

## 2SK1835

Silicon N Channel MOS FET

REJ03G0978-0400

Rev.4.00

Jun 04, 2008

### Application

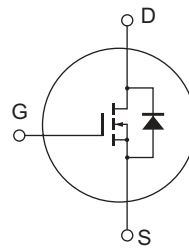
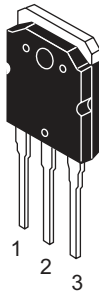
High speed power switching

### Features

- High breakdown voltage ( $V_{DSS} = 1500\text{ V}$ )
- High speed switching
- Low drive current
- No secondary breakdown
- Suitable for switching regulator

### 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 <sub>DSS</sub>                       | 1500        | V    |
| Gate to source voltage                    | V <sub>GSS</sub>                       | ±20         | V    |
| Drain current                             | I <sub>D</sub>                         | 4           | A    |
| Drain peak current                        | I <sub>D(pulse)</sub> <sup>Note1</sup> | 10          | A    |
| Body to drain diode reverse drain current | I <sub>DR</sub>                        | 4           | A    |
| Channel dissipation                       | P <sub>ch</sub> <sup>Note2</sup>       | 125         | W    |
| Channel temperature                       | T <sub>ch</sub>                        | 150         | °C   |
| Storage temperature                       | T <sub>stg</sub>                       | -55 to +150 | °C   |

