

2SK1317

Silicon N Channel MOS FET

REJ03G0929-0200
(Previous: ADE-208-1268)
Rev.2.00
Sep 07, 2005

Application

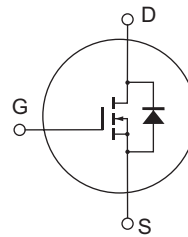
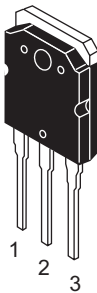
High speed power switching

Features

- High breakdown voltage $V_{DSS} = 1500\text{ V}$
- High speed switching
- Low drive current
- No secondary breakdown
- Suitable for switching regulator, DC-DC converter and motor driver

Outline

RENESAS Package code: PRSS0004ZE-A
(Package name: TO-3P)



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

Absolute Maximum Ratings

(Ta = 25°C)

| Item | Symbol | Ratings | Unit |
|---|---------------------|-------------|------|
| Drain to source voltage | V_{DSS} | 1500 | V |
| Gate to source voltage | V_{GSS} | ± 20 | V |
| Drain current | I_D | 2.5 | A |
| Drain peak current | $I_{D(pulse)}^{*1}$ | 7 | A |
| Body to drain diode reverse drain current | I_{DR} | 2.5 | A |
| Channel dissipation | P_{ch}^{*2} | 100 | 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 $T_C = 25^\circ C$

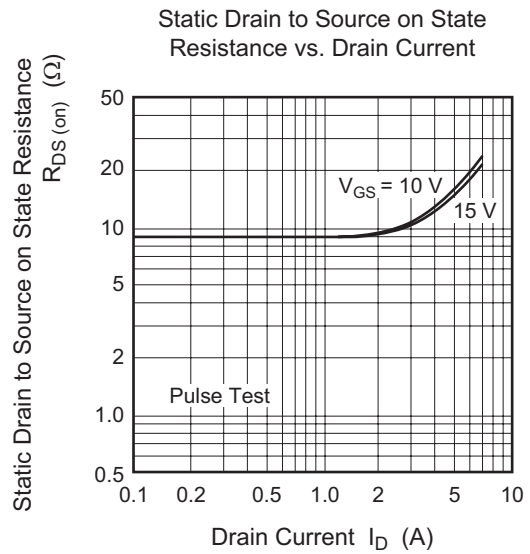
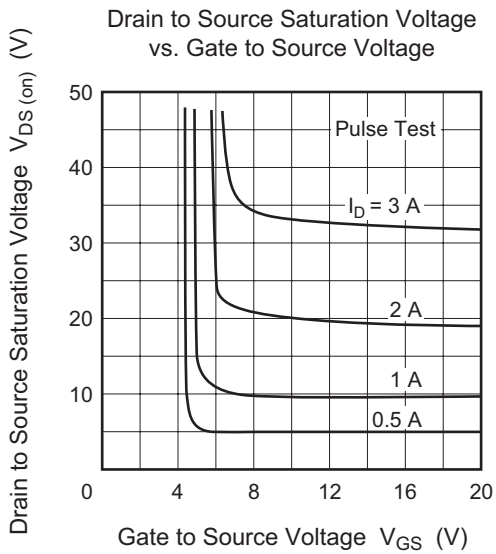
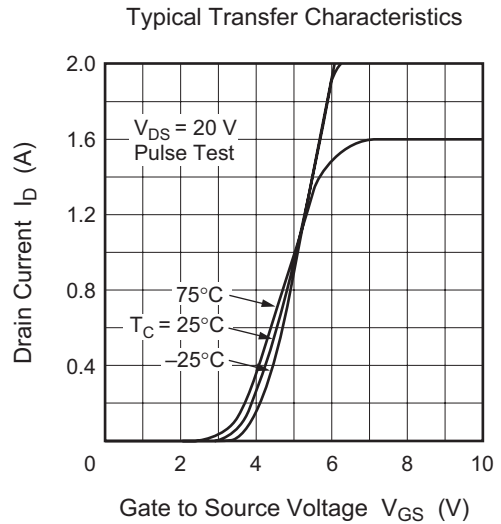
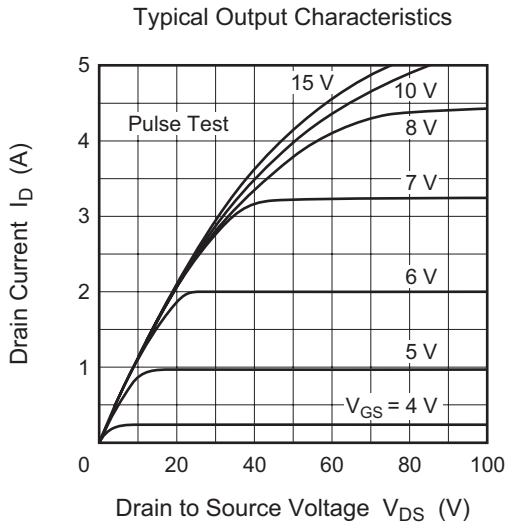
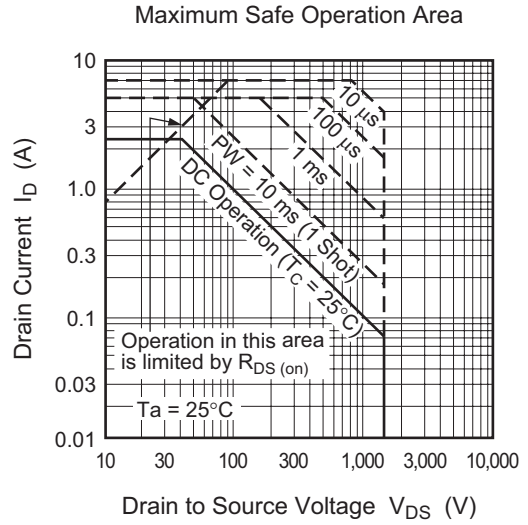
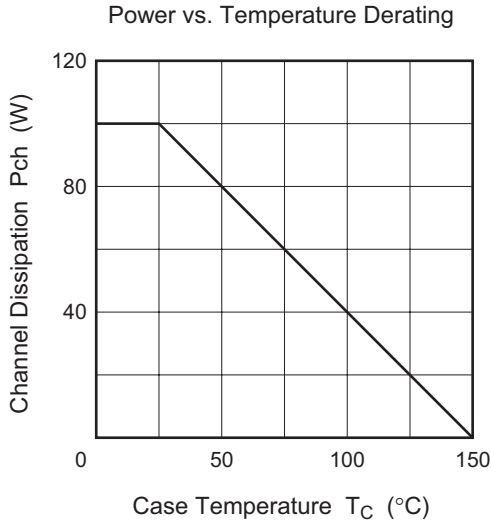
Electrical Characteristics

