

RJK1525DPJ, RJK1525DPE, RJK1525DPF

Silicon N Channel MOS FET
High Speed Power Switching

REJ03G0623-0100

Rev.1.00

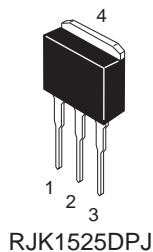
Apr.22,2005

Features

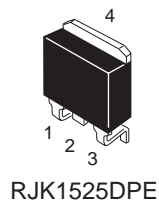
- Low on-resistance
- Low leakage current
- High speed switching

Outline

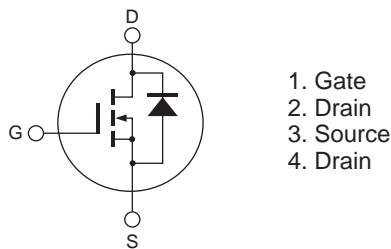
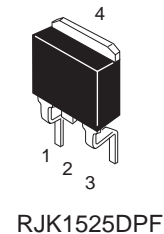
RENESAS Package code: PRSS0004AE-A
(Package name LPAK(L))



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



RENESAS Package code: PRSS0004AE-C
(Package name LPAK(S)-(2))



Absolute Maximum Ratings

(Ta = 25°C)

| Item | Symbol | Ratings | Unit |
|---|----------------------------------|-------------|------|
| Drain to Source voltage | V_{DSS} | 150 | V |
| Gate to Source voltage | V_{GSS} | ±30 | V |
| Drain current | I_D | 25 | A |
| Drain peak current | $I_{D(pulse)}$ ^{Note1} | 50 | A |
| Body-Drain diode reverse Drain current | I_{DR} | 25 | A |
| Body-Drain diode reverse Drain peak current | $I_{DR(pulse)}$ ^{Note1} | 50 | A |
| Avalanche current | I_{AP} ^{Note3} | 17 | A |
| Avalanche energy | E_{AR} ^{Note3} | 21.6 | mJ |
| Channel dissipation | P_{ch} ^{Note2} | 75 | W |
| Channel to case thermal impedance | θ_{ch-c} | 1.67 | °C/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 $T_c = 25^\circ C$
 3. $STch = 25^\circ C$, $T_{ch} \leq 150^\circ C$

