

2SJ553(L), 2SJ553(S)

Silicon P Channel MOS FET

REJ03G0900-0400
(Previous: ADE-208-650B)
Rev.4.00
Sep 07, 2005

Description

High speed power switching

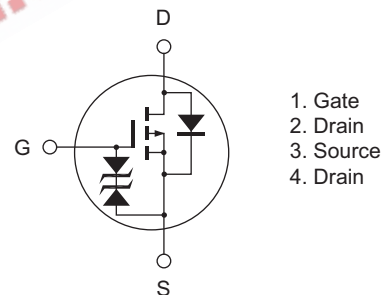
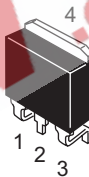
Features

- Low on-resistance
 $R_{DS(on)} = 0.028 \Omega$ 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 _{DSS} | -60 | V |
| Gate to source voltage | V _{GSS} | ±20 | V |
| Drain current | I _D | -30 | A |
| Drain peak current | I _{D (pulse)} ^{Note 1} | -120 | A |
| Body to drain diode reverse drain current | I _{DR} | -30 | A |
| Avalanche current | I _{AP} ^{Note 3} | -30 | A |
| Avalanche energy | E _{AR} ^{Note 3} | 77 | mJ |
| Channel dissipation | P _{ch} ^{Note 2} | 75 | W |
| Channel temperature | T _{ch} | 150 | °C |
| Storage temperature | T _{stg} | -55 to +150 | °C |

- Notes: 1. PW ≤ 10 μs, duty cycle ≤ 1%
 2. Value at Tc = 25°C
 3. Value at Tch = 25°C, Rg ≥ 50 Ω