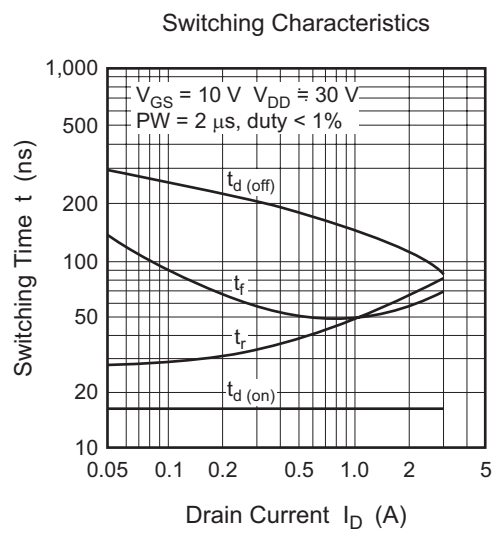
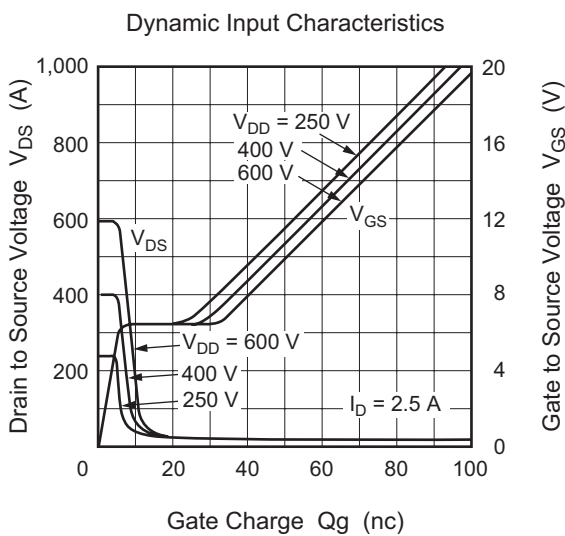
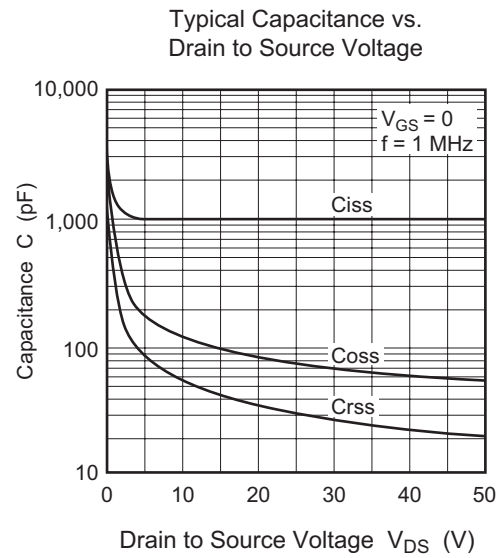
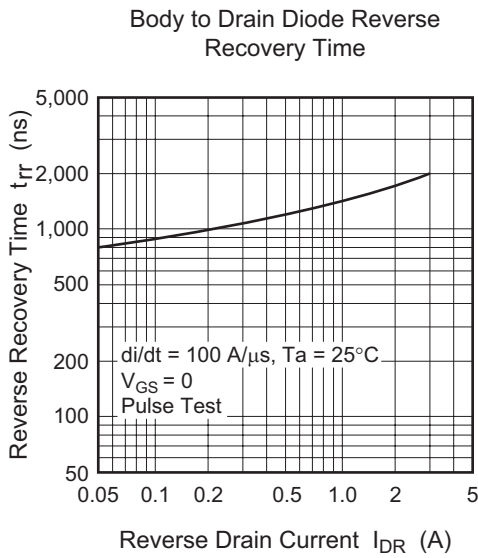
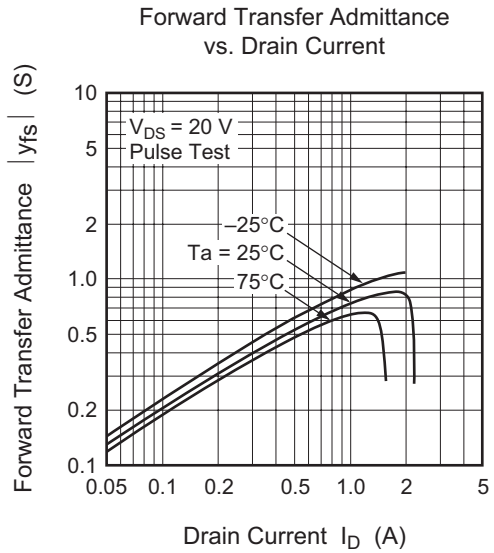
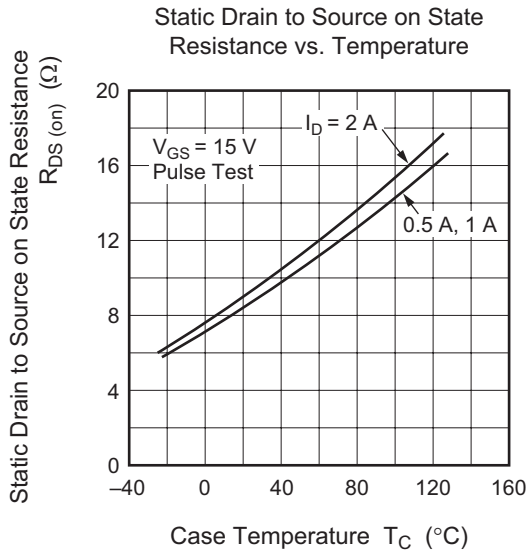
(Ta = 25°C)

