

# 2SK1623(L), 2SK1623(S)

Silicon N Channel MOS FET

REJ03G0958-0300  
(Previous: ADE-208-1299)  
Rev.3.00  
Jan 10, 2006

## Application

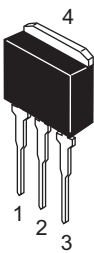
High speed power switching

## Features

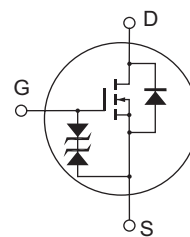
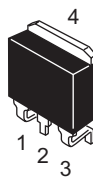
- Low on-resistance
- High speed switching
- 4 V gate drive device
  - Can be driven from 5 V source
- Suitable for motor drive, DC-DC converter, power switch and solenoid drive

## Outline

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



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



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

## Absolute Maximum Ratings

(Ta = 25°C)

| Item                                      | Symbol              | Ratings     | Unit |
|---|---------------------|-------------|------|
| Drain to source voltage                   | $V_{(BR)DSS}$       | 100         | V    |
| Gate to source voltage                    | $V_{GSS}$           | ±20         | V    |
| Drain current                             | $I_D$               | 20          | A    |
| Drain peak current                        | $I_{D(pulse)}^{*1}$ | 80          | A    |
| Body to drain diode reverse drain current | $I_{DR}$            | 20          | A    |
| Channel dissipation                       | $P_{ch}^{*2}$       | 50          | 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  $T_C = 25^\circ C$ 