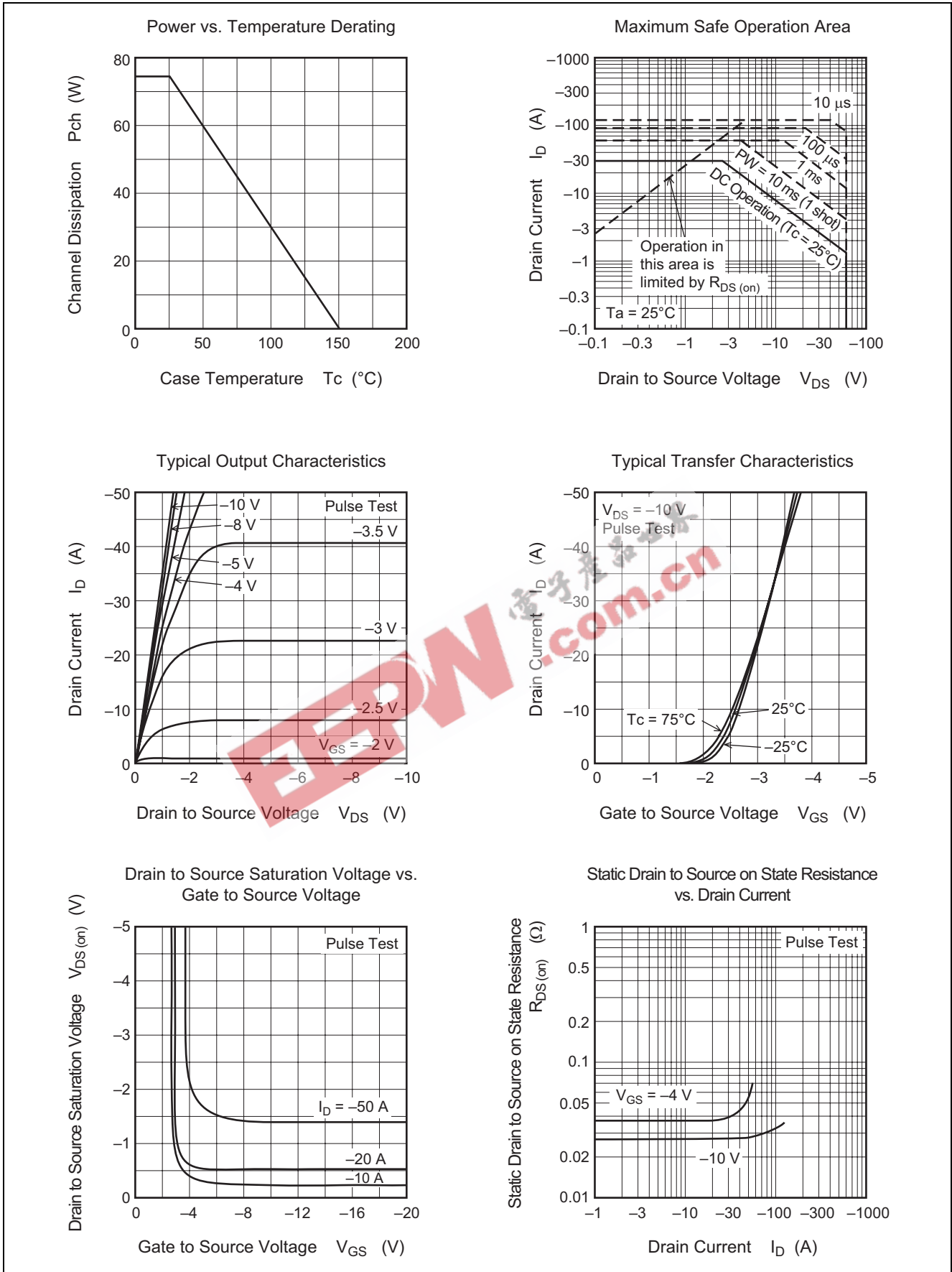
Electrical Characteristics

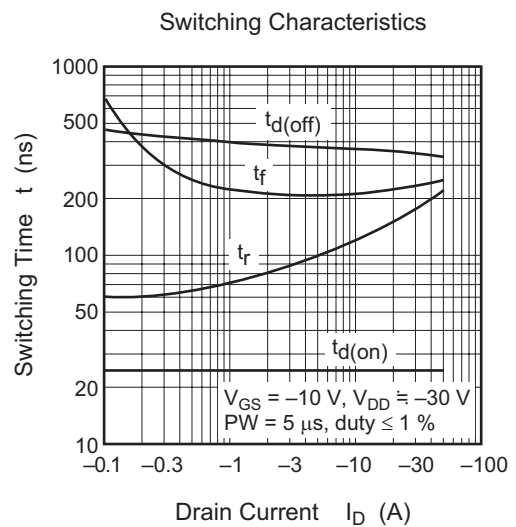
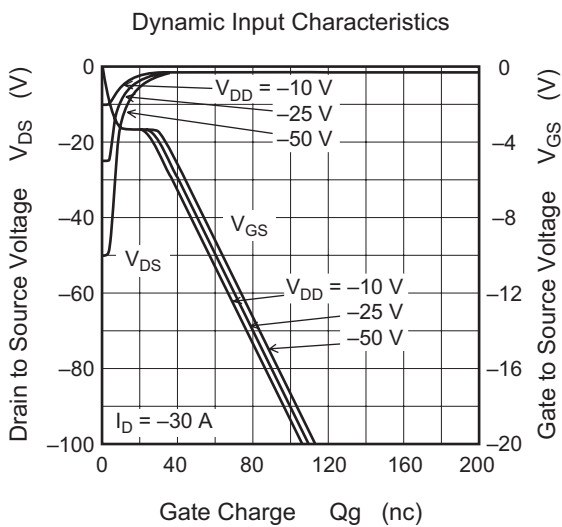
