

2SK2328

Silicon N Channel MOS FET

REJ03G1007-0200
(Previous: ADE-208-1355)
Rev.2.00
Sep 07, 2005

Application

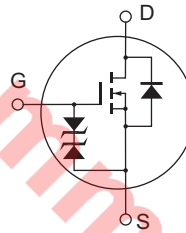
High speed power switching

Features

- Low on-resistance
- High speed switching
- Low drive current
- No secondary breakdown
- Suitable for switching regulator, DC-DC converter

Outline

RENESAS Package code: PRSS0004AC-A
(Package name: TO-220AB)



1. Gate
2. Drain
(Flange)
3. Source

Absolute Maximum Ratings

(Ta = 25°C)

| Item | Symbol | Ratings | Unit |
|---|---------------------|-------------|------|
| Drain to source voltage | V_{DS} | 650 | V |
| Gate to source voltage | V_{GS} | ± 30 | V |
| Drain current | I_D | 7 | A |
| Drain peak current | $I_{D(pulse)}^{*1}$ | 28 | A |
| Body to drain diode reverse drain current | I_{DR} | 7 | A |
| Channel dissipation | P_{ch}^{*2} | 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 $T_c = 25^\circ C$

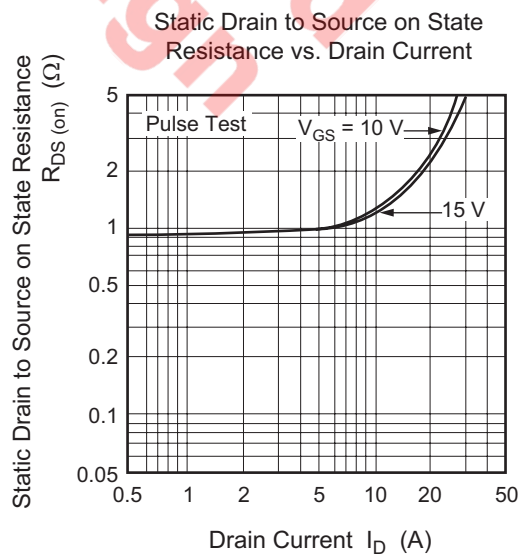
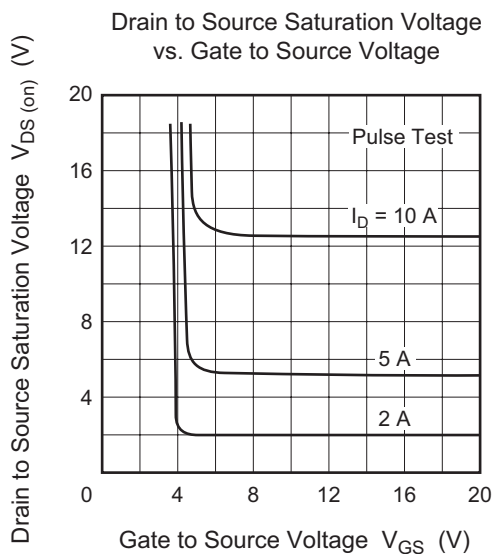
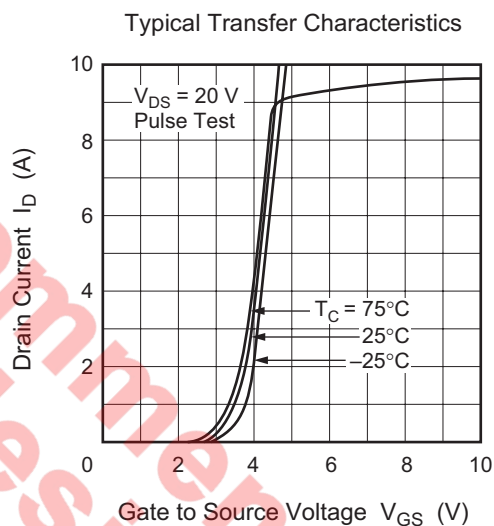
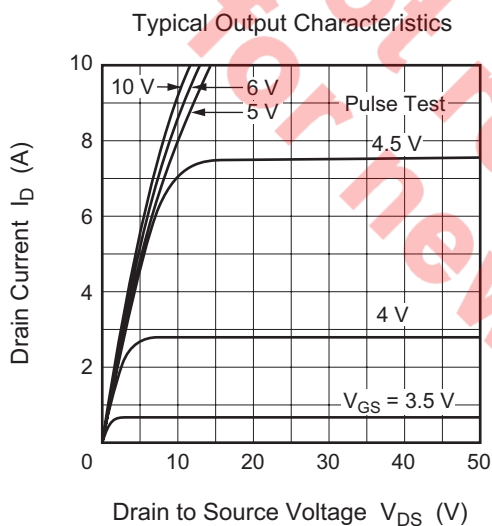
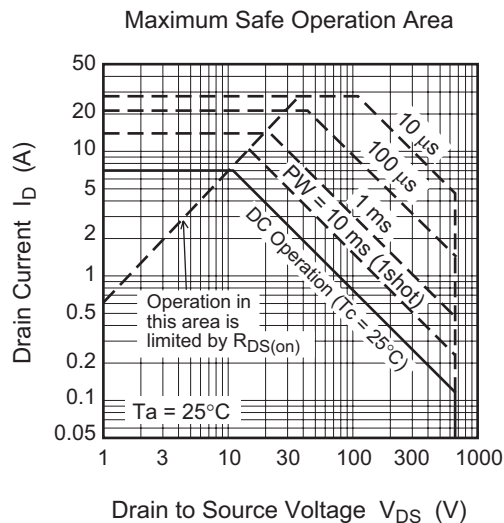
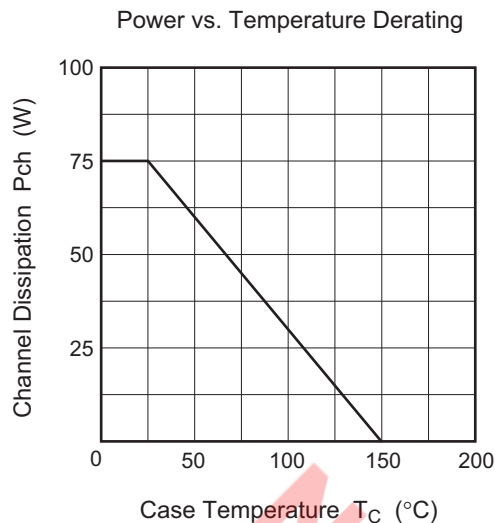
Electrical Characteristics

