To our customers,

Old Company Name in Catalogs and Other Documents

On April 1st, 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 1st, 2010
Renesas Electronics Corporation

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

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RJK5009DPP

Silicon N Channel MOS FET
High Speed Power Switching

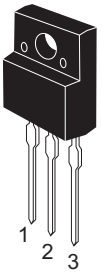
REJ03G1606-0100
Rev.1.00
Dec 04, 2007

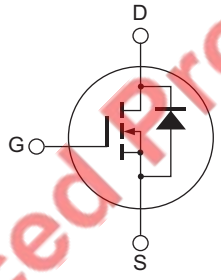
Features

- 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}	500	V
Gate to source voltage	V_{GSS}	±30	V
Drain current	I_D Note4	20	A
Drain peak current	$I_{D\ (pulse)}$ Note1	60	A
Body-drain diode reverse drain current	I_{DR}	20	A
Body-drain diode reverse drain peak current	$I_{DR\ (pulse)}$ Note1	60	A
Avalanche current	I_{AP} Note3	4	A
Avalanche energy	E_{AR} Note3	0.88	mJ
Channel dissipation	Pch Note2	40	W
Channel to case thermal impedance	θch-c	3.125	°C/W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	–55 to +150	°C

Notes: 1. PW ≤ 10 µs, duty cycle ≤ 1%
2. Value at Tc = 25°C
3. STch = 25°C, Tch ≤ 150°C
4. Limited by maximum safe operation area

Electrical Characteristics

(Ta = 25°C)

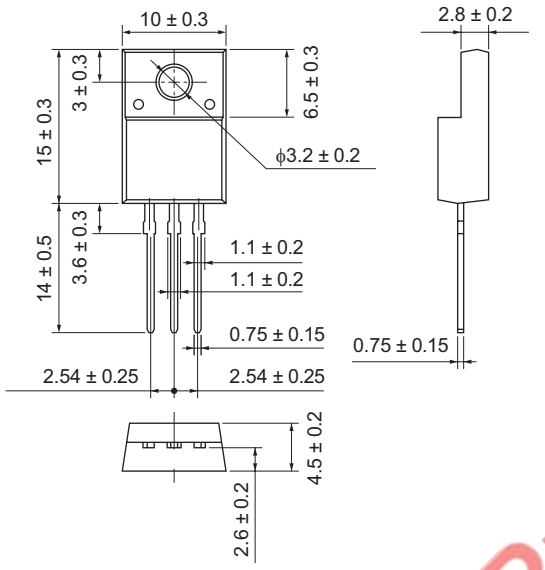
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	500	—	—	V	I_D = 10 mA, V_{GS} = 0
Zero gate voltage drain current	I_{DSS}	—	—	1	µA	V_{DS} = 500 V, V_{GS} = 0
Gate to source leak current	I_{GSS}	—	—	±0.1	µA	V_{GS} = ±30 V, V_{DS} = 0
Gate to source cutoff voltage	$V_{GS(off)}$	3.0	—	4.5	V	V_{DS} = 10 V, I_D = 1 mA
Static drain to source on state resistance	$R_{DS(on)}$	—	0.260	0.325	Ω	I_D = 10 A, V_{GS} = 10 V Note5
Input capacitance	Ciss	—	2100	—	pF	V_{DS} = 25 V V_{GS} = 0 f = 1 MHz
Output capacitance	Coss	—	220	—	pF	
Reverse transfer capacitance	Crss	—	27	—	pF	
Turn-on delay time	$t_{d(on)}$	—	35	—	ns	I_D = 10 A V_{GS} = 10 V R_L = 25 Ω Rg = 10 Ω
Rise time	t_r	—	33	—	ns	
Turn-off delay time	$t_{d(off)}$	—	97	—	ns	
Fall time	t_f	—	17	—	ns	
Total gate charge	Qg	—	52	—	nC	V_{DD} = 400 V V_{GS} = 10 V I_D = 20 A
Gate to source charge	Qgs	—	10.5	—	nC	
Gate to drain charge	Qgd	—	22	—	nC	
Body-drain diode forward voltage	V_{DF}	—	1.0	1.6	V	I_F = 20 A, V_{GS} = 0 Note5
Body-drain diode reverse recovery time	t_{rr}	—	320	—	ns	I_F = 20 A, V_{GS} = 0 di_F/dt = 100 A/µs

Notes: 5. Pulse test

Package Dimensions

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
TO-220FN	—	PRSS0003AB-A	—	2.0g

Unit: mm



Ordering Information

Part Name	Quantity	Shipping Container
RJK5009DPP-00-T2	1050 pcs	Box (Tube)

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