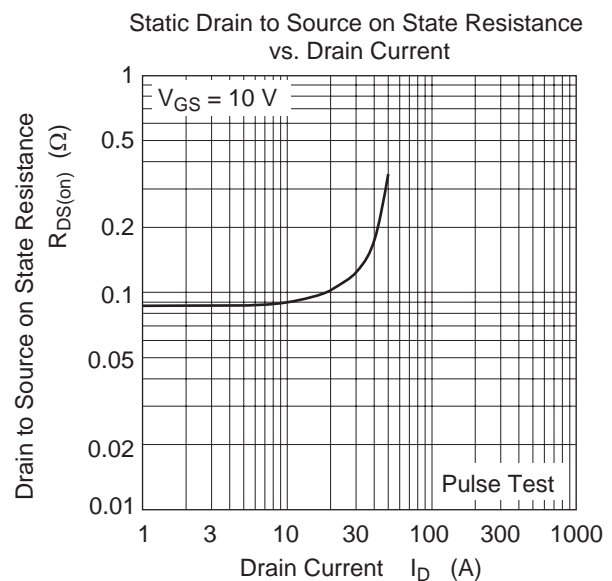
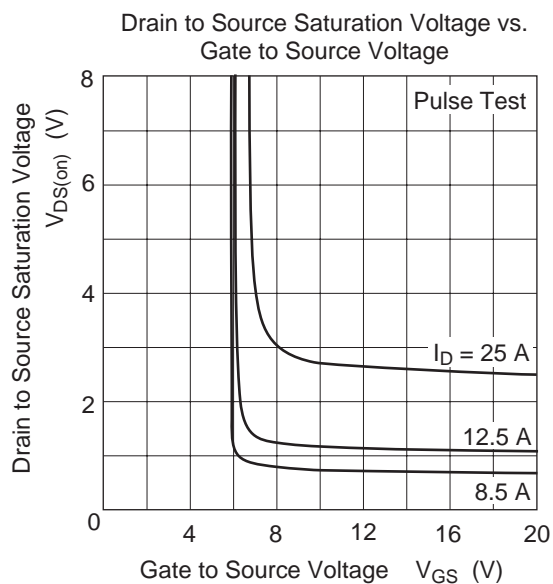
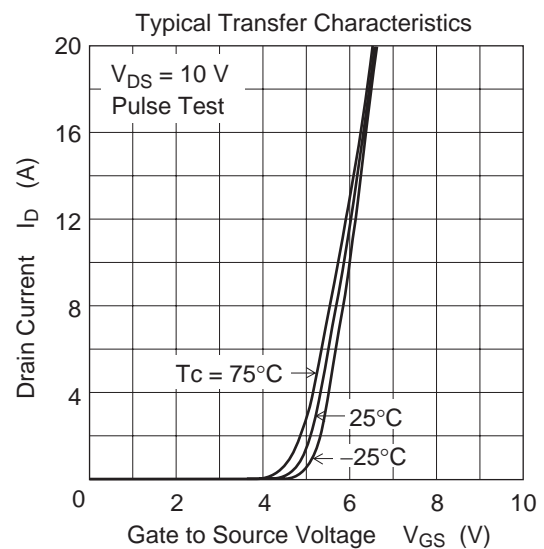
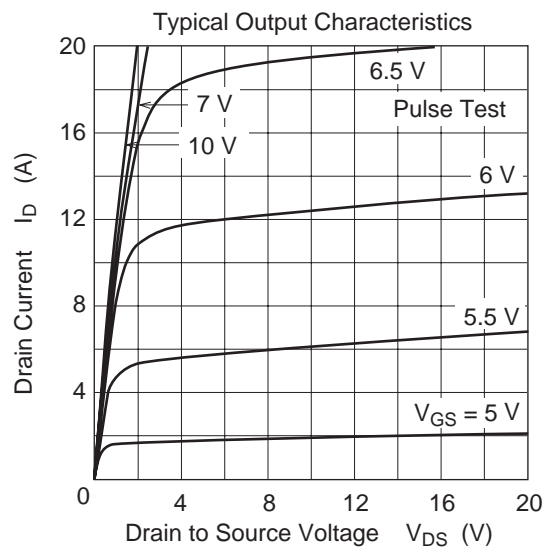
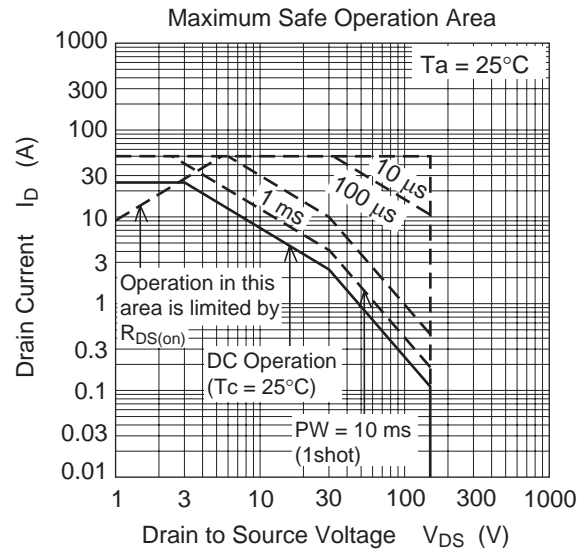
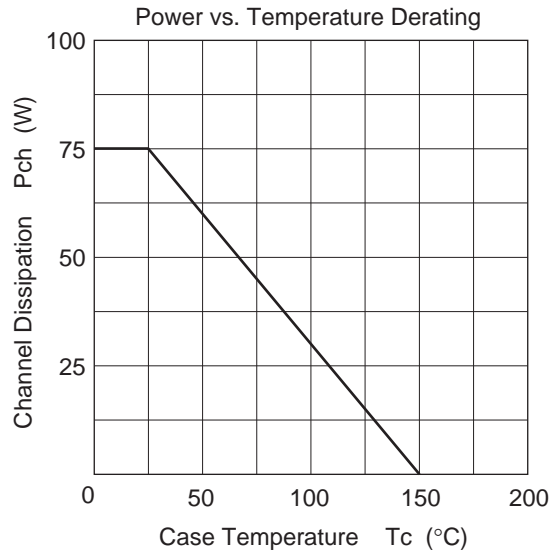
Electrical Characteristics

