

To all our customers

Regarding the change of names mentioned in the document, such as Mitsubishi Electric and Mitsubishi XX, to Renesas Technology Corp.

The semiconductor operations of Hitachi and Mitsubishi Electric were transferred to Renesas Technology Corporation on April 1st 2003. These operations include microcomputer, logic, analog and discrete devices, and memory chips other than DRAMs (flash memory, SRAMs etc.) Accordingly, although Mitsubishi Electric, Mitsubishi Electric Corporation, Mitsubishi Semiconductors, and other Mitsubishi brand names are mentioned in the document, these names have in fact all been changed to Renesas Technology Corp. Thank you for your understanding. Except for our corporate trademark, logo and corporate statement, no changes whatsoever have been made to the contents of the document, and these changes do not constitute any alteration to the contents of the document itself.

Note : Mitsubishi Electric will continue the business operations of high frequency & optical devices and power devices.

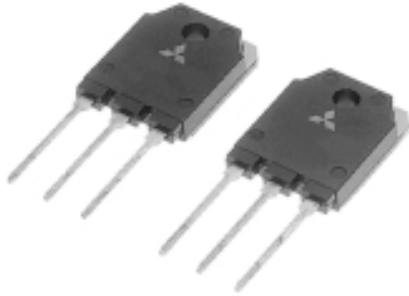
Renesas Technology Corp.
Customer Support Dept.
April 1, 2003

MITSUBISHI Nch POWER MOSFET

FS22SM-12A

HIGH-SPEED SWITCHING USE

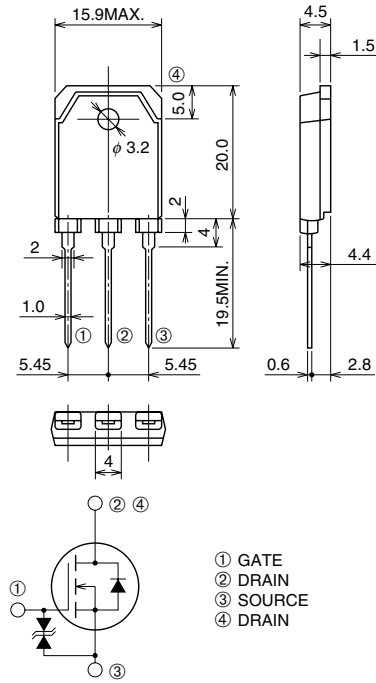
FS22SM-12A



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

OUTLINE DRAWING

Dimensions in mm



APPLICATION

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

MAXIMUM RATINGS (T_C = 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 = 200μH	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

Sep. 2001

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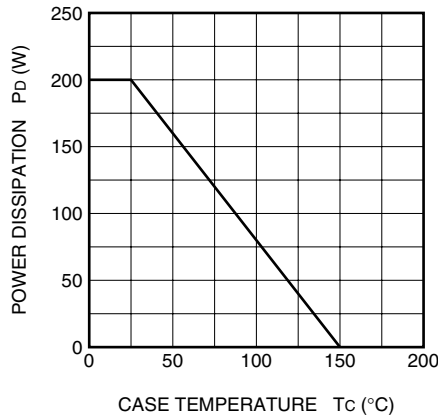
HIGH-SPEED SWITCHING USE

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

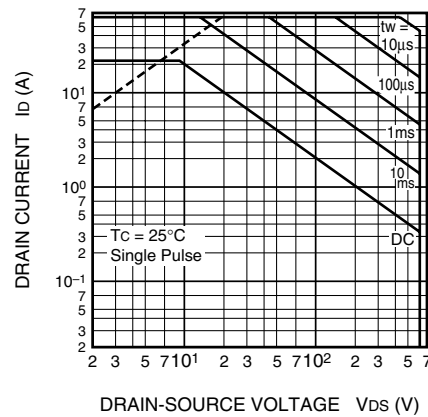
Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
V (BR) DSS	Drain-source breakdown voltage	I _D = 1mA, V _{GS} = 0V	600	—	—	V
V (BR) GSS	Gate-source breakdown voltage	I _G = ±100μA, V _{DS} = 0V	±30	—	—	V
I _{GSS}	Gate-source leakage current	V _{GS} = ±25V, V _{DS} = 0V	—	—	±10	μA
I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

PERFORMANCE CURVES

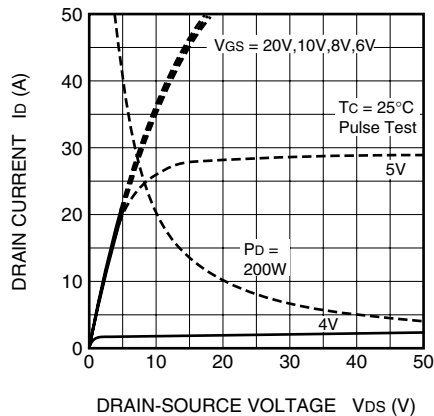
POWER DISSIPATION DERATING CURVE



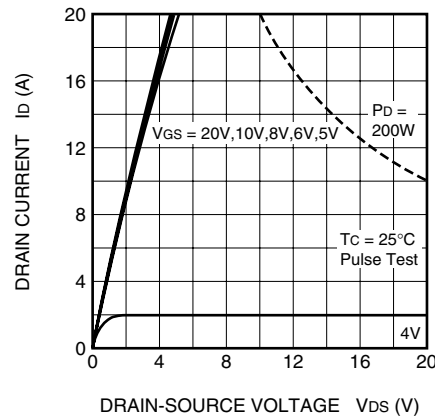
MAXIMUM SAFE OPERATING AREA



OUTPUT CHARACTERISTICS (TYPICAL)



