

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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# 2SJ549(L), 2SJ549(S)

Silicon P Channel MOS FET

REJ03G0896-0400

Rev.4.00

Jun 05, 2006

## Description

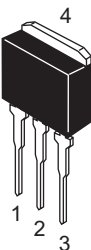
High speed power switching

## Features

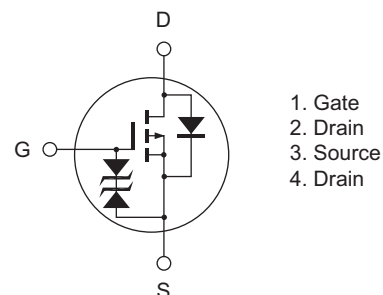
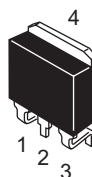
- Low on-resistance  
 $R_{DS(on)} = 0.11 \Omega$  typ.
- Low drive current
- 4 V gate drive devices
- High speed switching

## Outline

RENESAS Package code: PRSS0004AE-A  
(Package name: LDKPAK (L) )



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



## Absolute Maximum Ratings

(Ta = 25°C)

| Item                                      | Symbol                                   | Value       | Unit |
|---|--|-------------|------|
| Drain to source voltage                   | V <sub>DSS</sub>                         | -60         | V    |
| Gate to source voltage                    | V <sub>GSS</sub>                         | ±20         | V    |
| Drain current                             | I <sub>D</sub>                           | -12         | A    |
| Drain peak current                        | I <sub>D (pulse)</sub> <sup>Note 1</sup> | -48         | A    |
| Body to drain diode reverse drain current | I <sub>DR</sub>                          | -12         | A    |
| Avalanche current                         | I <sub>AP</sub> <sup>Note 3</sup>        | -12         | A    |
| Avalanche energy                          | E <sub>AR</sub> <sup>Note 3</sup>        | 12          | mJ   |
| Channel dissipation                       | P <sub>ch</sub> <sup>Note 2</sup>        | 50          | W    |
| Channel temperature                       | T <sub>ch</sub>                          | 150         | °C   |
| Storage temperature                       | T <sub>stg</sub>                         | -55 to +150 | °C   |

- Notes: 1. PW ≤ 10 μs, duty cycle ≤ 1%  
 2. Value at T<sub>c</sub> = 25°C  
 3. Value at T<sub>ch</sub> = 25°C, R<sub>g</sub> ≥ 50 Ω

