

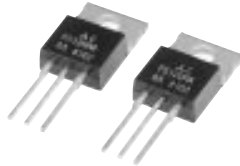
**PRELIMINARY**  
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MITSUBISHI Nch POWER MOSFET

# FS12UMA-4A

HIGH-SPEED SWITCHING USE

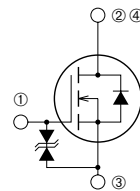
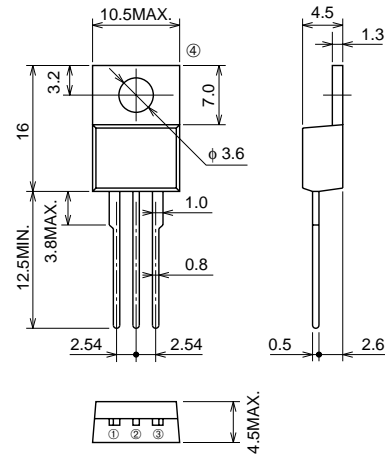
## FS12UMA-4A



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

## 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 (Tc = 25°C)

Symbol	Parameter	Conditions	Ratings	Unit
$V_{DSS}$	Drain-source voltage	$V_{GS} = 0V$	200	V
$V_{GSS}$	Gate-source voltage	$V_{DS} = 0V$	$\pm 20$	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
PD	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

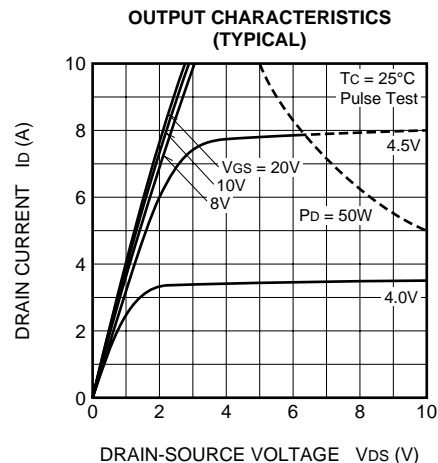
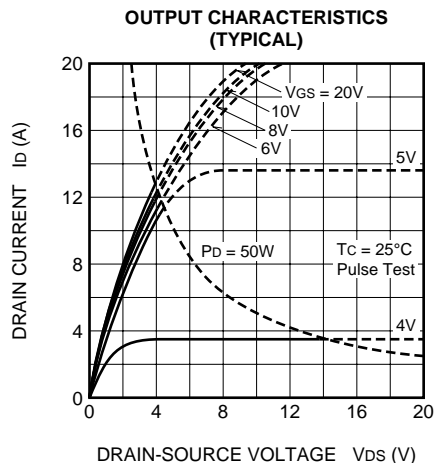
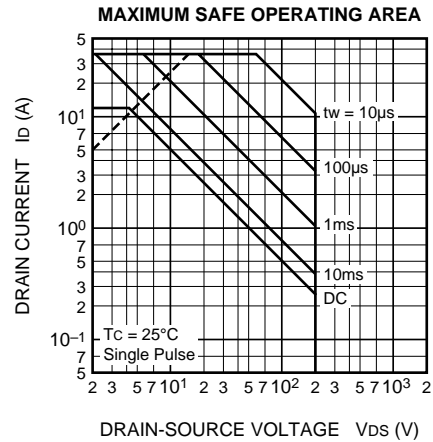
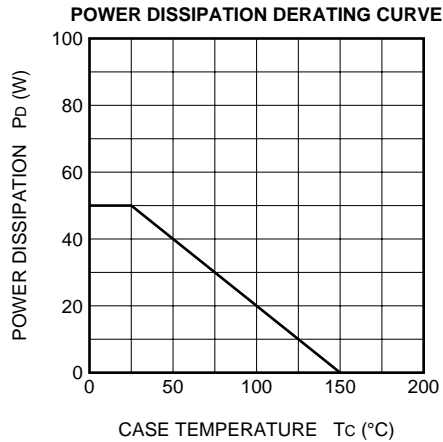


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**ELECTRICAL CHARACTERISTICS** (Tch = 25°C)