Notes: 1. PW ≤ 10 ∞s, duty cycle ≤ 1 %

2. Value at Tc = 25°C

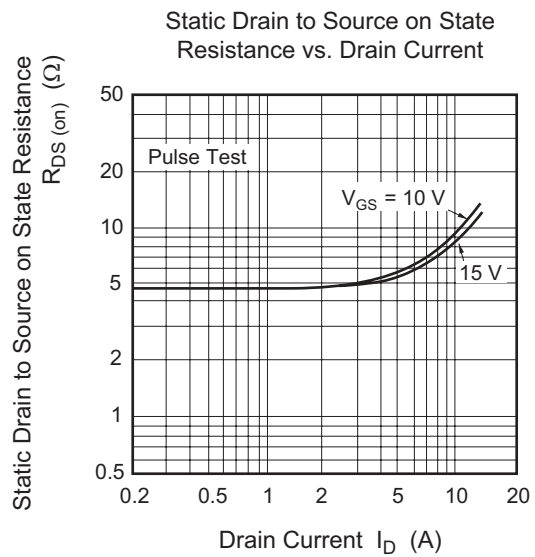
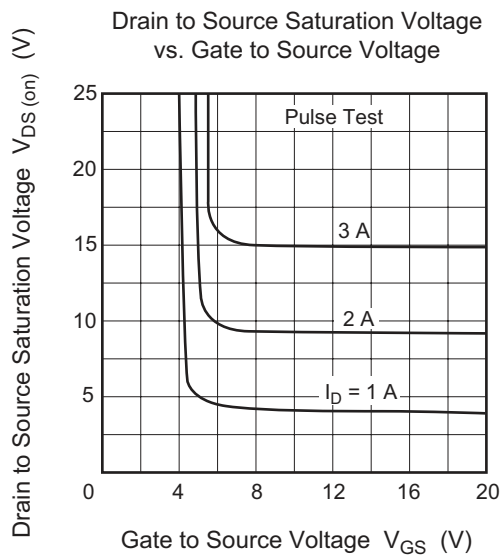
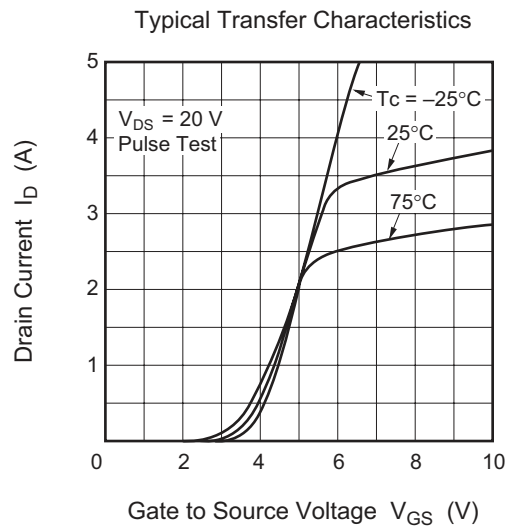
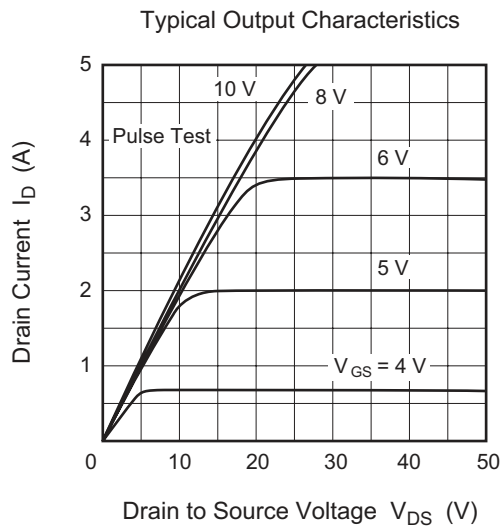
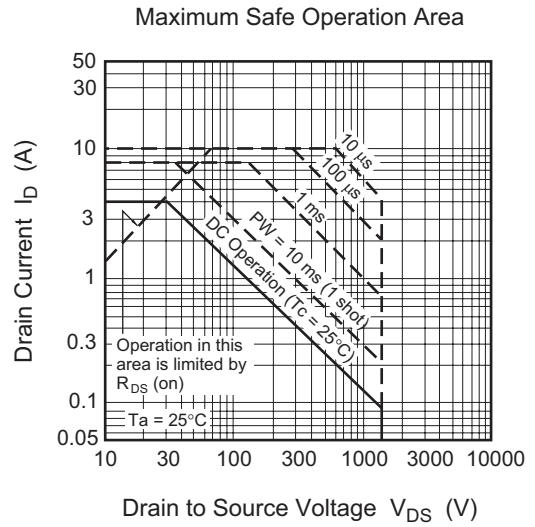
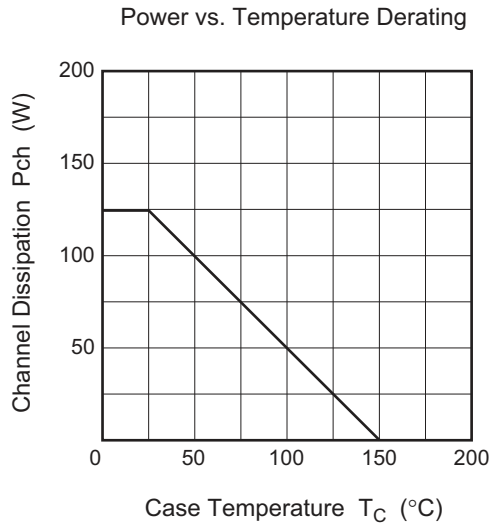
## Electrical Characteristics

