

2SK1169, 2SK1170

Silicon N Channel MOS FET

REJ03G0916-0200
(Previous: ADE-208-1254)
Rev.2.00
Sep 07, 2005

Application

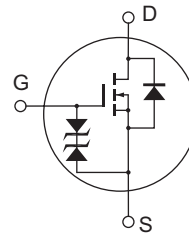
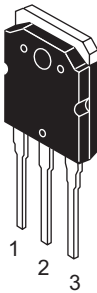
High speed power switching

Features

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

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 | 2SK1169 | 450 | V |
| | 2SK1170 | 500 | |
| Gate to source voltage | V _{GSS} | ±30 | V |
| Drain current | I _D | 20 | A |
| Drain peak current | I _{D(pulse)} * ¹ | 80 | A |
| Body to drain diode reverse drain current | I _{DR} | 20 | A |
| Channel dissipation | P _{ch} * ² | 120 | 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

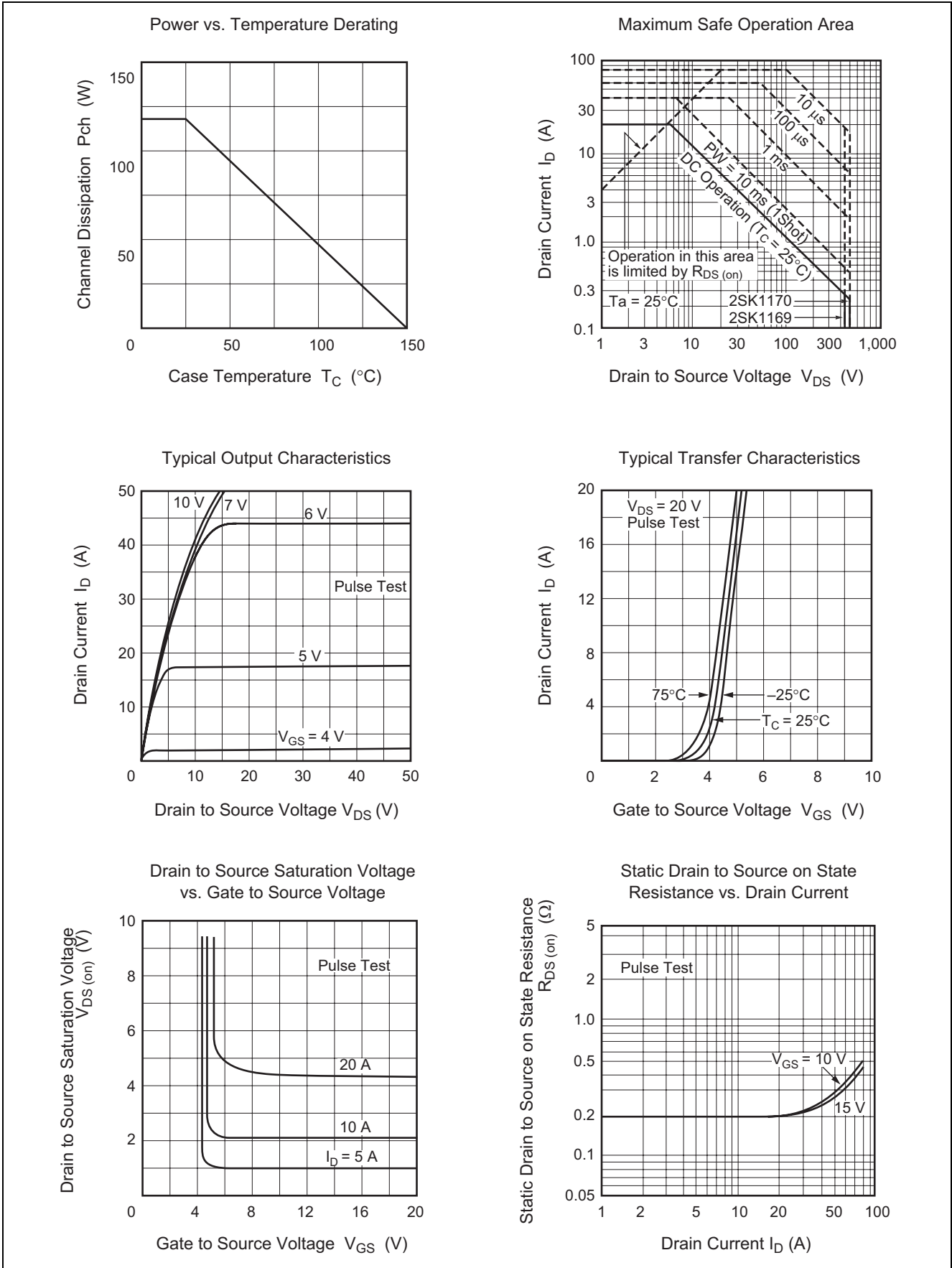
Electrical Characteristics

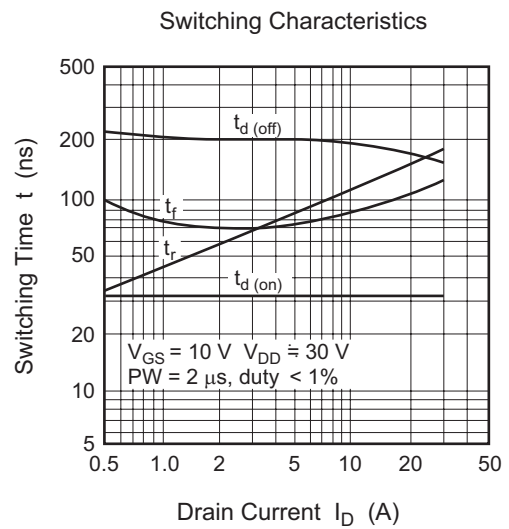
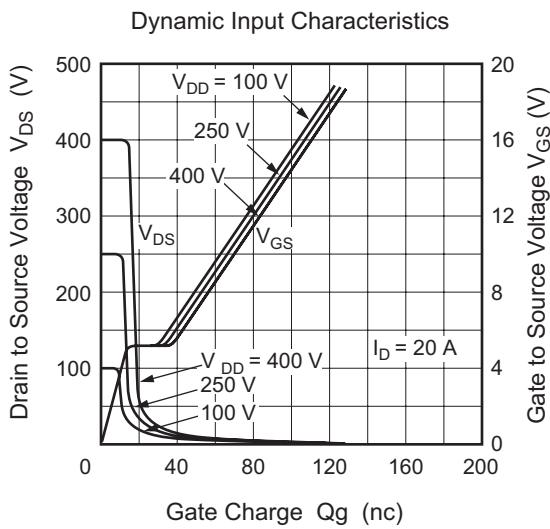
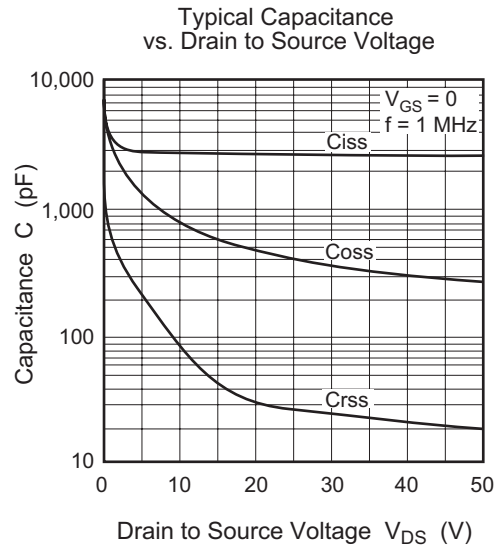
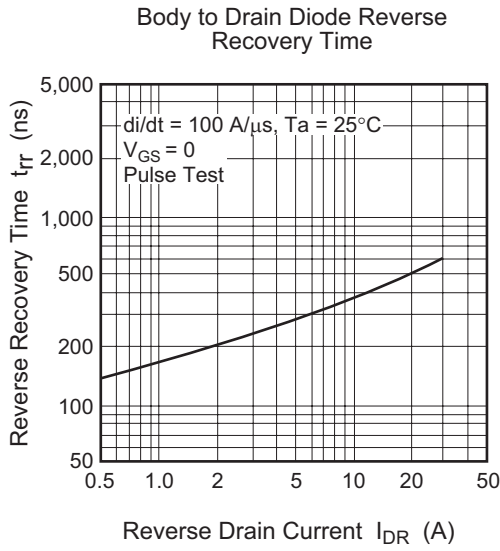
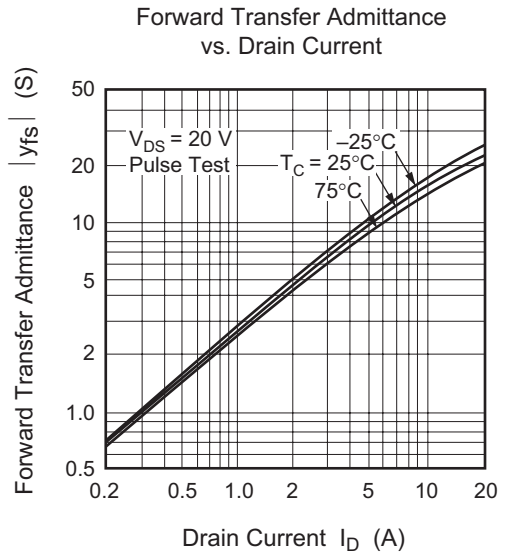
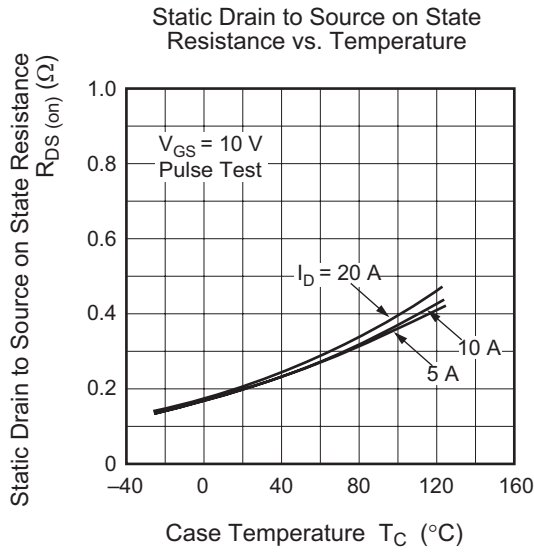
(Ta = 25°C)

