

# 2SK3736

## Silicon N Channel MOS FET Power Switching

REJ03G0525-0200

Rev.2.00

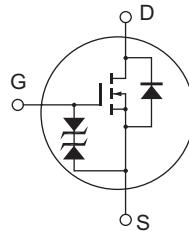
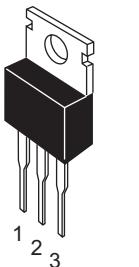
Jul 27, 2006

### Features

- Capable of 2.5 V gate drive
- Low drive current
- Low on-resistance

### 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 <sub>DSS</sub>                        | 250         | V    |
| Gate to source voltage                 | V <sub>GSS</sub>                        | ±10         | V    |
| Drain current                          | I <sub>D</sub>                          | 6           | A    |
| Drain peak current                     | I <sub>D</sub> (pulse) <sup>Note1</sup> | 24          | A    |
| Body-drain diode reverse drain current | I <sub>DR</sub>                         | 6           | A    |
| Channel dissipation                    | P <sub>ch</sub> <sup>Note2</sup>        | 30          | W    |
| Channel temperature                    | T <sub>ch</sub>                         | 150         | °C   |
| Storage temperature                    | T <sub>stg</sub>                        | -55 to +150 | °C   |

Notes: 1. PW ≤ 10 µs, duty cycle ≤ 1 %

2. Value at T<sub>c</sub> = 25°C

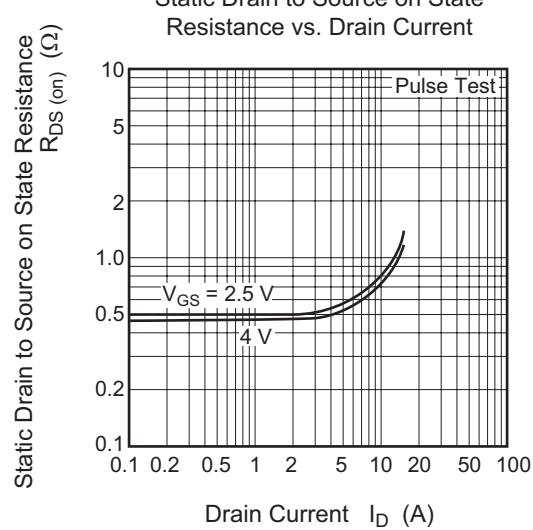
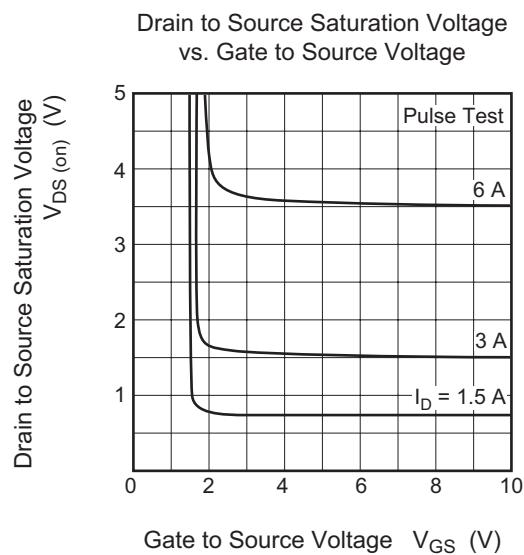
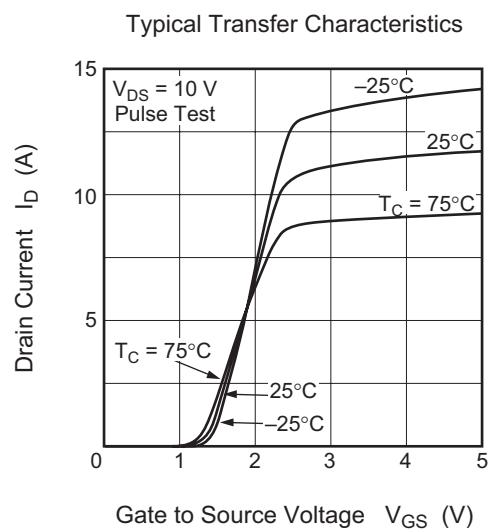
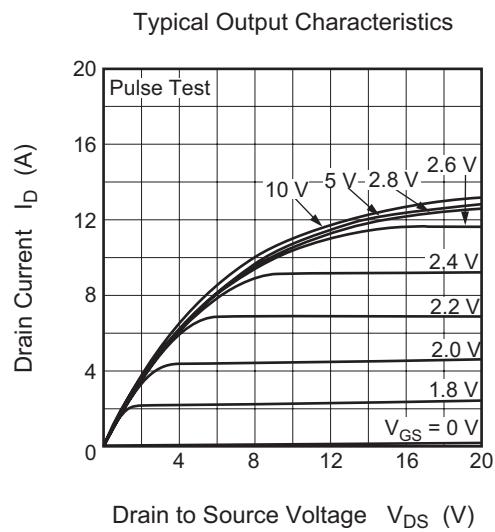
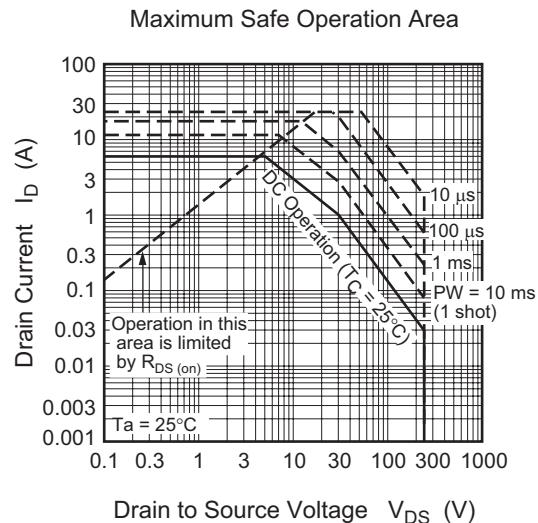
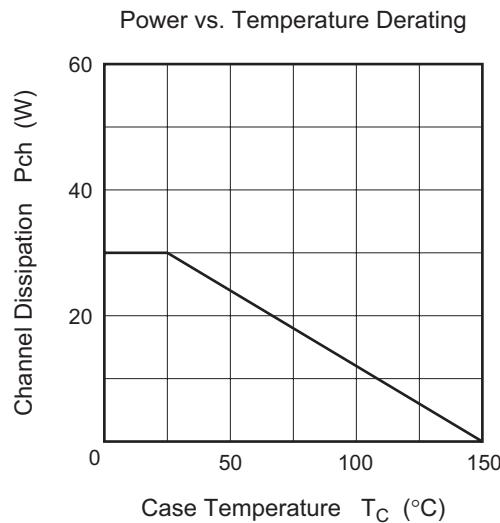
## Electrical Characteristics