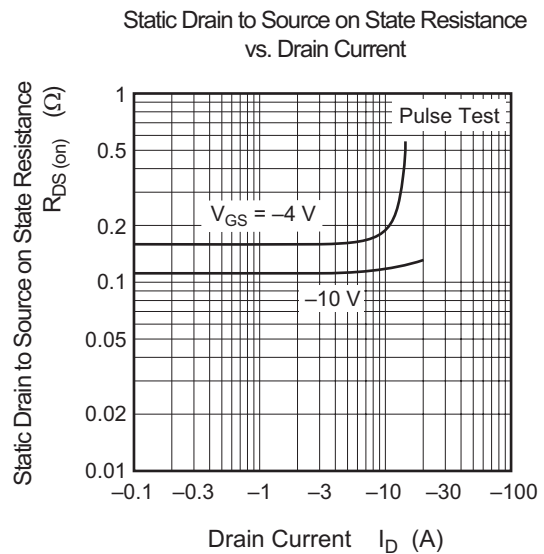
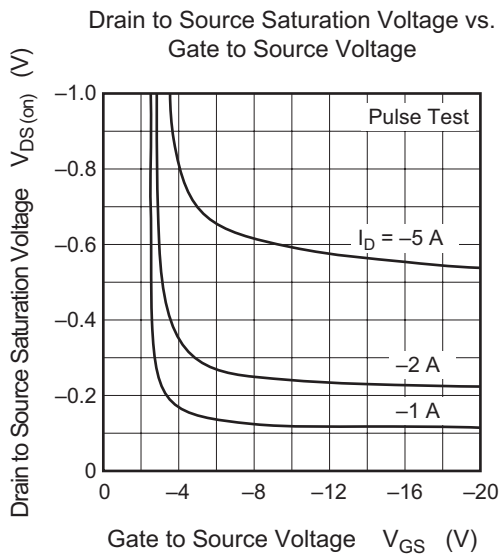
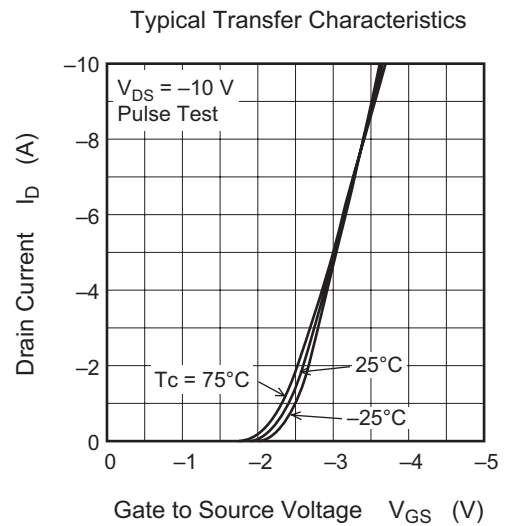
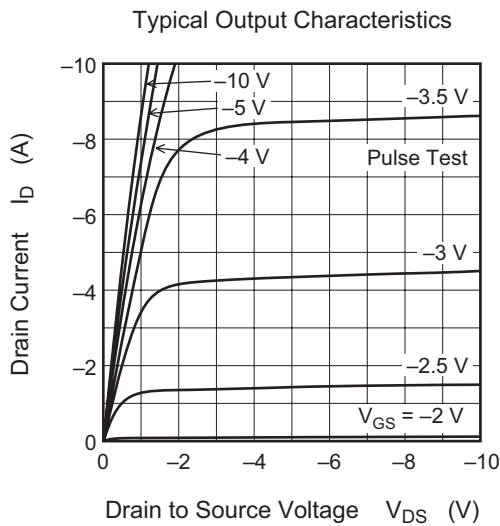
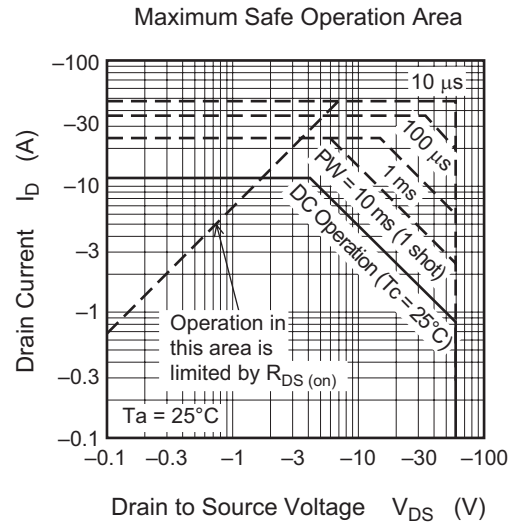
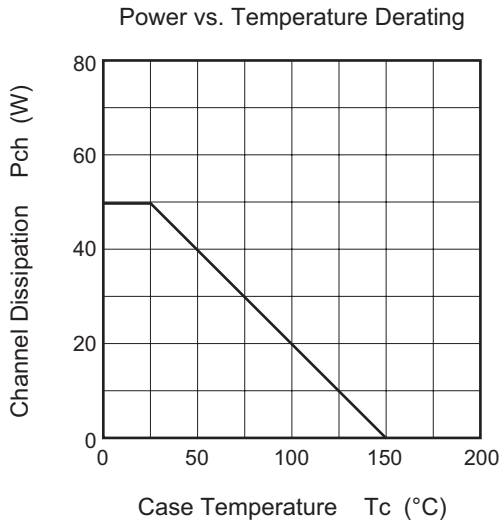
## Electrical Characteristics

