

# H7N0308CF

Silicon N Channel MOS FET  
High Speed Power Switching

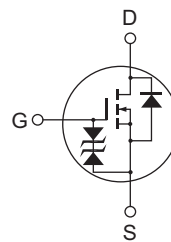
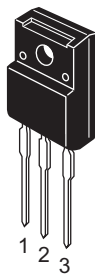
REJ03G1123-0300  
(Previous: ADE-208-1570A)  
Rev.3.00  
Sep 07, 2005

## 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

RENESAS Package code: PRSS0003AE-A  
(Package name: TO-220C•FM)



1. Gate
2. Drain
3. Source

## Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Value	Unit
Drain to source voltage	$V_{DS}$	30	V
Gate to source voltage	$V_{GS}$	±20	V
Drain current	$I_D$	60	A
Drain peak current	$I_{D(pulse)}$ <sup>Note 1</sup>	240	A
Body-drain diode reverse drain current	$I_{DR}$	60	A
Channel dissipation	$P_{ch}$ <sup>Note 2</sup>	30	W
Channel to case thermal impedance	$\theta_{ch-c}$	4.17	°C/W
Channel to ambient thermal impedance	$\theta_{ch-a}$	62.5	°C/W
Channel temperature	$T_{ch}$	150	°C
Storage temperature	$T_{stg}$	-55 to +150	°C

Notes: 1.  $PW \leq 10 \mu s$ , duty cycle  $\leq 1\%$ 2. Value at  $T_c = 25^\circ C$ 

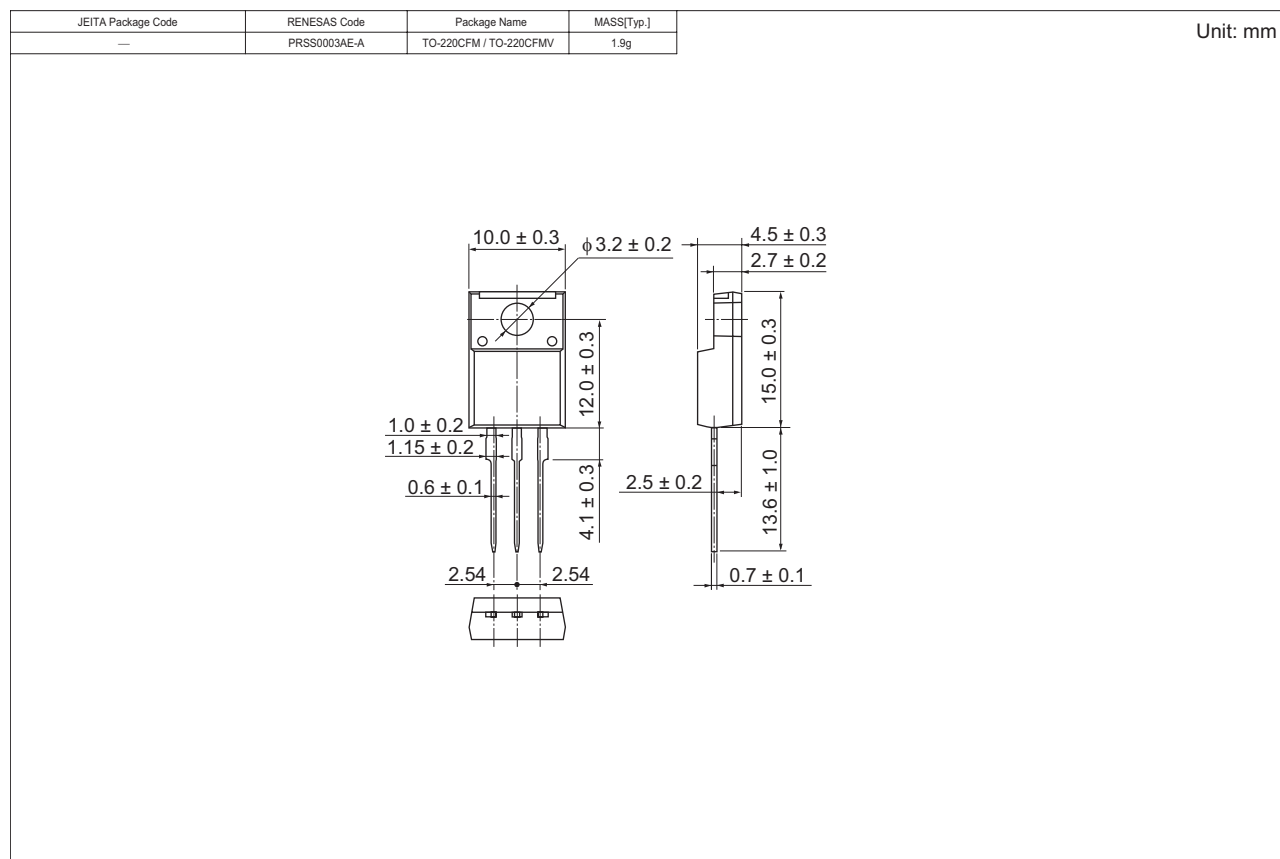
## Electrical Characteristics

(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	$V_{(BR)GSS}$	±20	—	—	V	$I_G = \pm 100 \mu A$ , $V_{DS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	±10	μA	$V_{GS} = \pm 16 \text{ V}$ , $V_{DS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	10	μA	$V_{DS} = 30 \text{ V}$ , $V_{GS} = 0$
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 3</sup>
Static drain to source on state resistance	$R_{DS(on)}$	—	3.8	4.8	mΩ	$I_D = 30 \text{ A}$ , $V_{GS} = 10 \text{ V}$ <sup>Note 3</sup>
		—	6.0	8.5	mΩ	$I_D = 30 \text{ A}$ , $V_{GS} = 4.5 \text{ V}$ <sup>Note 3</sup>
Forward transfer admittance	$ y_{fs} $	42	70	—	S	$I_D = 30 \text{ A}$ , $V_{DS} = 10 \text{ V}$ <sup>Note 3</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	$R_L = 0.33 \Omega$
Turn-off delay time	$t_{d(off)}$	—	80	—	ns	$R_g = 4.7 \Omega$
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	$I_F = 60 \text{ A}$ , $V_{GS} = 0$ $di_F/dt = 50 \text{ A}/\mu s$

Note: 3. Pulse test

## Package Dimensions



## Ordering Information

Part Name	Quantity	Shipping Container
H7N0308CF-E	50 pcs	Plastic magazine

Note: For some grades, production may be terminated. Please contact the Renesas sales office to check the state of production before ordering the product.

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