

To our customers,

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## Old Company Name in Catalogs and Other Documents

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

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Not recommended  
for new design

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# RJK4512DPP

Silicon N Channel MOS FET  
High Speed Power Switching

REJ03G1751-0100

Rev.1.00

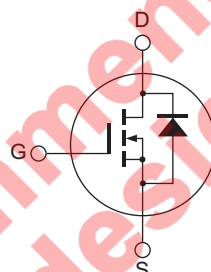
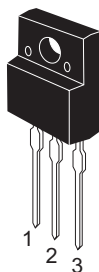
Nov 12, 2008

## Features

- Low on-resistance
- Low leakage current
- High speed switching

## Outline

RENESAS Package code: PRSS0003AB-A  
(Package name: TO-220FN)



1. Gate
2. Drain
3. Source

## Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	$V_{DSS}$	450	V
Gate to source voltage	$V_{GSS}$	±30	V
Drain current	$I_D$ <sup>Note4</sup>	14	A
Drain peak current	$I_{D(pulse)}$ <sup>Note1</sup>	42	A
Body-drain diode reverse drain current	$I_{DR}$	14	A
Body-drain diode reverse drain peak current	$I_{DR(pulse)}$ <sup>Note1</sup>	42	A
Avalanche current	$I_{AP}$ <sup>Note3</sup>	3	A
Avalanche energy	$E_{AR}$ <sup>Note3</sup>	0.5	mJ
Channel dissipation	$P_{ch}$ <sup>Note2</sup>	30	W
Channel to case thermal impedance	$\theta_{ch-c}$	4.17	°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.  $ST_{ch} = 25^\circ C$ ,  $T_{ch} \leq 150^\circ C$   
 4. Limited by maximum safe operation area