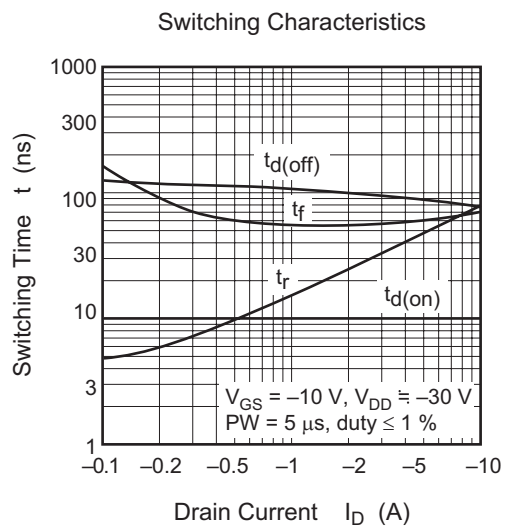
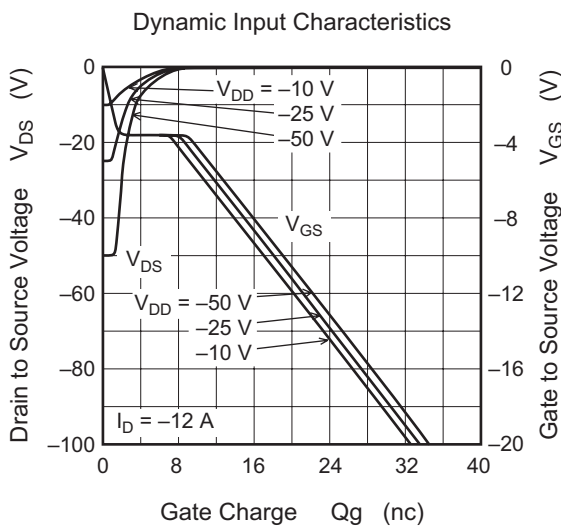
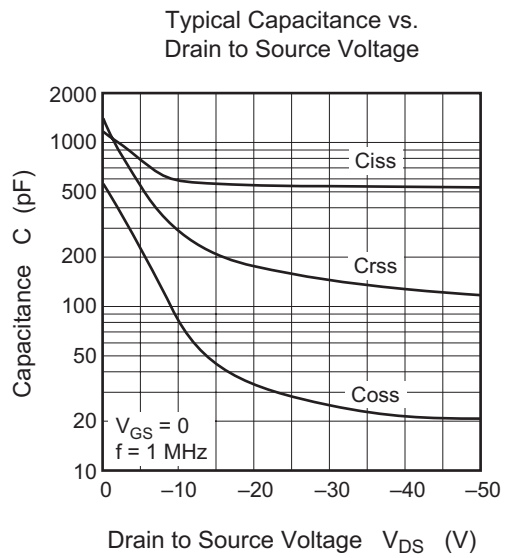
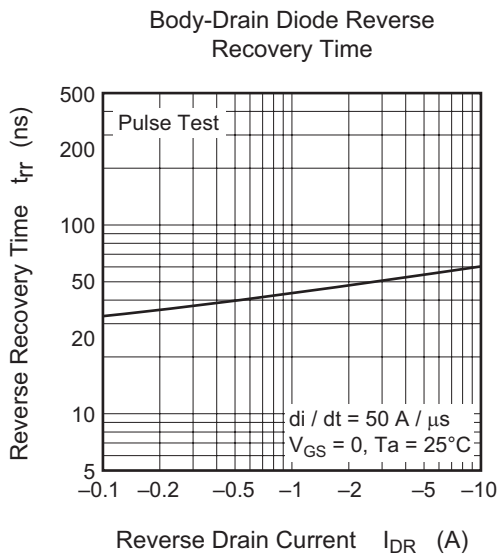
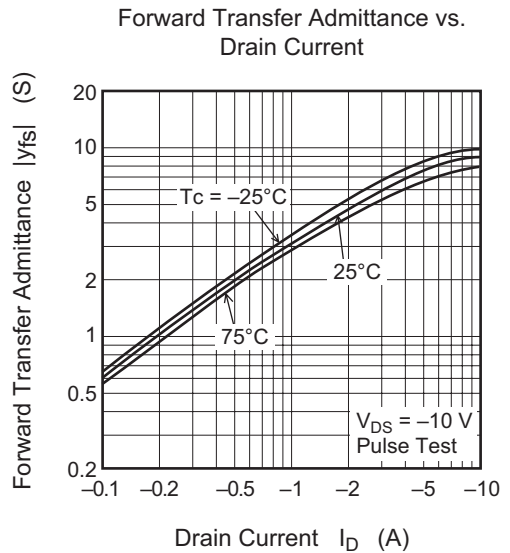
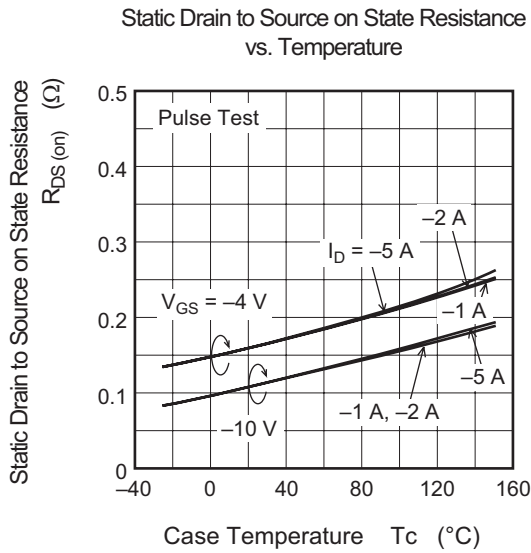
(Ta = 25°C)