| Item | Symbol | Min | Typ | Max | Unit | Test conditions |
|--|---------------|------|------|---------|----------|---|
| Drain to source breakdown voltage | $V_{(BR)DSS}$ | 1500 | — | — | V | $I_D = 10 \text{ mA}$, $V_{GS} = 0$ |
| Gate to source leak current | I_{GSS} | — | — | ± 1 | μA | $V_{GS} = \pm 20 \text{ V}$, $V_{DS} = 0$ |
| Zero gate voltage drain current | I_{DSS} | — | — | 500 | μA | $V_{DS} = 1200 \text{ V}$, $V_{GS} = 0$ |
| Gate to source cutoff voltage | $V_{GS(off)}$ | 2.0 | — | 4.0 | V | $I_D = 1 \text{ mA}$, $V_{DS} = 10 \text{ V}$ |
| Static drain to source on state resistance | $R_{DS(on)}$ | — | 9 | 12 | Ω | $I_D = 2 \text{ A}$, $V_{GS} = 15 \text{ V}^{*3}$ |
| Forward transfer admittance | $ y_{fs} $ | 0.45 | 0.75 | — | S | $I_D = 1 \text{ A}$, $V_{DS} = 20 \text{ V}^{*3}$ |
| Input capacitance | C_{iss} | — | 990 | — | pF | $V_{DS} = 10 \text{ V}$, $V_{GS} = 0$, $f = 1 \text{ MHz}$ |
| Output capacitance | C_{oss} | — | 125 | — | pF | |
| Reverse transfer capacitance | C_{rss} | — | 60 | — | pF | |
| Turn-on delay time | $t_{d(on)}$ | — | 17 | — | ns | $I_D = 2 \text{ A}$, $V_{GS} = 10 \text{ V}$, $R_L = 15 \Omega$ |
| Rise time | t_r | — | 70 | — | ns | |
| Turn-off delay time | $t_{d(off)}$ | — | 110 | — | ns | |
| Fall time | t_f | — | 60 | — | ns | |
| Body to drain diode forward voltage | V_{DF} | — | 0.9 | — | V | $I_F = 2 \text{ A}$, $V_{GS} = 0$ |
| Body to drain diode reverse recovery time | t_{rr} | — | 1750 | — | ns | $I_F = 2 \text{ A}$, $V_{GS} = 0$, $di_F/dt = 100 \text{ A}/\mu s$ |