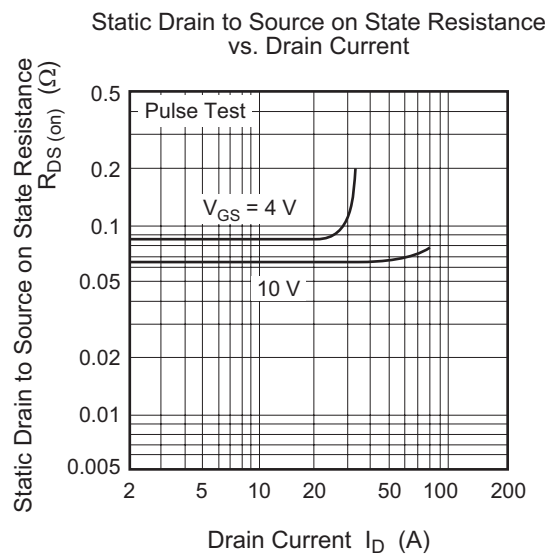
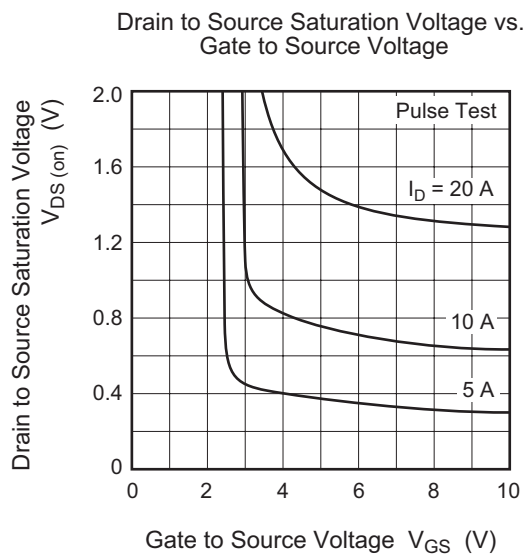
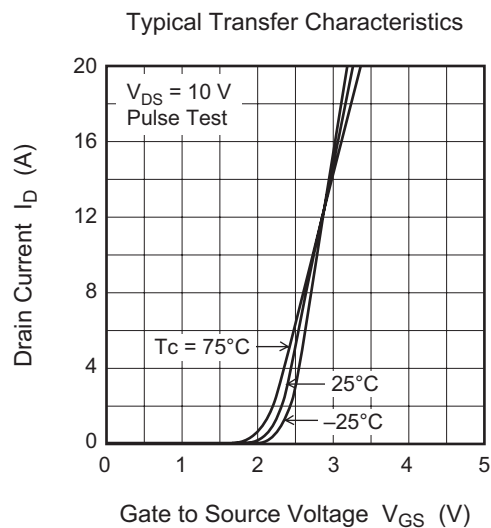
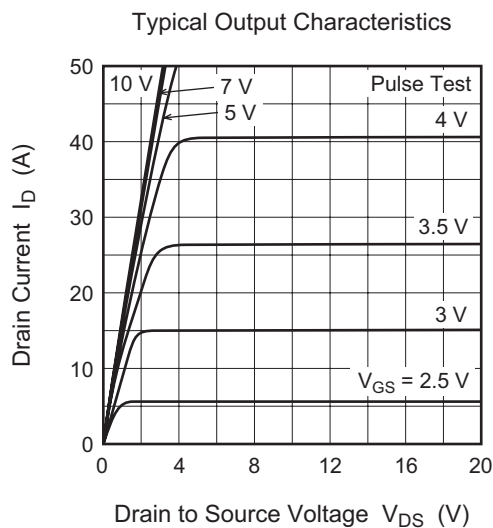
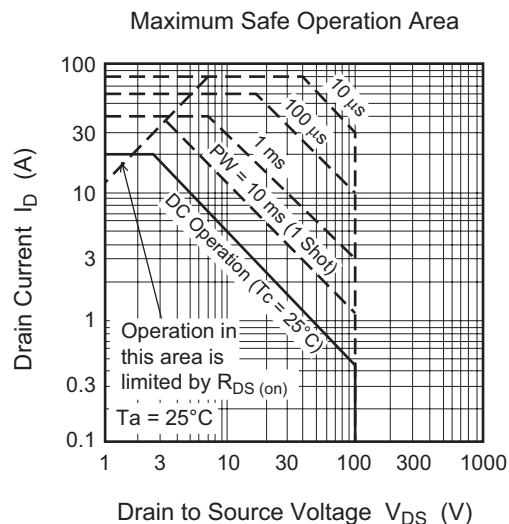
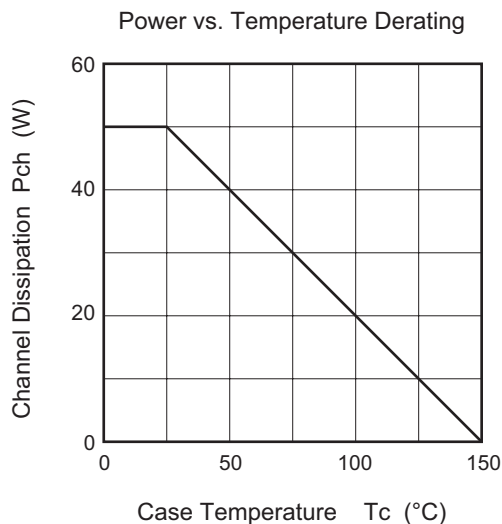
## Electrical Characteristics