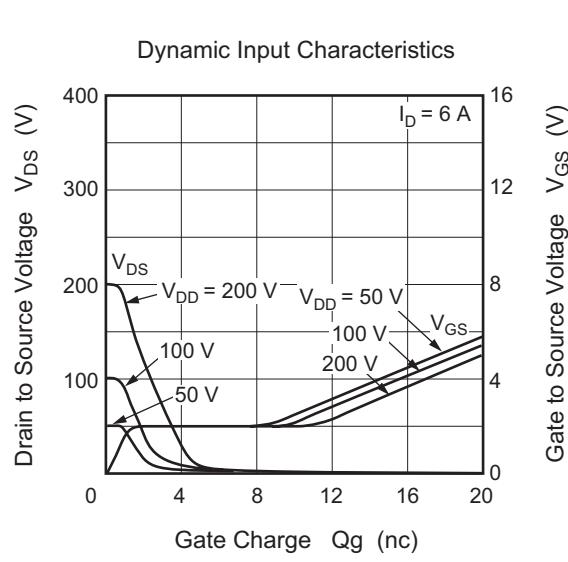
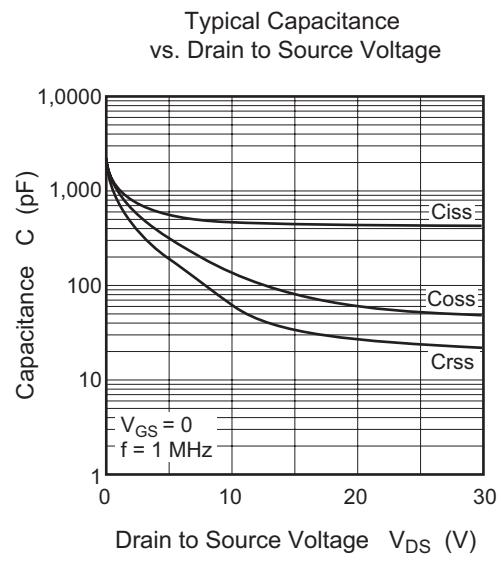
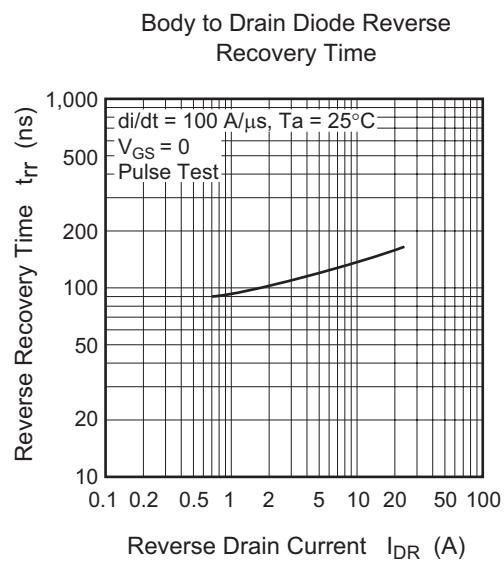
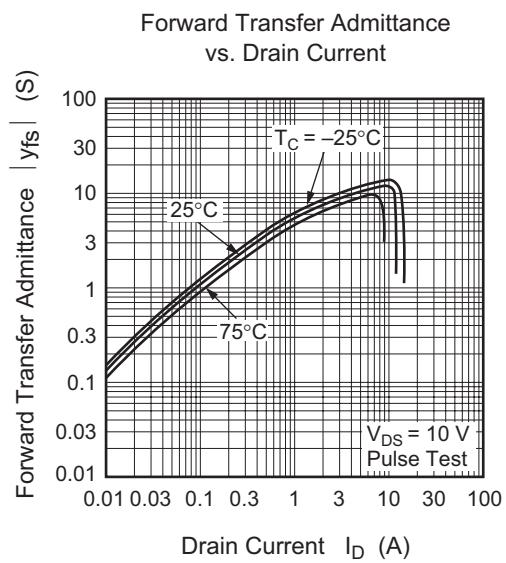
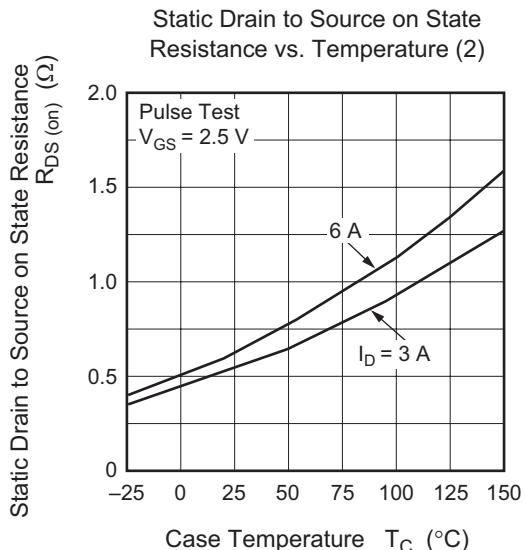
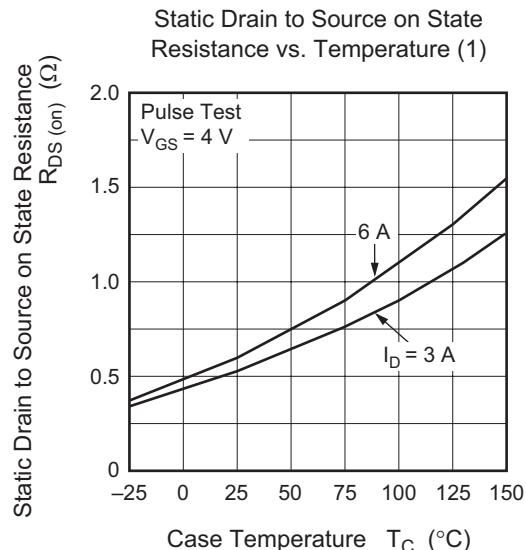
(Ta = 25°C)