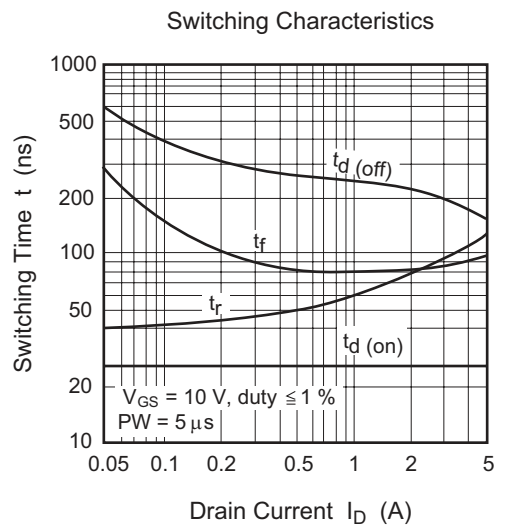
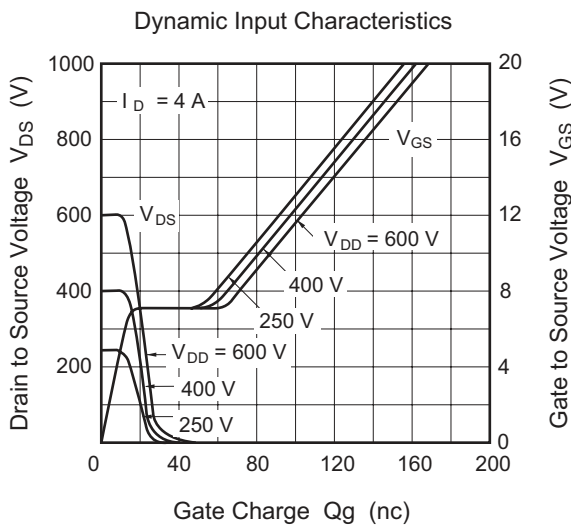
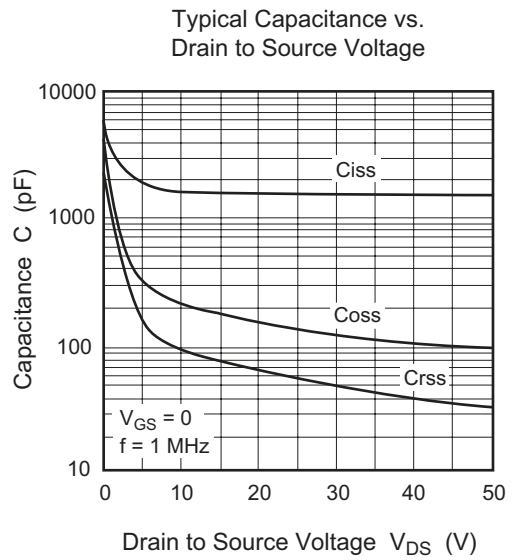
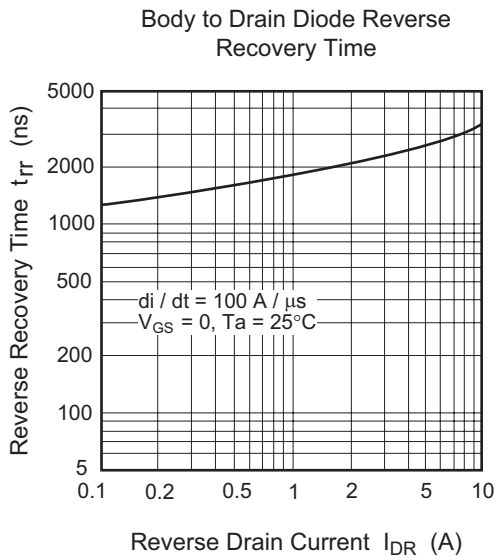
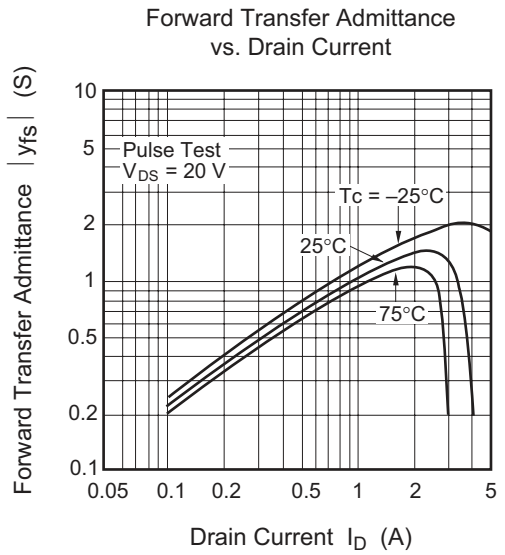
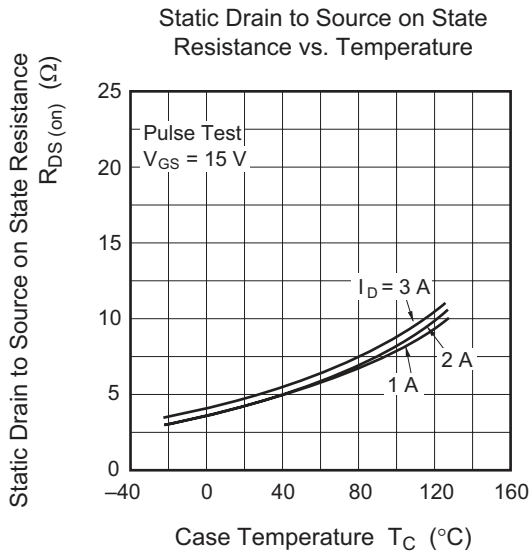
(Ta = 25°C)

