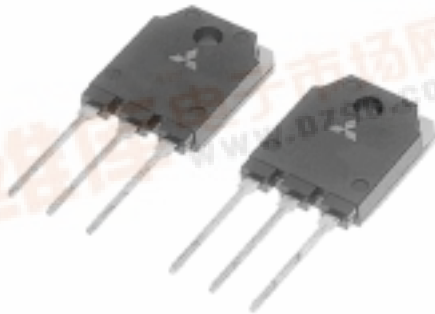


MITSUBISHI Nch POWER MOSFET

# FS22SM-12A

HIGH-SPEED SWITCHING USE

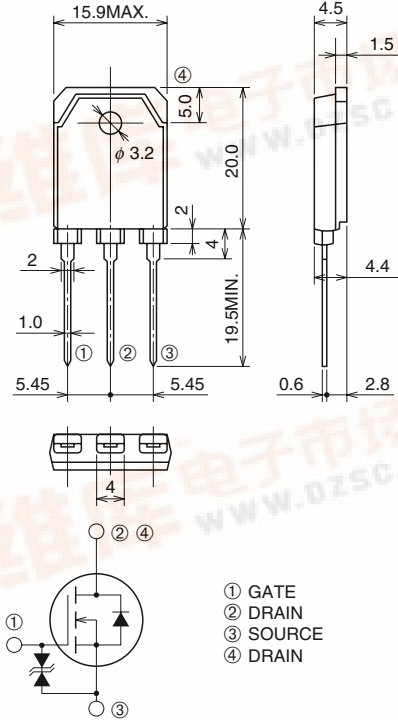
## FS22SM-12A



- 10V DRIVE
- $V_{DSS}$  ..... 600V
- $r_{DS(ON)}$  (MAX) ..... 0.30Ω
- $I_D$  ..... 22A

## OUTLINE DRAWING

Dimensions in mm



TO-3P

## APPLICATION

SMPS, AC-adapter, Power supply of Printer, Copier, TV, VCR. etc.

## MAXIMUM RATINGS (Tc = 25°C)

Symbol	Parameter	Conditions	Ratings	Unit
$V_{DSS}$	Drain-source voltage	$V_{GS} = 0V$	600	V
$V_{GSS}$	Gate-source voltage	$V_{DS} = 0V$	±30	V
$I_D$	Drain current		22	A
$I_{DM}$	Drain current (Pulsed)		66	A
$I_{DA}$	Avalanche drain current (Pulsed)	$L = 200\mu H$	22	A
$P_D$	Maximum power dissipation		200	W
$T_{ch}$	Channel temperature		-55 ~ +150	°C
$T_{stg}$	Storage temperature		-55 ~ +150	°C
—	Weight	Typical value	4.8	g



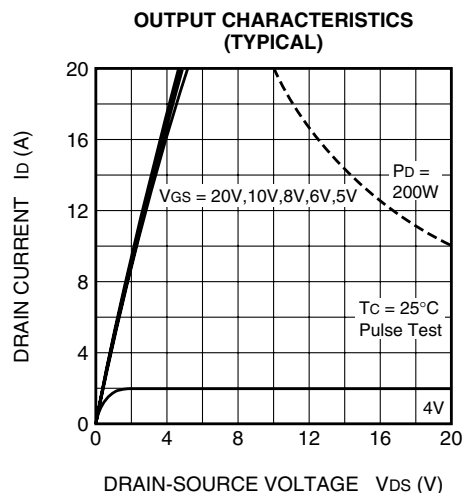
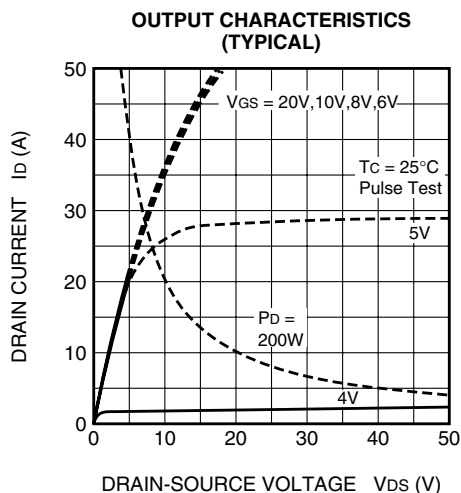
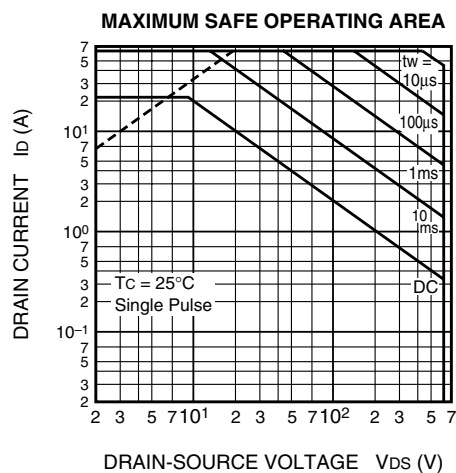
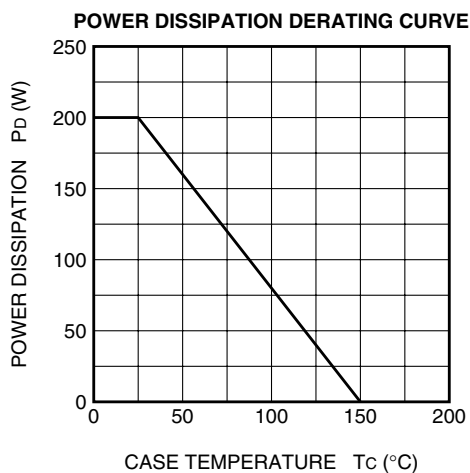
# FS22SM-12A

