

# 2SK2957(L), 2SK2957(S)

Silicon N Channel MOS FET  
High Speed Power Switching

REJ03G1057-0600  
(Previous: ADE-208-567D)  
Rev.6.00  
Sep 07, 2005

## Features

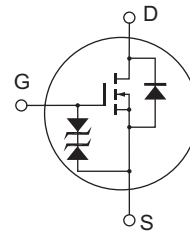
- Low on-resistance  
 $R_{DS(on)} = 7 \text{ m}\Omega$  typ.
- 4 V gate drive devices.
- High speed switching

## Outline

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



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



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

## Absolute Maximum Ratings

(Ta = 25°C)

| Item                                   | Symbol                          | Ratings     | Unit |
|----------------------------------------|---------------------------------|-------------|------|
| Drain to source voltage                | $V_{DS}$                        | 30          | V    |
| Gate to source voltage                 | $V_{GS}$                        | $\pm 20$    | V    |
| Drain current                          | $I_D$                           | 50          | A    |
| Drain peak current                     | $I_{D(pulse)}$ <sup>Note1</sup> | 200         | A    |
| Body-drain diode reverse drain current | $I_{DR}$                        | 50          | A    |
| Channel dissipation                    | $P_{ch}$ <sup>Note2</sup>       | 75          | 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  $T_c = 25^\circ C$ 

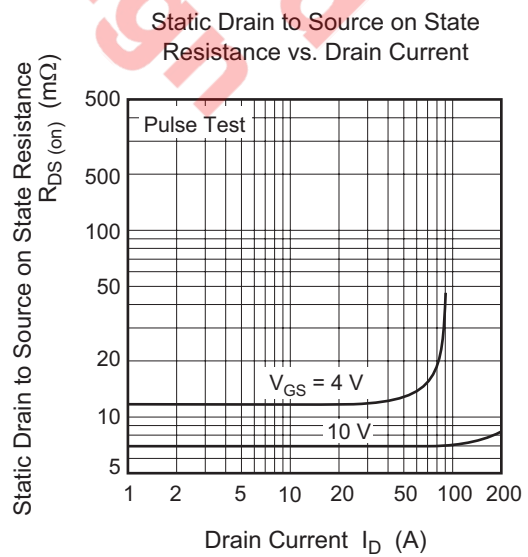
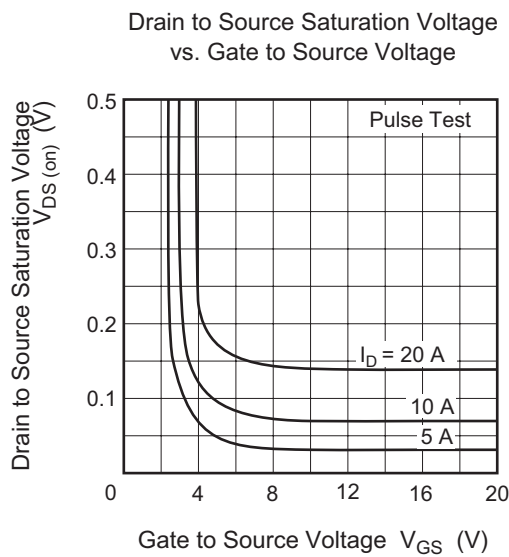
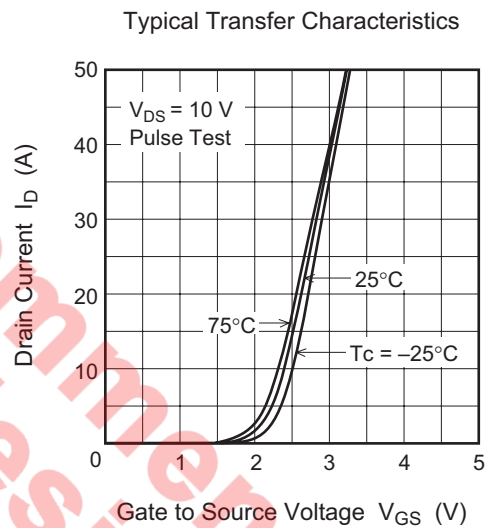
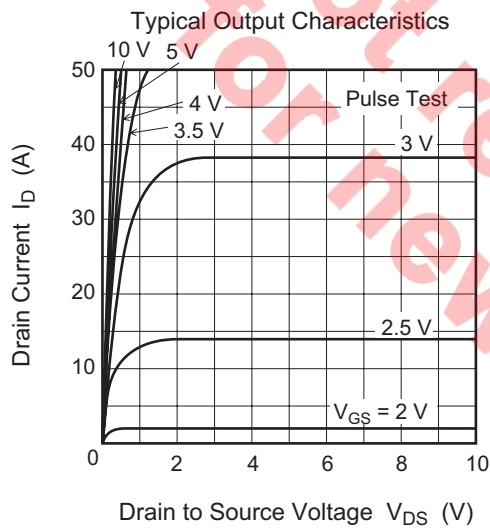
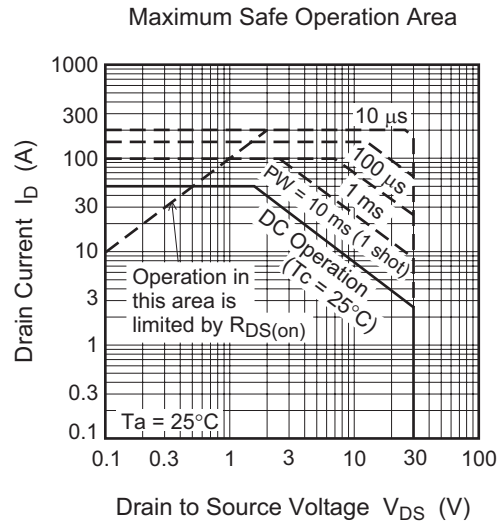
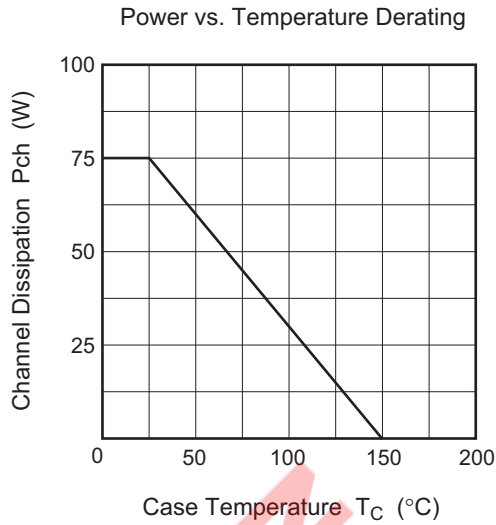
## Electrical Characteristics