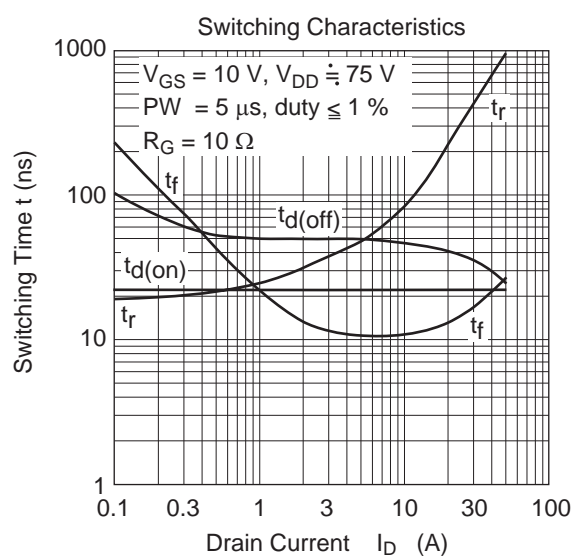
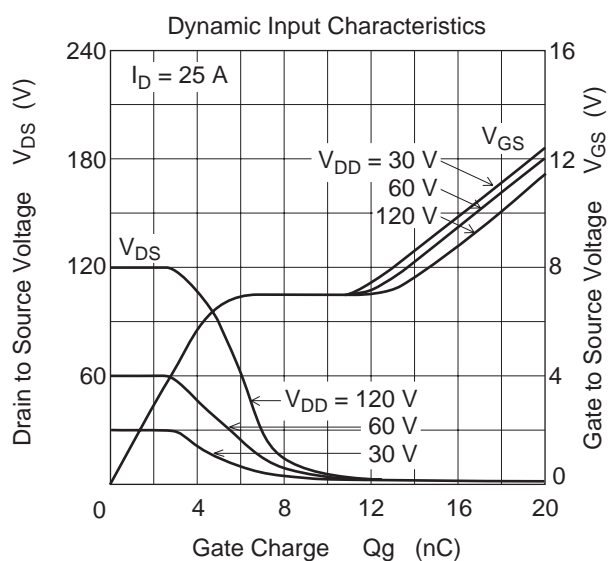
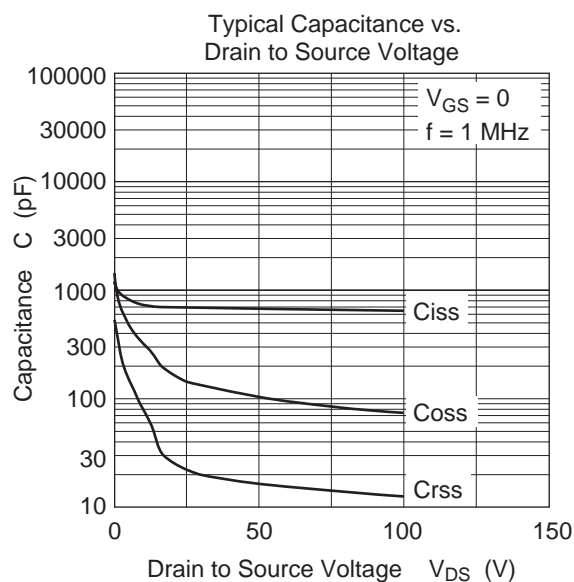