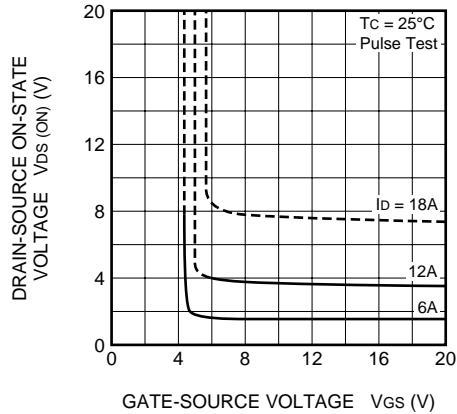
Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
V (BR) DSS	Drain-source breakdown voltage	Id = 1mA, VGS = 0V	200	—	—	V
V (BR) GSS	Gate-source breakdown voltage	IGS = ±10μA, VDS = 0V	±20	—	—	V
IGSS	Gate-source leakage current	VGS = ±20V, VDS = 0V	—	—	±10	μA
IDSS	Drain-source leakage 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 = 6A, VGS = 10V	—	0.30	0.40	Ω
VDS (ON)	Drain-source on-state voltage	Id = 6A, VGS = 10V	—	1.80	2.40	V
yfs	Forward transfer admittance	Id = 6A, VDS = 10V	—	8.0	—	S
Ciss	Input capacitance	VDS = 25V, VGS = 0V, f = 1MHz	—	700	—	pF
Coss	Output capacitance		—	95	—	pF
Crss	Reverse transfer capacitance		—	30	—	pF
td (on)	Turn-on delay time	VDD = 100V, Id = 6A, VGS = 10V, RGEN = RGS = 50Ω	—	15	—	ns
tr	Rise time		—	20	—	ns
td (off)	Turn-off delay time		—	110	—	ns
tf	Fall time		—	35	—	ns
VSD	Source-drain voltage	Is = 6A, VGS = 0V	—	0.95	—	V
Rth (ch-c)	Thermal resistance	Channel to case	—	—	2.50	°C/W

**PERFORMANCE CURVES**

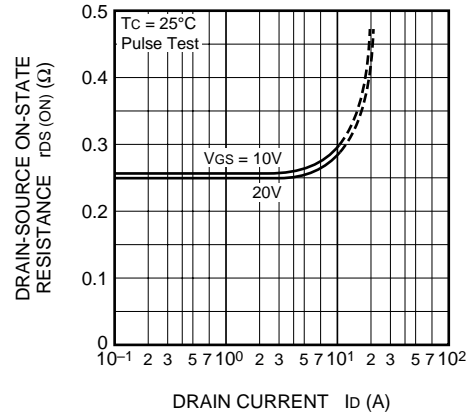


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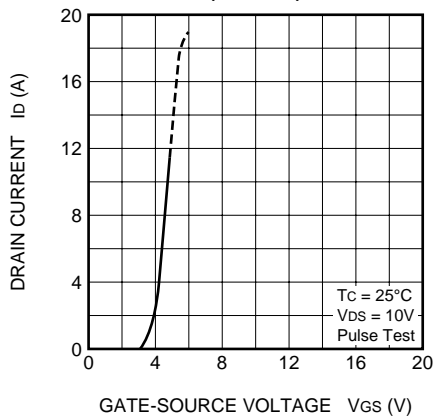
**ON-STATE VOLTAGE VS. GATE-SOURCE VOLTAGE (TYPICAL)**



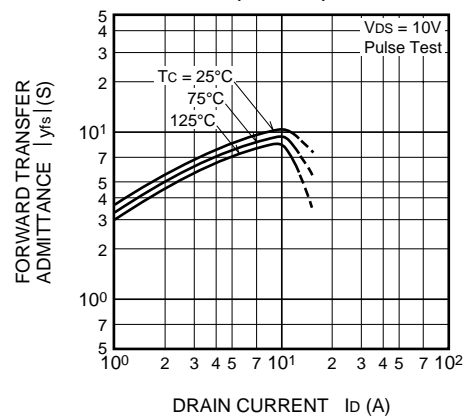
**ON-STATE RESISTANCE VS. DRAIN CURRENT (TYPICAL)**



