

H5N2508DL, H5N2508DS

Silicon N Channel MOS FET
High Speed Power Switching

REJ03G1108-0200
(Previous: ADE-208-1377)
Rev.2.00
Sep 07, 2005

Features

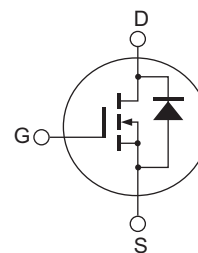
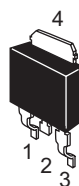
- Low on-resistance: $R_{DS(on)} = 0.48 \Omega$ typ.
- Low leakage current: $I_{DSS} = 1 \mu A$ max (at $V_{DS} = 250 V$)
- High speed switching: $t_f = 11 ns$ typ (at $V_{GS} = 10 V$, $V_{DD} = 125 V$, $I_D = 3.5 A$)
- Low gate charge: $Q_g = 13 nC$ typ (at $V_{DD} = 200 V$, $V_{GS} = 10 V$, $I_D = 7 A$)
- Avalanche ratings

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} | 250 | V |
| Gate to source voltage | V _{GSS} | ±30 | V |
| Drain current | I _D | 7 | A |
| Drain peak current | I _{D (pulse)} ^{Note 1} | 28 | A |
| Body-drain diode reverse drain current | I _{DR} | 7 | A |
| Body-drain diode reverse drain peak current | I _{DR (pulse)} ^{Note 1} | 28 | A |
| Avalanche current | I _{AP} ^{Note 3} | 7 | A |
| Channel dissipation | P _{ch} ^{Note 2} | 30 | W |
| Channel to case thermal Impedance | θ _{ch-c} | 4.17 | °C/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 T_c = 25°C
 3. T_{ch} ≤ 150°C