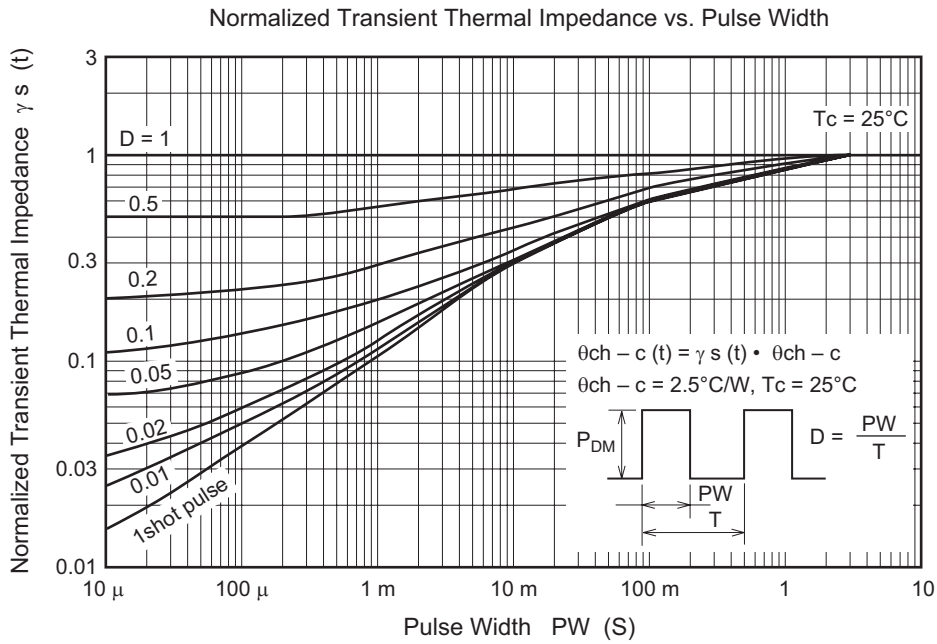
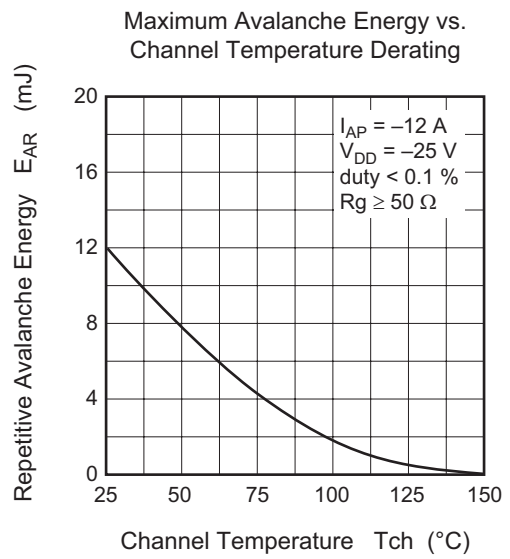
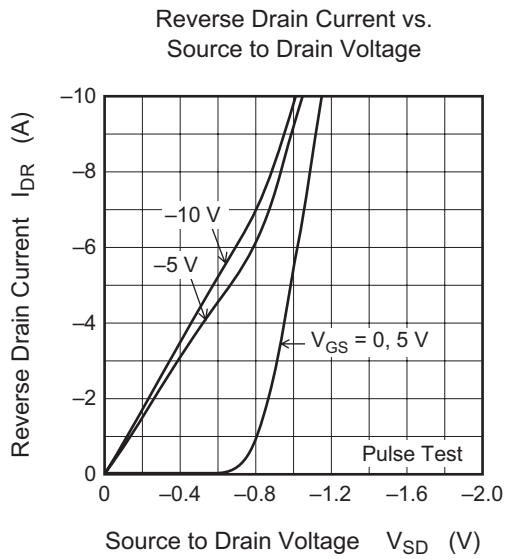
| Item                                       | Symbol                | Min  | Typ  | Max  | Unit | Test Conditions  |
|--|-----------------------|------|------|------|------|--|
| Drain to source breakdown voltage          | V <sub>(BR) DSS</sub> | -60  | —    | —    | V    | I <sub>D</sub> = -10 mA, V <sub>GS</sub> = 0                                 |
| Gate to source breakdown voltage           | V <sub>(BR) GSS</sub> | ±20  | —    | —    | V    | I <sub>G</sub> = ±100 μA, V <sub>DS</sub> = 0                                |
| Zero gate voltage drain current            | I <sub>DSS</sub>      | —    | —    | -10  | μA   | V <sub>DS</sub> = -60 V, V <sub>GS</sub> = 0                                 |
| Gate to source leak current                | I <sub>GSS</sub>      | —    | —    | ±10  | μA   | V <sub>GS</sub> = ±16 V, V <sub>DS</sub> = 0                                 |
| Gate to source cutoff voltage              | V <sub>GS (off)</sub> | -1.0 | —    | -2.0 | V    | I <sub>D</sub> = -1 mA, V <sub>DS</sub> = -10 V                              |
| Static drain to source on state resistance | R <sub>DS (on)</sub>  | —    | 0.11 | 0.15 | Ω    | I <sub>D</sub> = -6 A, V <sub>GS</sub> = -10 V <sup>Note 4</sup>             |
|  | R <sub>DS (on)</sub>  | —    | 0.16 | 0.23 | Ω    | I <sub>D</sub> = -6 A, V <sub>GS</sub> = -4 V <sup>Note 4</sup>              |