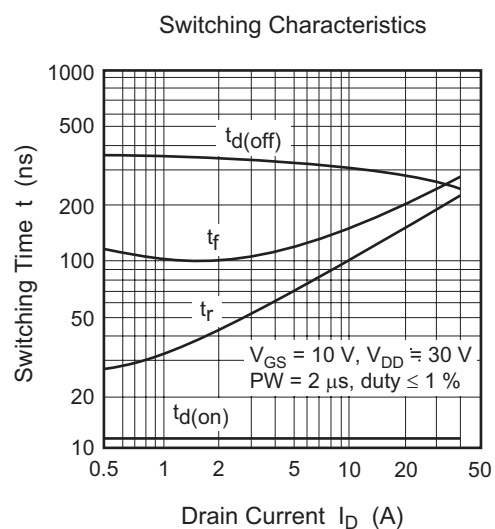
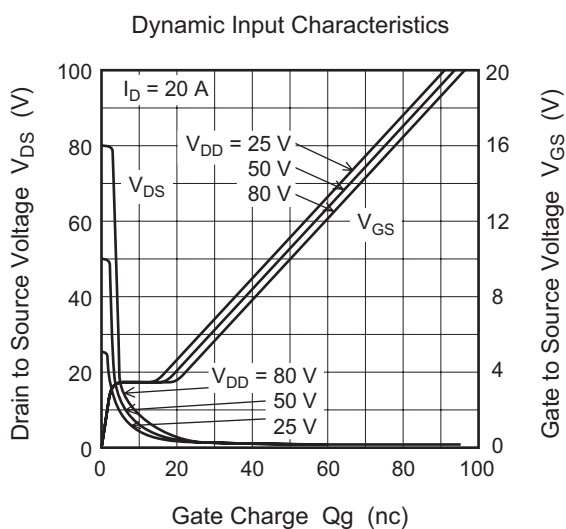
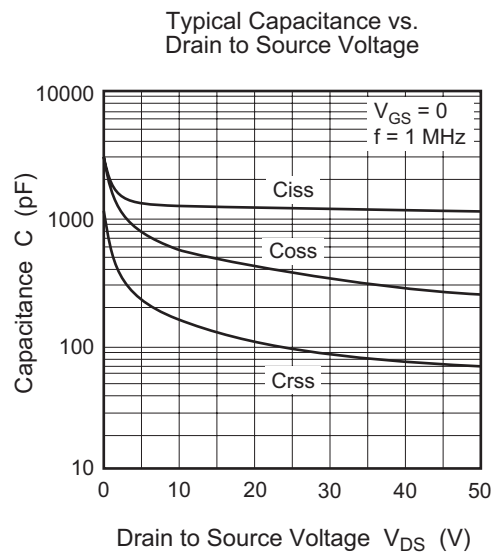
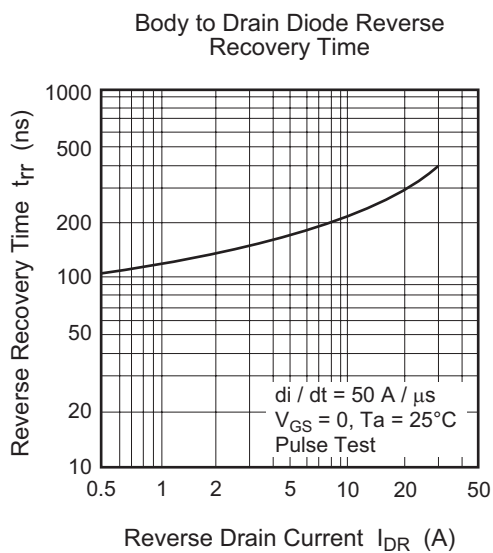
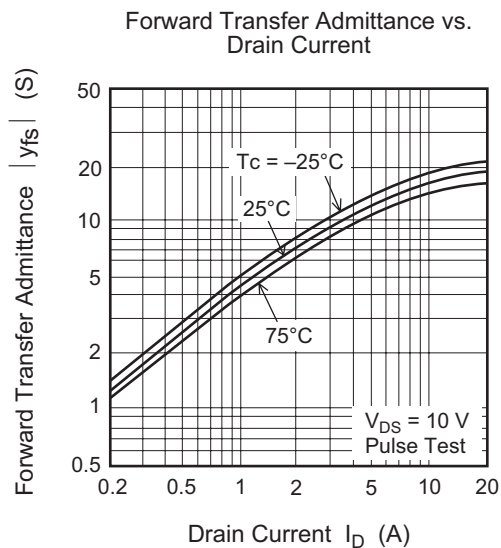
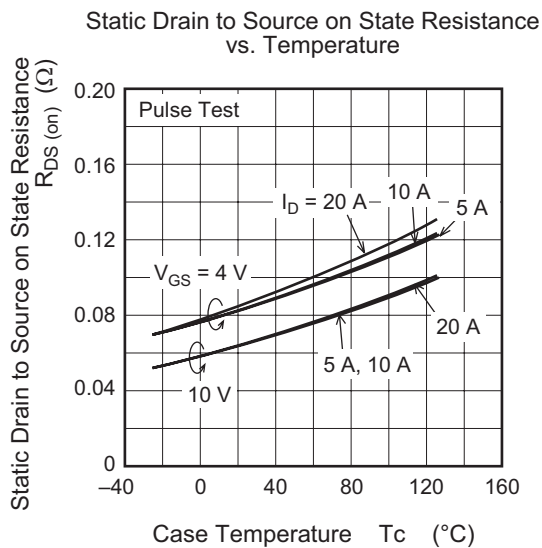
(Ta = 25°C)