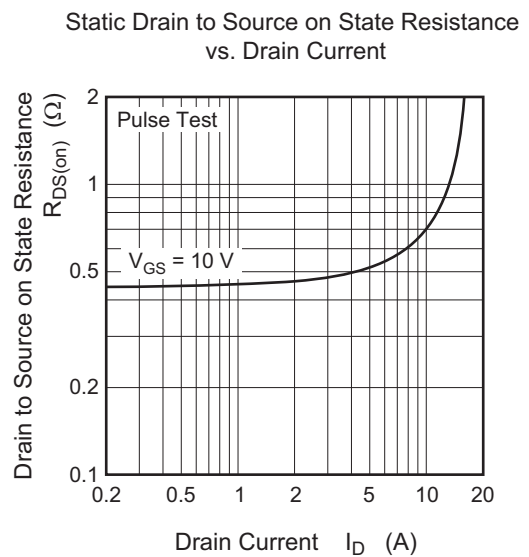
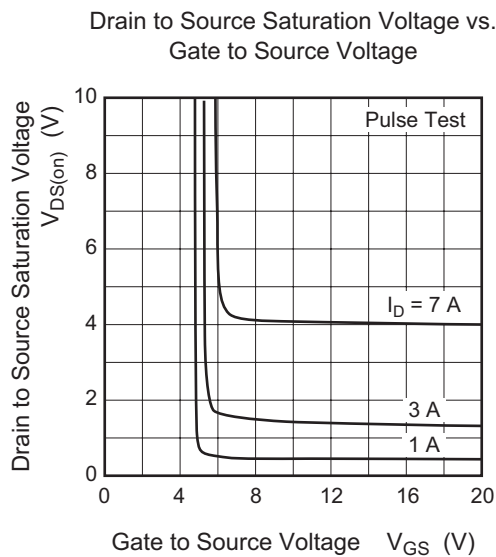
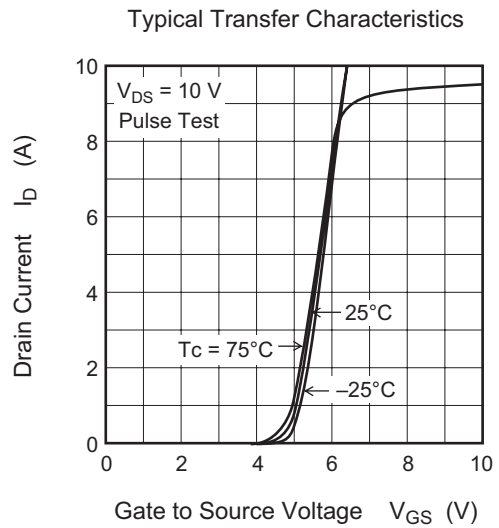
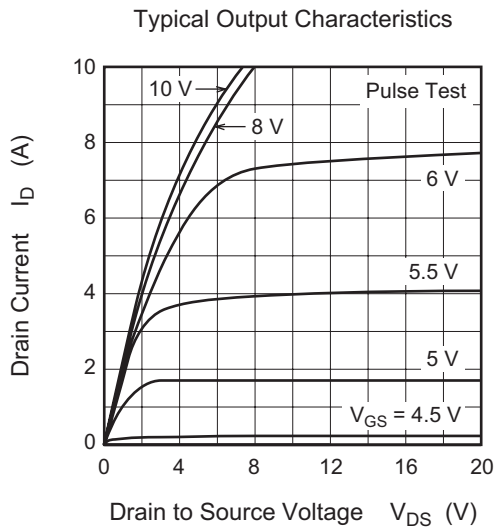
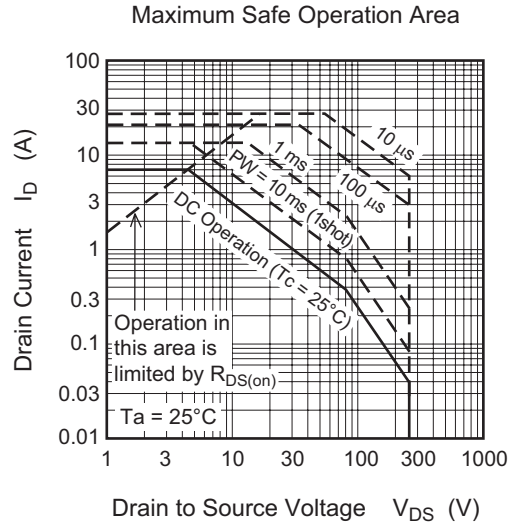
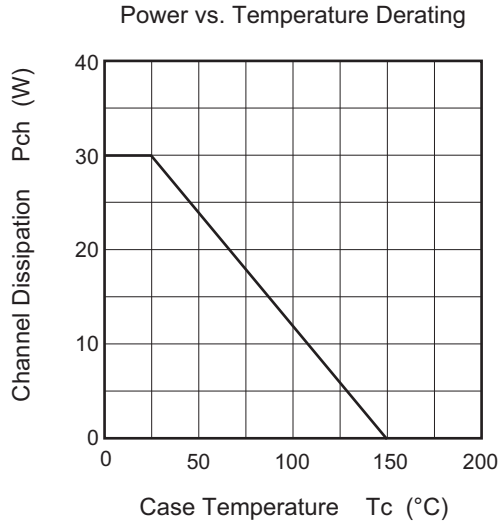
Electrical Characteristics