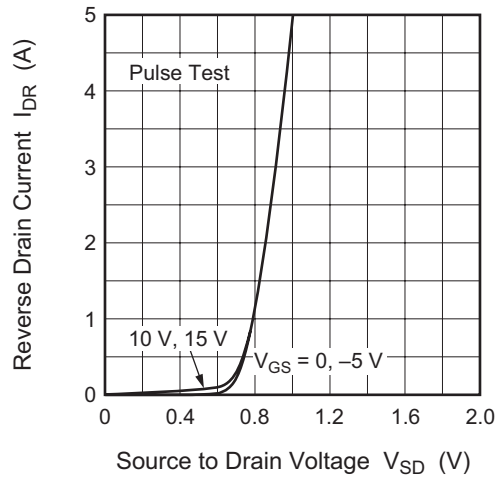
Note: 3. Pulse test

Main Characteristics

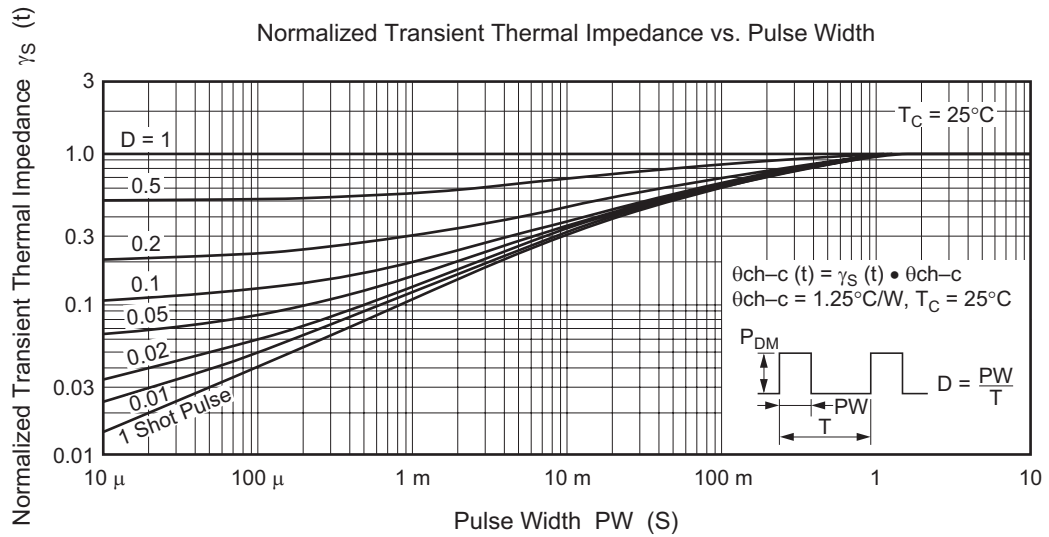




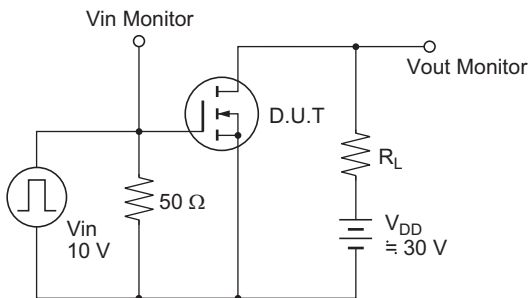
Reverse Drain Current vs. Source to Drain Voltage



