

2SK1163, 2SK1164

Silicon N Channel MOS FET

REJ03G0913-0200
(Previous: ADE-208-1251)
Rev.2.00
Sep 07, 2005

Application

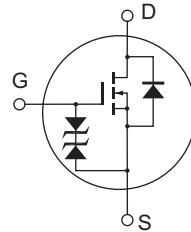
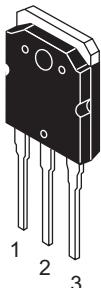
High speed power switching

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 2SK1163 | V _{DSS} | 450 | V |
| 2SK1164 | | 500 | |
| Gate to source voltage | V _{GSS} | ±30 | V |
| Drain current | I _D | 11 | A |
| Drain peak current | I _{D(pulse)} ^{*1} | 40 | A |
| Body to drain diode reverse drain current | I _{DR} | 11 | 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 ≤ 10 µs, duty cycle ≤ 1%

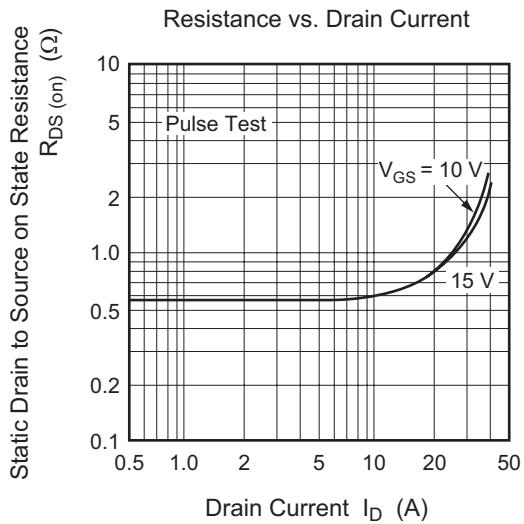
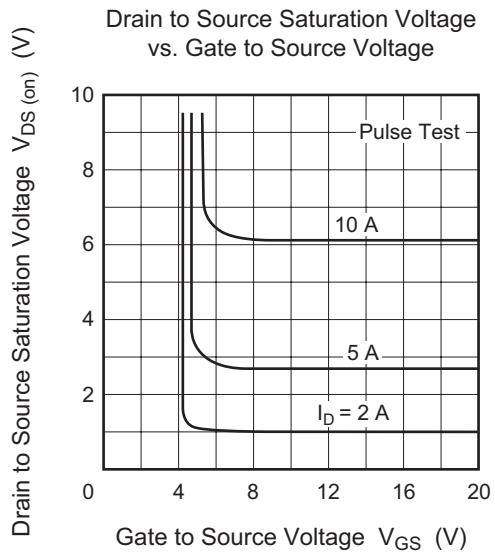
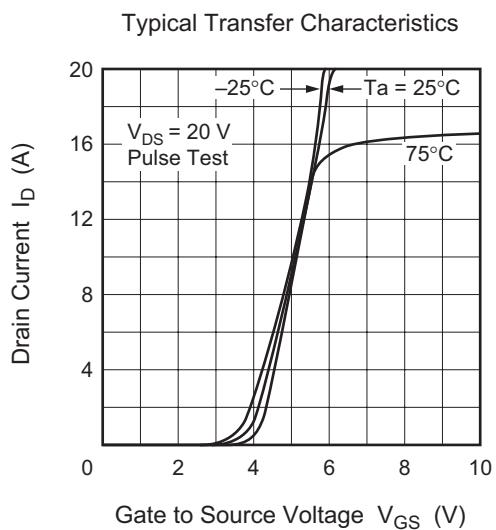
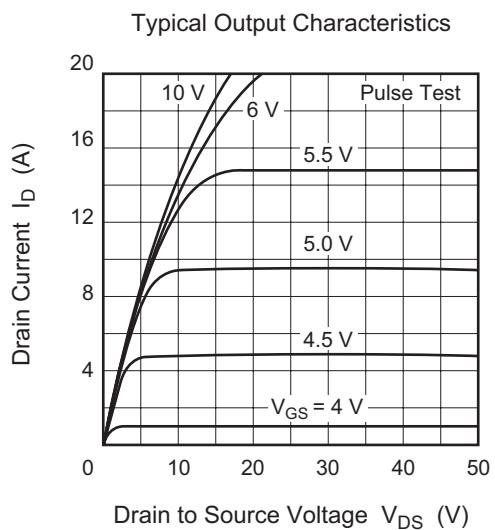
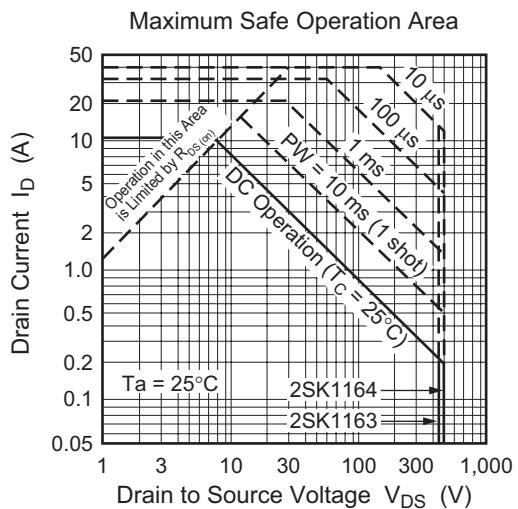
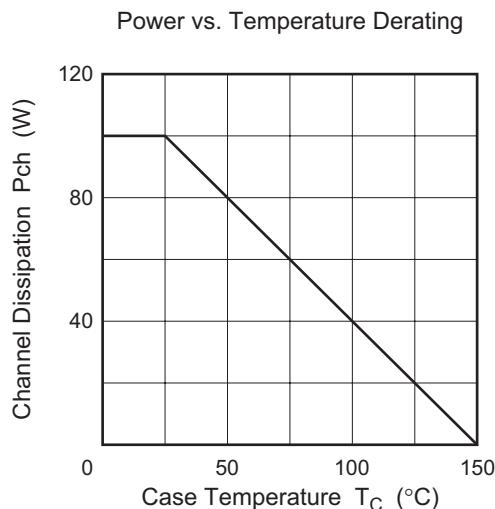
2. Value at T_C = 25°C**Electrical Characteristics**