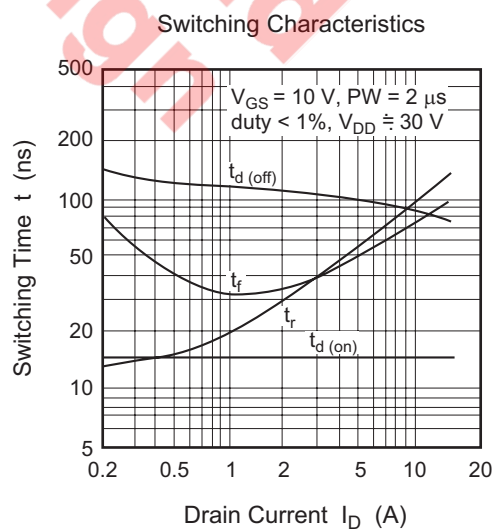
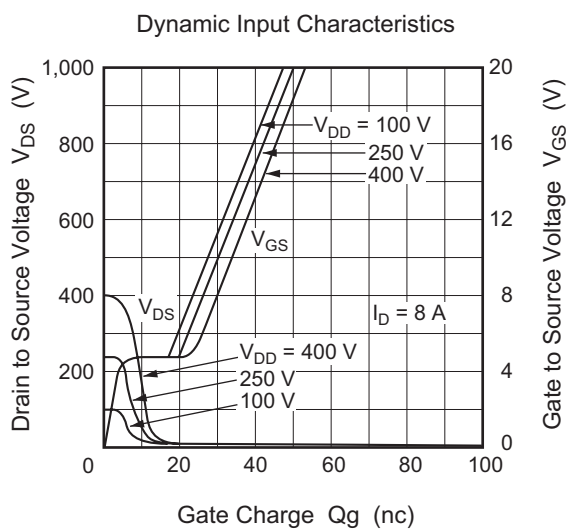
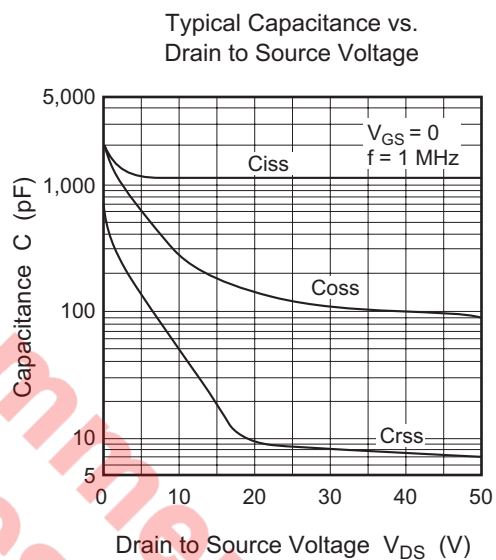
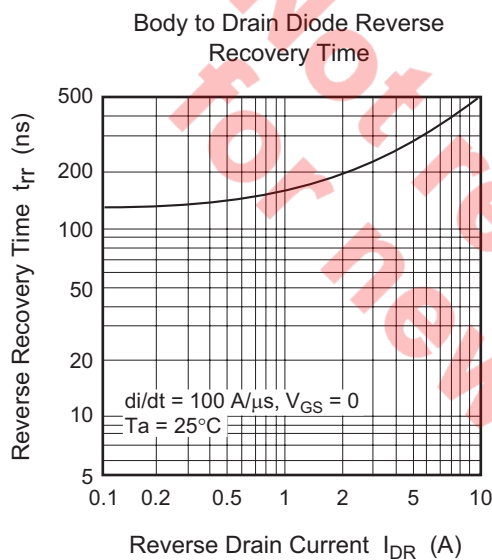
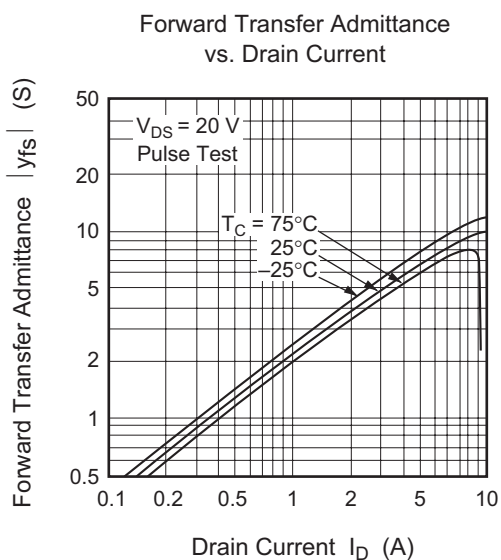
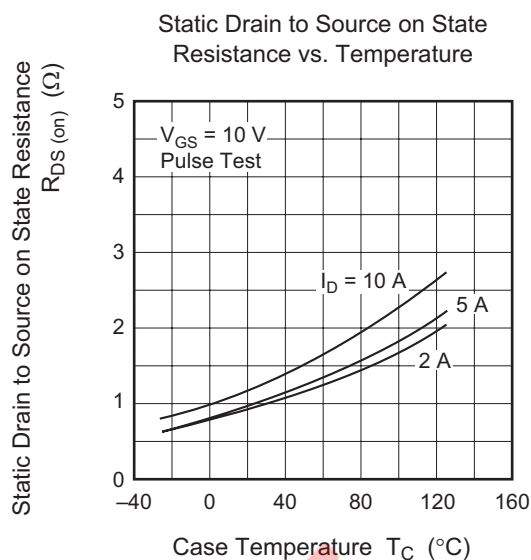
(Ta = 25°C)

