

# RJK6025DPE

Silicon N Channel MOS FET  
High Speed Power Switching

REJ03G1870-0100

Rev.1.00

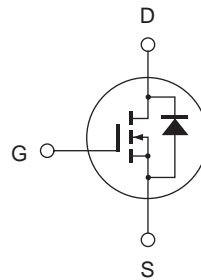
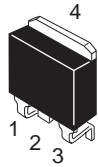
Dec 08, 2009

## Features

- Low on-resistance  
 $R_{DS(on)} = 13 \Omega$  typ. (at  $I_D = 0.4 \text{ A}$ ,  $V_{GS} = 10 \text{ V}$ ,  $T_a = 25^\circ\text{C}$ )
- 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

( $T_a = 25^\circ\text{C}$ )

| Item  | Symbol                           | Ratings     | Unit               |
|---|----------------------------------|-------------|--------------------|
| Drain to source voltage                     | $V_{DSS}$                        | 600         | V                  |
| Gate to source voltage                      | $V_{GSS}$                        | $\pm 30$    | V                  |
| Drain current                               | $I_D$                            | 0.8         | A                  |
| Drain peak current                          | $I_{D(pulse)}$ <sup>Note1</sup>  | 1.2         | A                  |
| Body-drain diode reverse drain current      | $I_{DR}$                         | 0.8         | A                  |
| Body-drain diode reverse drain peak current | $I_{DR(pulse)}$ <sup>Note1</sup> | 1.2         | A                  |
| Channel dissipation                         | $P_{ch}$ <sup>Note2</sup>        | 25          | W                  |
| Channel to case thermal impedance           | $\theta_{ch-c}$                  | 5           | $^\circ\text{C/W}$ |
| Channel temperature                         | $T_{ch}$                         | 150         | $^\circ\text{C}$   |
| Storage temperature                         | $T_{stg}$                        | -55 to +150 | $^\circ\text{C}$   |

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

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

## Electrical Characteristics

(Ta = 25°C)

