

To all our customers

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

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Keep safety first in your circuit designs!

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# H7N0308CF

Silicon N Channel MOS FET  
High Speed Power Switching

**RENESAS**

ADE-208-1570A(Z)

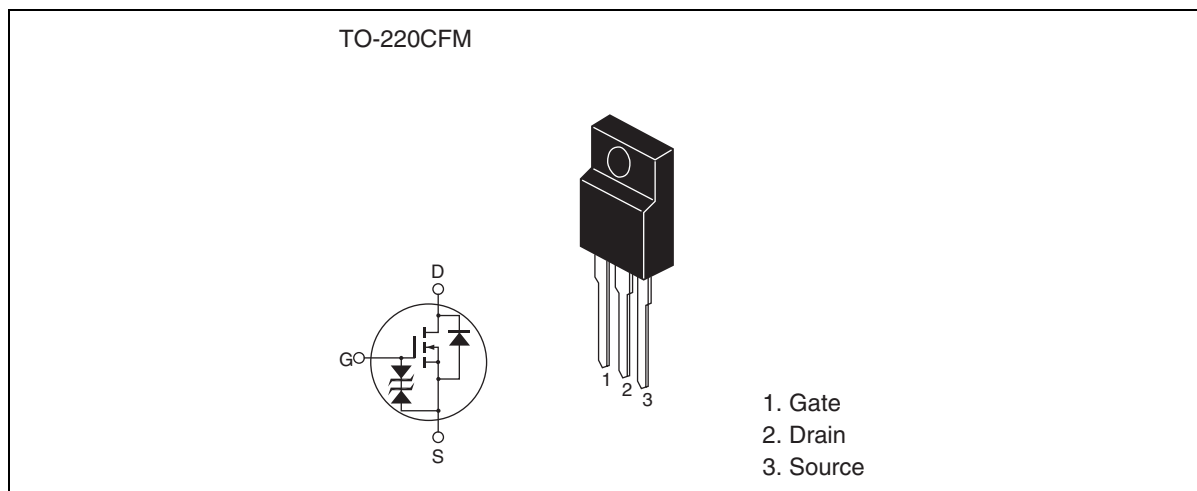
2nd. Edition  
Aug. 2002

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## Features

- Low on-resistance
- $R_{DS(on)} = 3.8 \text{ m}\Omega$  typ.
- Low drive current
- 4.5 V gate drive device can be driven from 5 V source

## Outline



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## H7N0308CF

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### Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V <sub>DSS</sub>	30	V
Gate to source voltage	V <sub>GSS</sub>	±20	V
Drain current	I <sub>D</sub>	60	A
Drain peak current	I <sub>D(pulse)</sub> <sup>Note 1</sup>	240	A
Body-drain diode reverse drain current	I <sub>DR</sub>	60	A
Channel dissipation	P <sub>ch</sub> <sup>Note 2</sup>	30	W
Channel to Case Thermal Impedance	θ <sub>ch-c</sub>	4.17	°C/W
Channel to Ambient Thermal Impedance	θ <sub>ch-a</sub>	62.5	°C/W
Channel temperature	T <sub>ch</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55 to +150	°C

Notes: 1. PW ≤ 10μs, duty cycle ≤ 1 %  
2. Value at Tc = 25°C

**Electrical Characteristics**

(Ta = 25°C)

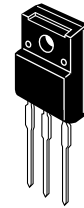
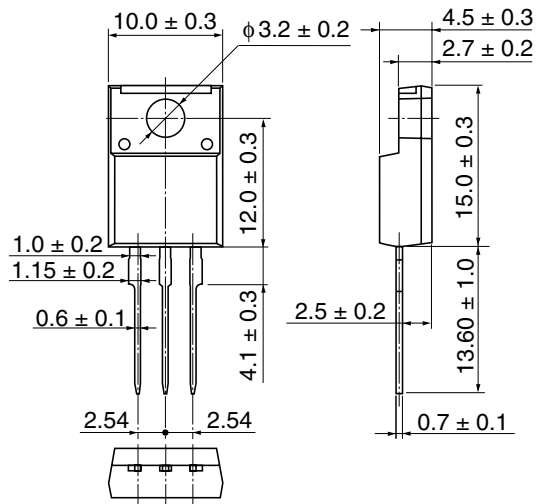
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	30	—	—	V	$I_D = 10 \text{ mA}, V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	$\pm 20$	—	—		$I_G = \pm 100 \text{ }\mu\text{A}, V_{DS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	$\pm 10$	$\mu\text{A}$	$V_{GS} = \pm 16 \text{ V}, V_{DS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	10	$\mu\text{A}$	$V_{DS} = 30 \text{ V}, V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	1.0	—	2.5	V	$I_D = 1 \text{ mA}, V_{DS} = 10 \text{ V}$ <sup>Note 1</sup>
Static drain to source on state resistance	$R_{DS(on)}$	—	3.8	4.8	$\text{m}\Omega$	$I_D = 30 \text{ A}, V_{GS} = 10 \text{ V}$ <sup>Note 1</sup>
		—	6.0	8.5	$\text{m}\Omega$	$I_D = 30 \text{ A}, V_{GS} = 4.5 \text{ V}$ <sup>Note 1</sup>
Forward transfer admittance	$ y_{fs} $	42	70	—	S	$I_D = 30 \text{ A}, V_{DS} = 10 \text{ V}$ <sup>Note 1</sup>
Input capacitance	$C_{iss}$	—	3350	—	pF	$V_{DS} = 10 \text{ V}$
Output capacitance	$C_{oss}$	—	840	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	$C_{rss}$	—	480	—	pF	$f = 1 \text{ MHz}$
Total gate charge	$Q_g$	—	52	—	nc	$V_{DD} = 10 \text{ V}$
Gate to source charge	$Q_{gs}$	—	11	—	nc	$V_{GS} = 10 \text{ V}$
Gate to drain charge	$Q_{gd}$	—	10	—	nc	$I_D = 60 \text{ A}$
Turn-on delay time	$t_{d(on)}$	—	30	—	ns	$V_{GS} = 10 \text{ V}, I_D = 30 \text{ A}$
Rise time	$t_r$	—	370	—	ns	$R_L = 0.33 \text{ }\Omega$
Turn-off delay time	$t_{d(off)}$	—	80	—	ns	$R_g = 4.7 \text{ }\Omega$
Fall time	$t_f$	—	27	—	ns	
Body-drain diode forward voltage	$V_{DF}$	—	0.90	—	V	$I_F = 60 \text{ A}, V_{GS} = 0$
Body-drain diode reverse recovery time	$t_{rr}$	—	55	—	ns	$I_F = 60 \text{ A}, V_{GS} = 0$ $di_F/dt = 50 \text{ A}/\mu\text{s}$

Notes: 1. Pulse test

# H7N0308CF

## Package Dimensions

As of January, 2002  
Unit: mm



Hitachi Code	TO-220CFM
JEDEC	—
JEITA	—
Mass (reference value)	1.9 g

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