

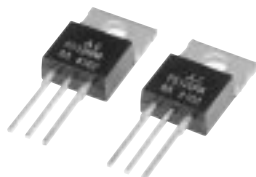
PRELIMINARY
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 Some parametric limits are subject to change.

MITSUBISHI Nch POWER MOSFET

FS12UMA-4A

HIGH-SPEED SWITCHING USE

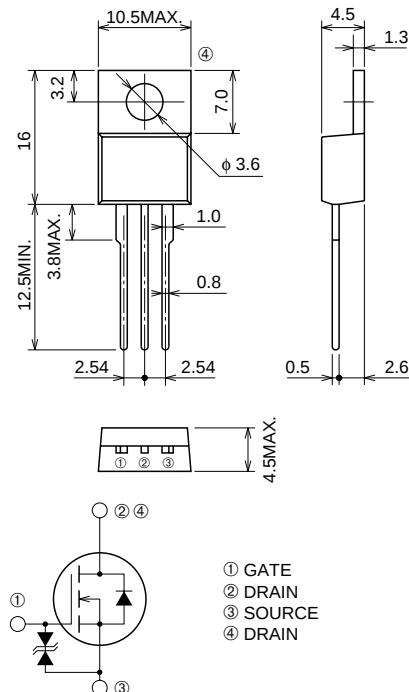
FS12UMA-4A



- 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		$-55 \sim +150$	°C
T_{stg}	Storage temperature		$-55 \sim +150$	°C
—	Weight	Typical value	2.0	g

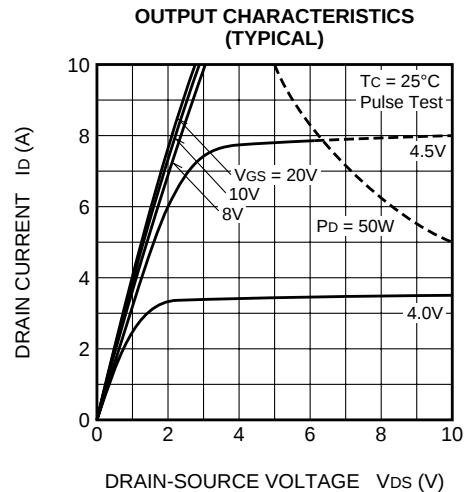
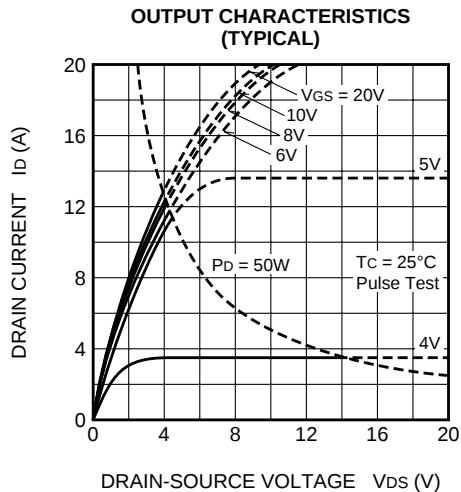
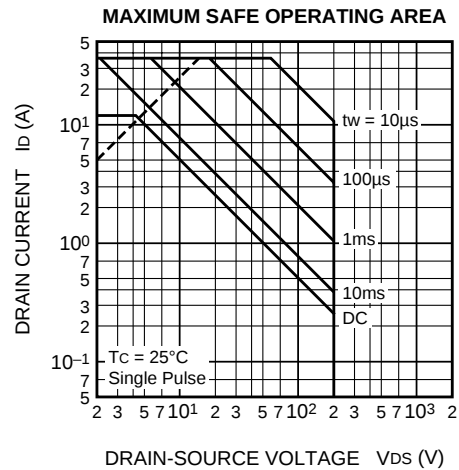
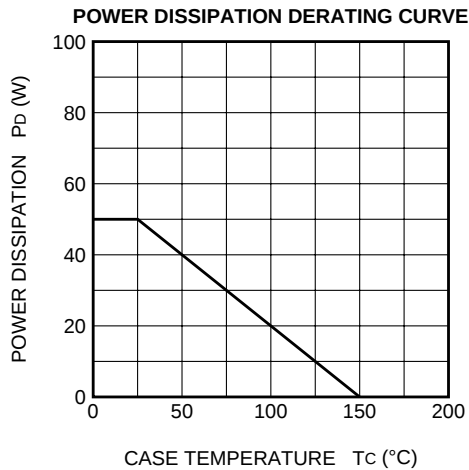
Sep.1998