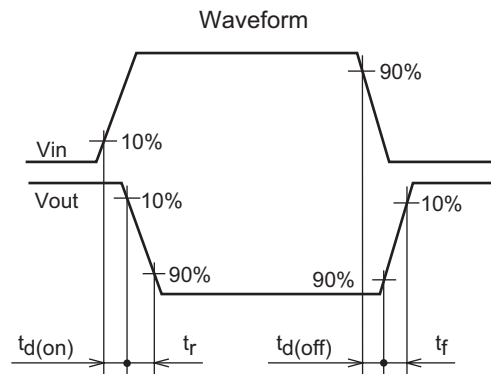
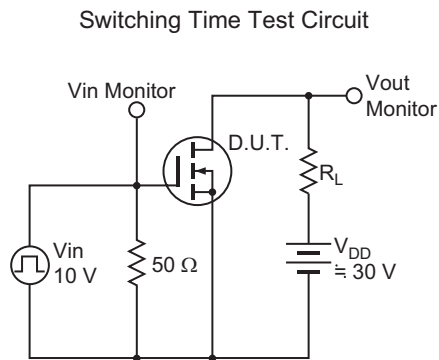
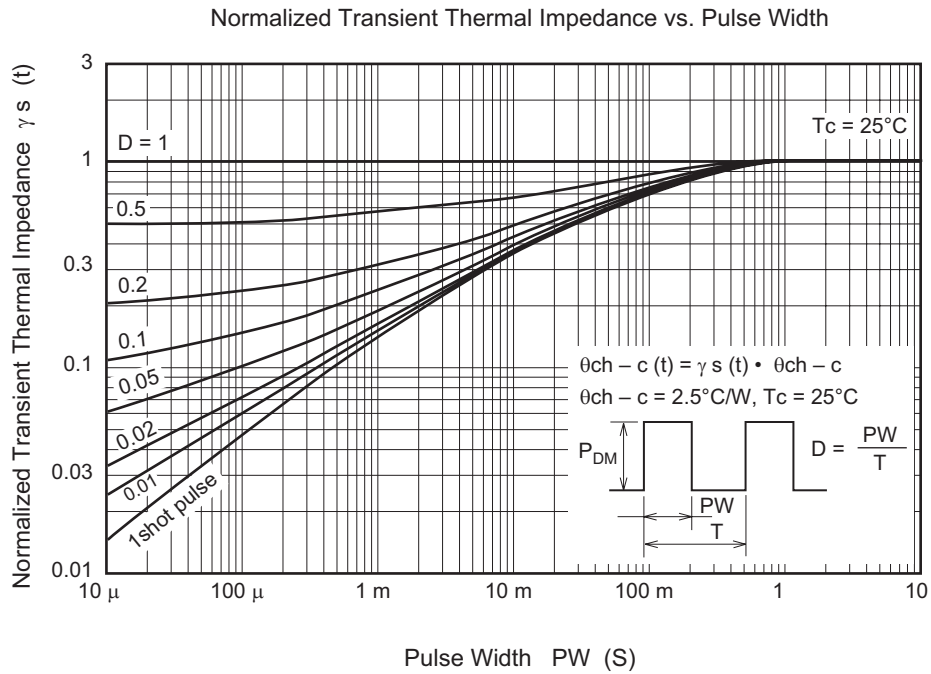
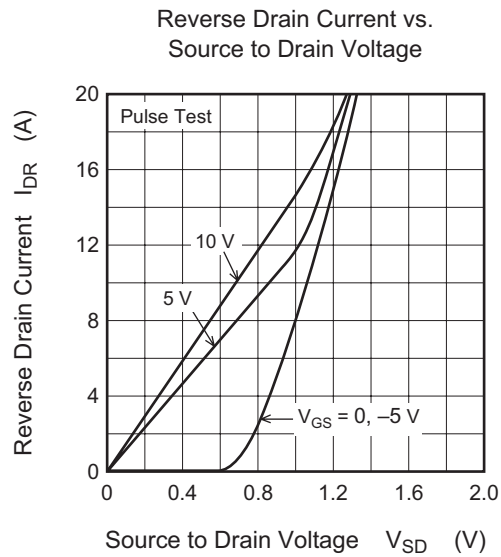
| Item                                       | Symbol        | Min | Typ   | Max   | Unit | Test conditions   |
|--|---------------|-----|-------|-------|------|---|
| Drain to source breakdown voltage          | $V_{(BR)DSS}$ | 100 | —     | —     | V    | $I_D = 10 \text{ mA}$ , $V_{GS} = 0$                                    |
| Gate to source breakdown voltage           | $V_{(BR)GSS}$ | ±20 | —     | —     | V    | $I_G = \pm 100 \mu A$ , $V_{DS} = 0$                                    |
| Gate to source leak current                | $I_{GSS}$     | —   | —     | ±10   | μA   | $V_{GS} = \pm 16 \text{ V}$ , $V_{DS} = 0$                              |
| Zero gate voltage drain current            | $I_{DSS}$     | —   | —     | 250   | μA   | $V_{DS} = 80 \text{ V}$ , $V_{GS} = 0$                                  |
| Gate to source cutoff voltage              | $V_{GS(off)}$ | 1.0 | —     | 2.0   | V    | $I_D = 1 \text{ mA}$ , $V_{DS} = 10 \text{ V}$                          |
| Static drain to source on state resistance | $R_{DS(on)}$  | —   | 0.065 | 0.085 | Ω    | $I_D = 10 \text{ A}$ , $V_{GS} = 10 \text{ V}^{*3}$                     |
