

2SJ387(L), 2SJ387(S)

Silicon P Channel MOS FET

REJ03G0862-0200
(Previous: ADE-208-1196)
Rev.2.00
Sep 07, 2005

Description

High speed power switching

Features

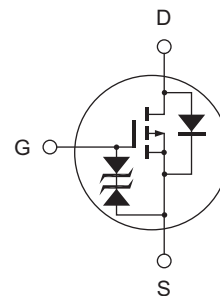
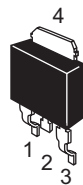
- Low on-resistance
- Low drive current
- 2.5 V Gate drive device can be driven from 3 V Source
- Suitable for Switching regulator, DC-DC converter

Outline

RENESAS Package code: PRSS0004ZD-B
(Package name: DPAK (L)-(2))



RENESAS Package code: PRSS0004ZD-C
(Package name: DPAK (S))



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

Absolute Maximum Ratings

(Ta = 25°C)

| Item | Symbol | Value | Unit |
|---|-----------------------------------|-------------|------|
| Drain to source voltage | V_{DSS} | -20 | V |
| Gate to source voltage | V_{GSS} | ±10 | V |
| Drain current | I_D | -10 | A |
| Drain peak current | $I_{D (pulse)}$ ^{Note 1} | -40 | A |
| Body to drain diode reverse drain current | I_{DR} | -10 | A |
| Channel dissipation | P_{ch} ^{Note 2} | 20 | 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 $T_c = 25^\circ C$

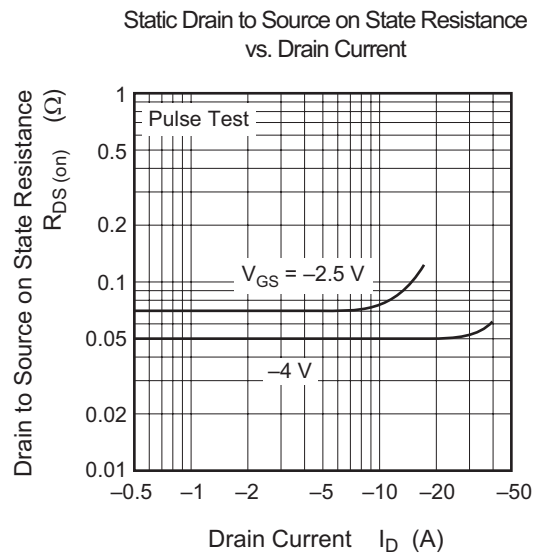
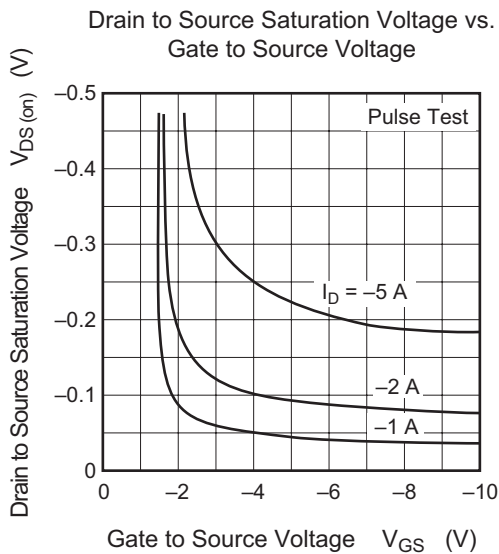
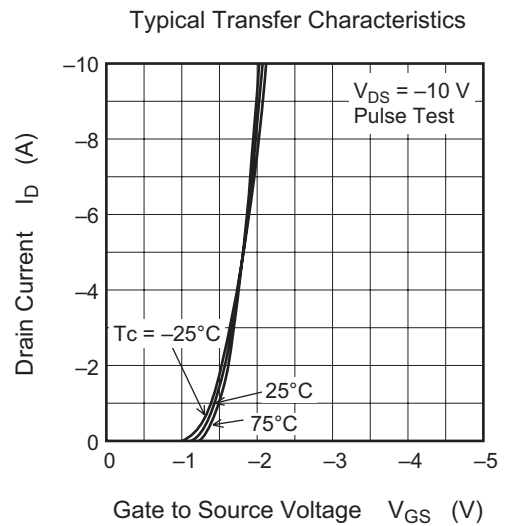
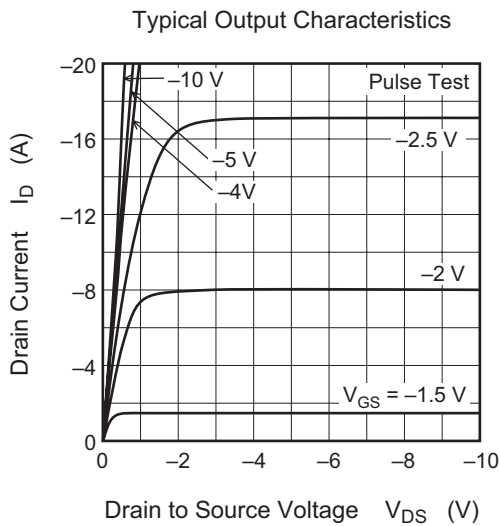
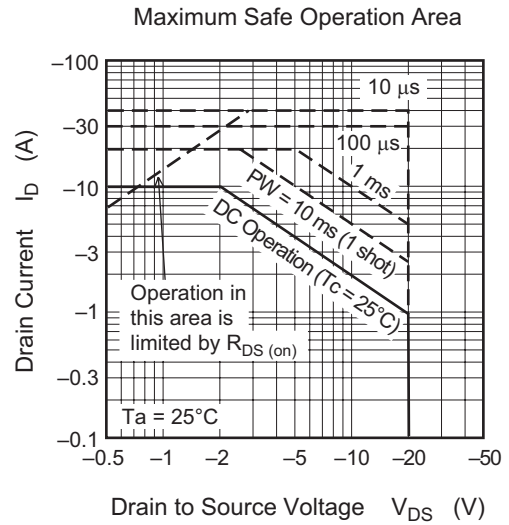
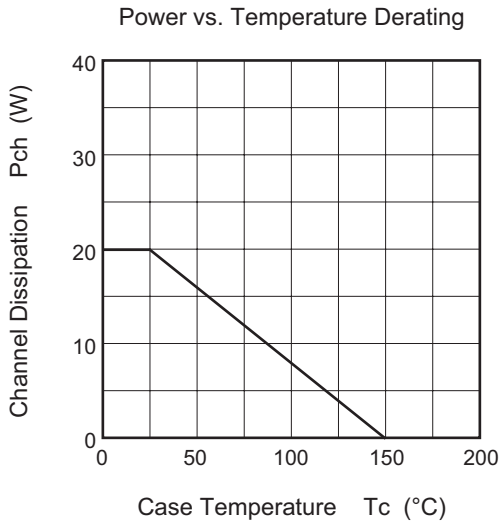
Electrical Characteristics