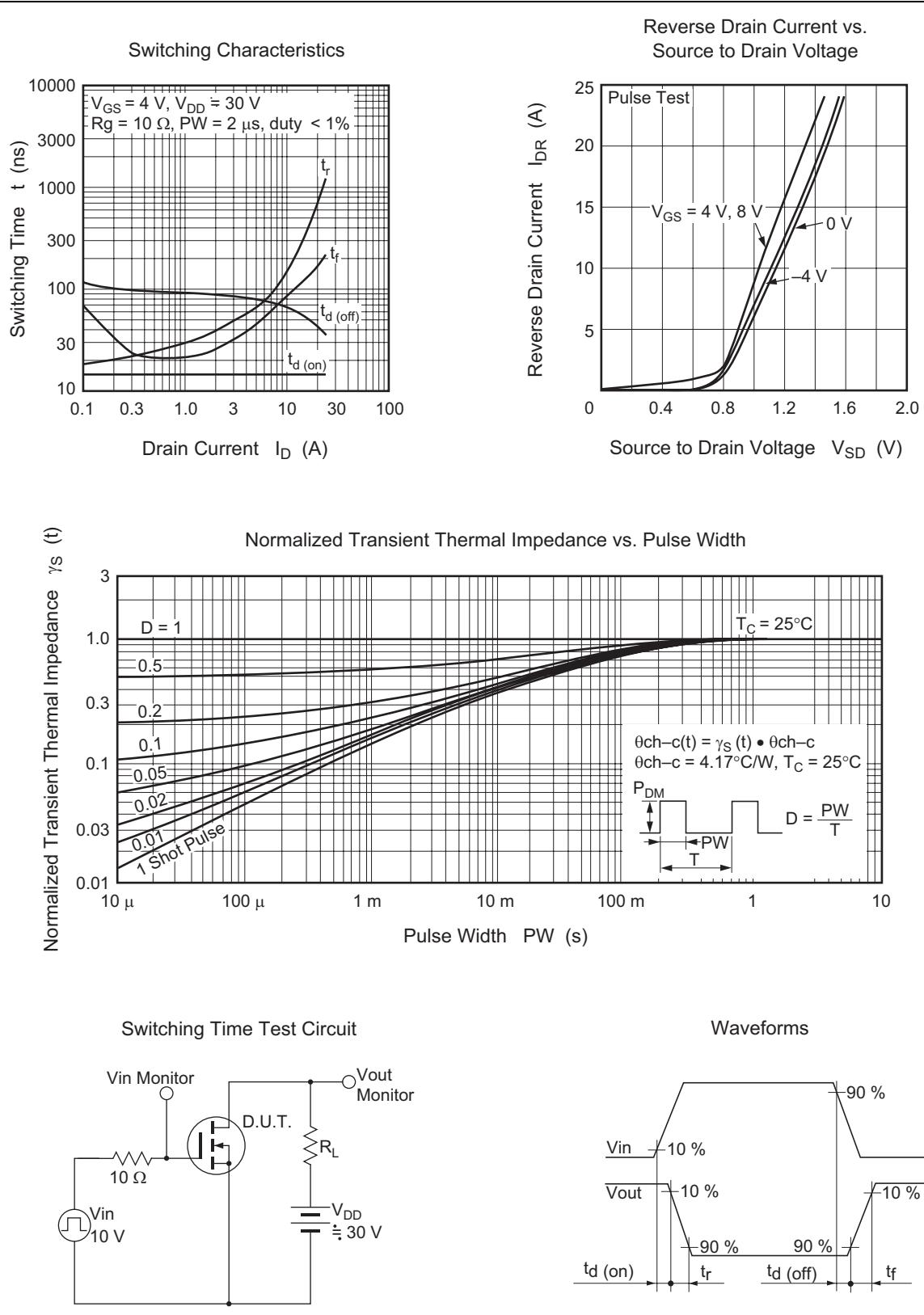
| Item                                       | Symbol               | Min | Typ  | Max  | Unit | Test Conditions  |
|--|----------------------|-----|------|------|------|--|
| Drain to source breakdown voltage          | V <sub>(BR)DSS</sub> | 250 | —    | —    | V    | I <sub>D</sub> = 10 mA, V <sub>GS</sub> = 0  |
| Gate to source breakdown voltage           | V <sub>(BR)GSS</sub> | ±10 | —    | —    | V    | I <sub>G</sub> = ±100 μA, V <sub>DS</sub> = 0  |
| Gate to source leak current                | I <sub>GSS</sub>     | —   | —    | ±10  | μA   | V <sub>GS</sub> = ±8 V, V <sub>DS</sub> = 0  |
| Zero gate voltage drain current            | I <sub>DS</sub>      | —   | —    | 5    | μA   | V <sub>DS</sub> = 250 V, V <sub>GS</sub> = 0   |
| Gate to source cutoff voltage              | V <sub>GS(off)</sub> | 0.5 | —    | 1.5  | V    | V <sub>DS</sub> = 10 V, I <sub>D</sub> = 1 mA  |
| Static drain to source on state resistance | R <sub>DS(on)</sub>  | —   | 0.55 | 0.7  | Ω    | I <sub>D</sub> = 3 A, V <sub>GS</sub> = 4 V <sup>Note3</sup>                                 |
|  | R <sub>DS(on)</sub>  | —   | 0.57 | 0.8  | Ω    | I <sub>D</sub> = 3 A, V <sub>GS</sub> = 2.5V <sup>Note3</sup>                                |
| Forward transfer admittance                | y <sub>fs</sub>      | 5.5 | 9.2  | —    | S    | I <sub>D</sub> = 3 A, V <sub>DS</sub> = 10 V <sup>Note3</sup>                                |
| Output capacitance                         | C <sub>iss</sub>     | —   | 450  | —    | pF   | V <sub>DS</sub> = 10 V, V <sub>GS</sub> = 0,<br>f = 1 MHz                                    |
| Output capacitance                         | C <sub>oss</sub>     | —   | 100  | —    | pF   |  |
| Reverse transfer capacitance               | C <sub>rss</sub>     | —   | 60   | —    | pF   |  |