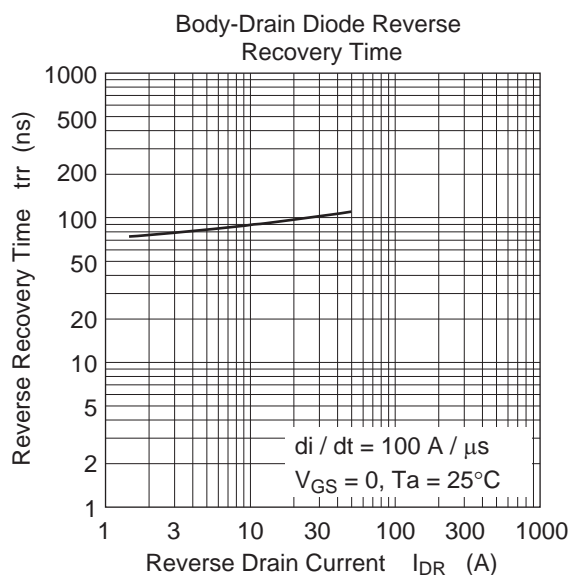
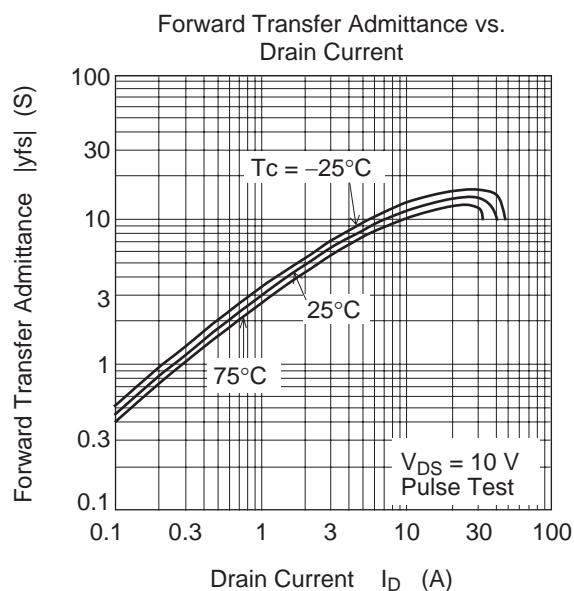
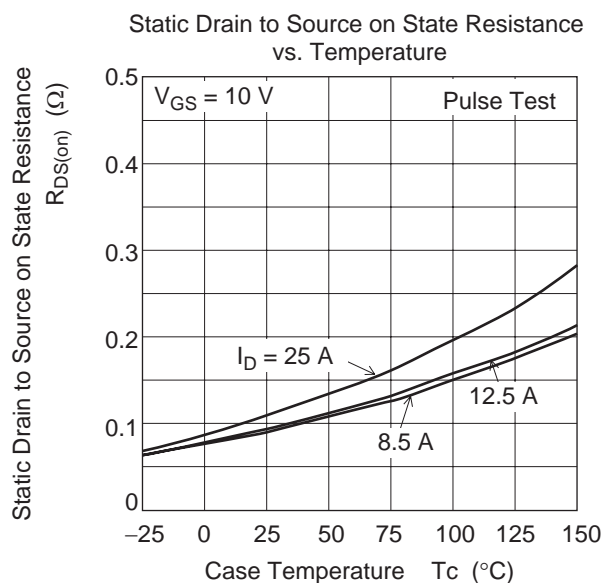
(Ta = 25°C)