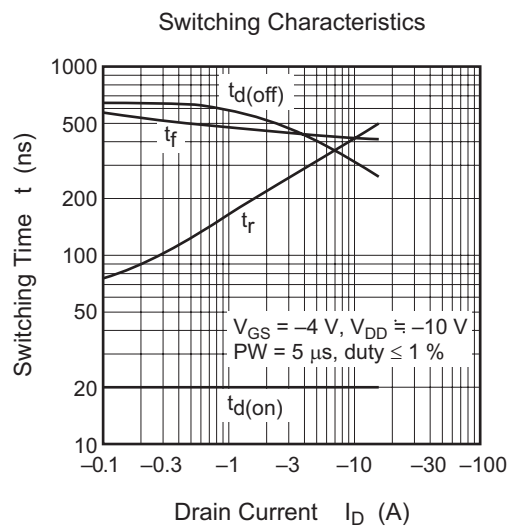
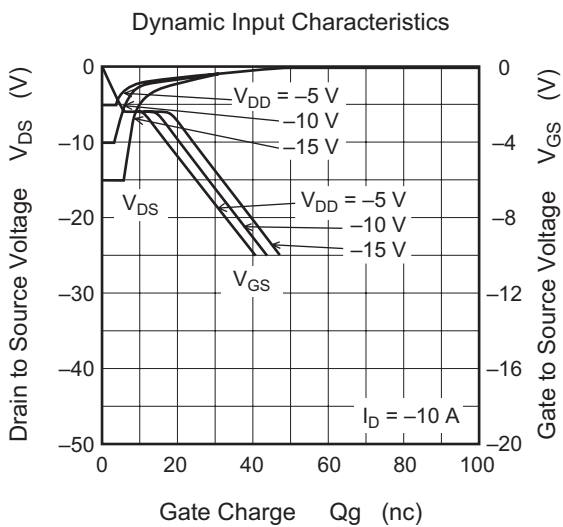
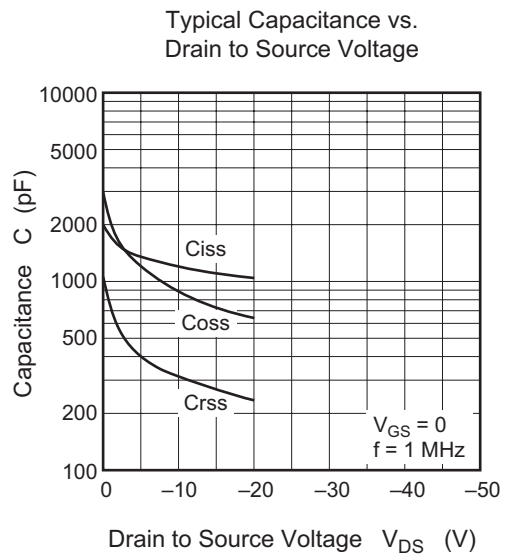
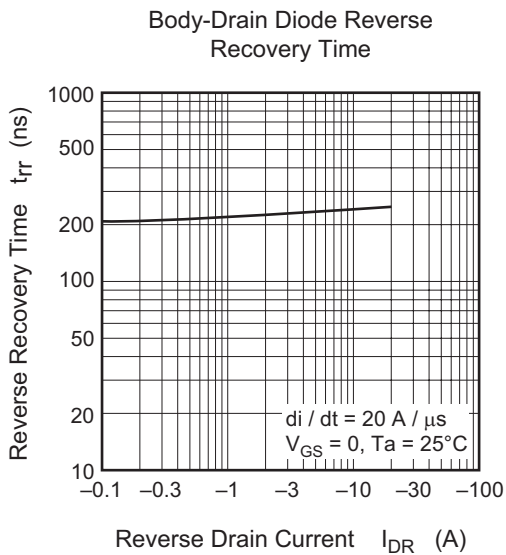
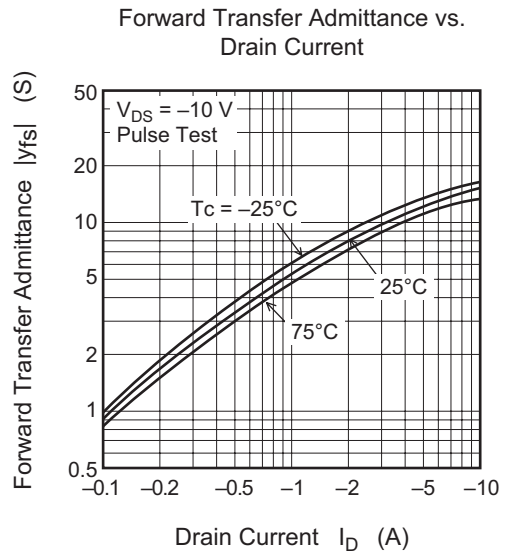
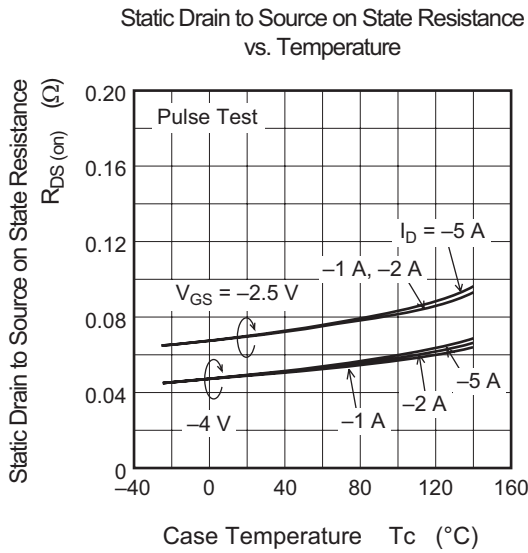
(Ta = 25°C)