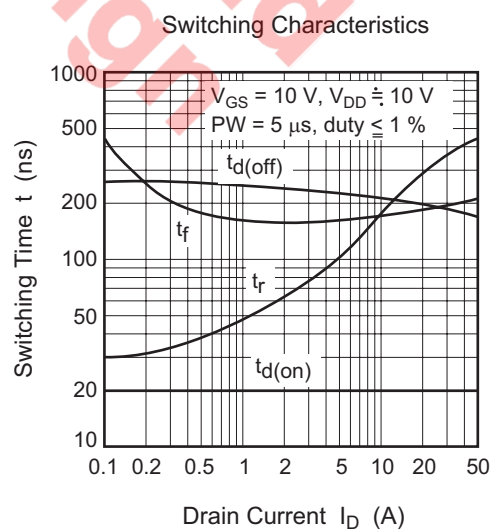
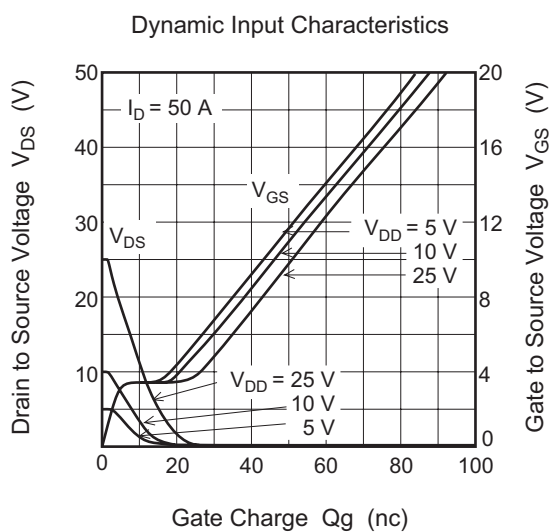
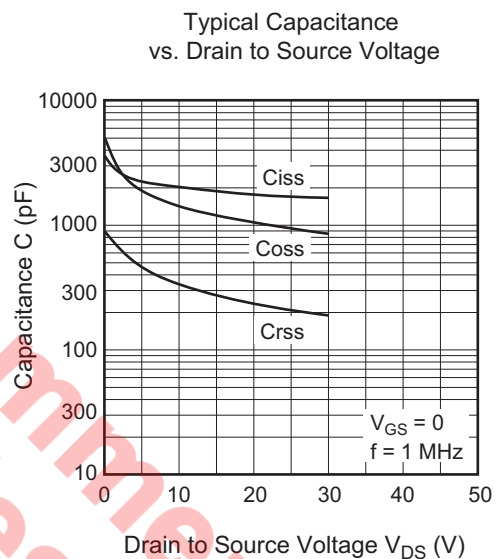
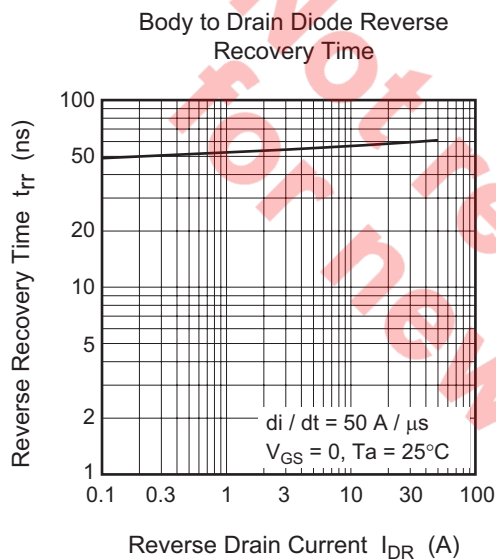
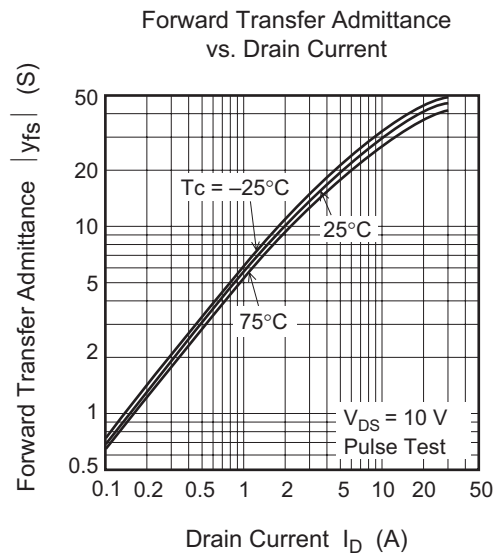
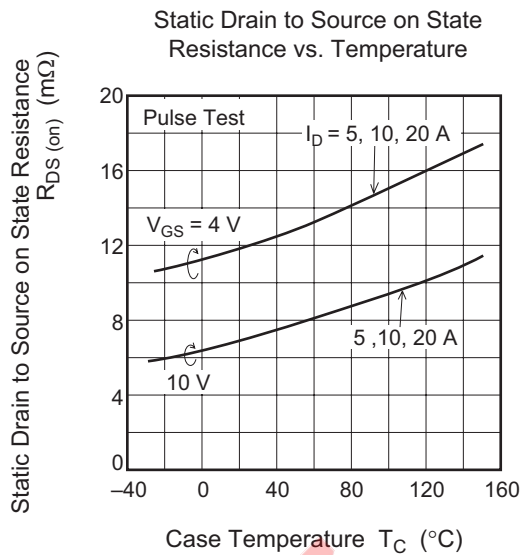
(Ta = 25°C)