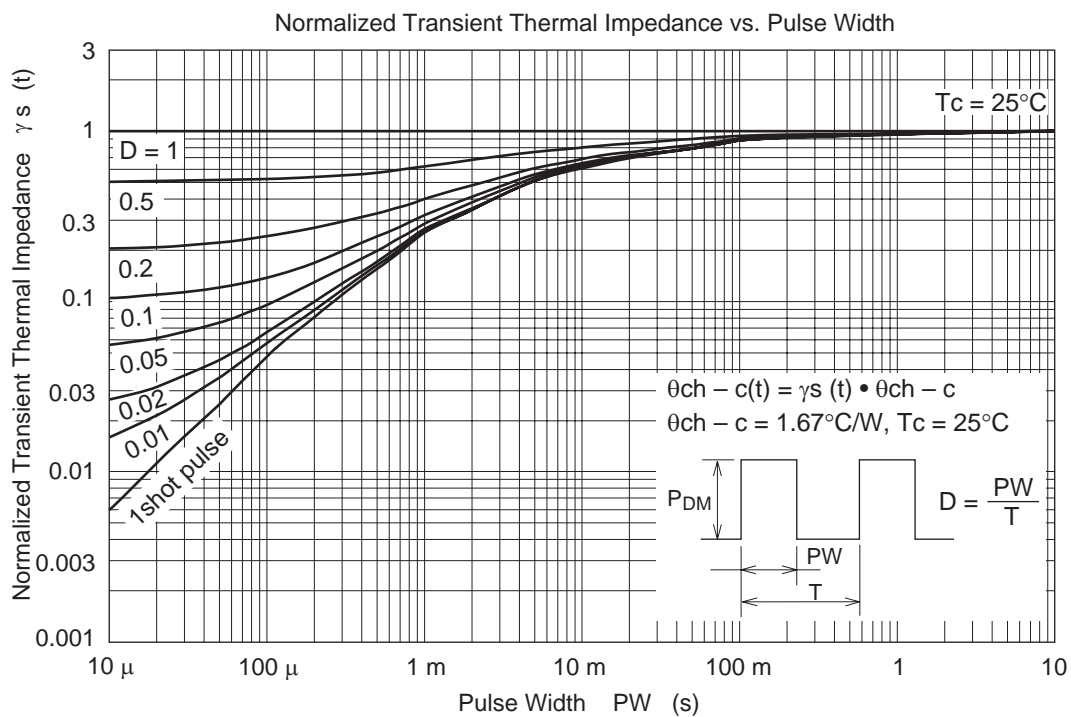
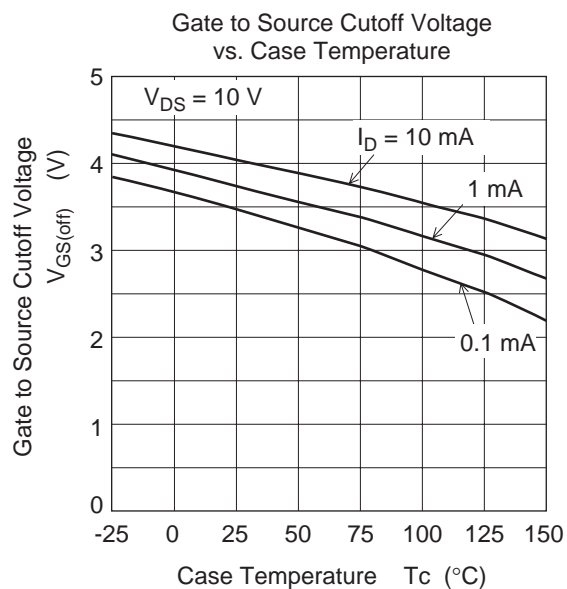
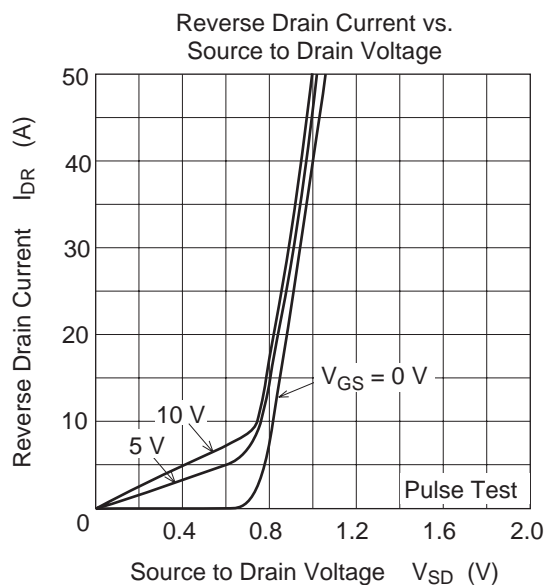
| Item | Symbol | Min | Typ | Max | Unit | Test conditions |
|--|---------------|-----|-------|-------|----------|--|
| Drain to Source breakdown voltage | $V_{(BR)DSS}$ | 150 | — | — | V | $I_D = 10 \text{ mA}$, $V_{GS} = 0$ |
| Zero Gate voltage drain current | I_{DSS} | — | — | 1 | μA | $V_{DS} = 150 \text{ V}$, $V_{GS} = 0$ |
| Gate to Source leak current | I_{GSS} | — | — | ±0.1 | μA | $V_{GS} = \pm 30 \text{ V}$, $V_{DS} = 0$ |
| Gate to Source cutoff voltage | $V_{GS(off)}$ | 3.0 | — | 4.5 | V | $V_{DS} = 10 \text{ V}$, $I_D = 1 \text{ mA}$ |
| Forward transfer admittance | $ y_{fs} $ | 7 | 12 | — | S | $I_D = 12.5 \text{ A}$, $V_{DS} = 10 \text{ V}$ ^{Note4} |
| Static Drain to Source on state resistance | $R_{DS(on)}$ | — | 0.093 | 0.110 | Ω | $I_D = 12.5 \text{ A}$, $V_{GS} = 10 \text{ V}$ ^{Note4} |
| Input capacitance | C_{iss} | — | 680 | — | pF | $V_{DS} = 25 \text{ V}$ $V_{GS} = 0$ $f = 1 \text{ MHz}$ |