| Item | Symbol | Min | Typ | Max | Unit | Test conditions |
|--|----------------------|-----|------|------|------|---|
| Drain to source breakdown voltage | 2SK1169 | 450 | — | — | V | I _D = 10 mA, V _{GS} = 0 |
| | 2SK1170 | 500 | | | | |
| Gate to source breakdown voltage | V _{(BR)GSS} | ±30 | — | — | V | I _G = ±100 μA, V _{DS} = 0 |
| Gate to source leak current | I _{GSS} | — | — | ±10 | μA | V _{GS} = ±25 V, V _{DS} = 0 |
| Zero gate voltage drain current | 2SK1169 | — | — | 250 | μA | V _{DS} = 360 V, V _{GS} = 0 |
| | 2SK1170 | | | | | V _{DS} = 400 V, V _{GS} = 0 |
| Gate to source cutoff voltage | V _{GS(off)} | 2.0 | — | 3.0 | V | I _D = 1 mA, V _{DS} = 10 V |
| Static drain to source on state resistance | 2SK1169 | — | 0.20 | 0.25 | Ω | I _D = 10 A, V _{GS} = 10 V * ³ |
| | 2SK1170 | — | 0.22 | 0.27 | | |
| Forward transfer admittance | y _{fs} | 10 | 16 | — | S | I _D = 10 A, V _{DS} = 10 V * ³ |
| Input capacitance | C _{iss} | — | 2800 | — | pF | V _{DS} = 10 V, V _{GS} = 0, f = 1 MHz |
| Output capacitance | C _{oss} | — | 780 | — | pF | |
| Reverse transfer capacitance | C _{rss} | — | 90 | — | pF | |
| Turn-on delay time | t _{d(on)} | — | 32 | — | ns | |
| Rise time | t _r | — | 115 | — | ns | I _D = 10 A, V _{GS} = 10 V, R _L = 3 Ω |
| Turn-off delay time | t _{d(off)} | — | 200 | — | ns | |
| Fall time | t _f | — | 90 | — | ns | |
| Body to drain diode forward voltage | V _{DF} | — | 1.0 | — | V | I _F = 20 A, V _{GS} = 0 |
| Body to drain diode reverse recovery time | t _{rr} | — | 500 | — | ns | I _F = 20 A, V _{GS} = 0, di _F /dt = 100 A/μs |