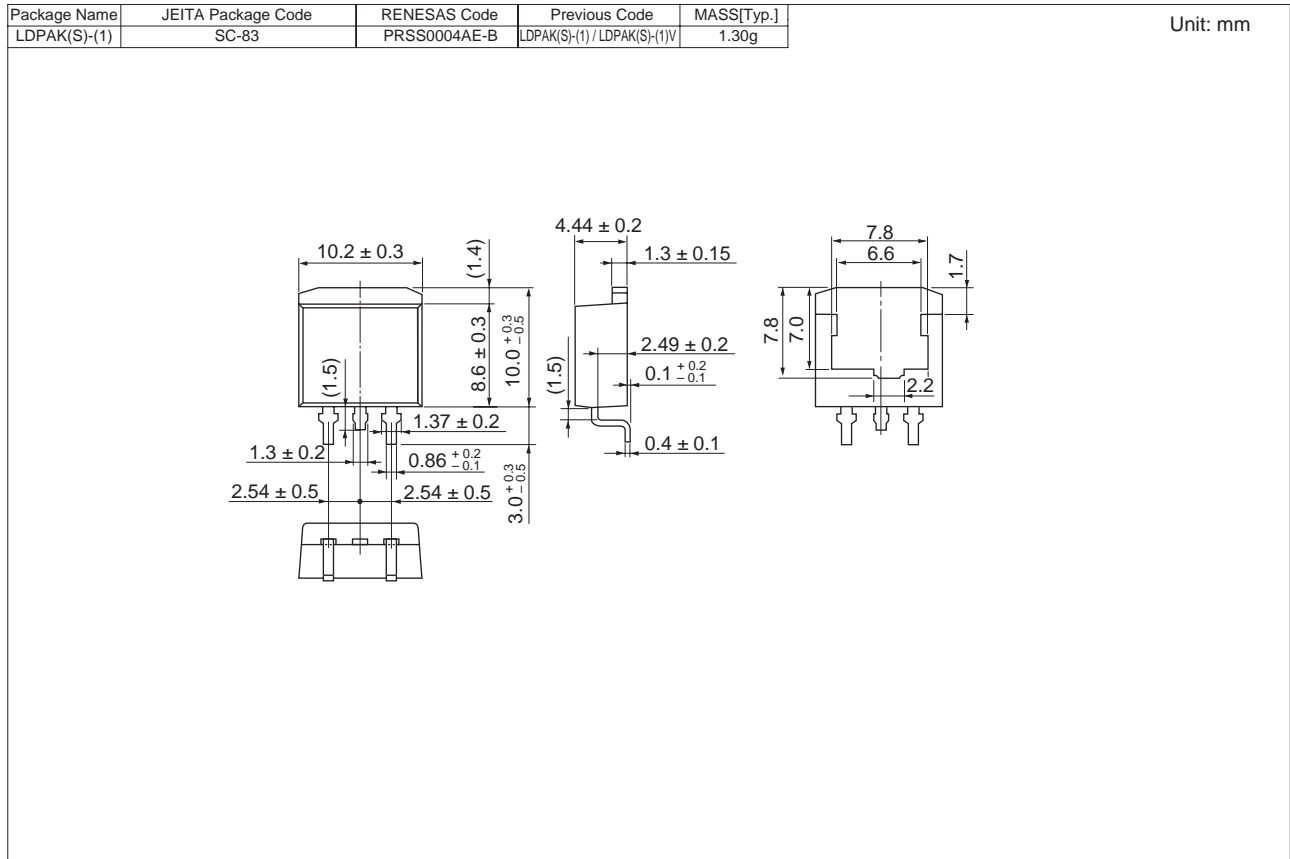
| Item                                       | Symbol        | Min | Typ  | Max       | Unit          | Test conditions   |
|--|---------------|-----|------|-----------|---------------|---|
| Drain to source breakdown voltage          | $V_{(BR)DSS}$ | 600 | —    | —         | V             | $I_D = 10 \text{ mA}$ , $V_{GS} = 0$  |
| Zero gate voltage drain current            | $I_{DSS}$     | —   | —    | 1         | $\mu\text{A}$ | $V_{DS} = 600 \text{ V}$ , $V_{GS} = 0$                                       |
| 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   | —    | 5         | V             | $V_{DS} = 10 \text{ V}$ , $I_D = 1 \text{ mA}$                                |
| Static drain to source on state resistance | $R_{DS(on)}$  | —   | 13.0 | 17.5      | $\Omega$      | $I_D = 0.4 \text{ A}$ , $V_{GS} = 10 \text{ V}$ <sup>Note3</sup>              |
| Input capacitance                          | $C_{iss}$     | —   | 71.5 | —         | pF            | $V_{DS} = 25 \text{ V}$   |
| Output capacitance                         | $C_{oss}$     | —   | 10.5 | —         | pF            | $V_{GS} = 0$  |
| Reverse transfer capacitance               | $C_{rss}$     | —   | 1.5  | —         | pF            | $f = 1 \text{ MHz}$   |
| Turn-on delay time                         | $t_{d(on)}$   | —   | 31   | —         | ns            | $I_D = 0.4 \text{ A}$   |
| Rise time                                  | $t_r$         | —   | 15   | —         | ns            | $V_{GS} = 10 \text{ V}$   |
| Turn-off delay time                        | $t_{d(off)}$  | —   | 44   | —         | ns            | $R_L = 750 \Omega$  |
| Fall time                                  | $t_f$         | —   | 44   | —         | ns            | $R_g = 10 \Omega$   |
| Total gate charge                          | $Q_g$         | —   | 5.0  | —         | nC            | $V_{DD} = 480 \text{ V}$  |
| Gate to source charge                      | $Q_{gs}$      | —   | 0.7  | —         | nC            | $V_{GS} = 10 \text{ V}$   |
| Gate to drain charge                       | $Q_{gd}$      | —   | 3.3  | —         | nC            | $I_D = 0.8 \text{ A}$   |
| Body-drain diode forward voltage           | $V_{DF}$      | —   | 0.86 | 1.45      | V             | $I_F = 0.8 \text{ A}$ , $V_{GS} = 0$ <sup>Note3</sup>                         |
| Body-drain diode reverse recovery time     | $t_{rr}$      | —   | 157  | —         | ns            | $I_F = 0.8 \text{ A}$ , $V_{GS} = 0$<br>$di_F/dt = 100 \text{ A}/\mu\text{s}$ |

Notes: 3. Pulse test

4. This device is sensitive to electrostatic discharge.

It is recommended to adopt appropriate cautions when handling this product.

### Package Dimensions



### Ordering Information

| Part No.         | Quantity | Shipping Container |
|------------------|----------|--------------------|
| RJK6025DPE-00-J3 | 1000 pcs | Taping             |

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