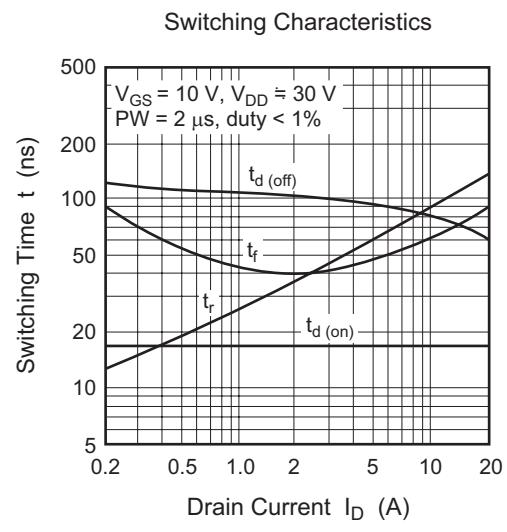
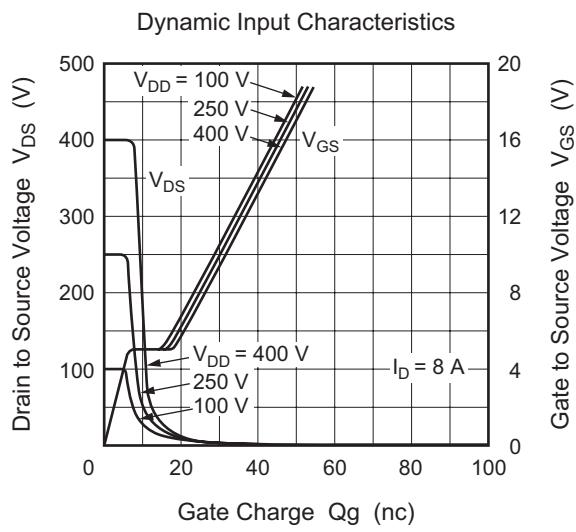
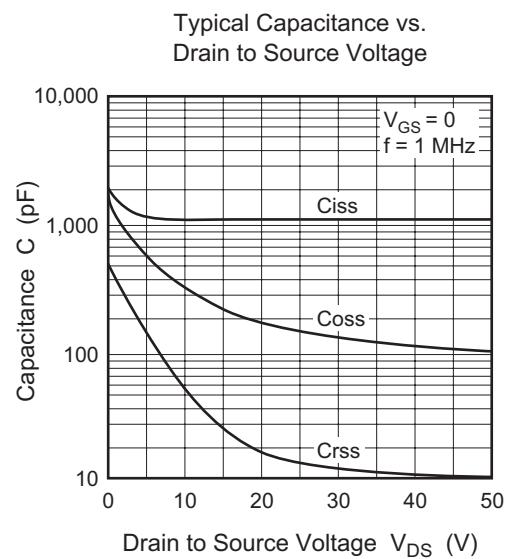
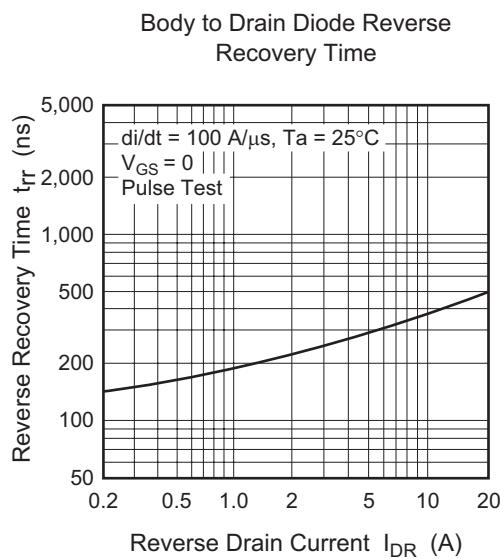
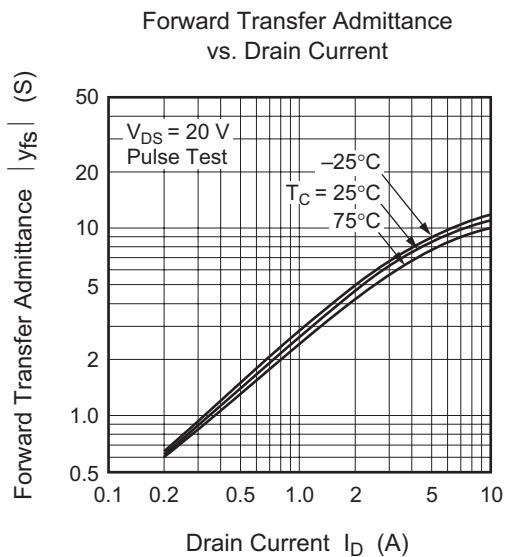
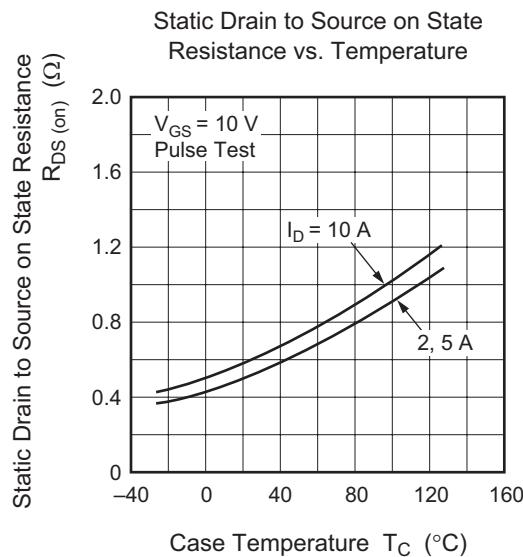
(Ta = 25°C)