| Item | Symbol | Min | Typ | Max | Unit | Test Conditions |
|--|----------------|------|------|------|------|--|
| Drain to source breakdown voltage | $V_{(BR) DSS}$ | -20 | — | — | V | $I_D = -10 \text{ mA}$, $V_{GS} = 0$ |
| Gate to source breakdown voltage | $V_{(BR) GSS}$ | ±10 | — | — | V | $I_G = \pm 200 \mu A$, $V_{DS} = 0$ |
| Gate to source leak current | I_{GSS} | — | — | ±10 | μA | $V_{GS} = \pm 6.5 \text{ V}$, $V_{DS} = 0$ |
| Zero gate voltage drain current | I_{DSS} | — | — | -100 | μA | $V_{DS} = -16 \text{ V}$, $V_{GS} = 0$ |
| Gate to source cutoff voltage | $V_{GS (off)}$ | -0.5 | — | -1.5 | V | $I_D = -1 \text{ mA}$, $V_{DS} = -10 \text{ V}$ |
| Static drain to source on state resistance | $R_{DS (on)}$ | — | 0.05 | 0.07 | Ω | $I_D = -5 \text{ A}$, $V_{GS} = -4 \text{ V}$ ^{Note 3} |
| | $R_{DS (on)}$ | — | 0.07 | 0.1 | Ω | $I_D = -5 \text{ A}$, $V_{GS} = -2.5 \text{ V}$ ^{Note 3} |
| Forward transfer admittance | $ y_{fs} $ | 7 | 12 | — | S | $I_D = -5 \text{ A}$, $V_{DS} = -10 \text{ V}$ ^{Note 3} |
| Input capacitance | C_{iss} | — | 1170 | — | pF | $V_{DS} = -10 \text{ V}$ |
| Output capacitance | C_{oss} | — | 860 | — | pF | $V_{GS} = 0$ |
| Reverse transfer capacitance | C_{rss} | — | 310 | — | pF | $f = 1 \text{ MHz}$ |
| Turn-on delay time | $t_{d (on)}$ | — | 20 | — | ns | $I_D = -5 \text{ A}$ |
| Rise time | t_r | — | 325 | — | ns | $V_{GS} = -4 \text{ V}$ |
| Turn-off delay time | $t_{d (off)}$ | — | 350 | — | ns | $R_L = 2 \Omega$ |
| Fall time | t_f | — | 425 | — | ns | |
| Body to drain diode forward voltage | V_{DF} | — | -1.0 | — | V | $I_F = -10 \text{ A}$, $V_{GS} = 0$ |
| Body to drain diode reverse recovery time | t_{rr} | — | 240 | — | ns | $I_F = -10 \text{ A}$, $V_{GS} = 0$ $di_F/dt = 20 \text{ A}/\mu s$ |