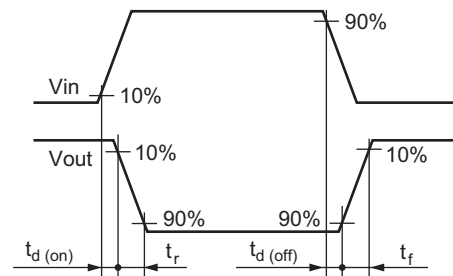
Normalized Transient Thermal Impedance vs. Pulse Width



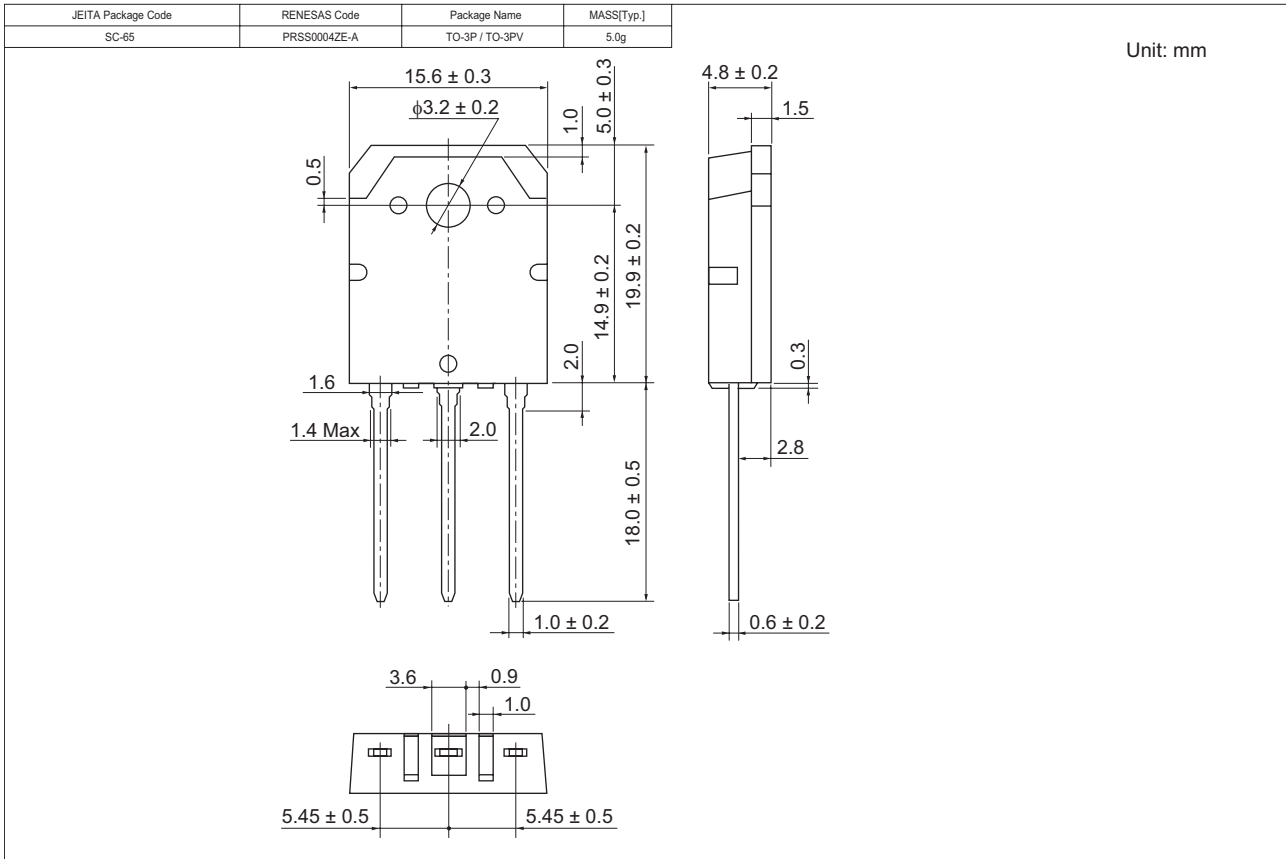
Switching Time Test Circuit



Waveforms



Package Dimensions



Ordering Information

| Part Name | Quantity | Shipping Container |
|-----------|----------|--------------------|
| 2SK1317-E | 360 pcs | Box (Tube) |

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