| Item                                       | Symbol               | Min  | Typ  | Max | Unit | Test Conditions  |
|--|----------------------|------|------|-----|------|--|
| Drain to source breakdown voltage          | V <sub>(BR)DSS</sub> | 1500 | —    | —   | V    | I <sub>D</sub> = 10 mA, V <sub>GS</sub> = 0                                  |
| Gate to source leak current                | I <sub>GSS</sub>     | —    | —    | ±1  | ∞A   | V <sub>GS</sub> = ±20 V, V <sub>DS</sub> = 0                                 |
| Zero gate voltage drain current            | I <sub>DSS</sub>     | —    | —    | 500 | ∞A   | V <sub>DS</sub> = 1200 V, V <sub>GS</sub> = 0                                |
| Gate to source cutoff voltage              | V <sub>GS(off)</sub> | 2.0  | —    | 4.0 | V    | I <sub>D</sub> = 1 mA, V <sub>DS</sub> = 10 V                                |
| Static drain to source on state resistance | R <sub>DS(on)</sub>  | —    | 4.6  | 7.0 | Ω    | I <sub>D</sub> = 2 A, V <sub>GS</sub> = 15 V <sup>Note 3</sup>               |
| Forward transfer admittance                | y <sub>fs</sub>      | 0.9  | 1.4  | —   | S    | I <sub>D</sub> = 2 A, V <sub>DS</sub> = 20 V <sup>Note 3</sup>               |
| Input capacitance                          | C <sub>iss</sub>     | —    | 1700 | —   | pF   | V <sub>DS</sub> = 10 V, V <sub>GS</sub> = 0,<br>f = 1 MHz                    |
| Output capacitance                         | C <sub>oss</sub>     | —    | 230  | —   | pF   |  |
| Reverse transfer capacitance               | C <sub>rss</sub>     | —    | 100  | —   | pF   |  |
| Turn-on delay time                         | t <sub>d(on)</sub>   | —    | 25   | —   | ns   | I <sub>D</sub> = 2A, V <sub>GS</sub> = 10 V,<br>R <sub>L</sub> = 15 Ω        |
| Rise time                                  | t <sub>r</sub>       | —    | 80   | —   | ns   |  |
| Turn-off delay time                        | t <sub>d(off)</sub>  | —    | 230  | —   | ns   |  |
| Fall time                                  | t <sub>f</sub>       | —    | 80   | —   | ns   |  |
| Body to drain diode forward voltage        | V <sub>DF</sub>      | —    | 0.85 | —   | V    | I <sub>F</sub> = 4 A, V <sub>GS</sub> = 0                                    |
| Body to drain diode reverse recovery time  | t <sub>rr</sub>      | —    | 2500 | —   | ns   | I <sub>F</sub> = 4 A, V <sub>GS</sub> = 0,<br>di <sub>F</sub> /dt = 100 A/∞s |