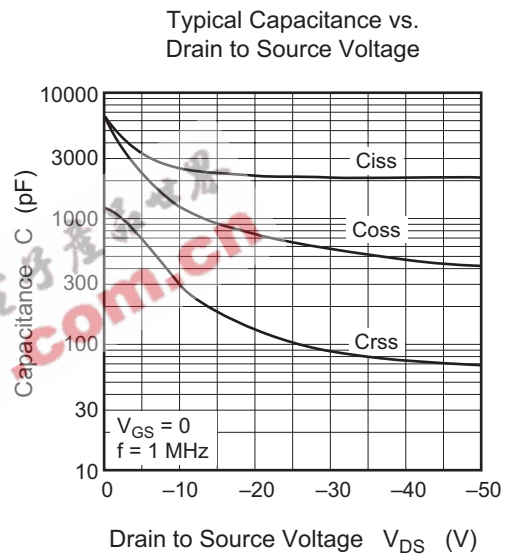
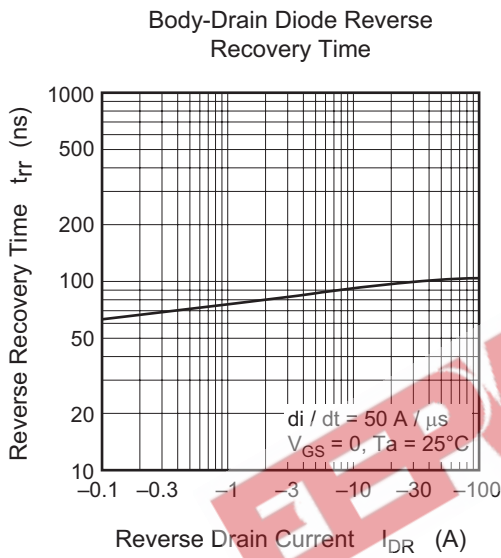
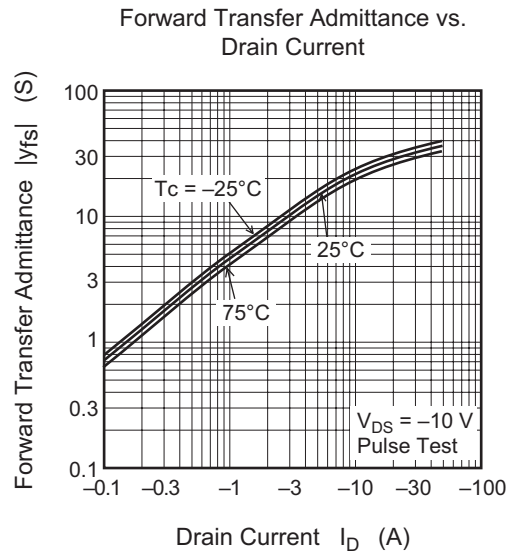
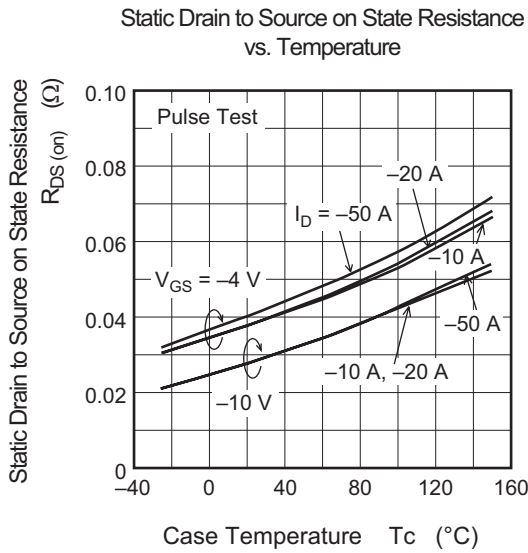
(Ta = 25°C)