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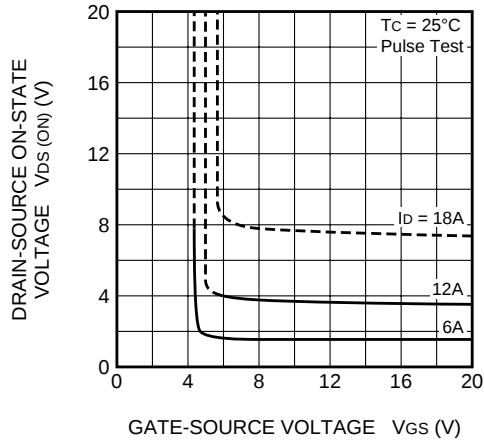
ELECTRICAL CHARACTERISTICS ($T_{ch} = 25^{\circ}\text{C}$)

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
$V_{(BR)DSS}$	Drain-source breakdown voltage	$I_D = 1\text{mA}$, $V_{GS} = 0\text{V}$	200	—	—	V
$V_{(BR)GSS}$	Gate-source breakdown voltage	$I_{GS} = \pm 10\mu\text{A}$, $V_{DS} = 0\text{V}$	± 20	—	—	V
I_{GSS}	Gate-source leakage current	$V_{GS} = \pm 20\text{V}$, $V_{DS} = 0\text{V}$	—	—	± 10	μA
I_{DSS}	Drain-source leakage current	$V_{DS} = 200\text{V}$, $V_{GS} = 0\text{V}$	—	—	1	mA
$V_{GS(th)}$	Gate-source threshold voltage	$I_D = 1\text{mA}$, $V_{DS} = 10\text{V}$	2.0	3.0	4.0	V
$r_{DS(on)}$	Drain-source on-state resistance	$I_D = 6\text{A}$, $V_{GS} = 10\text{V}$	—	0.30	0.40	Ω
$V_{DS(on)}$	Drain-source on-state voltage	$I_D = 6\text{A}$, $V_{GS} = 10\text{V}$	—	1.80	2.40	V
$ y_{fs} $	Forward transfer admittance	$I_D = 6\text{A}$, $V_{DS} = 10\text{V}$	—	8.0	—	S
C_{iss}	Input capacitance	$V_{DS} = 25\text{V}$, $V_{GS} = 0\text{V}$, $f = 1\text{MHz}$	—	700	—	pF
C_{oss}	Output capacitance		—	95	—	pF
C_{rss}	Reverse transfer capacitance		—	30	—	pF
$t_d(on)$	Turn-on delay time	$V_{DD} = 100\text{V}$, $I_D = 6\text{A}$, $V_{GS} = 10\text{V}$, $R_{GEN} = R_{GS} = 50\Omega$	—	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	$I_S = 6\text{A}$, $V_{GS} = 0\text{V}$	—	0.95	—	V
$R_{th(ch-c)}$	Thermal resistance	Channel to case	—	—	2.50	$^{\circ}\text{C/W}$