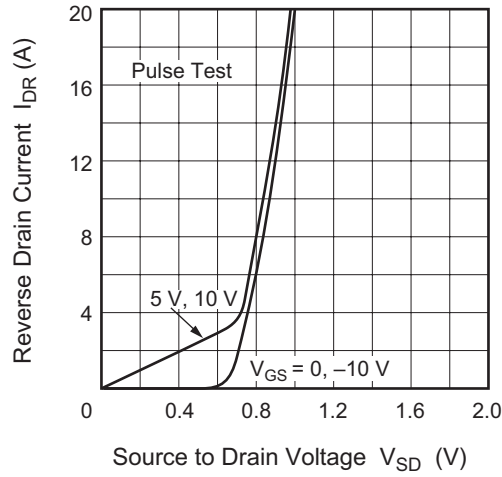
Note: 3. Pulse test

Main Characteristics

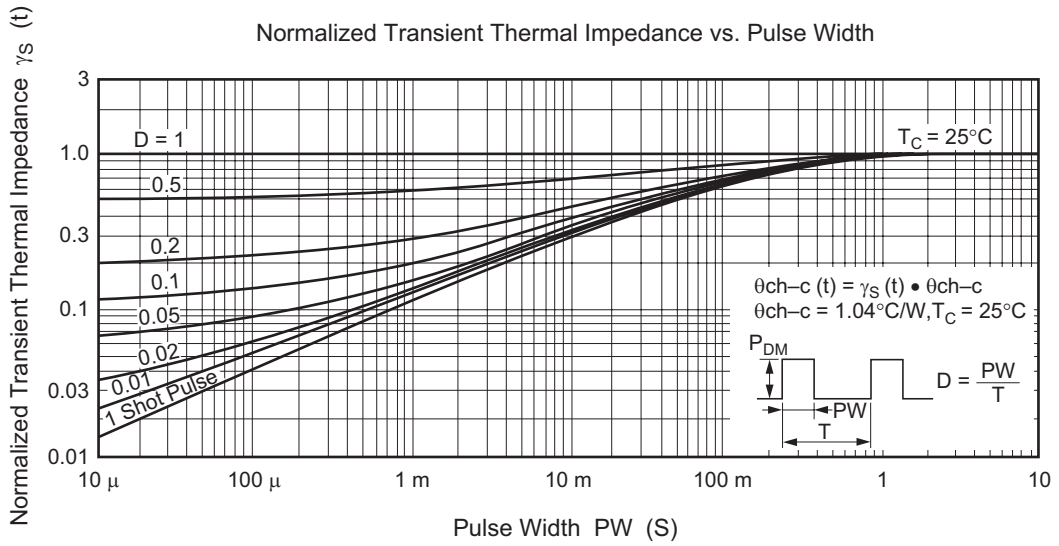




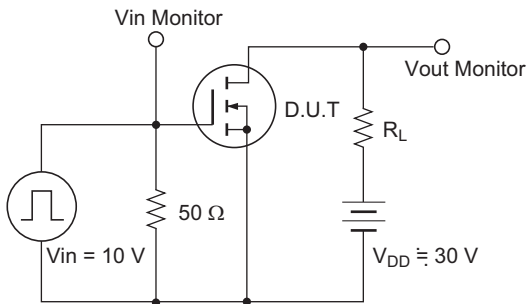
Reverse Drain Current vs. Source to Drain Voltage



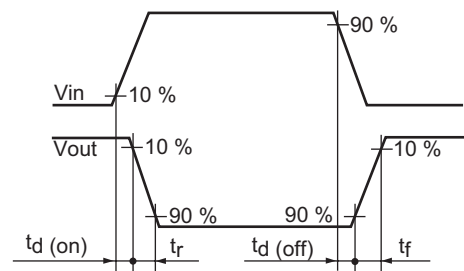
Normalized Transient Thermal Impedance vs. Pulse Width