|  |               | —   | 0.085 | 0.12  | Ω    | $I_D = 10 \text{ A}$ , $V_{GS} = 4 \text{ V}^{*3}$                      |
| Forward transfer admittance                | $ y_{fs} $    | 10  | 16    | —     | S    | $I_D = 10 \text{ A}$ , $V_{DS} = 10 \text{ V}^{*3}$                     |
| Input capacitance                          | $C_{iss}$     | —   | 1300  | —     | pF   | $V_{DS} = 10 \text{ V}$ , $V_{GS} = 0$ ,<br>$f = 1 \text{ MHz}$         |
| Output capacitance                         | $C_{oss}$     | —   | 540   | —     | pF   |   |
| Reverse transfer capacitance               | $C_{rss}$     | —   | 160   | —     | pF   |   |
| Turn-on delay time                         | $t_{d(on)}$   | —   | 12    | —     | ns   | $I_D = 10 \text{ A}$ , $V_{GS} = 10 \text{ V}$ ,<br>$R_L = 3 \Omega$    |
| Rise time                                  | $t_r$         | —   | 100   | —     | ns   |   |
| Turn-off delay time                        | $t_{d(off)}$  | —   | 300   | —     | ns   |   |
| Fall time                                  | $t_f$         | —   | 150   | —     | ns   |   |
| Body to drain diode forward voltage        | $V_{DF}$      | —   | 1.3   | —     | V    | $I_F = 20 \text{ A}$ , $V_{GS} = 0$                                     |
| Body to drain diode reverse recovery time  | $t_{rr}$      | —   | 300   | —     | ns   | $I_F = 20 \text{ A}$ , $V_{GS} = 0$ ,<br>$di_F/dt = 50 \text{ A}/\mu s$ |