| Total gate charge                          | Q <sub>g</sub>       | —   | 17   | —    | nC   | V <sub>DD</sub> = 200 V, V <sub>GS</sub> = 4 V,<br>I <sub>D</sub> = 6 A                      |
| Gate to source charge                      | Q <sub>gs</sub>      | —   | 0.8  | —    | nC   |  |
| Gate to drain charge                       | Q <sub>gd</sub>      | —   | 9.5  | —    | nC   |  |
| Turn-on delay time                         | t <sub>d(on)</sub>   | —   | 14   | —    | ns   | V <sub>GS</sub> = 4 V, I <sub>D</sub> = 3 A,<br>R <sub>L</sub> = 10 Ω, R <sub>g</sub> = 10 Ω |
| Rise time                                  | t <sub>r</sub>       | —   | 48   | —    | ns   |  |
| Turn-off delay time                        | t <sub>d(off)</sub>  | —   | 88   | —    | ns   |  |
| Fall time                                  | t <sub>f</sub>       | —   | 25   | —    | ns   |  |
| Body-drain diode forward voltage           | V <sub>DF</sub>      | —   | 0.94 | 1.45 | V    | I <sub>F</sub> = 6 A, V <sub>GS</sub> = 0 <sup>Note3</sup>                                   |
| Body-drain diode reverse recovery time     | trr                  | —   | 125  | —    | ns   | I <sub>F</sub> = 6 A, V <sub>GS</sub> = 0<br>di <sub>F</sub> /dt = 100 A/μs                  |

Notes: 3. Pulse test

## Main Characteristics







## Package Dimensions

| Package Name | JEITA Package Code | RENESAS Code | Previous Code        | MASS[Typ.] | Unit: mm |
|--------------|--------------------|--------------|----------------------|------------|----------|
| TO-220AB     | SC-46              | PRSS004AC-A  | TO-220AB / TO-220ABV | 1.8g       |          |

## Ordering Information

| Part Name | Quantity | Shipping Container |
|-----------|----------|--------------------|
| 2SK3736   | 50 pcs.  | Sack               |

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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