HIGH-SPEED SWITCHING USE

## ELECTRICAL CHARACTERISTICS (T<sub>ch</sub> = 25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
V (BR) DSS	Drain-source breakdown voltage	I <sub>D</sub> = 1mA, V <sub>GS</sub> = 0V	600	—	—	V
V (BR) GSS	Gate-source breakdown voltage	I <sub>G</sub> = ±100μA, V <sub>DS</sub> = 0V	±30	—	—	V
I <sub>GSS</sub>	Gate-source leakage current	V <sub>GS</sub> = ±25V, V <sub>DS</sub> = 0V	—	—	±10	μA
I <sub>DSS</sub>	Drain-source leakage current	V <sub>DS</sub> = 600V, V <sub>GS</sub> = 0V	—	—	1	mA
V <sub>GS</sub> (th)	Gate-source threshold voltage	I <sub>D</sub> = 1mA, V <sub>DS</sub> = 10V	2.5	3.0	3.5	V
r <sub>DS</sub> (ON)	Drain-source on-state resistance	I <sub>D</sub> = 11A, V <sub>GS</sub> = 10V	—	0.23	0.30	Ω
V <sub>DS</sub> (ON)	Drain-source on-state voltage	I <sub>D</sub> = 11A, V <sub>GS</sub> = 10V	—	2.53	3.30	V
y <sub>fs</sub>	Forward transfer admittance	I <sub>D</sub> = 11A, V <sub>DS</sub> = 10V	14.4	24.0	—	S
C <sub>iss</sub>	Input capacitance	V <sub>DS</sub> = 25V, V <sub>GS</sub> = 0V, f = 1MHz	—	4600	—	pF
C <sub>oss</sub>	Output capacitance		—	420	—	pF
C <sub>rss</sub>	Reverse transfer capacitance		—	100	—	pF
t <sub>d</sub> (on)	Turn-on delay time	V <sub>DD</sub> = 200V, I <sub>D</sub> = 11A, V <sub>GS</sub> = 10V, R <sub>GEN</sub> = R <sub>GS</sub> = 50Ω	—	60	—	ns
t <sub>r</sub>	Rise time		—	100	—	ns
t <sub>d</sub> (off)	Turn-off delay time		—	630	—	ns
t <sub>f</sub>	Fall time		—	140	—	ns
V <sub>SD</sub>	Source-drain voltage	I <sub>S</sub> = 11A, V <sub>GS</sub> = 0V	—	1.5	2.0	V
R <sub>th</sub> (ch-c)	Thermal resistance	Channel to case	—	—	0.625	°C/W