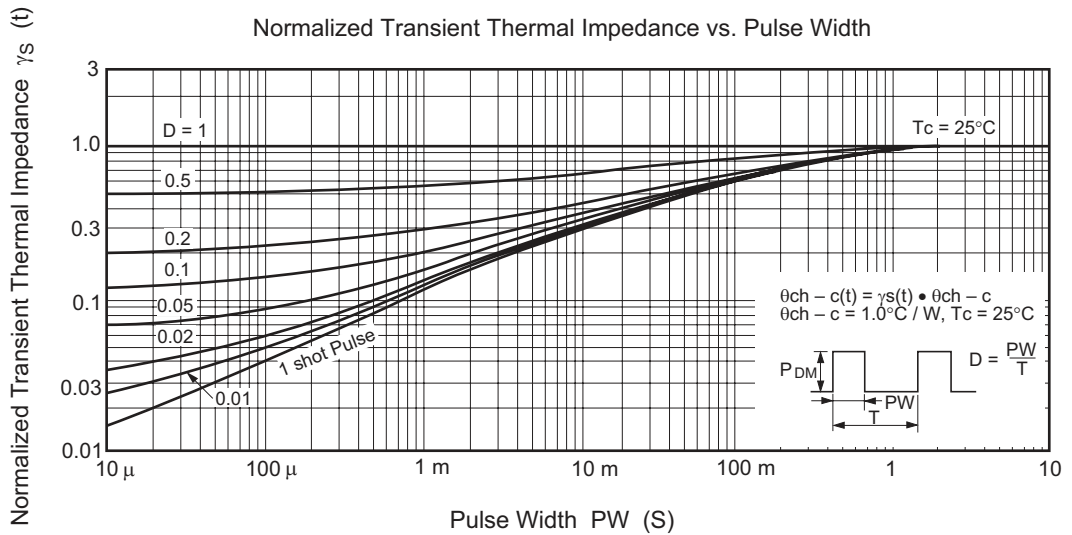
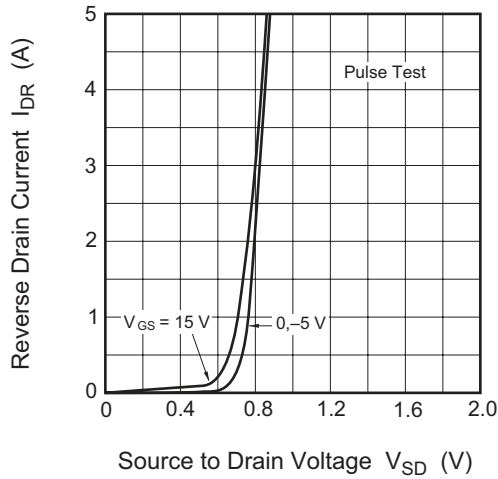
Note: 3. Pulse Test

### Main Characteristics

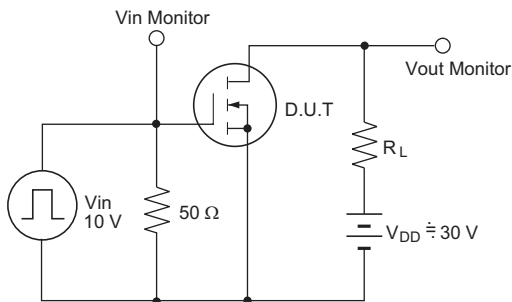




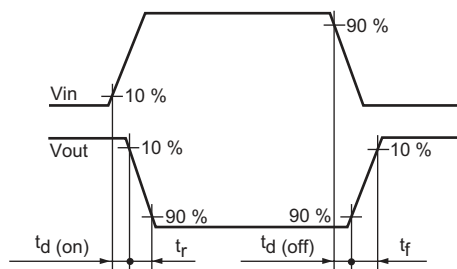
Reverse Drain Current vs. Source to Drain Voltage