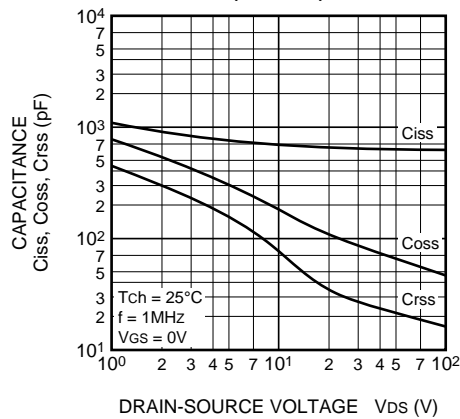
**TRANSFER CHARACTERISTICS (TYPICAL)**



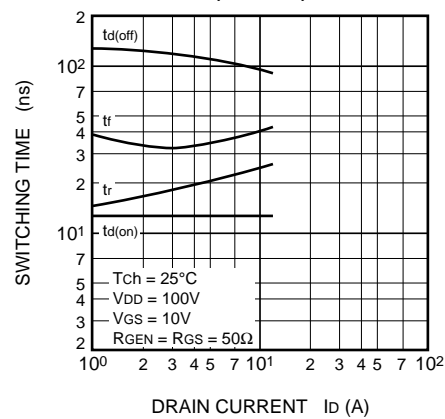
**FORWARD TRANSFER ADMITTANCE VS. DRAIN CURRENT (TYPICAL)**



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

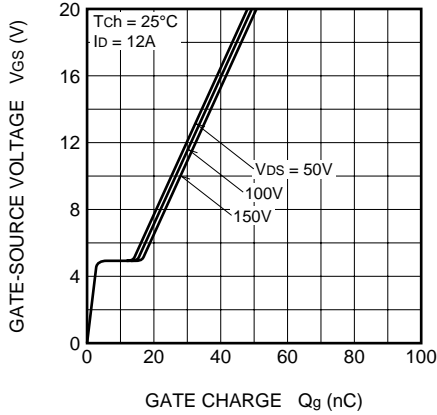


**SWITCHING CHARACTERISTICS (TYPICAL)**

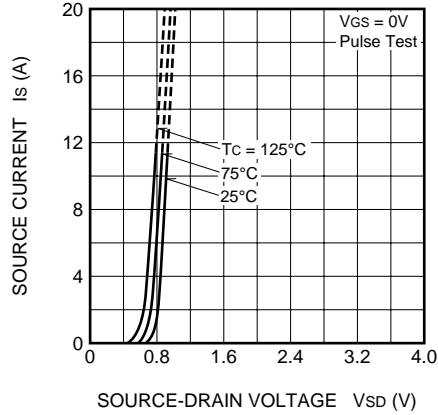


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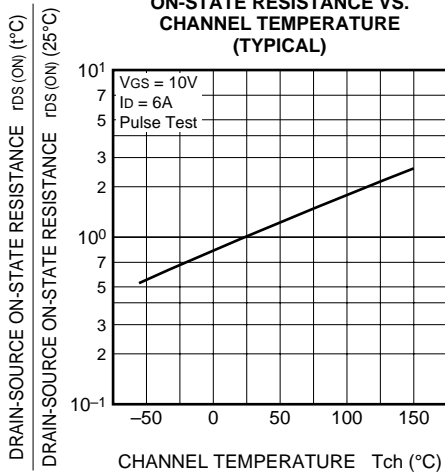
**GATE-SOURCE VOLTAGE VS. GATE CHARGE (TYPICAL)**



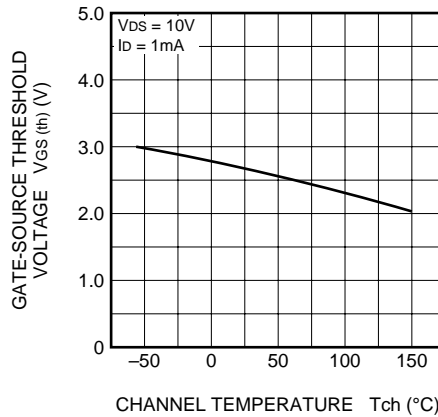
**SOURCE-DRAIN DIODE FORWARD CHARACTERISTICS (TYPICAL)**



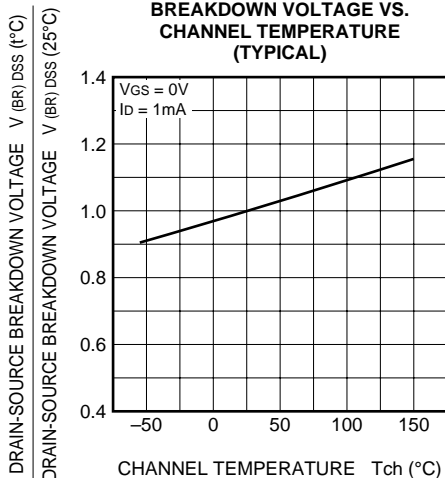
**ON-STATE RESISTANCE VS. CHANNEL TEMPERATURE (TYPICAL)**



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



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



**TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS**