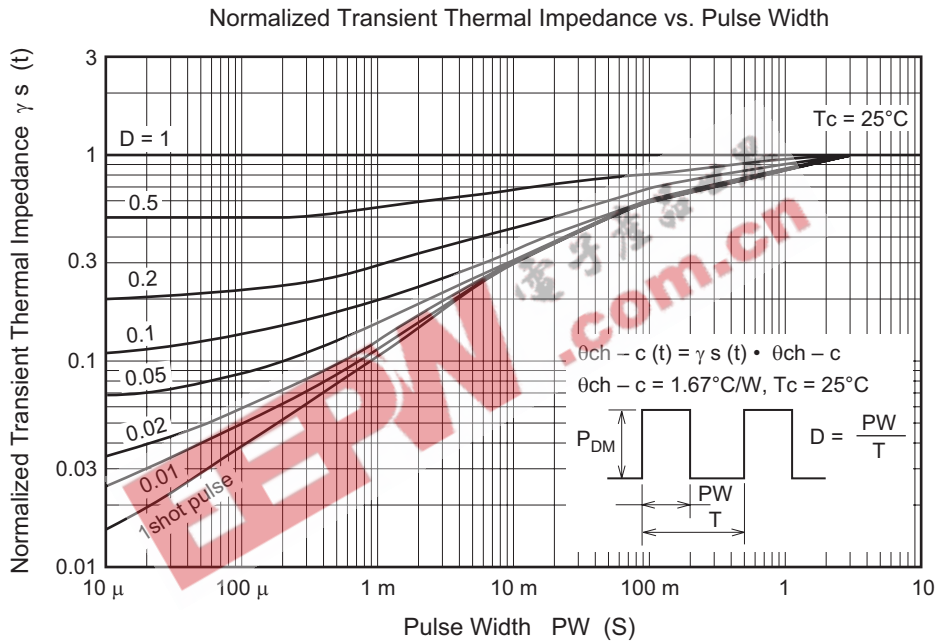
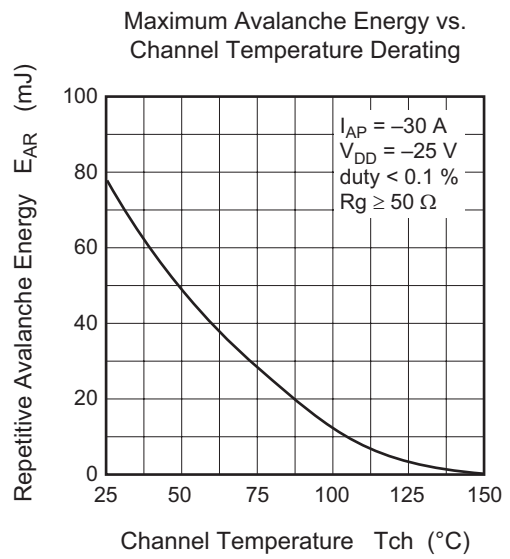
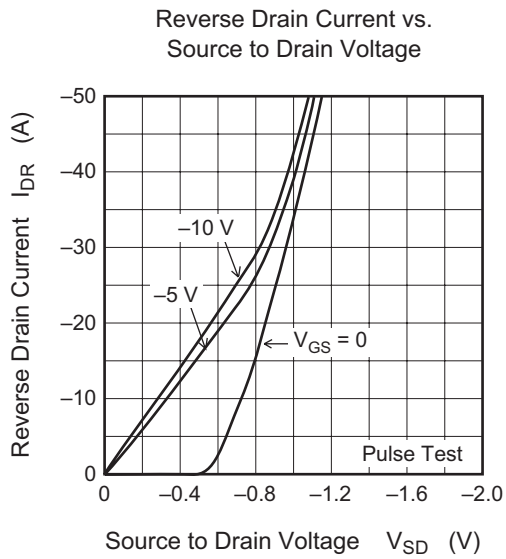
| Item | Symbol | Min | Typ | Max | Unit | Test Conditions |
|--|-----------------------|------|-------|-------|------|--|
| Drain to source breakdown voltage | V _{(BR) DSS} | -60 | — | — | V | I _D = -10 mA, V _{GS} = 0 |
| Gate to source breakdown voltage | V _{(BR) GSS} | ±20 | — | — | V | I _G = ±100 μA, V _{DS} = 0 |
| Zero gate voltage drain current | I _{DSS} | — | — | -10 | μA | V _{DS} = -60 V, V _{GS} = 0 |
| Gate to source leak current | I _{GSS} | — | — | ±10 | μA | V _{GS} = ±16 V, V _{DS} = 0 |
| Gate to source cutoff voltage | V _{GS (off)} | -1.0 | — | -2.0 | V | I _D = -1 mA, V _{DS} = -10 V |
| Static drain to source on state resistance | R _{DS (on)} | — | 0.028 | 0.037 | Ω | I _D = -15 A, V _{GS} = -10 V ^{Note 4} |
| | R _{DS (on)} | — | 0.038 | 0.055 | Ω | I _D = -15 A, V _{GS} = -4 V ^{Note 4} |
| Forward transfer admittance | y _{fs} | 15 | 25 | — | S | I _D = -15 A, V _{DS} = -10 V ^{Note 4} |
| Input capacitance | C _{iSS} | — | 2500 | — | pF | V _{DS} = -10 V |
| Output capacitance | C _{oSS} | — | 1300 | — | pF | V _{GS} = 0 |
| Reverse transfer capacitance | C _{rss} | — | 300 | — | pF | f = 1 MHz |
| Turn-on delay time | t _{d (on)} | — | 25 | — | ns | V _{GS} = -10 V |
| Rise time | t _r | — | 150 | — | ns | I _D = -15 A |
| Turn-off delay time | t _{d (off)} | — | 350 | — | ns | R _L = 2 Ω |
| Fall time | t _f | — | 220 | — | ns | |
| Body to drain diode forward voltage | V _{DF} | — | -0.95 | — | V | I _F = -30 A, V _{GS} = 0 |
| Body to drain diode reverse recovery time | t _{rr} | — | 100 | — | ns | I _F = -30 A, V _{GS} = 0 di _F /dt = 50 A/μs |

