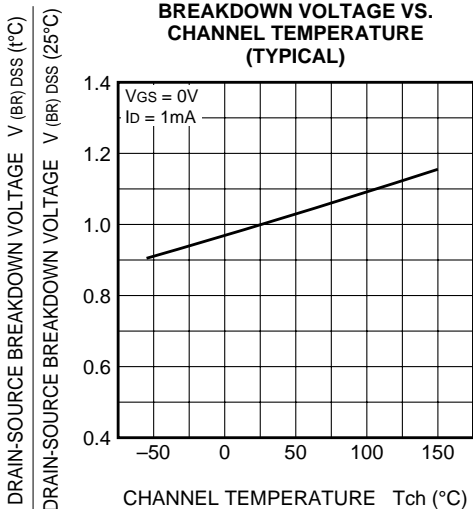
ON-STATE RESISTANCE VS. CHANNEL TEMPERATURE (TYPICAL)



THRESHOLD VOLTAGE VS. CHANNEL TEMPERATURE (TYPICAL)



BREAKDOWN VOLTAGE VS. CHANNEL TEMPERATURE (TYPICAL)



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS

