

# H5N2502CF

Silicon N Channel MOS FET  
High Speed Power Switching

REJ03G0480-0100

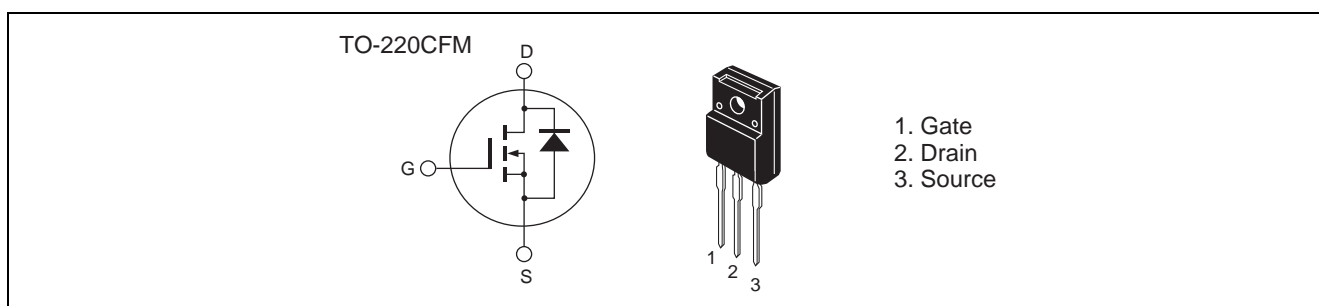
Rev.1.00

Nov.26.2004

## Features

- Low on-resistance
- Low leakage current
- High Speed Switching

## Outline



## Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	$V_{DSS}$	250	V
Gate to source voltage	$V_{GSS}$	±30	V
Drain current	$I_D$	18	A
Drain peak current	$I_{D(pulse)}$ Note 1	72	A
Body-drain diode reverse drain current	$I_{DR}$	18	A
Body-drain diode reverse drain peak current	$I_{DR(pulse)}$ Note 1	72	A
Avalanche current	$I_{AP}$ Note 3	18	A
Channel dissipation	$P_{ch}$ Note 2	35	W
Channel to case Thermal Impedance	$\theta_{ch-c}$	3.57	°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  $T_c = 25^\circ C$

3.  $T_{ch} \leq 150^\circ C$

## Electrical Characteristics

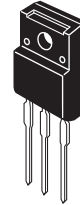
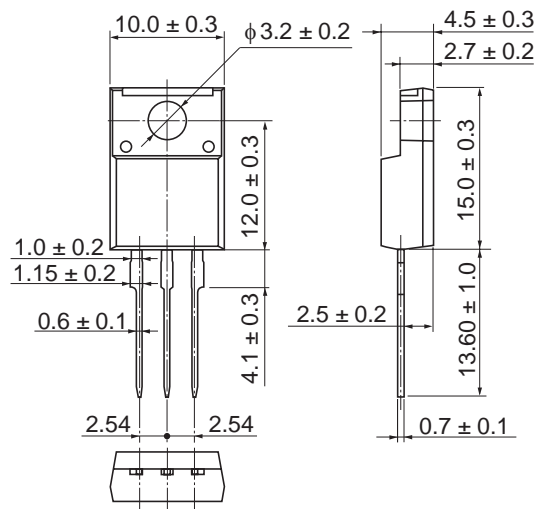
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	250	—	—	V	$I_D = 10 \text{ mA}$ , $V_{GS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	$\pm 0.1$	$\mu\text{A}$	$V_{GS} = \pm 30 \text{ V}$ , $V_{DS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	1	$\mu\text{A}$	$V_{DS} = 250 \text{ V}$ , $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	3.0	—	4.0	V	$I_D = 1 \text{ mA}$ , $V_{DS} = 10 \text{ V}$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.082	0.105	$\Omega$	$I_D = 9 \text{ A}$ , $V_{GS} = 10 \text{ V}$ <sup>Note 4</sup>
Forward transfer admittance	$ y_{fs} $	10	17	—	S	$I_D = 9 \text{ A}$ , $V_{DS} = 10 \text{ V}$ <sup>Note 4</sup>
Input capacitance	$C_{iss}$	—	2300	—	pF	$V_{DS} = 25 \text{ V}$
Output capacitance	$C_{oss}$	—	290	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	$C_{rss}$	—	80	—	pF	$f = 1 \text{ MHz}$
Turn-on delay time	$t_{d(on)}$	—	40	—	ns	$I_D = 9 \text{ A}$ $R_L = 13.9 \Omega$ $V_{GS} = 10 \text{ V}$ $R_g = 10 \Omega$
Rise time	$t_r$	—	65	—	ns	
Turn-off delay time	$t_{d(off)}$	—	140	—	ns	
Fall time	$t_f$	—	40	—	ns	
Total gate charge	$Q_g$	—	75	—	nC	$V_{DD} = 200 \text{ V}$
Gate to source charge	$Q_{gs}$	—	12	—	nC	$V_{GS} = 10 \text{ V}$
Gate to drain charge	$Q_{gd}$	—	38	—	nC	$I_D = 18 \text{ A}$
Body-drain diode forward voltage	$V_{DF}$	—	0.85	1.3	V	$I_F = 18 \text{ A}$ , $V_{GS} = 0$ <sup>Note 4</sup>
Body-drain diode reverse recovery time	$t_{rr}$	—	200	—	ns	$I_F = 18 \text{ A}$ , $V_{GS} = 0$ $diF/dt = 100 \text{ A}/\mu\text{s}$
Body-drain diode reverse recovery time	$Q_{rr}$	—	1.4	—	$\mu\text{C}$	

Notes: 4. Pulse test

## Package Dimensions

As of January, 2003  
Unit: mm



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

## Ordering Information

Part Name	Quantity	Shipping Container
H5N2502CF	50	Stick

Note: Therefore especially small contact area of terminal, miss contact may occur if inadequate soldering condition is applied.

Contact Renesas sales office for any question regarding recommended soldering condition of Renesas.

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