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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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RJK4513DPE

Silicon N Channel MOS FET
High Speed Power Switching

REJ03G1586-0100

Rev.1.00

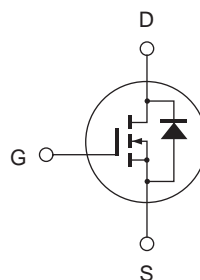
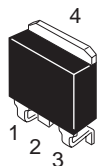
Dec 08, 2009

Features

- Low on-resistance
 $R_{DS(on)} = 0.33 \Omega$ typ. (at $I_D = 8 A$, $V_{GS} = 10 V$, $T_a = 25^\circ C$)
- Low leakage current
- High speed switching

Outline

RENESAS Package code: PRSS0004AE-B
(Package name: LDKPAK(S)-(1))



1. Gate
2. Drain
3. Source
4. Drain

Absolute Maximum Ratings

($T_a = 25^\circ C$)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	450	V
Gate to source voltage	V_{GSS}	± 30	V
Drain current	I_D	16	A
Drain peak current	$I_{D(pulse)}$ ^{Note1}	48	A
Body-drain diode reverse drain current	I_{DR}	16	A
Body-drain diode reverse drain peak current	$I_{DR(pulse)}$ ^{Note1}	48	A
Avalanche current	I_{AP} ^{Note3}	4	A
Avalanche energy	E_{AR} ^{Note3}	0.9	mJ
Channel dissipation	P_{ch} ^{Note2}	100	W
Channel to case thermal impedance	θ_{ch-c}	1.25	$^\circ C/W$
Channel temperature	T_{ch}	150	$^\circ C$
Storage temperature	T_{stg}	-55 to +150	$^\circ C$

Notes: 1. $PW \leq 10 \mu s$, duty cycle $\leq 1\%$

2. Value at $T_c = 25^\circ C$

3. $STch = 25^\circ C$, $T_{ch} \leq 150^\circ C$

Electrical Characteristics

(Ta = 25°C)

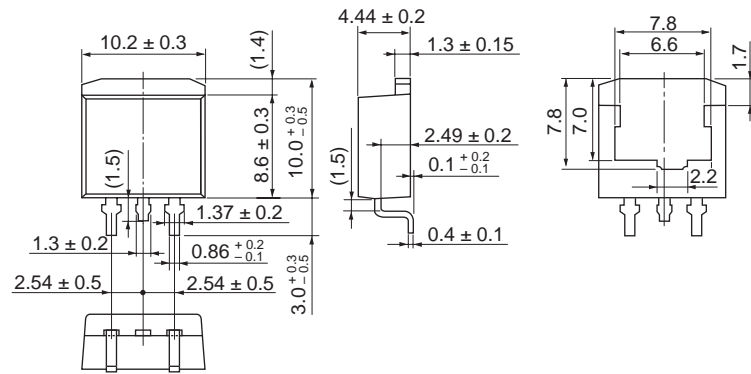
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	450	—	—	V	$I_D = 10 \text{ mA}$, $V_{GS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	1	μA	$V_{DS} = 450 \text{ V}$, $V_{GS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 0.1	μA	$V_{GS} = \pm 30 \text{ V}$, $V_{DS} = 0$
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	$R_{DS(on)}$	—	0.33	0.38	Ω	$I_D = 8 \text{ A}$, $V_{GS} = 10 \text{ V}$ ^{Note4}
Input capacitance	C_{iss}	—	1450	—	pF	$V_{DS} = 25 \text{ V}$ $V_{GS} = 0$ $f = 1 \text{ MHz}$
Output capacitance	C_{oss}	—	162	—	pF	
Reverse transfer capacitance	C_{rss}	—	18	—	pF	
Turn-on delay time	$t_{d(on)}$	—	33	—	ns	$I_D = 8 \text{ A}$ $V_{GS} = 10 \text{ V}$ $R_L = 28.1 \Omega$ $R_g = 10 \Omega$
Rise time	t_r	—	28	—	ns	
Turn-off delay time	$t_{d(off)}$	—	84	—	ns	
Fall time	t_f	—	17	—	ns	
Total gate charge	Q_g	—	37.1	—	nC	$V_{DD} = 360 \text{ V}$ $V_{GS} = 10 \text{ V}$ $I_D = 16 \text{ A}$
Gate to source charge	Q_{gs}	—	7.5	—	nC	
Gate to drain charge	Q_{gd}	—	16.9	—	nC	
Body-drain diode forward voltage	V_{DF}	—	0.89	1.50	V	$I_F = 16 \text{ A}$, $V_{GS} = 0$ ^{Note4}
Body-drain diode reverse recovery time	t_{rr}	—	290	—	ns	$I_F = 16 \text{ A}$, $V_{GS} = 0$ $di_F/dt = 100 \text{ A}/\mu\text{s}$

Notes: 4. Pulse test

Package Dimensions

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
LDBAK(S)-(1)	SC-83	PRSS0004AE-B	LDBAK(S)-(1) / LDBAK(S)-(1)V	1.30g

Unit: mm



Ordering Information

Part No.	Quantity	Shipping Container
RJK4513DPE-00-J3	1000 pcs	Taping

Notes:

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Renesas Technology America, Inc.
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