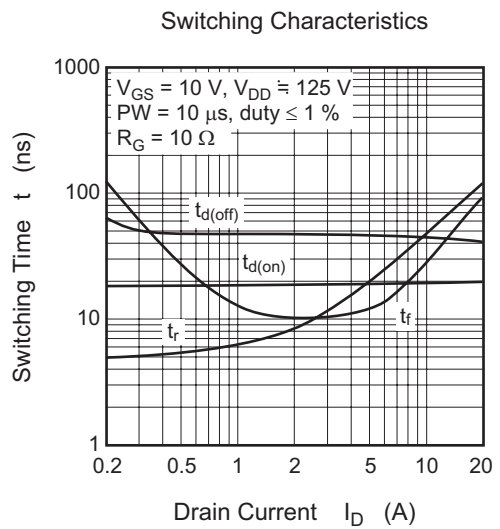
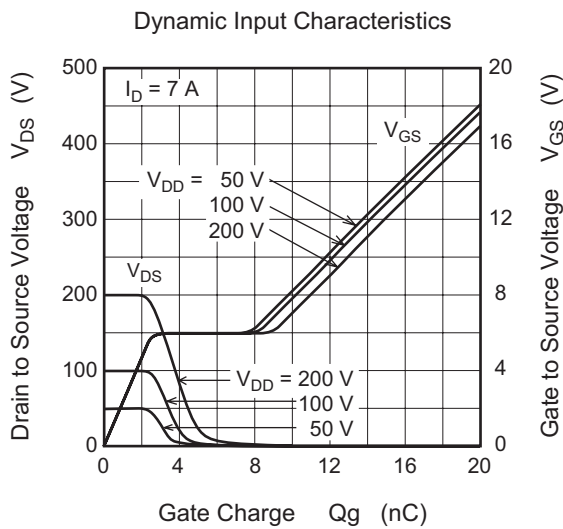
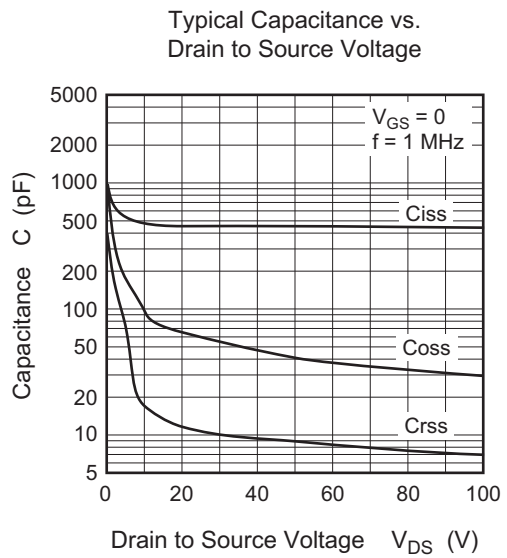
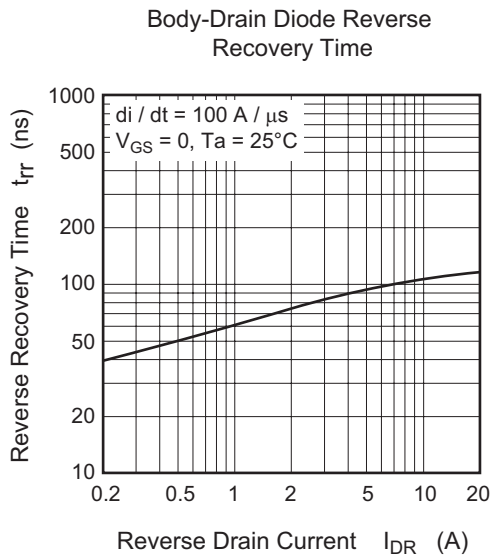
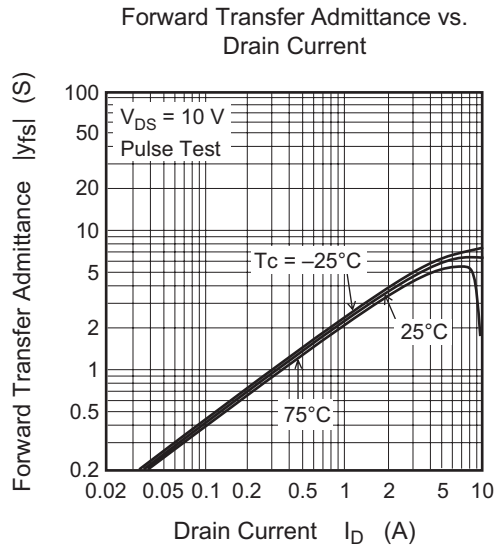
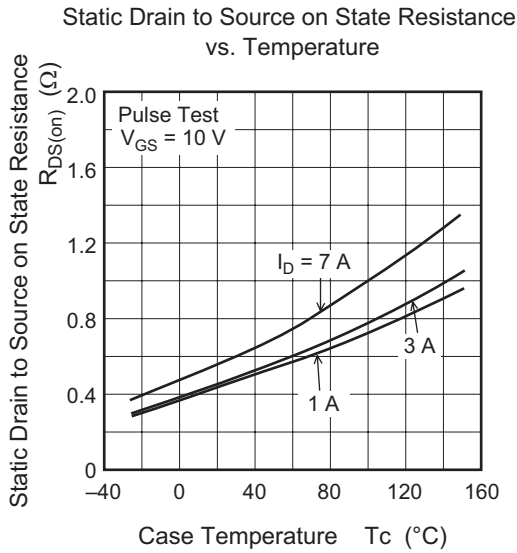
(Ta = 25°C)