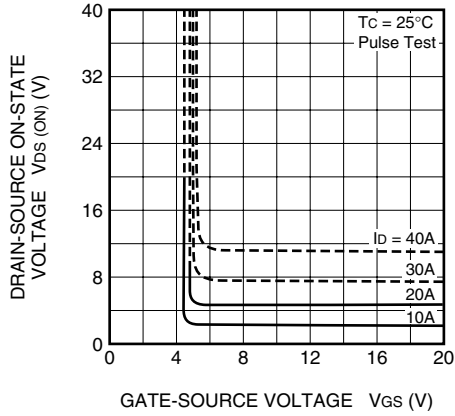
OUTPUT CHARACTERISTICS (TYPICAL)



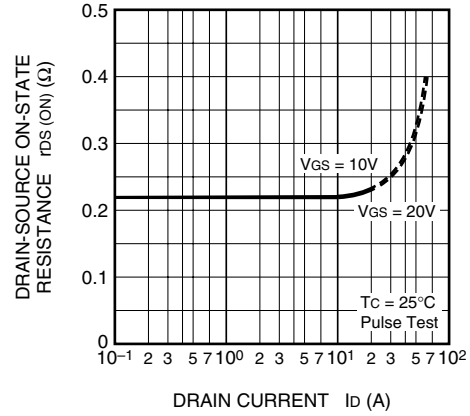
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HIGH-SPEED SWITCHING USE

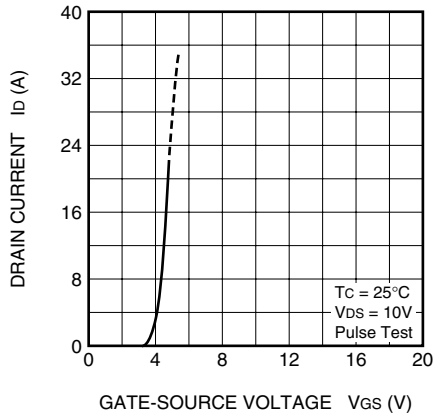
ON-STATE VOLTAGE VS. GATE-SOURCE VOLTAGE (TYPICAL)



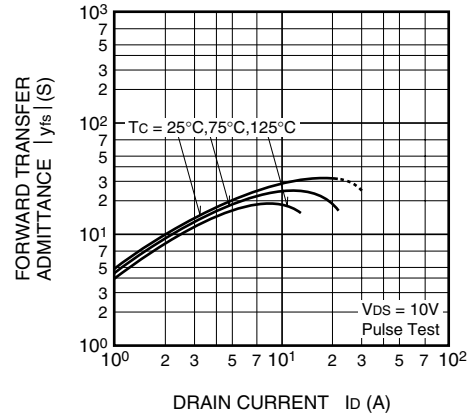
ON-STATE RESISTANCE VS. DRAIN CURRENT (TYPICAL)



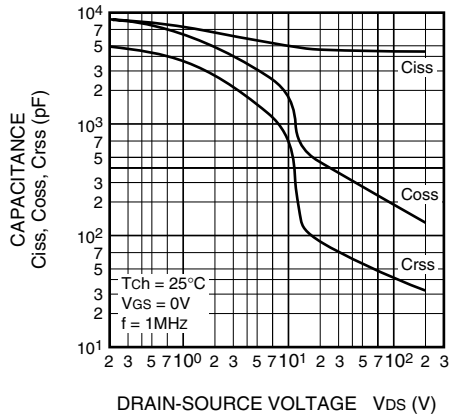
TRANSFER CHARACTERISTICS (TYPICAL)



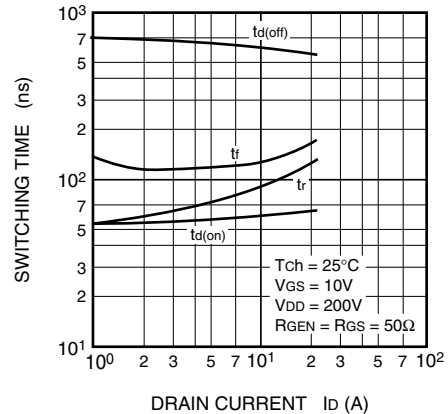
FORWARD TRANSFER ADMITTANCE VS. DRAIN CURRENT (TYPICAL)



CAPACITANCE VS. DRAIN-SOURCE VOLTAGE (TYPICAL)



SWITCHING CHARACTERISTICS (TYPICAL)



FS22SM-12A

HIGH-SPEED SWITCHING USE