| Forward transfer admittance                | y <sub>fs</sub>       | 5    | 8    | —    | S    | I <sub>D</sub> = -6 A, V <sub>DS</sub> = -10 V <sup>Note 4</sup>             |
| Input capacitance                          | C <sub>iss</sub>      | —    | 580  | —    | pF   | V <sub>DS</sub> = -10 V  |
| Output capacitance                         | C <sub>oss</sub>      | —    | 300  | —    | pF   | V <sub>GS</sub> = 0  |
| Reverse transfer capacitance               | C <sub>rss</sub>      | —    | 85   | —    | pF   | f = 1 MHz  |
| Turn-on delay time                         | t <sub>d (on)</sub>   | —    | 10   | —    | ns   | V <sub>GS</sub> = -10 V  |
| Rise time                                  | t <sub>r</sub>        | —    | 55   | —    | ns   | I <sub>D</sub> = -6 A  |
| Turn-off delay time                        | t <sub>d (off)</sub>  | —    | 85   | —    | ns   | R <sub>L</sub> = 6 Ω   |
| Fall time                                  | t <sub>f</sub>        | —    | 60   | —    | ns   |  |
| Body to drain diode forward voltage        | V <sub>DF</sub>       | —    | -1.2 | —    | V    | I <sub>F</sub> = -12 A, V <sub>GS</sub> = 0                                  |
| Body to drain diode reverse recovery time  | t <sub>rr</sub>       | —    | 60   | —    | ns   | I <sub>F</sub> = -12 A, V <sub>GS</sub> = 0<br>di <sub>F</sub> /dt = 50 A/μs |