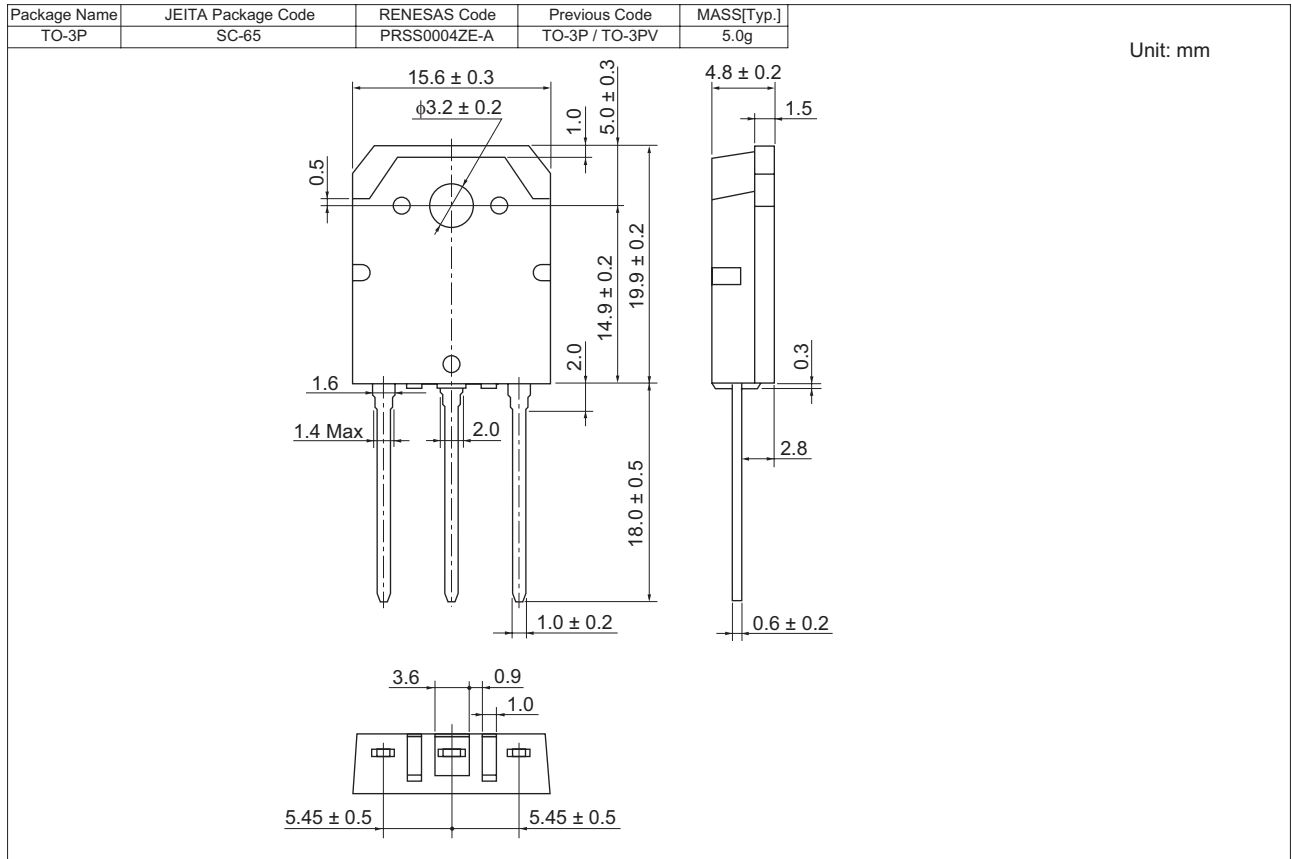
Switching Time Test Circuit



Waveforms



### Package Dimensions



### Ordering Information

| Part Name | Quantity | Shipping Container |
|-----------|----------|--------------------|
| 2SK1835-E | 360 pcs  | Box (Tube)         |

Notes:

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