Note: 3. Pulse test

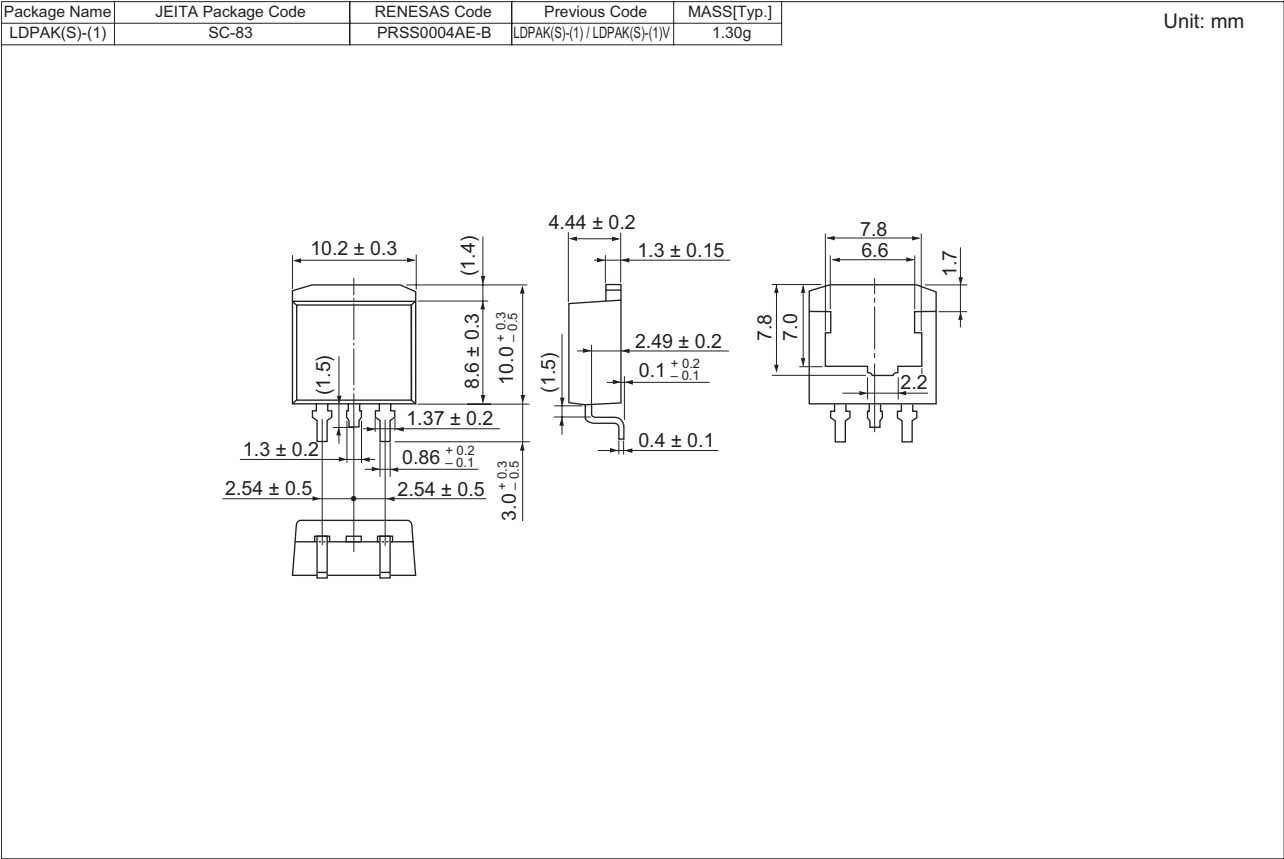
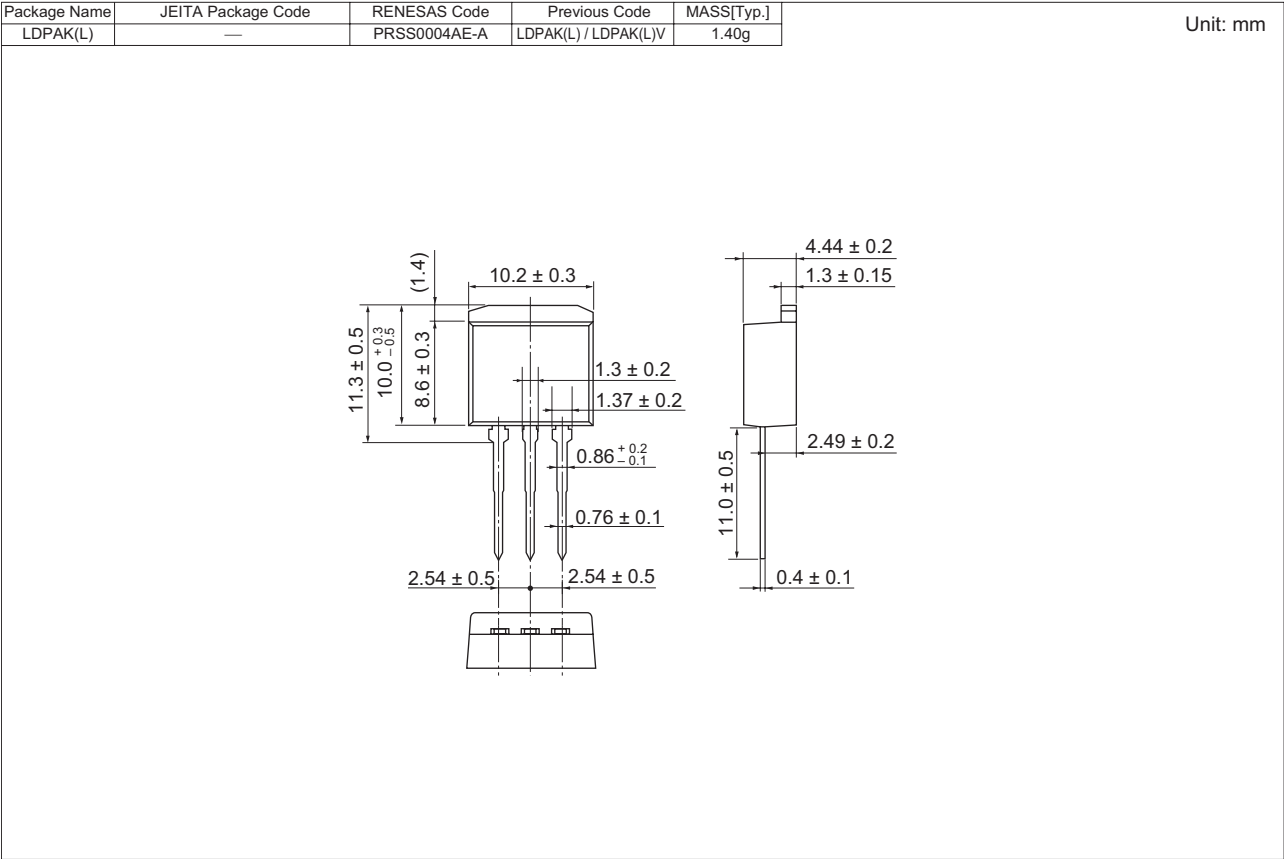
## Main Characteristics







Package Dimensions



**Ordering Information**

| <b>Part Name</b> | <b>Quantity</b> | <b>Shipping Container</b> |
|------------------|-----------------|---------------------------|
| 2SK1623L-E       | 500 pcs         | Box (Sack)                |
| 2SK1623STL-E     | 1000 pcs        | Taping                    |

Note: For some grades, production may be terminated. Please contact the Renesas sales office to check the state of production before ordering the product.

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