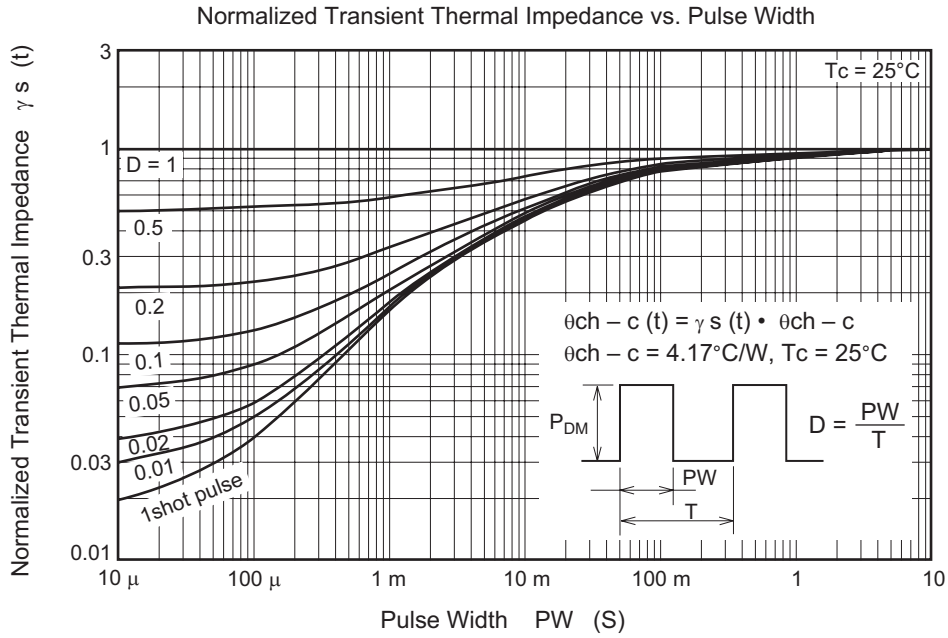
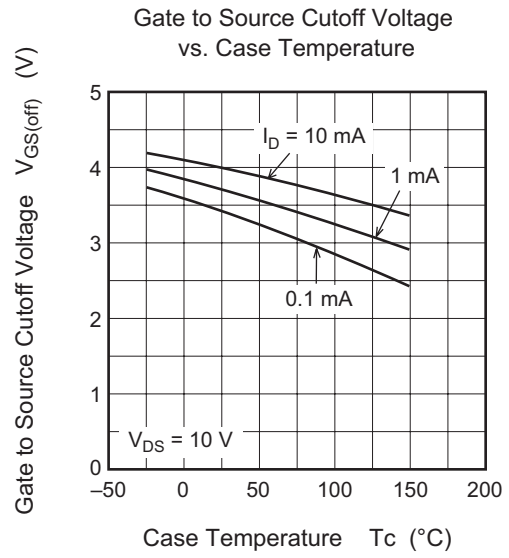
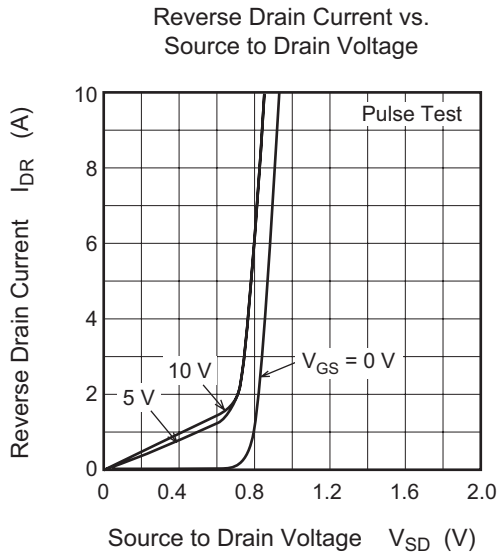
| Item | Symbol | Min | Typ | Max | Unit | Test Conditions |
|--|-----------------------|-----|------|------|------|--|
| Drain to source breakdown voltage | V _{(BR) DSS} | 250 | — | — | V | I _D = 10 mA, V _{GS} = 0 |
| Gate to source leak current | I _{GSS} | — | — | ±0.1 | μA | V _{GS} = ±30 V, V _{DS} = 0 |
| Zero gate voltage drain current | I _{DSS} | — | — | 1 | μA | V _{DS} = 250 V, V _{GS} = 0 |
| Gate to source cutoff voltage | V _{GS (off)} | 3.0 | — | 4.5 | V | V _{DS} = 10 V, I _D = 1 mA |
| Static drain to source on state resistance | R _{DS (on)} | — | 0.48 | 0.63 | Ω | I _D = 3.5 A, V _{GS} = 10 V ^{Note 4} |
| Forward transfer admittance | y _{fs} | 3.0 | 5.0 | — | S | I _D = 3.5 A, V _{DS} = 10 V ^{Note 4} |
| Input capacitance | C _{iss} | — | 450 | — | pF | V _{DS} = 25 V |