- Note: 4. Pulse test

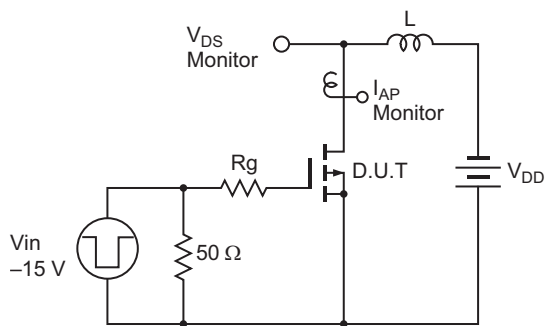
Main Characteristics





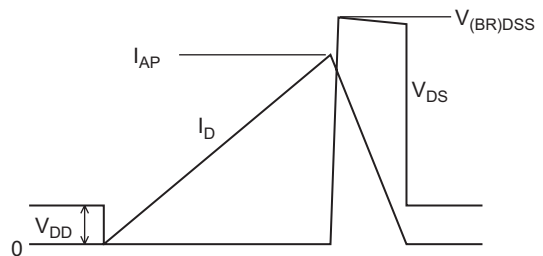


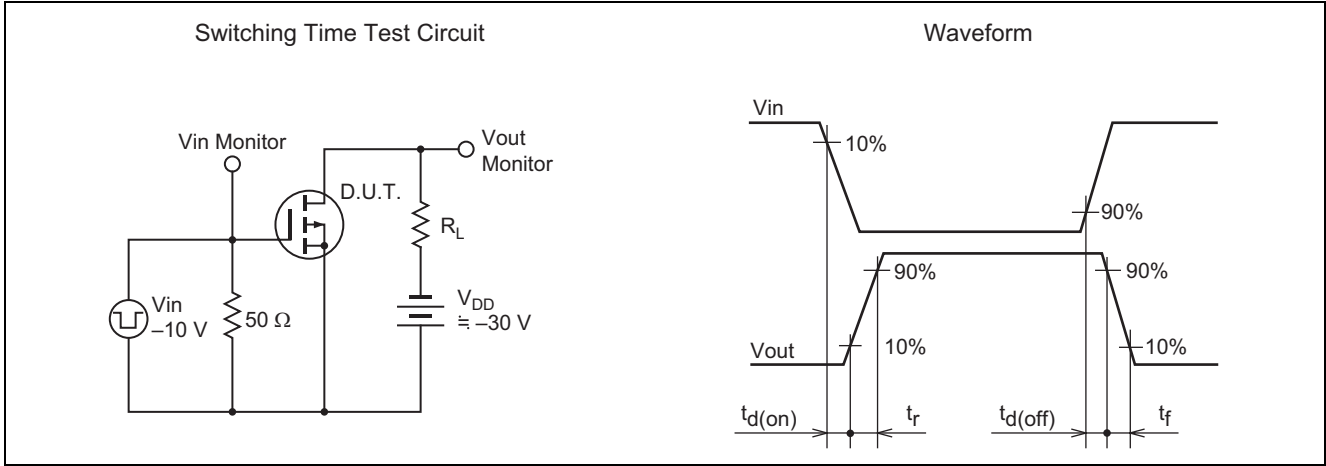
Avalanche Test Circuit



Avalanche Waveform