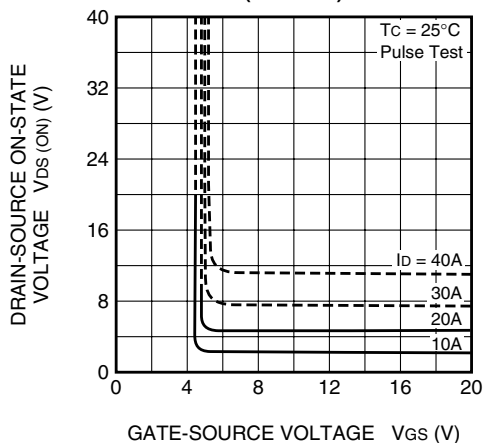
## PERFORMANCE CURVES



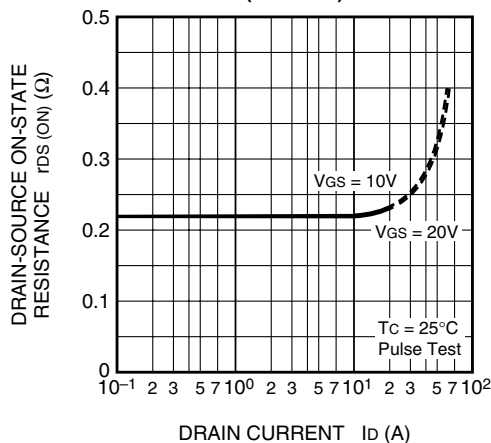
# FS22SM-12A

## HIGH-SPEED SWITCHING USE

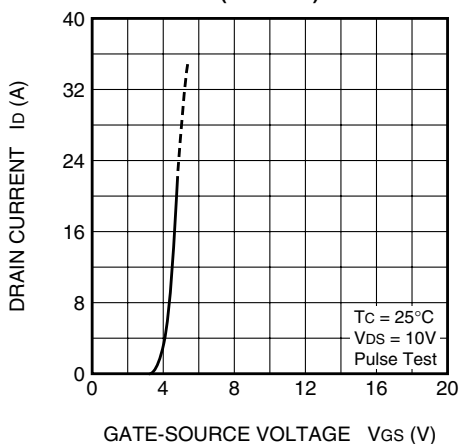
**ON-STATE VOLTAGE VS. GATE-SOURCE VOLTAGE (TYPICAL)**



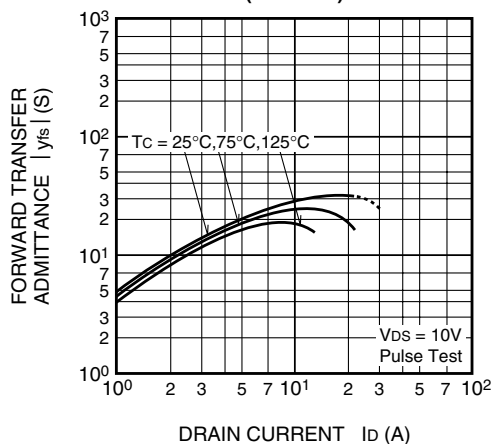
**ON-STATE RESISTANCE VS. DRAIN CURRENT (TYPICAL)**



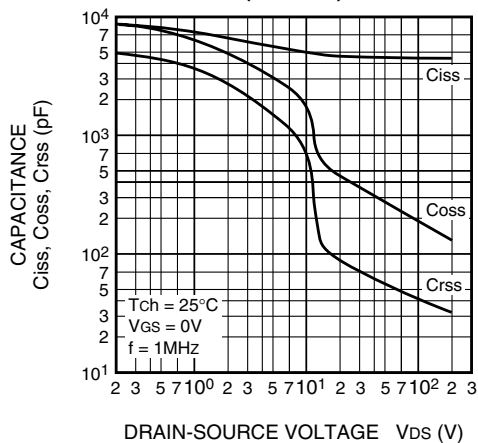
**TRANSFER CHARACTERISTICS (TYPICAL)**



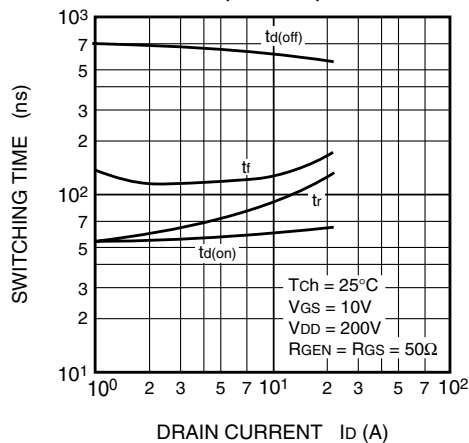
**FORWARD TRANSFER ADMITTANCE VS. DRAIN CURRENT (TYPICAL)**



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



**SWITCHING CHARACTERISTICS (TYPICAL)**



# FS22SM-12A

HIGH-SPEED SWITCHING USE

