

To our customers,

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## Old Company Name in Catalogs and Other Documents

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On April 1<sup>st</sup>, 2010, NEC Electronics Corporation merged with Renesas Technology Corporation, and Renesas Electronics Corporation took over all the business of both companies. Therefore, although the old company name remains in this document, it is a valid Renesas Electronics document. We appreciate your understanding.

Renesas Electronics website: <http://www.renesas.com>

April 1<sup>st</sup>, 2010  
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

Send any inquiries to <http://www.renesas.com/inquiry>.

Not recommended  
for new design

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(Note 2) “Renesas Electronics product(s)” means any product developed or manufactured by or for Renesas Electronics.

To all our customers

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

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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

# FY12AAJ-03F

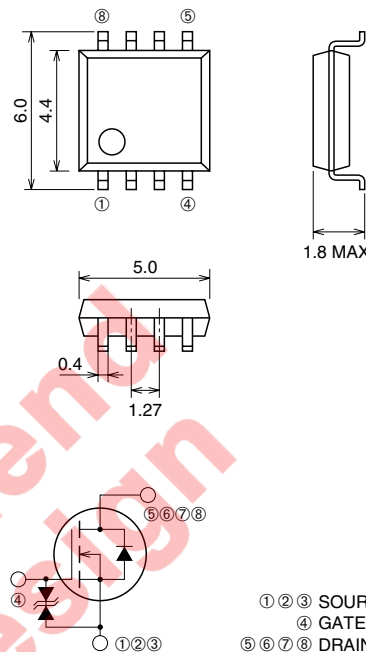
HIGH-SPEED SWITCHING USE

**FY12AAJ-03F**



- 4V DRIVE
- V<sub>DSS</sub> ..... 30V
- r<sub>DS (ON)</sub> (MAX) ..... 11.5mΩ
- I<sub>D</sub> ..... 12A

**OUTLINE DRAWING** Dimensions in mm



① ② ③ SOURCE  
④ GATE  
⑤ ⑥ ⑦ ⑧ DRAIN

**SOP-8**

**APPLICATION**

Motor control, Lamp control, Solenoid control  
DC-DC converter, etc.

**MAXIMUM RATINGS** (T<sub>c</sub> = 25°C)

Symbol	Parameter	Conditions	Ratings	Unit
V <sub>DSS</sub>	Drain-source voltage	V <sub>GS</sub> = 0V	30	V
V <sub>GSS</sub>	Gate-source voltage	V <sub>DS</sub> = 0V	±20	V
I <sub>D</sub>	Drain current		12	A
I <sub>DM</sub>	Drain current (Pulsed)		84	A
I <sub>DA</sub>	Avalanche drain current (Pulsed)	L = 10μH	12	A
I <sub>S</sub>	Source current		1.8	A
I <sub>SM</sub>	Source current (Pulsed)		7.2	A
P <sub>D</sub>	Maximum power dissipation		2.0	W
T <sub>ch</sub>	Channel temperature		-55~+150	°C
T <sub>stg</sub>	Storage temperature		-55~+150	°C
—	Weight	Typical value	0.07	g

**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	30	—	—	V
V (BR)GSS	Gate-source breakdown voltage	IG = ±100μA, VGS = 0V	±20	—	—	V
IDSS	Drain-source leakage current	VDS = 30V, VGS = 0V	—	—	0.1	mA
IGSS	Gate-source leakage current	VGS = ±20V, VDS = 0V	—	—	±10	μA
VGS (th)	Gate-source threshold voltage	ID = 1mA, VDS = 10V	1.0	1.5	2.0	V
rDS (ON)	Drain-source on-state resistance	ID = 12A, VGS = 10V	—	9.0	11.5	mΩ
rDS (ON)	Drain-source on-state resistance	ID = 6A, VGS = 4.5V	—	12.5	17.5	mΩ
rDS (ON)	Drain-source on-state resistance	ID = 6A, VGS = 4V	—	14.5	20.0	mΩ
VDS (ON)	Drain-source on-state voltage	ID = 12A, VGS = 10V	—	0.108	0.138	V
yfs	Forward transfer admittance	ID = 12A, VDS = 10V	—	25	—	S
Ciss	Input capacitance	VDS = 10V, VGS = 0V, f = 1MHz	—	1800	—	pF
Coss	Output capacitance		—	500	—	pF
Crss	Reverse transfer capacitance		—	230	—	pF
td (on)	Turn-on delay time	VDD = 15V, ID = 6A, VGS = 10V, RG = 5Ω	—	18	—	ns
tr	Rise time		—	20	—	ns
td (off)	Turn-off delay time		—	50	—	ns
tf	Fall time		—	17	—	ns
Qg	Total gate charge	VDD = 15V, VGS = 10V, ID = 12A	—	35	—	nC
Qgs	Gate-source charge		—	4	—	nC
Qgd	Gate-drain charge		—	10	—	nC
VSD	Source-drain voltage	IS = 1.8A, VGS = 0V	—	0.75	1.10	V
Rth (ch-a)	Thermal resistance	Channel to air	—	—	62.5	°C/W
trr	Reverse recovery time	IS = 1.8A, dis/dt = -50A/μs	—	45	—	ns

Not recommended for new design