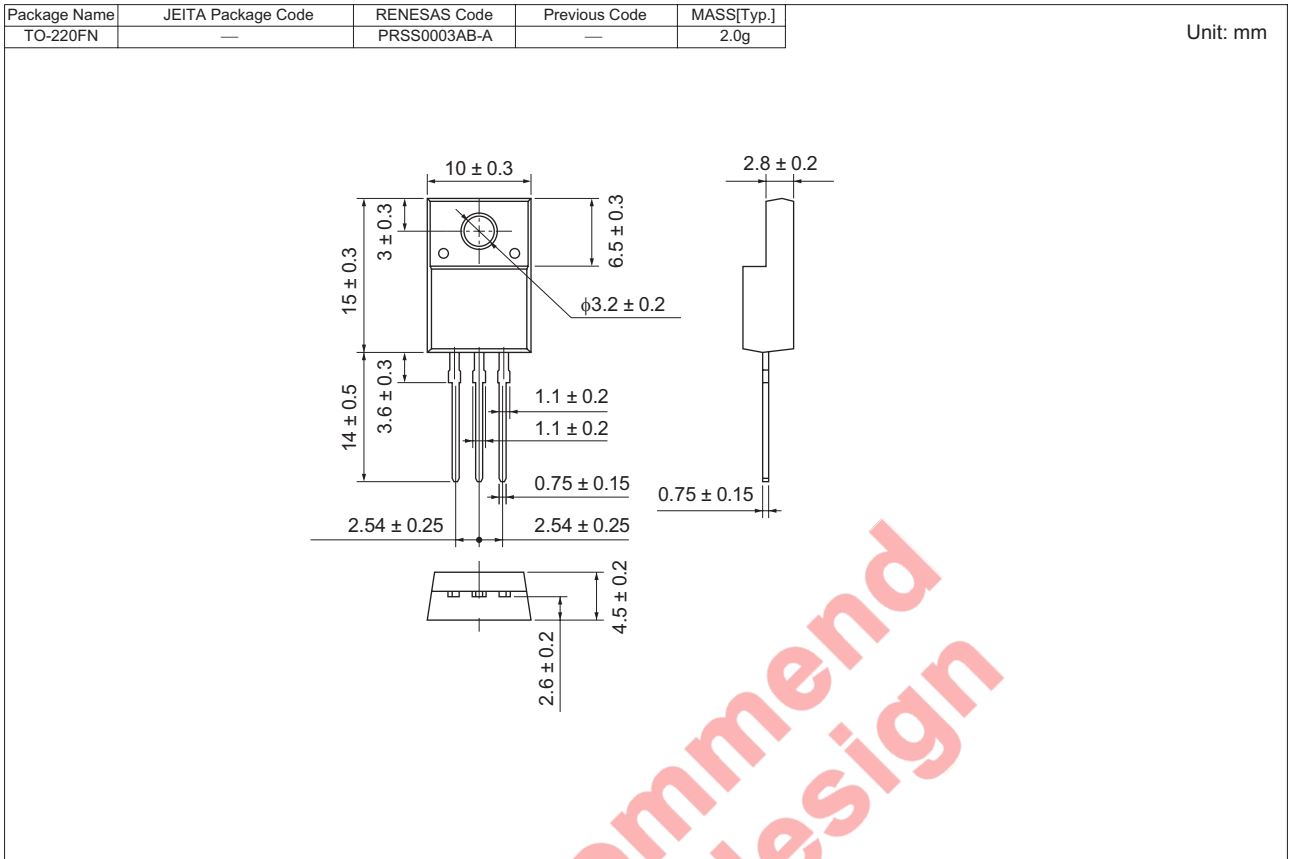
## Electrical Characteristics

(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	450	—	—	V	$I_D = 10 \text{ mA}$ , $V_{GS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	1	$\mu\text{A}$	$V_{DS} = 450 \text{ V}$ , $V_{GS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	$\pm 0.1$	$\mu\text{A}$	$V_{GS} = \pm 30 \text{ V}$ , $V_{DS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	3.0	—	4.5	V	$V_{DS} = 10 \text{ V}$ , $I_D = 1 \text{ mA}$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.43	0.51	$\Omega$	$I_D = 7 \text{ A}$ , $V_{GS} = 10 \text{ V}$ <sup>Note5</sup>
Input capacitance	$C_{iss}$	—	1100	—	pF	$V_{DS} = 25 \text{ V}$
Output capacitance	$C_{oss}$	—	125	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	$C_{rss}$	—	15	—	pF	$f = 1 \text{ MHz}$
Turn-on delay time	$t_{d(on)}$	—	30	—	ns	$I_D = 7 \text{ A}$
Rise time	$t_r$	—	25	—	ns	$V_{GS} = 10 \text{ V}$
Turn-off delay time	$t_{d(off)}$	—	78	—	ns	$R_L = 32.1 \Omega$
Fall time	$t_f$	—	17	—	ns	$R_g = 10 \Omega$
Total gate charge	$Q_g$	—	29	—	nC	$V_{DD} = 360 \text{ V}$
Gate to source charge	$Q_{gs}$	—	5.5	—	nC	$V_{GS} = 10 \text{ V}$
Gate to drain charge	$Q_{gd}$	—	13	—	nC	$I_D = 14 \text{ A}$
Body-drain diode forward voltage	$V_{DF}$	—	0.89	1.50	V	$I_F = 14 \text{ A}$ , $V_{GS} = 0$ <sup>Note5</sup>
Body-drain diode reverse recovery time	$t_{rr}$	—	280	—	ns	$I_F = 14 \text{ A}$ , $V_{GS} = 0$ $di_F/dt = 100 \text{ A}/\mu\text{s}$

Notes: 5. Pulse test

### Package Dimensions



### Ordering Information

Part No.	Quantity	Shipping Container
RJK4512DPP-00-T2	1050 pcs	Box (Tube)

Notes:

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450 Holger Way, San Jose, CA 95134-1368, U.S.A  
Tel: <1> (408) 382-7500, Fax: <1> (408) 382-7501

**Renesas Technology Europe Limited**  
Dukes Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, U.K.  
Tel: <44> (1628) 585-100, Fax: <44> (1628) 585-900

**Renesas Technology (Shanghai) Co., Ltd.**  
Unit 204, 205, AZIA Center, No.1233 Lujiazui Ring Rd, Pudong District, Shanghai, China 200120  
Tel: <86> (21) 5877-1818, Fax: <86> (21) 6887-7858/7898

**Renesas Technology Hong Kong Ltd.**  
7th Floor, North Tower, World Finance Centre, Harbour City, Canton Road, Tsimshatsui, Kowloon, Hong Kong  
Tel: <852> 2265-6688, Fax: <852> 2377-3473

**Renesas Technology Taiwan Co., Ltd.**  
10th Floor, No.99, Fushing North Road, Taipei, Taiwan  
Tel: <886> (2) 2715-2888, Fax: <886> (2) 3518-3399

**Renesas Technology Singapore Pte. Ltd.**  
1 Harbour Front Avenue, #06-10, Keppel Bay Tower, Singapore 098632  
Tel: <65> 6213-0200, Fax: <65> 6278-8001

**Renesas Technology Korea Co., Ltd.**  
Kukje Center Bldg. 18th Fl., 191, 2-ka, Hangang-ro, Yongsan-ku, Seoul 140-702, Korea  
Tel: <82> (2) 796-3115, Fax: <82> (2) 796-2145

**Renesas Technology Malaysia Sdn. Bhd**  
Unit 906, Block B, Menara Amcorp, Amcorp Trade Centre, No.18, Jln Persiaran Barat, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia  
Tel: <603> 7955-9390, Fax: <603> 7955-9510