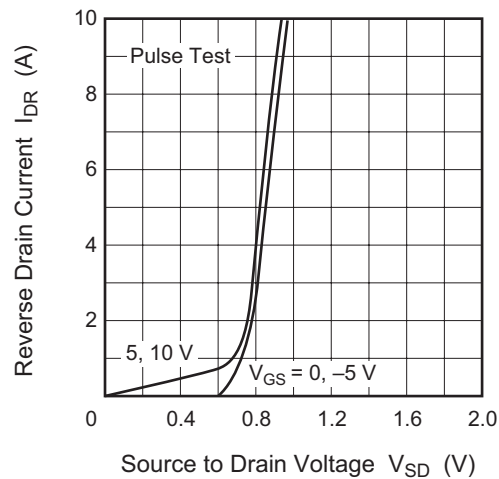
| Item | Symbol | Min | Typ | Max | Unit | Test Conditions |
|--|---------------|----------|------|----------|----------|---|
| Drain to source breakdown voltage | $V_{(BR)DSS}$ | 650 | — | — | V | $I_D = 10 \text{ mA}$, $V_{GS} = 0$ |
| Gate to source breakdown voltage | $V_{(BR)GSS}$ | ± 30 | — | — | V | $I_G = \pm 100 \mu A$, $V_{DS} = 0$ |
| Gate to source leak current | I_{GSS} | — | — | ± 10 | μA | $V_{GS} = \pm 25 \text{ V}$, $V_{DS} = 0$ |
| Zero gate voltage drain current | I_{DSS} | — | — | 250 | μA | $V_{DS} = 550 \text{ V}$, $V_{GS} = 0$ |
| Gate to source cutoff voltage | $V_{GS(off)}$ | 2.0 | — | 3.0 | V | $I_D = 1 \text{ mA}$, $V_{DS} = 10 \text{ V}$ |
| Static drain to source on state resistance | $R_{DS(on)}$ | — | 1.0 | 1.4 | Ω | $I_D = 4 \text{ A}$, $V_{GS} = 10 \text{ V}^{*3}$ |
| Forward transfer admittance | $ y_{fs} $ | 4.0 | 6.5 | — | S | $I_D = 4 \text{ A}$, $V_{DS} = 10 \text{ V}^{*3}$ |
| Input capacitance | C_{iss} | — | 1180 | — | pF | $V_{DS} = 10 \text{ V}$, $V_{GS} = 0$, $f = 1 \text{ MHz}$ |
| Output capacitance | C_{oss} | — | 265 | — | pF | |
| Reverse transfer capacitance | C_{rss} | — | 50 | — | pF | |
| Turn-on delay time | $t_{d(on)}$ | — | 15 | — | ns | $I_D = 4 \text{ A}$, $V_{GS} = 10 \text{ V}$, $R_L = 7.5 \Omega$ |
| Rise time | t_r | — | 50 | — | ns | |
| Turn-off delay time | $t_{d(off)}$ | — | 105 | — | ns | |
| Fall time | t_f | — | 45 | — | ns | |
| Body-drain diode forward voltage | V_{DF} | — | 0.95 | — | V | $I_F = 7 \text{ A}$, $V_{GS} = 0$ |
| Body-drain diode reverse recovery time | t_{rr} | — | 420 | — | ns | $I_F = 7 \text{ A}$, $V_{GS} = 0$, $di_F / dt = 100 \text{ A} / \mu s$ |