| Output capacitance | C_{oss} | — | 150 | — | pF | |
| Reverse transfer capacitance | C_{rss} | — | 22 | — | pF | |
| Turn-on delay time | $t_{d(on)}$ | — | 22 | — | ns | $I_D = 12.5 \text{ A}$ $V_{GS} = 10 \text{ V}$ $R_L = 6 \Omega$ $R_g = 10 \Omega$ |
| Rise time | t_r | — | 110 | — | ns | |
| Turn-off delay time | $t_{d(off)}$ | — | 45 | — | ns | |
| Fall time | t_f | — | 12 | — | ns | |
| Total Gate charge | Q_g | — | 18 | — | nC | $V_{DD} = 120 \text{ V}$ $V_{GS} = 10 \text{ V}$ $I_D = 25 \text{ A}$ |
| Gate to Source charge | Q_{gs} | — | 4.5 | — | nC | |
| Gate to Drain charge | Q_{gd} | — | 9 | — | nC | |
| Body-Drain diode forward voltage | V_{DF} | — | 0.95 | 1.50 | V | $I_F = 25 \text{ A}$, $V_{GS} = 0$ ^{Note4} |
| Body-Drain diode reverse recovery time | t_{rr} | — | 100 | — | ns | $I_F = 25 \text{ A}$, $V_{GS} = 0$ $diF/dt = 100 \text{ A}/\mu s$ |
| Body-Drain diode reverse recovery charge | Q_{rr} | — | 0.4 | — | μC | |