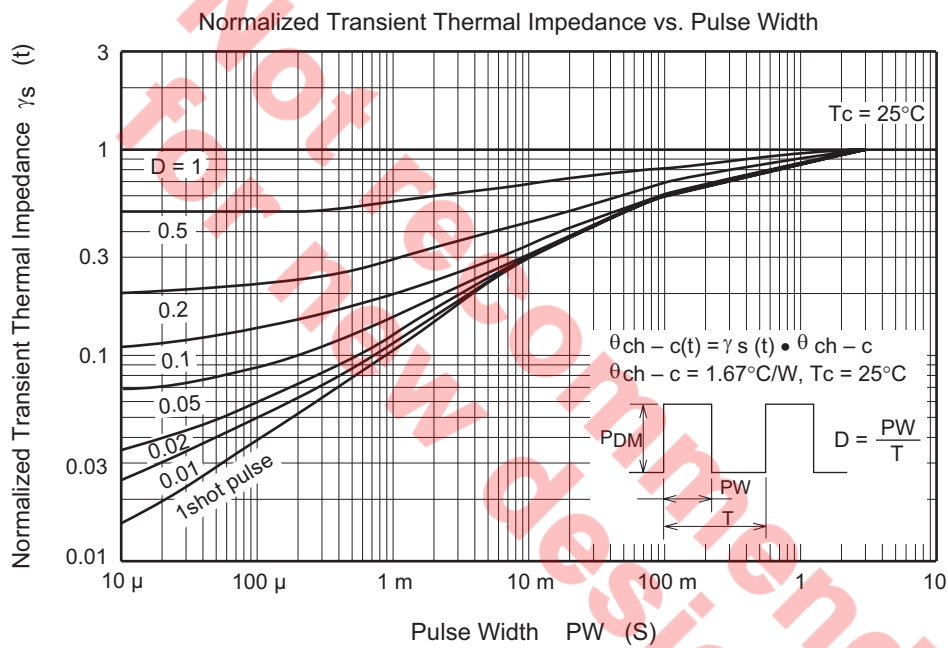
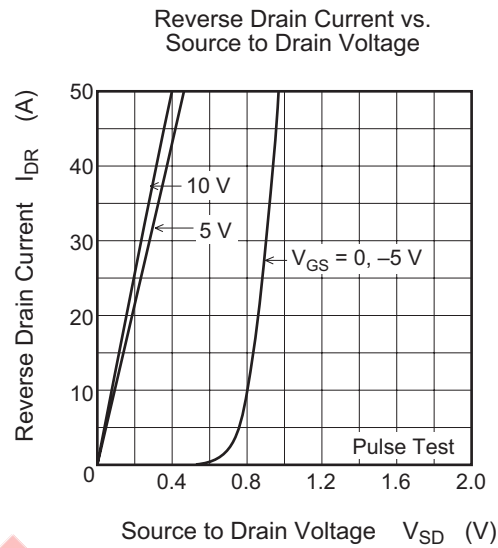
| Item                                       | Symbol        | Min      | Typ  | Max      | Unit      | Test Conditions                                                             |
|--------------------------------------------|---------------|----------|------|----------|-----------|-----------------------------------------------------------------------------|
| Drain to source breakdown voltage          | $V_{(BR)DSS}$ | 30       | —    | —        | V         | $I_D = 10\text{ mA}$ , $V_{GS} = 0$                                         |
| Gate to source breakdown voltage           | $V_{(BR)GSS}$ | $\pm 20$ | —    | —        | V         | $I_G = \pm 100\text{ }\mu A$ , $V_{DS} = 0$                                 |
| Zero gate voltage drain current            | $I_{DSS}$     | —        | —    | 10       | $\mu A$   | $V_{DS} = 30\text{ V}$ , $V_{GS} = 0$                                       |
| Gate to source leak current                | $I_{GSS}$     | —        | —    | $\pm 10$ | $\mu A$   | $V_{GS} = \pm 16\text{ V}$ , $V_{DS} = 0$                                   |
| 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 | $R_{DS(on)}$  | —        | 7.0  | 10       | $m\Omega$ | $I_D = 25\text{ A}$ , $V_{GS} = 10\text{ V}$ <sup>Note3</sup>               |
|                                            | $R_{DS(on)}$  | —        | 12   | 18       | $m\Omega$ | $I_D = 25\text{ A}$ , $V_{GS} = 4\text{ V}$ <sup>Note3</sup>                |
| Forward transfer admittance                | $ y_{fs} $    | 25       | 45   | —        | S         | $I_D = 25\text{ A}$ , $V_{DS} = 10\text{ V}$ <sup>Note3</sup>               |
| Input capacitance                          | $C_{iss}$     | —        | 2000 | —        | pF        | $V_{DS} = 10\text{ V}$ , $V_{GS} = 0$ ,<br>$f = 1\text{ MHz}$               |
| Output capacitance                         | $C_{oss}$     | —        | 1500 | —        | pF        |                                                                             |
| Reverse transfer capacitance               | $C_{rss}$     | —        | 350  | —        | pF        |                                                                             |
| Turn-on delay time                         | $t_{d(on)}$   | —        | 20   | —        | ns        | $V_{GS} = 10\text{ V}$ , $I_D = 25\text{ A}$ ,<br>$R_L = 0.4\text{ }\Omega$ |
| Rise time                                  | $t_r$         | —        | 330  | —        | ns        |                                                                             |
| Turn-off delay time                        | $t_{d(off)}$  | —        | 190  | —        | ns        |                                                                             |
| Fall time                                  | $t_f$         | —        | 190  | —        | ns        |                                                                             |
| Body-drain diode forward voltage           | $V_{DF}$      | —        | 0.95 | —        | V         | $I_F = 50\text{ A}$ , $V_{GS} = 0$                                          |
| Body-drain diode reverse recovery time     | $t_{rr}$      | —        | 60   | —        | ns        | $I_F = 50\text{ A}$ , $V_{GS} = 0$<br>$di_F/dt = 50\text{ A}/\mu s$         |