Note: 3. Pulse test

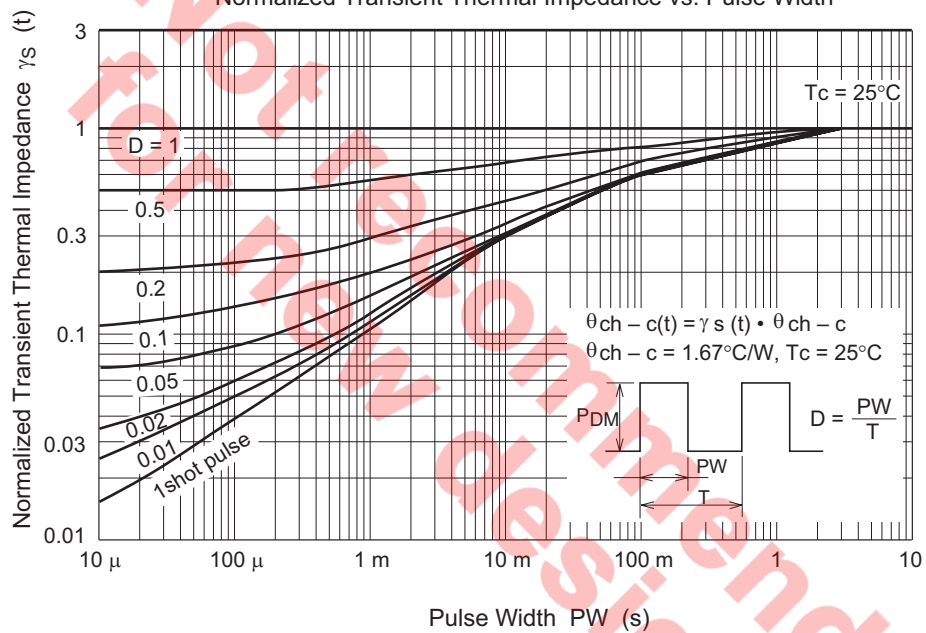
Main Characteristics



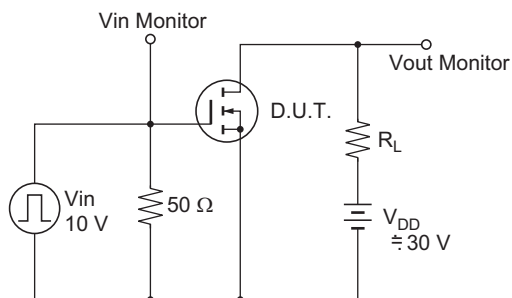


Reverse Drain Current vs.
Source to Drain Voltage

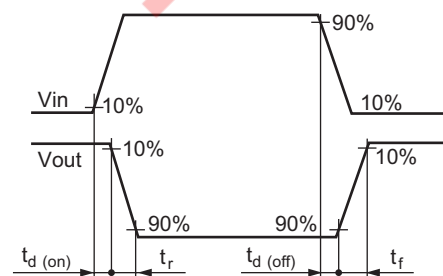
Normalized Transient Thermal Impedance vs. Pulse Width



Switching Time Test Circuit



Waveforms



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Renesas Technology America, Inc.

450 Holger Way, San Jose, CA 95134-1368, U.S.A
Tel: <1> (408) 382-7500, Fax: <1> (408) 382-7501

Renesas Technology Europe Limited

Dukes Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, U.K.
Tel: <44> (1628) 585-100, Fax: <44> (1628) 585-900

Renesas Technology Hong Kong Ltd.

7th Floor, North Tower, World Finance Centre, Harbour City, 1 Canton Road, Tsimshatsui, Kowloon, Hong Kong
Tel: <852> 2265-6688, Fax: <852> 2730-6071

Renesas Technology Taiwan Co., Ltd.

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

Renesas Technology (Shanghai) Co., Ltd.

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.

1 Harbour Front Avenue, #06-10, Keppel Bay Tower, Singapore 098632
Tel: <65> 6213-0200, Fax: <65> 6278-8001

Renesas Technology Korea Co., Ltd.

Kukje Center Bldg. 18th Fl., 191, 2-ka, Hangang-ro, Yongsan-ku, Seoul 140-702, Korea
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