- Note: 4. Pulse test

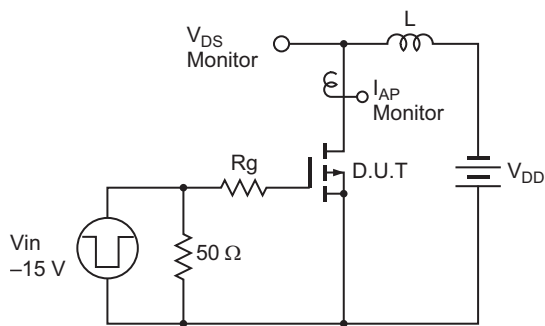
Main Characteristics





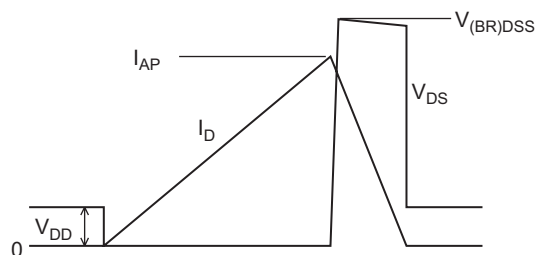


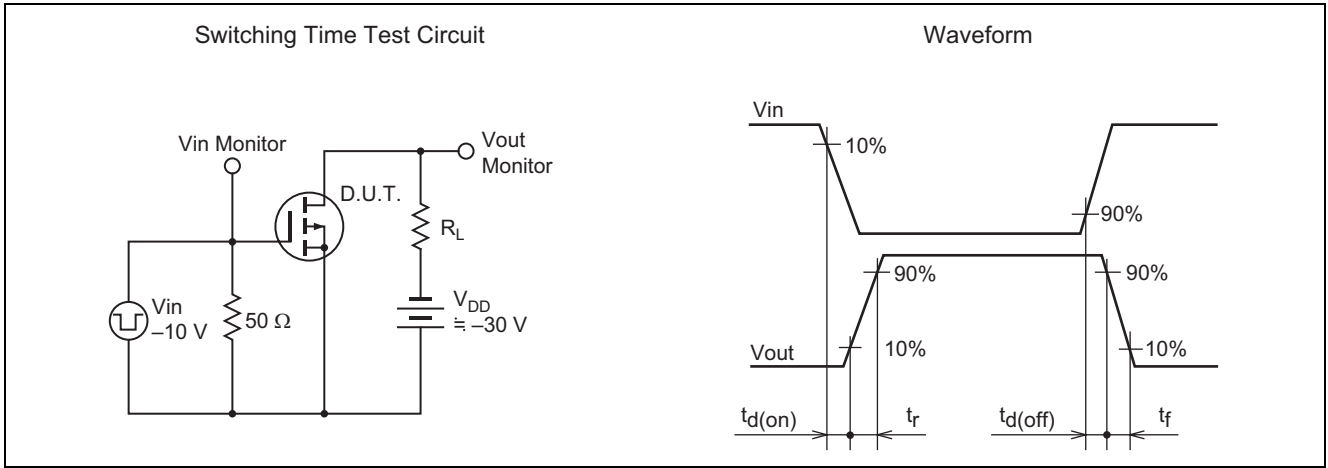
Avalanche Test Circuit



Avalanche Waveform

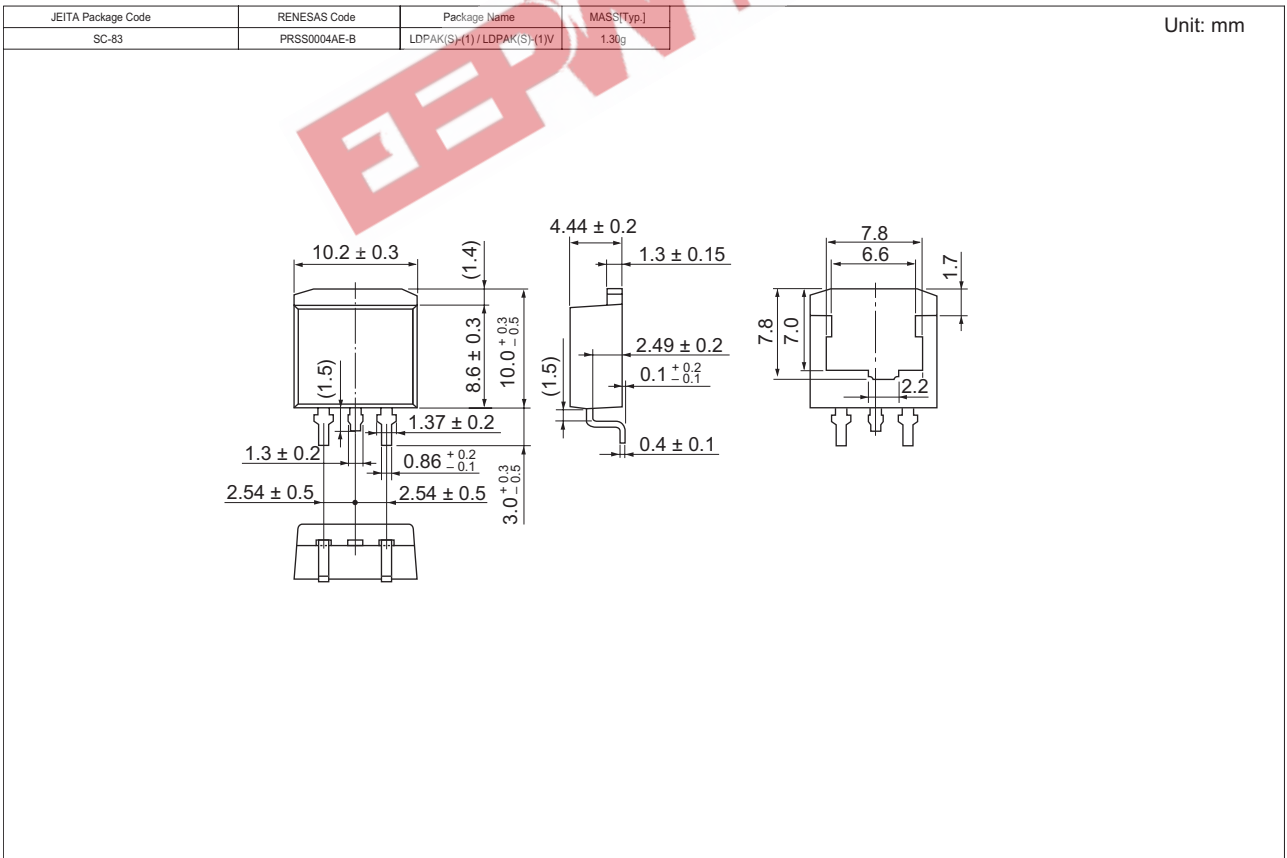
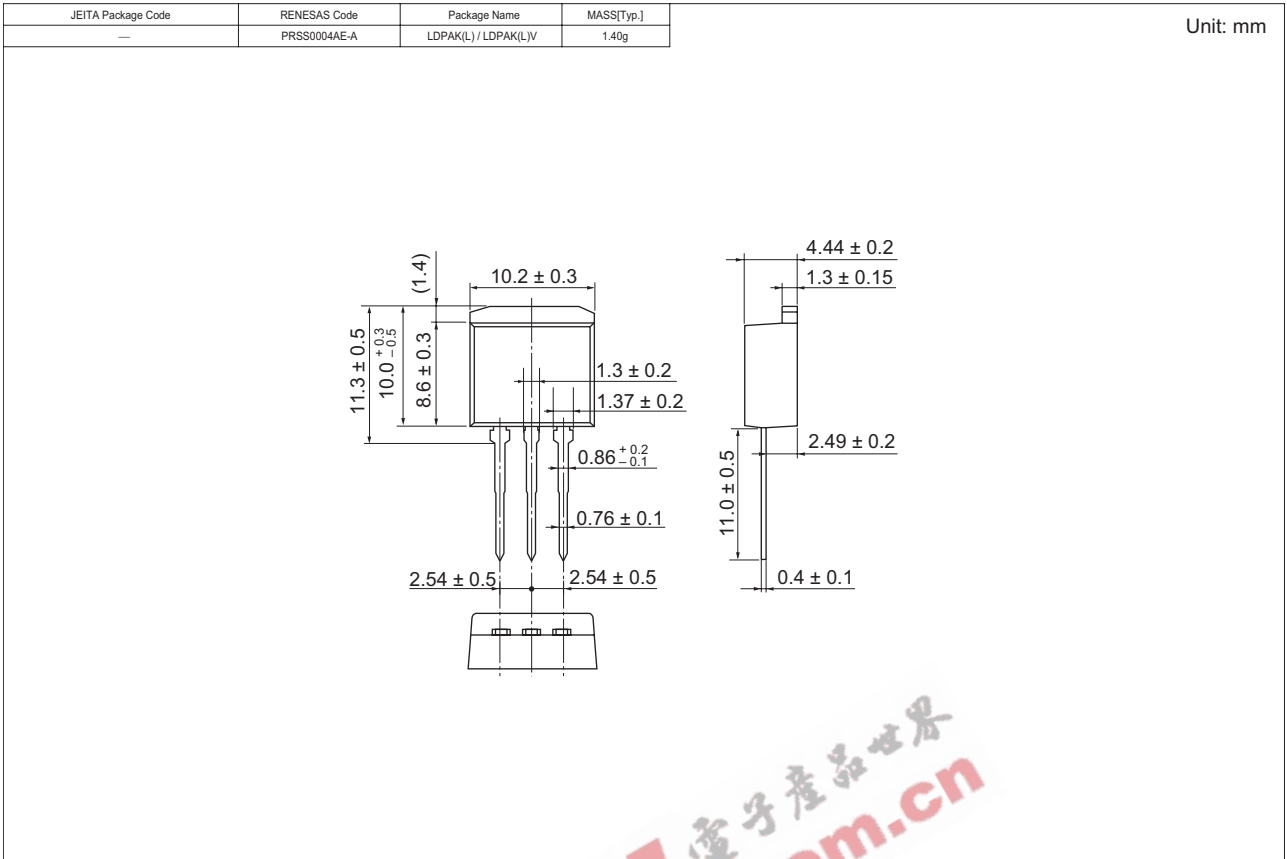
$$E_{AR} = \frac{1}{2} \cdot L \cdot I_{AP}^2 \cdot \frac{V_{DSS}}{V_{DSS} - V_{DD}}$$





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Package Dimensions



Ordering Information

| Part Name | Quantity | Shipping Container |
|-------------|----------|--------------------|
| 2SJ553L-E | 500 pcs | Box (Sack) |
| 2SJ553STL-E | 1000 pcs | Taping |

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Tel: <852> 2265-6688, Fax: <852> 2730-6071

Renesas Technology Taiwan Co., Ltd.

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Unit2607 Ruijing Building, No.205 Maoming Road (S), Shanghai 200020, China
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Renesas Technology Singapore Pte. Ltd.

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Tel: <82> 2-796-3115, Fax: <82> 2-796-2145

Renesas Technology Malaysia Sdn. Bhd.

Unit 906, Block B, Menara Amcorp, Amcorp Trade Centre, No.18, Jalan Persiaran Barat, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia
Tel: <603> 7955-9390, Fax: <603> 7955-9510