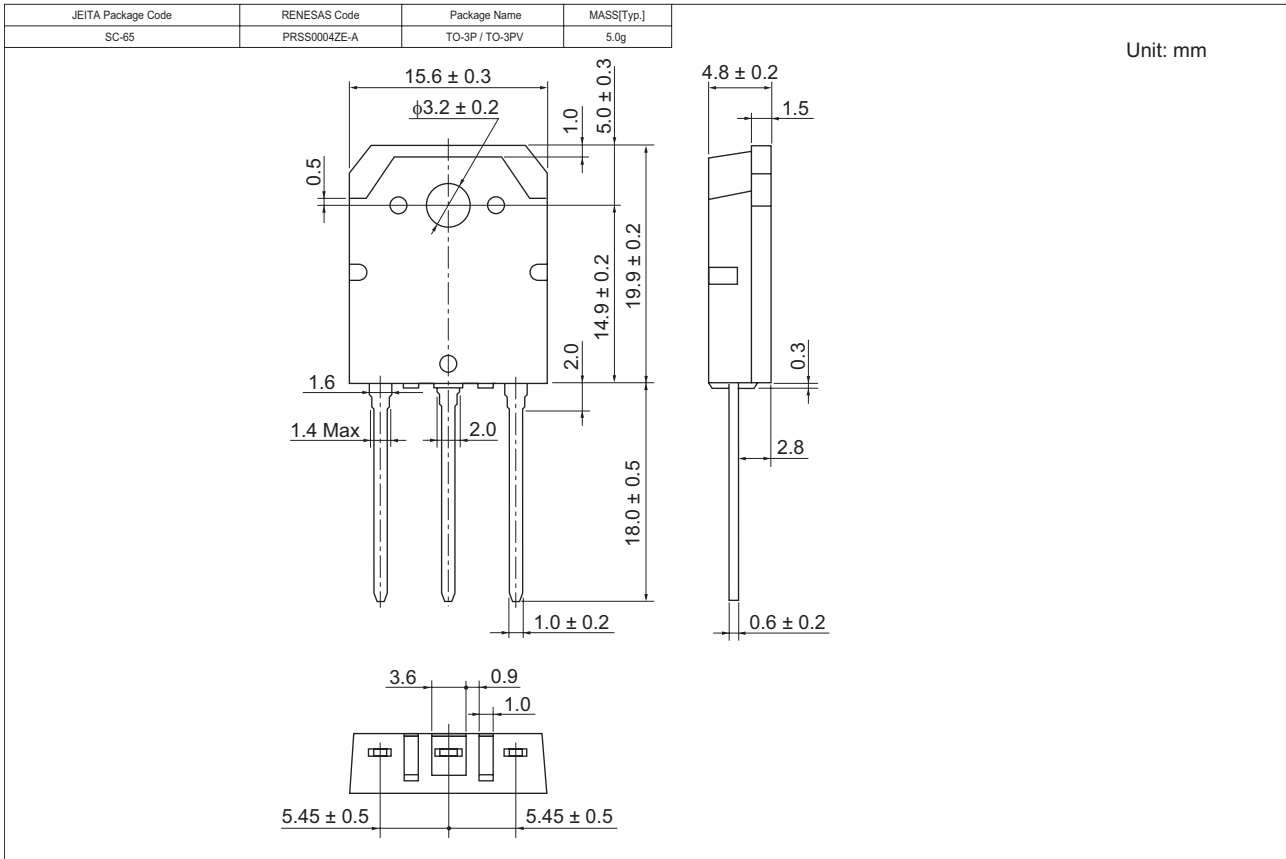
Switching Time Test Circuit



Waveforms



Package Dimensions



Ordering Information

| Part Name | Quantity | Shipping Container |
|-----------|----------|--------------------|
| 2SK1169-E | 360 pcs | Box (Tube) |
| 2SK1170-E | 360 pcs | Box (Tube) |

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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