| Output capacitance | C _{oss} | — | 60 | — | pF | V _{GS} = 0 |
| Reverse transfer capacitance | C _{rss} | — | 12 | — | pF | f = 1 MHz |
| Turn-on delay time | t _{d (on)} | — | 19 | — | ns | V _{DD} = 125 V, I _D = 3.5 A |
| Rise time | t _r | — | 14 | — | ns | V _{GS} = 10 V |
| Turn-off delay time | t _{d (off)} | — | 47 | — | ns | R _L = 35.7 Ω |
| Fall time | t _f | — | 11 | — | ns | R _g = 10 Ω |
| Total gate charge | Q _g | — | 13 | — | nC | V _{DD} = 200 V |
| Gate to source charge | Q _{gs} | — | 2.5 | — | nC | V _{GS} = 10 V |
| Gate to drain charge | Q _{gd} | — | 6 | — | nC | I _D = 7 A |
| Body-drain diode forward voltage | V _{DF} | — | 0.9 | 1.4 | V | I _F = 7 A, V _{GS} = 0 |
| Body-drain diode reverse recovery time | t _{rr} | — | 100 | — | ns | I _F = 7 A, V _{GS} = 0 |
| Body-drain diode reverse recovery charge | Q _{rr} | — | 0.38 | — | μC | di _F /dt = 100 A/μs |