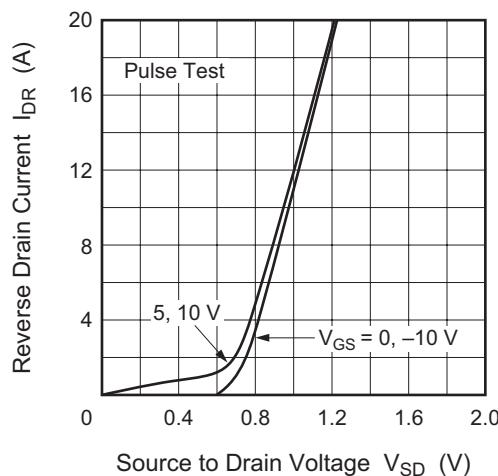
| Item | Symbol | Min | Typ | Max | Unit | Test conditions |
|---|----------------------|-----|------|-----|------|---|
| Drain to source breakdown voltage 2SK1163 | V _{(BR)DSS} | 450 | — | — | V | I _D = 10 mA, V _{GS} = 0 |
| 2SK1164 | | 500 | | — | V | |
| Gate to source breakdown voltage | V _{(BR)GSS} | ±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 2SK1163 | I _{DSS} | — | — | 250 | µA | V _{DS} = 360 V, V _{GS} = 0 |
| 2SK1164 | | — | | — | µA | 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 2SK1163 | R _{DS(on)} | — | 0.55 | 0.7 | Ω | I _D = 5 A, V _{GS} = 10 V ^{*3} |
| 2SK1164 | | — | 0.60 | 0.8 | Ω | |
| Forward transfer admittance | y _{fs} | 5.0 | 8.0 | — | S | I _D = 5 A, V _{DS} = 10 V ^{*3} |
| Input capacitance | C _{iss} | — | 1150 | — | pF | V _{DS} = 10 V, V _{GS} = 0, f = 1 MHz |
| Output capacitance | C _{oss} | — | 340 | — | pF | |
| Reverse transfer capacitance | C _{rss} | — | 55 | — | pF | |
| Turn-on delay time | t _{d(on)} | — | 17 | — | ns | I _D = 5 A, V _{GS} = 10 V, R _L = 6 Ω |
| Rise time | t _r | — | 60 | — | ns | |
| Turn-off delay time | t _{d(off)} | — | 95 | — | ns | |
| Fall time | t _f | — | 50 | — | ns | |
| Body to drain diode forward voltage | V _{DF} | — | 1.0 | — | V | I _F = 11 A, V _{GS} = 0 |
| Body to drain diode reverse recovery time | t _{rr} | — | 400 | — | ns | I _F = 11 A, V _{GS} = 0, di _F /dt = 100 A/µs |