Notes: 4. Pulse test

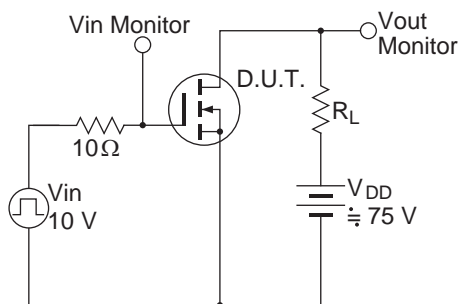
Main Characteristics



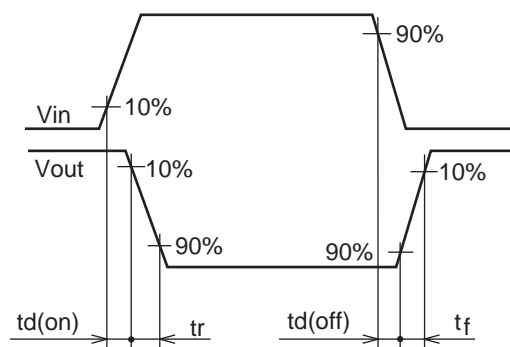




Switching Time Test Circuit

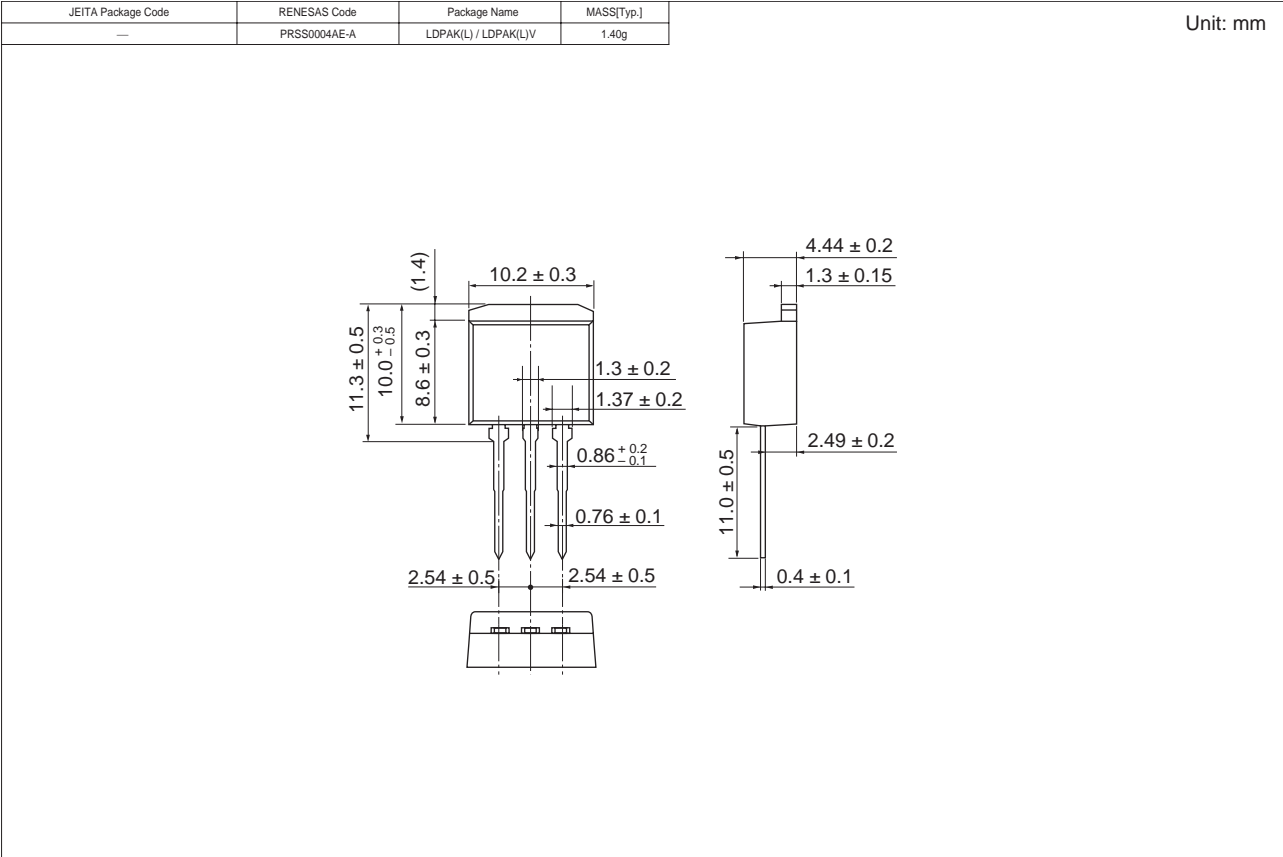


Waveform

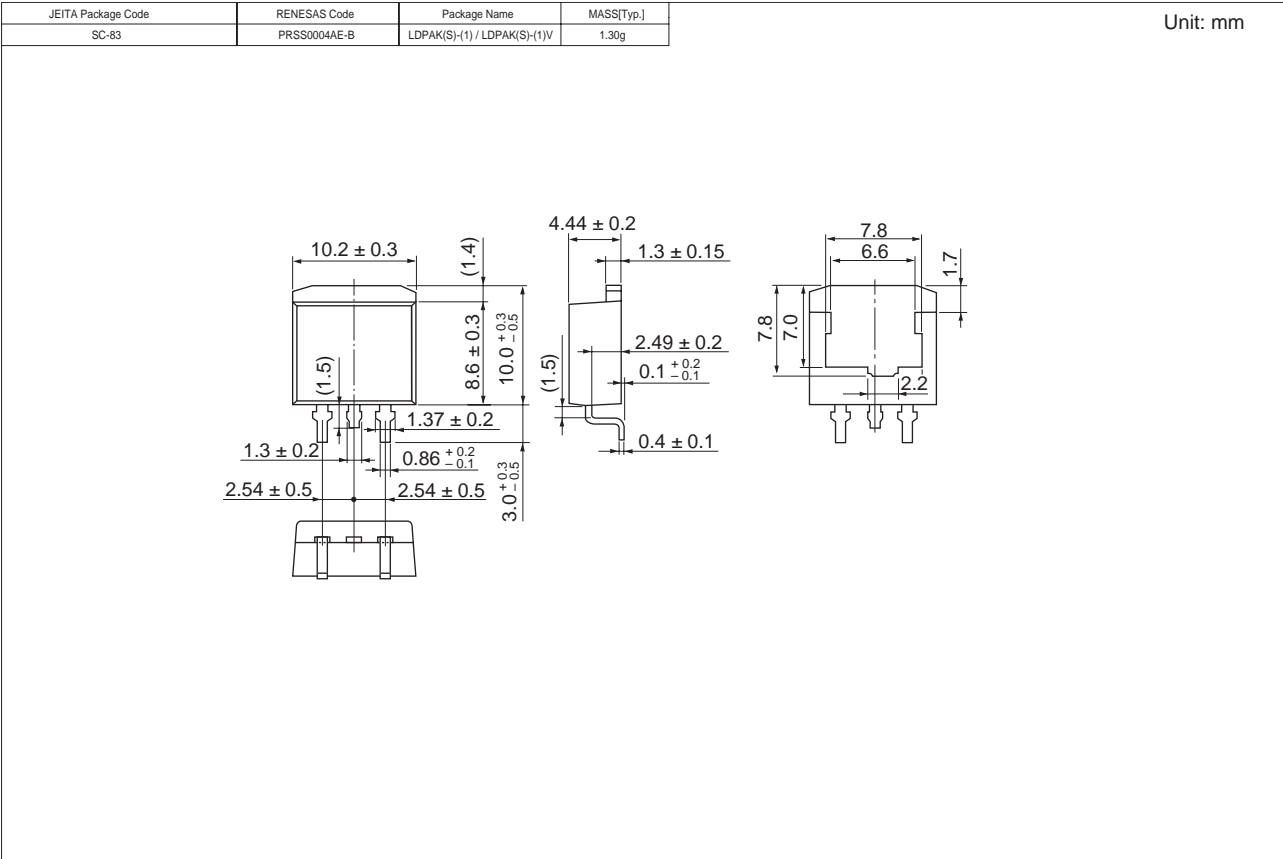


Package Dimensions

• RJK1525DPJ



• RJK1525DPE



• RJK1525DPF

| JEITA Package Code | RENESAS Code | Package Name | MASS[Typ.] | Unit: mm |
|--------------------|--------------|------------------------------|------------|----------|
| — | PRSS0004AE-C | LDBAK(S)-(2) / LDBAK(S)-(2)V | 1.35g | |

The drawing shows three views of the RJK1525DPF package with the following dimensions (all in mm):

- Top View:** Overall width 10.2 ± 0.3 , overall height 10.0 ± 0.3 . Pin pitch is 1.3 ± 0.2 . Pin width is 0.86 ± 0.1 . Pin length is 2.54 ± 0.5 . A central feature has a width of 1.37 ± 0.2 and a height of 8.6 ± 0.3 . A small feature on the right has a width of 1.4 .
- Side View:** Overall height 4.44 ± 0.2 . Pin height is 1.3 ± 0.15 . A central feature has a height of 2.49 ± 0.2 . A small feature on the right has a height of 0.1 ± 0.1 . The pin length is 0.4 ± 0.1 . A small feature on the left has a width of 2.3 .
- Bottom View:** Overall width 7.8 , overall height 7.0 . Pin pitch is 6.6 . Pin width is 1.7 . A central feature has a width of 2.2 .

Ordering Information

| Part Name | Quantity | Shipping Container |
|---------------|----------|--------------------|
| RJK1525DPE-LE | 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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