- Note: 4. Pulse test

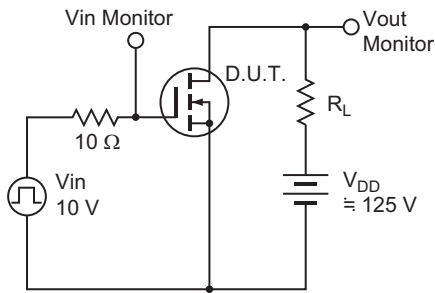
Main Characteristics



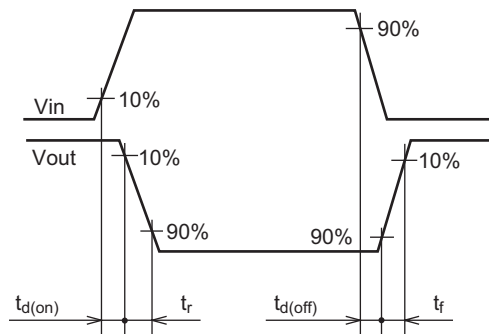




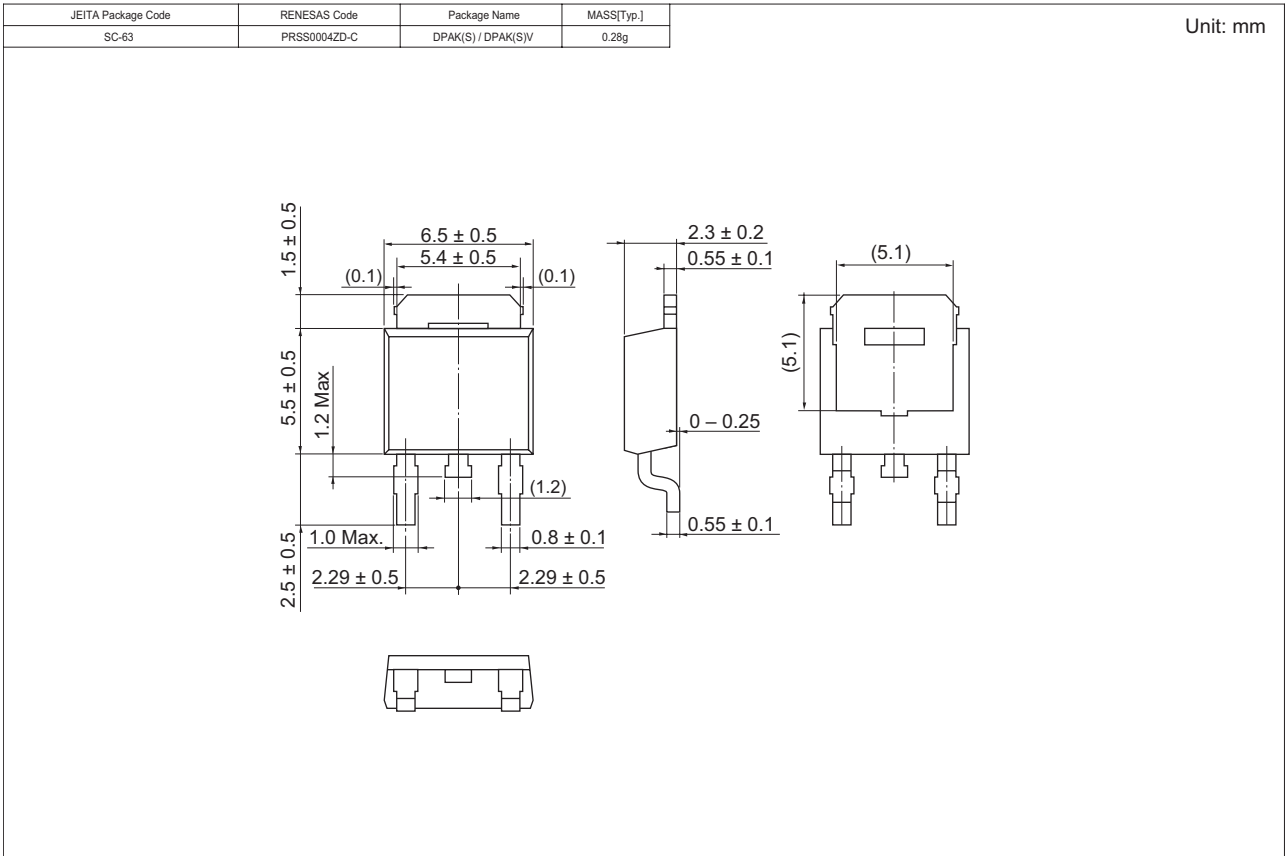
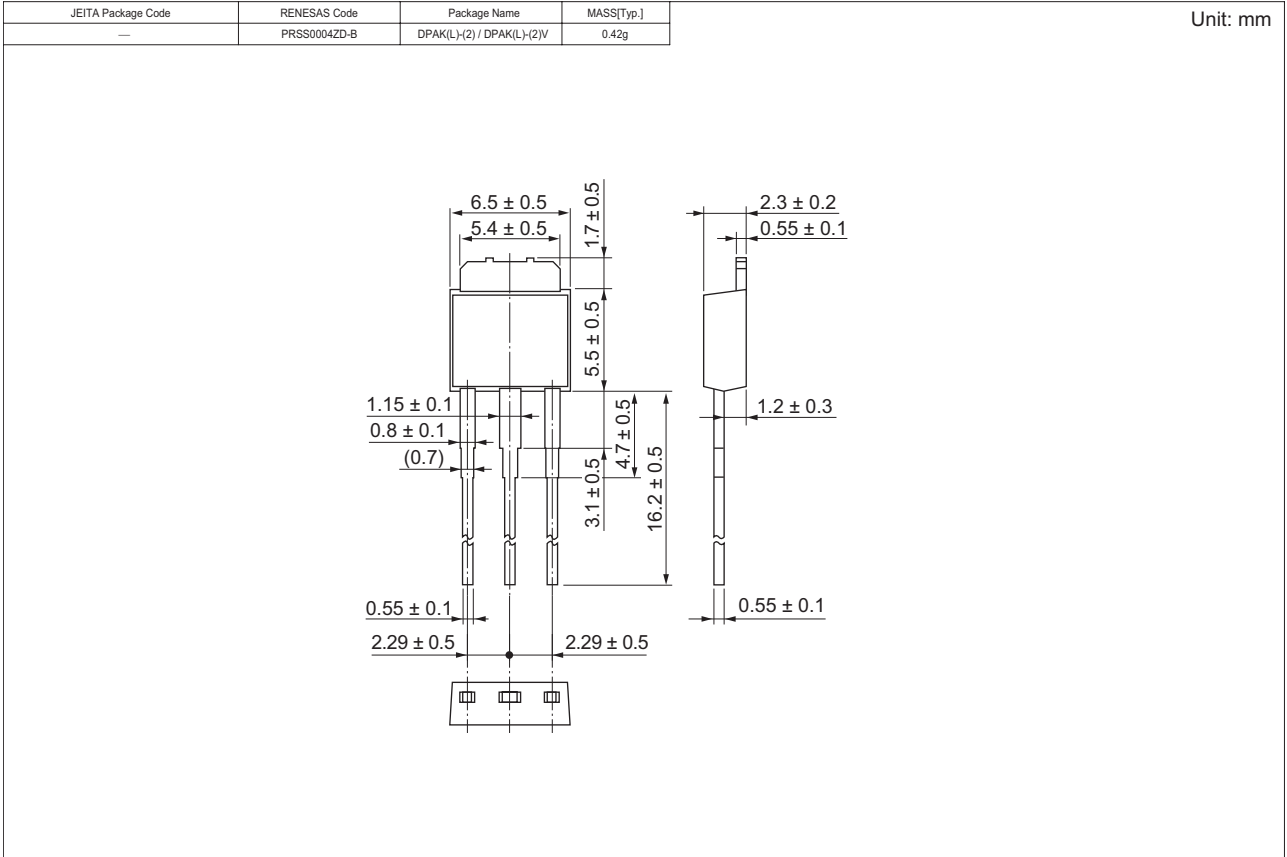
Switching Time Test Circuit



Waveform



Package Dimensions



Ordering Information

| Part Name | Quantity | Shipping Container |
|---------------|----------|--------------------|
| H5N2508DL-E | 3200 pcs | Box (Sack) |
| H5N2508DSTL-E | 3000 pcs | Taping |

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Renesas Technology Europe Limited

Dukes Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, U.K.
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Renesas Technology Taiwan Co., Ltd.

10th Floor, No.99, Fushing North Road, Taipei, Taiwan
Tel: <886> (2) 2715-2888, Fax: <886> (2) 2713-2999

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Unit2607 Ruijing Building, No.205 Maoming Road (S), Shanghai 200020, China
Tel: <86> (21) 6472-1001, Fax: <86> (21) 6415-2952

Renesas Technology Singapore Pte. Ltd.

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Renesas Technology Korea Co., 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