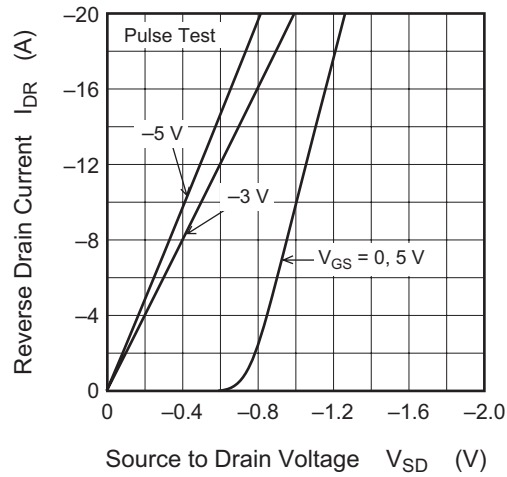
Note: 3. Pulse test

Main Characteristics

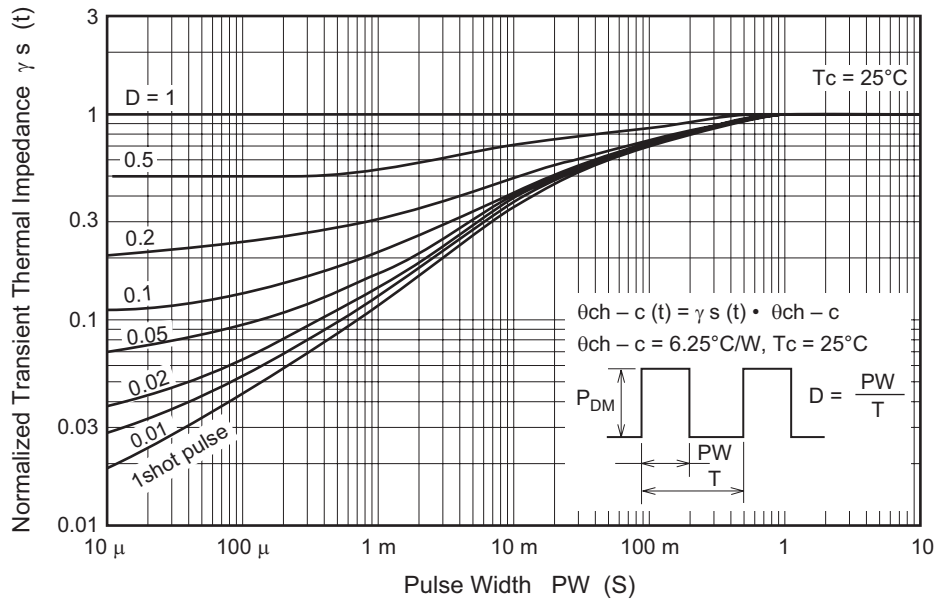




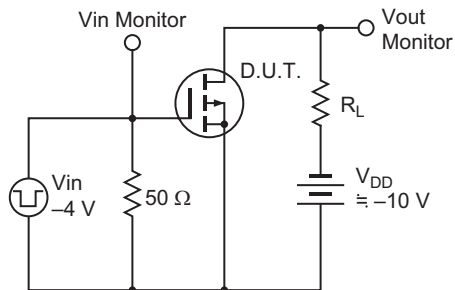
Reverse Drain Current vs. Source to Drain Voltage



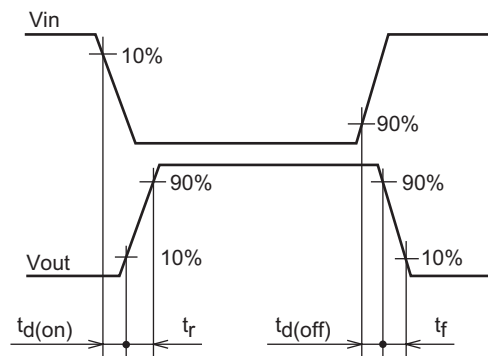
Normalized Transient Thermal Impedance vs. Pulse Width