Note: 3. Pulse test

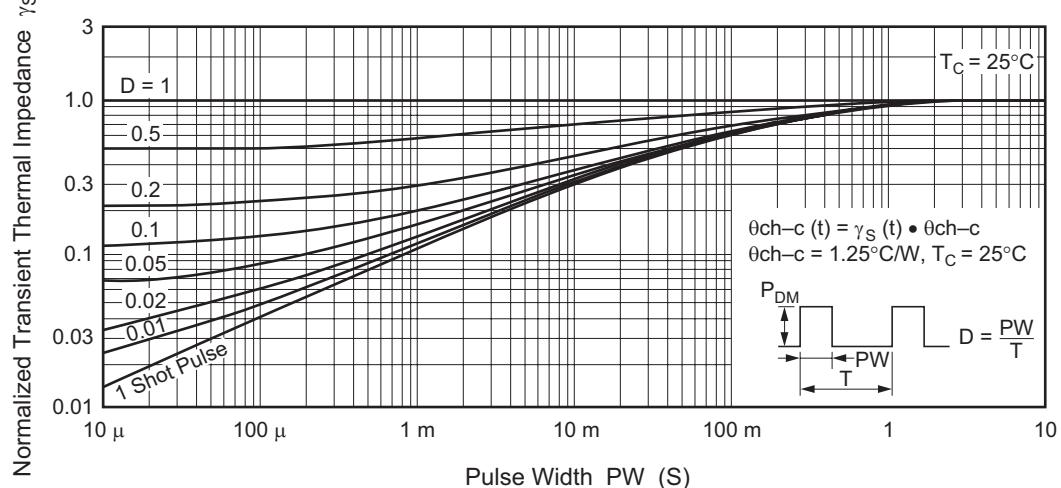
Main Characteristics



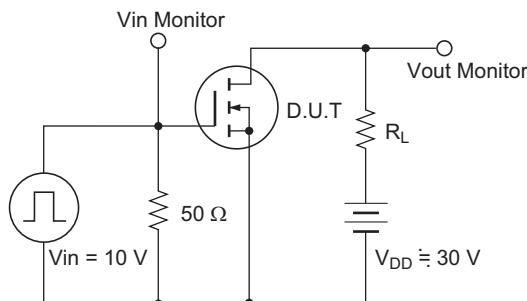


Reverse Drain Current vs.
Source to Drain Voltage

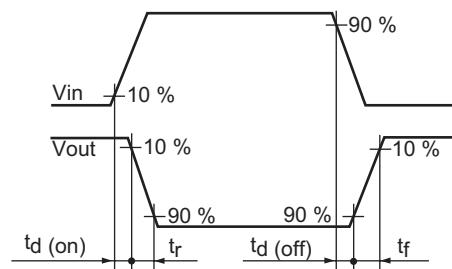
Normalized Transient Thermal Impedance vs. Pulse Width