Note: 3. Pulse test

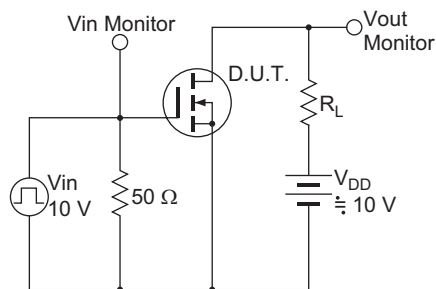
## Main Characteristics



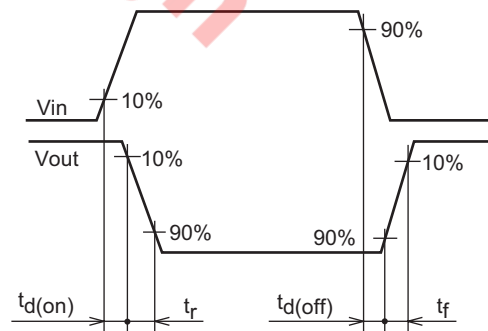




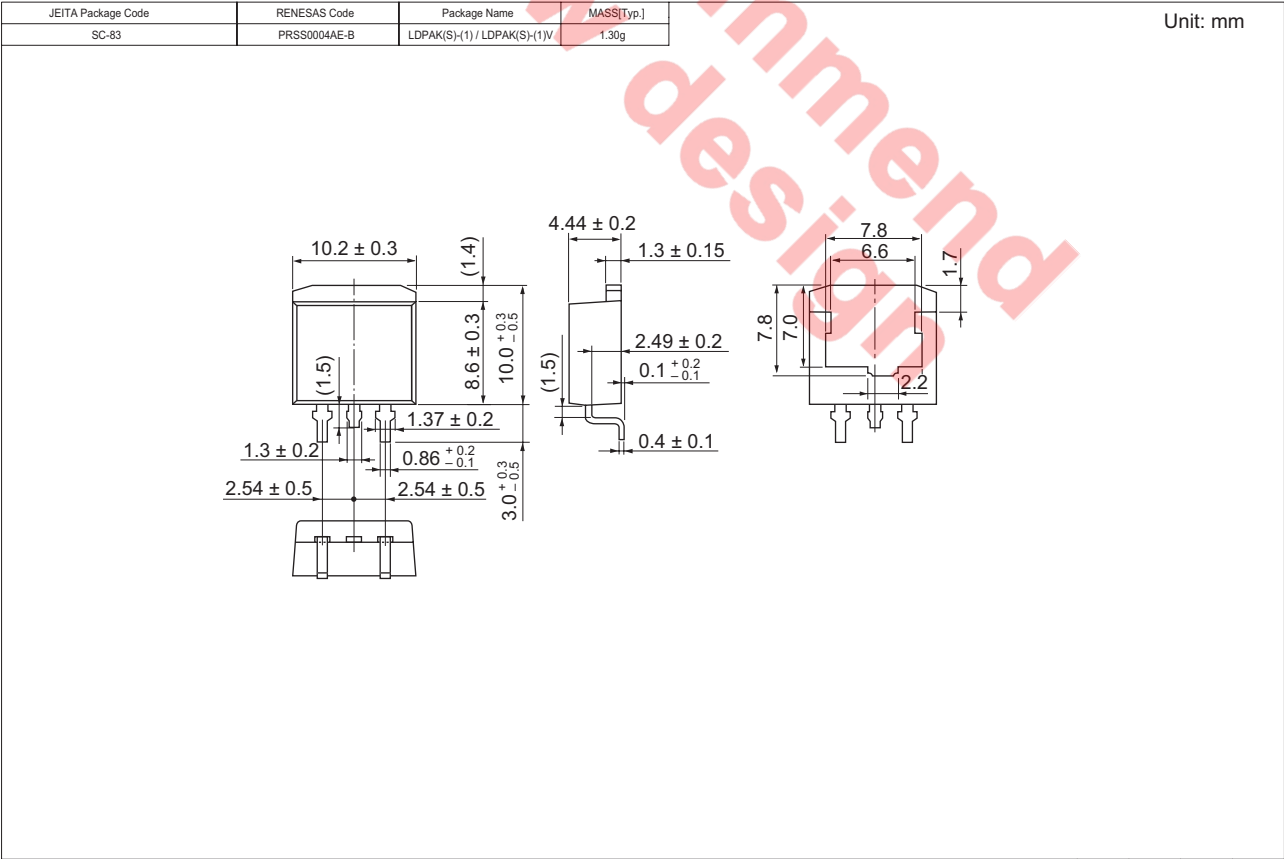
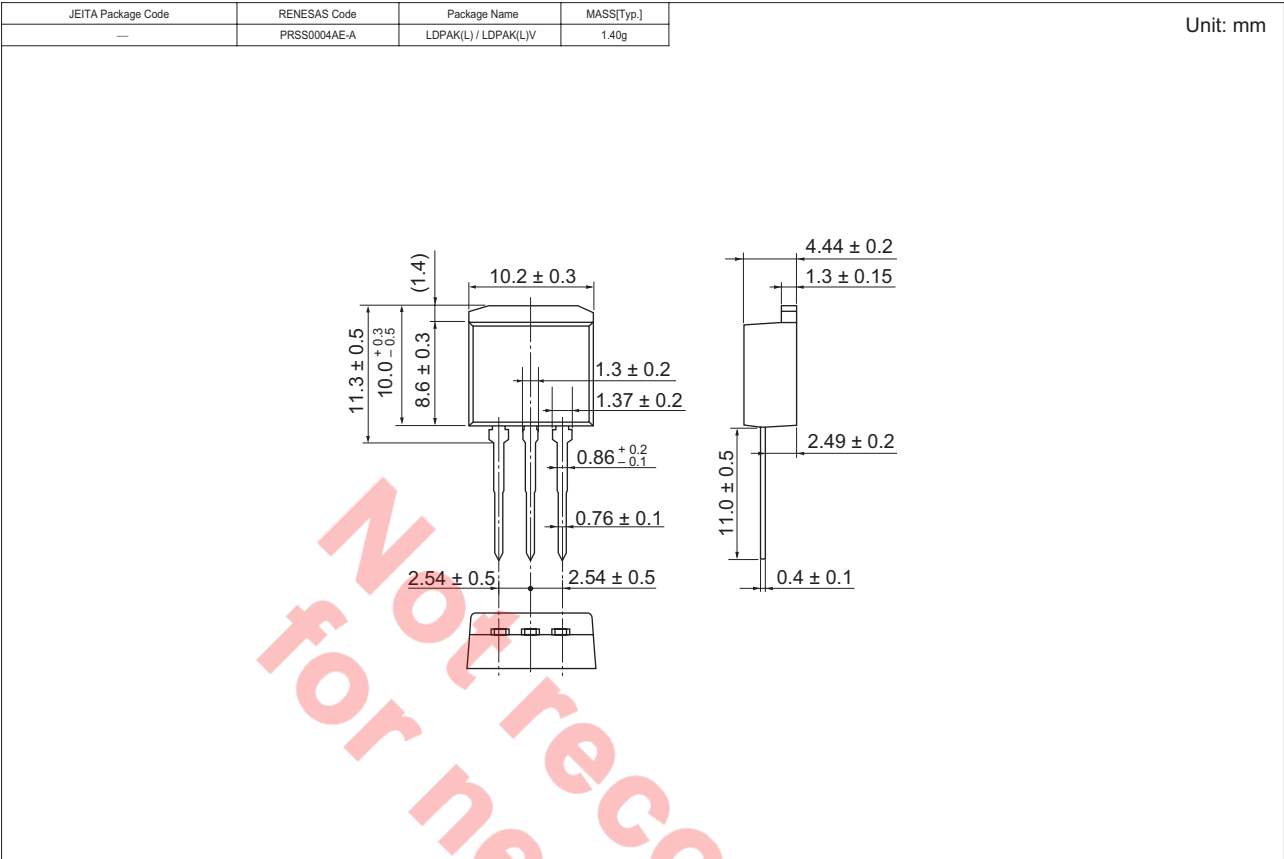
Switching Time Test Circuit



Waveform



Package Dimensions



### Ordering Information

| Part Name    | Quantity | Shipping Container |
|--------------|----------|--------------------|
| 2SK2957L-E   | 500 pcs  | Box (Sack)         |
| 2SK2957STL-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.

Not recommend  
for new design

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