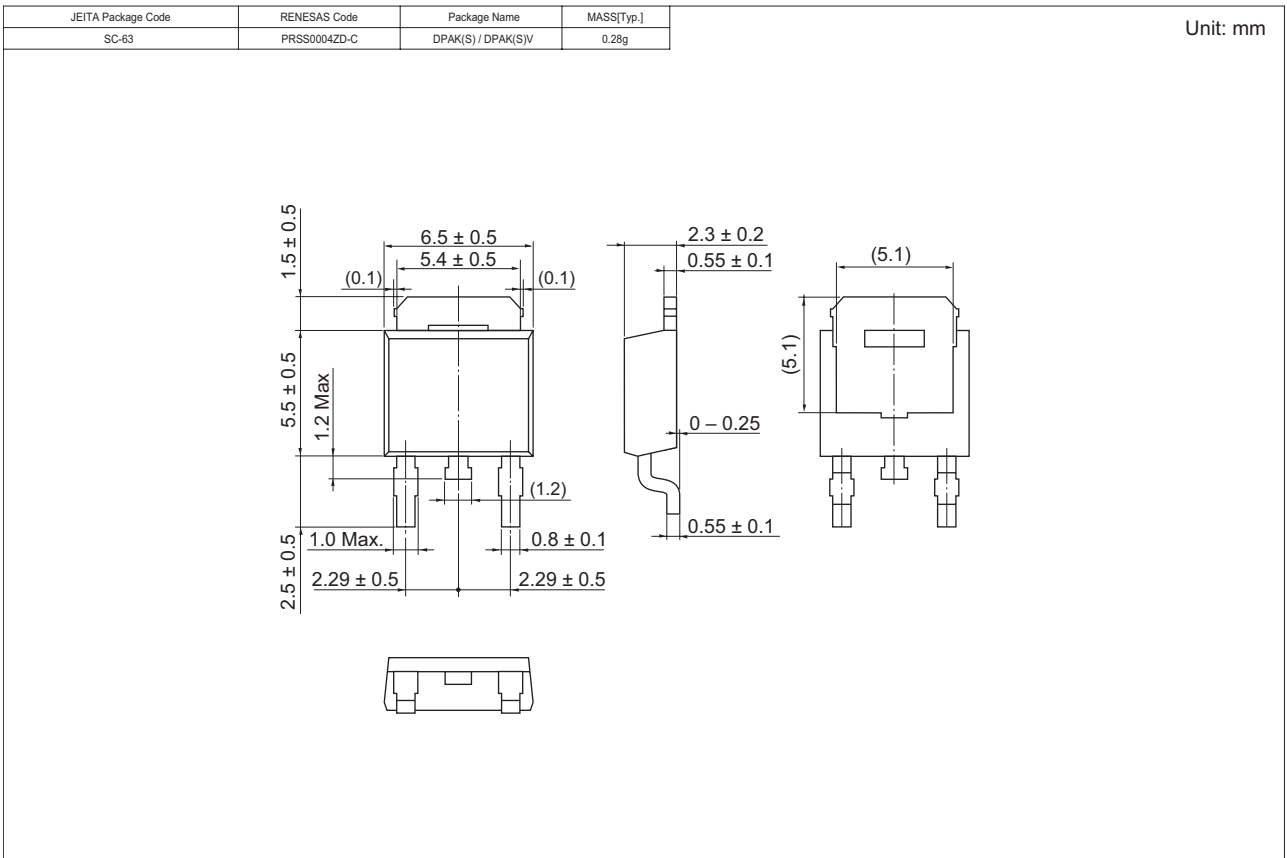
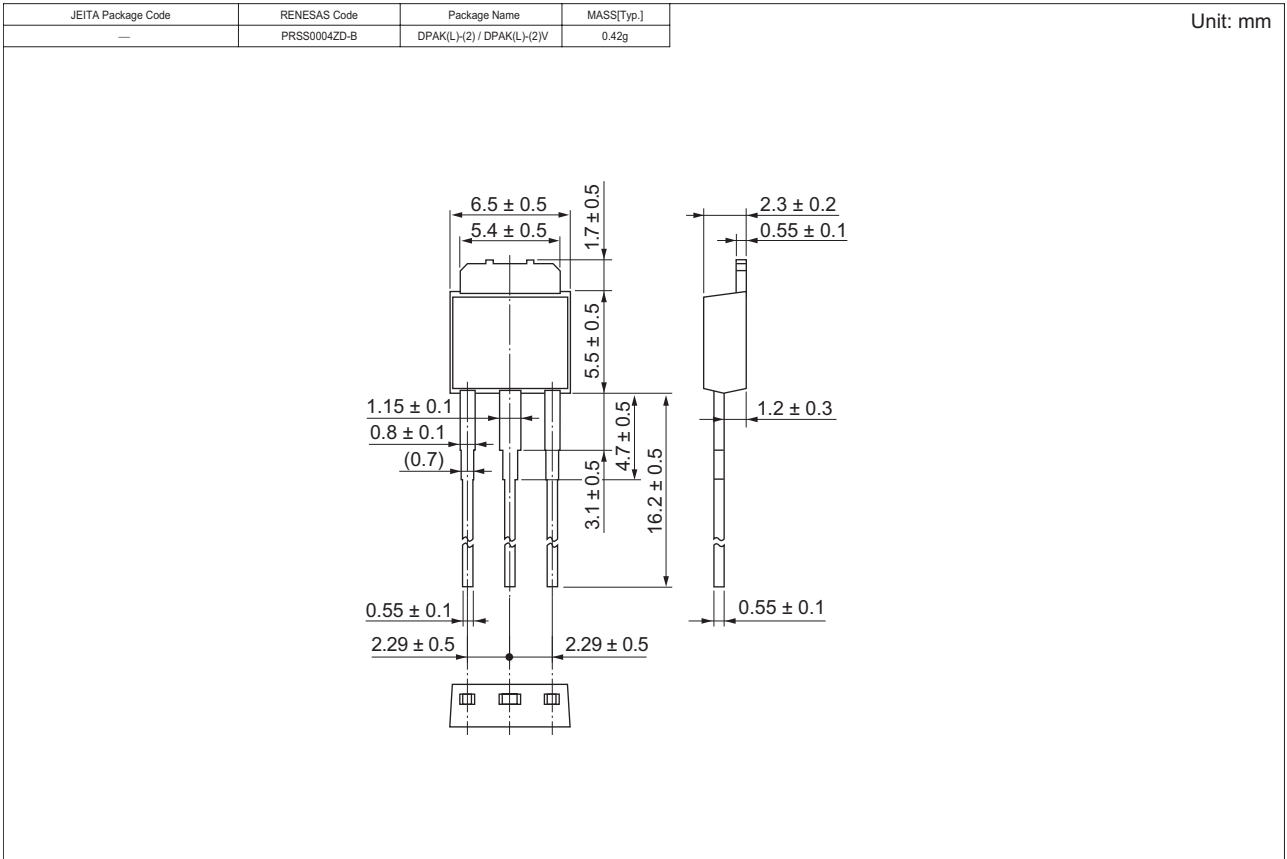
Switching Time Test Circuit



Waveform



Package Dimensions



Ordering Information

| Part Name | Quantity | Shipping Container |
|-------------|----------|--------------------|
| 2SJ387L-E | 3200 pcs | Box (Sack) |
| 2SJ387STL-E | 3000 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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