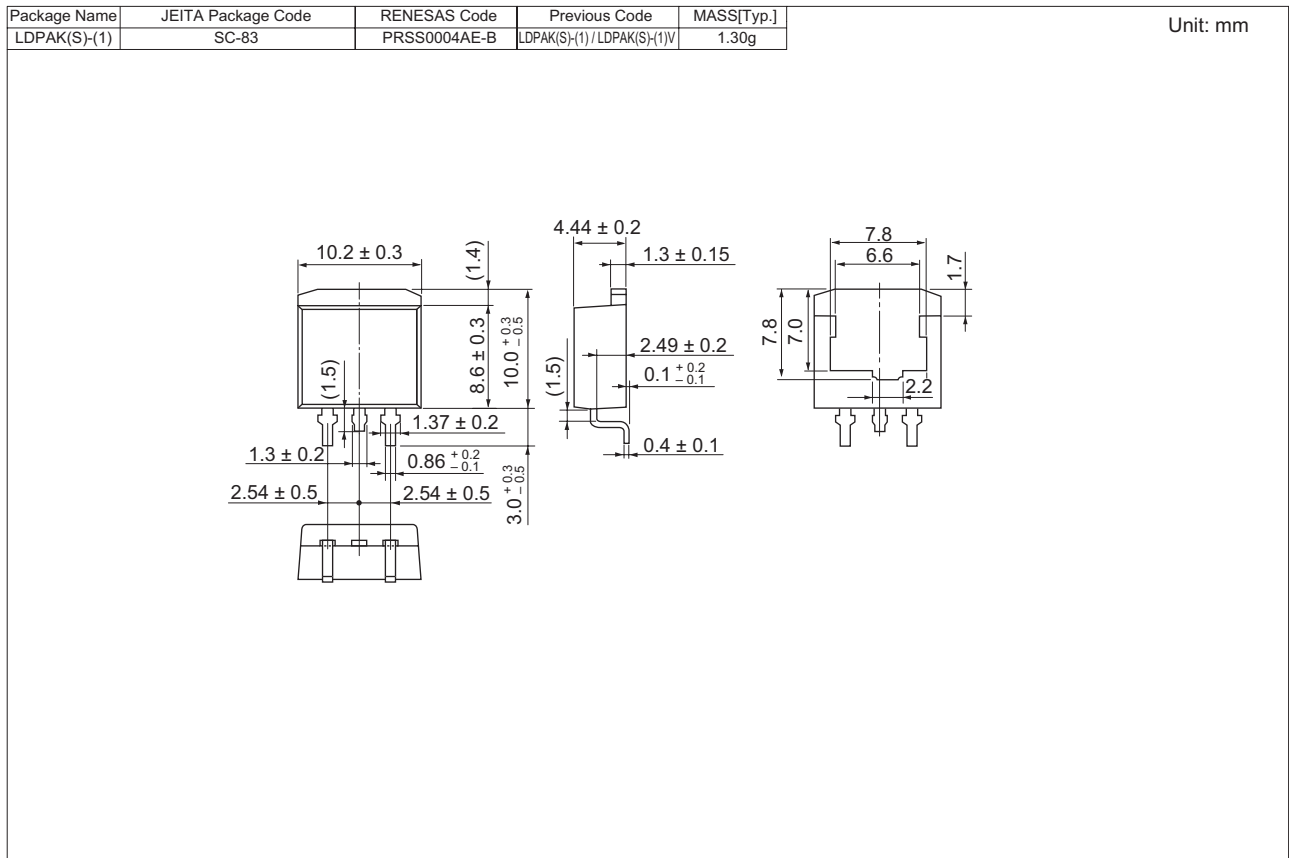
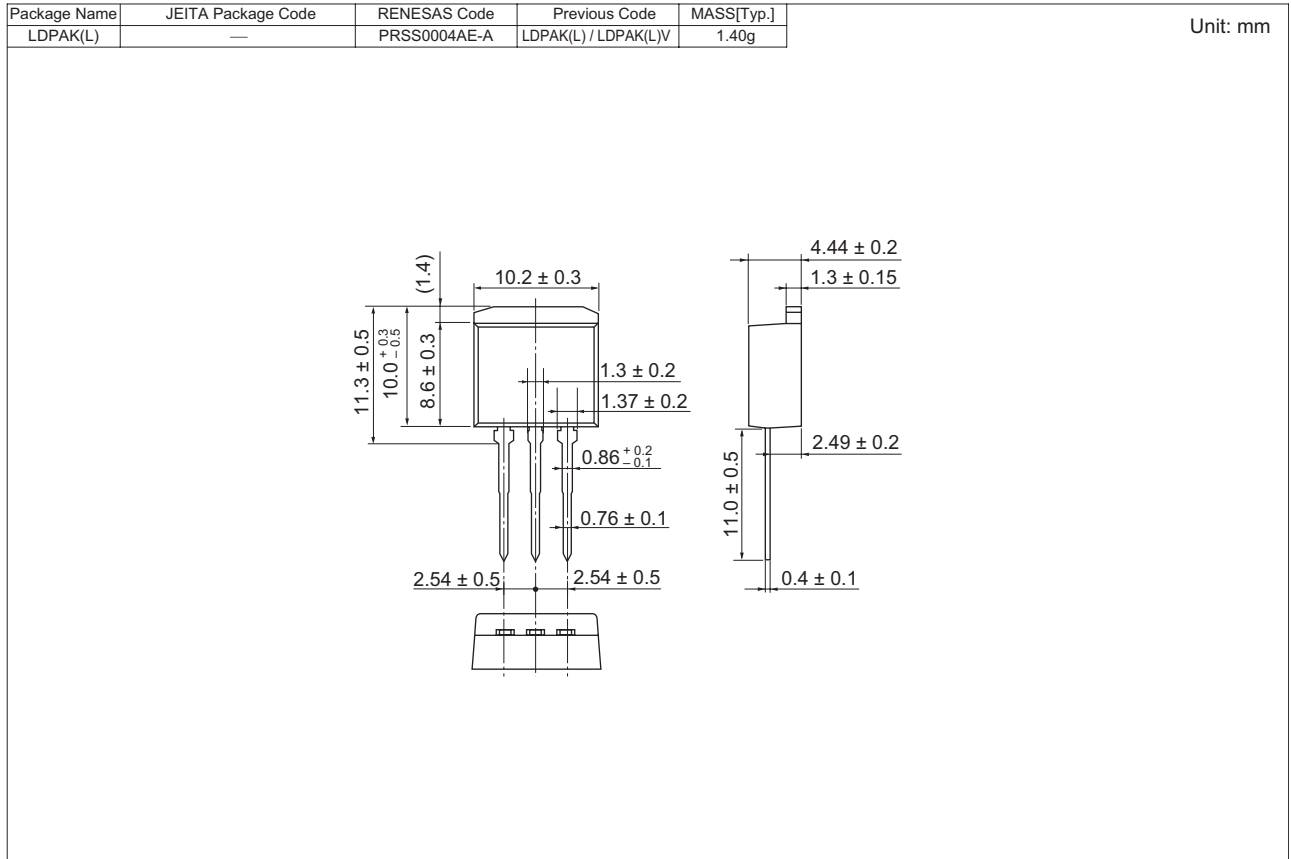
$$E_{AR} = \frac{1}{2} \cdot L \cdot I_{AP}^2 \cdot \frac{V_{DSS}}{V_{DSS} - V_{DD}}$$







Package Dimensions



### Ordering Information

| Part Name   | Quantity | Shipping Container |
|-------------|----------|--------------------|
| 2SJ549L-E   | 500 pcs  | Box (Sack)         |
| 2SJ549STL-E | 1000 pcs | Taping             |

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