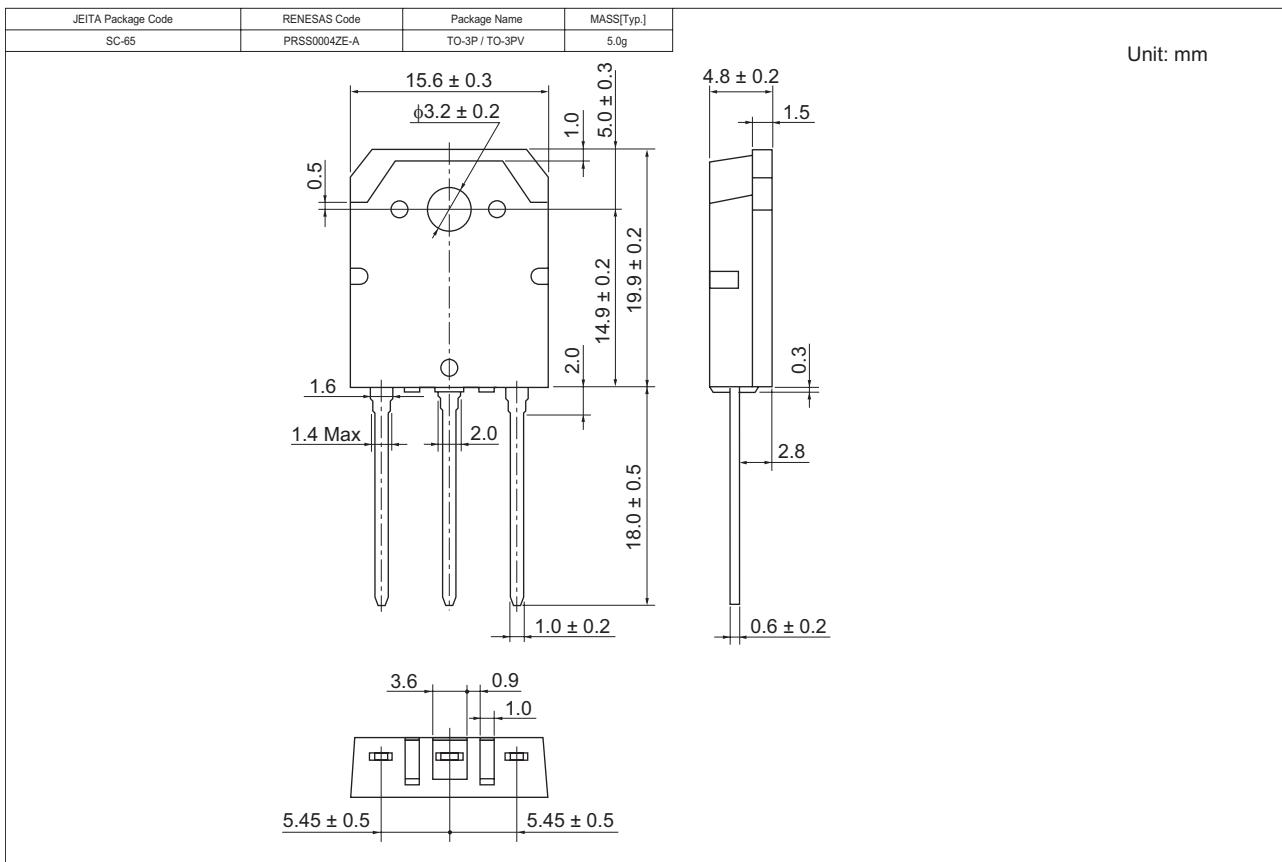
Switching Time Test Circuit



Waveforms



Package Dimensions



Ordering Information

| Part Name | Quantity | Shipping Container |
|-----------|----------|--------------------|
| 2SK1163-E | 360 pcs | Box (Tube) |
| 2SK1164-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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