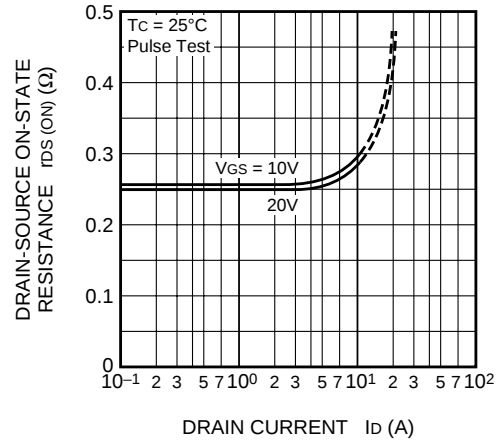
PERFORMANCE CURVES



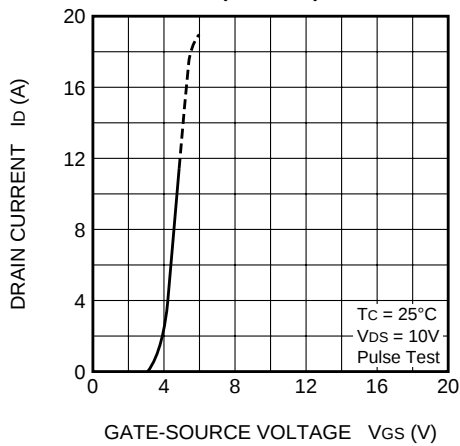
**ON-STATE VOLTAGE VS.
GATE-SOURCE VOLTAGE
(TYPICAL)**



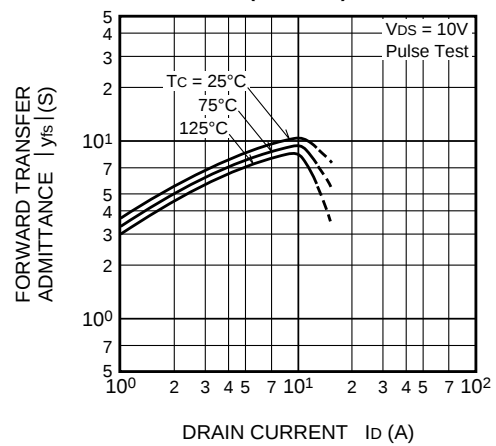
**ON-STATE RESISTANCE VS.
DRAIN CURRENT
(TYPICAL)**



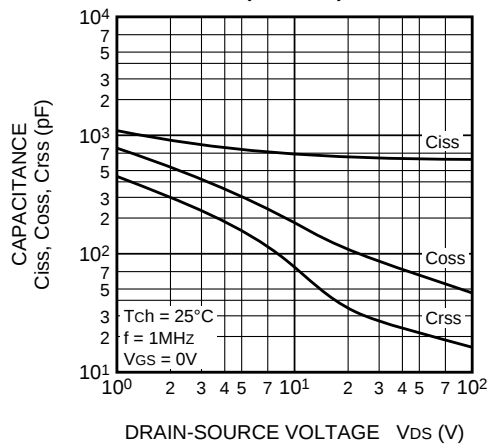
**TRANSFER CHARACTERISTICS
(TYPICAL)**



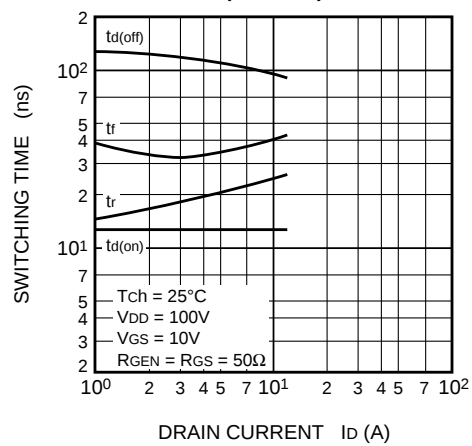
**FORWARD TRANSFER ADMITTANCE
VS. DRAIN CURRENT
(TYPICAL)**



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



**SWITCHING CHARACTERISTICS
(TYPICAL)**



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