

# 2SK2315

## Silicon N Channel MOS FET

REJ03G1006-0200  
(Previous: ADE-208-1354)  
Rev.2.00  
Sep.07,2005

### Application

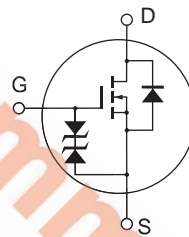
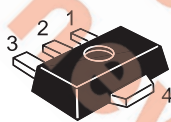
High speed power switching

### Features

- Low on-resistance
- High speed switching
- Low drive current
- 2.5 V gate drive device can be driven from 3 V source.
- Suitable for DC-DC converter, motor drive, power switch, solenoid drive

### Outline

RENESAS Package code: PLZZ0004CA-A  
(Package name: UPAK<sup>®</sup>)



1. Gate
2. Drain
3. Source
4. Drain

Note: Marking is "TY"

\*UPAK is a trademark of Renesas Technology Corp.

## Absolute Maximum Ratings

(Ta = 25°C)

| Item                                      | Symbol              | Ratings     | Unit |
|---|---------------------|-------------|------|
| Drain to source voltage                   | $V_{DS}$            | 60          | V    |
| Gate to source voltage                    | $V_{GS}$            | $\pm 20$    | V    |
| Drain current                             | $I_D$               | 2           | A    |
| Drain peak current                        | $I_{D(pulse)}^{*1}$ | 4           | A    |
| Body to drain diode reverse drain current | $I_{DR}$            | 2           | A    |
| Channel dissipation                       | $P_{ch}^{*2}$       | 1           | 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. When using the alumina ceramic board ( $12.5 \times 20 \times 0.7 \text{ mm}$ )

## Electrical Characteristics

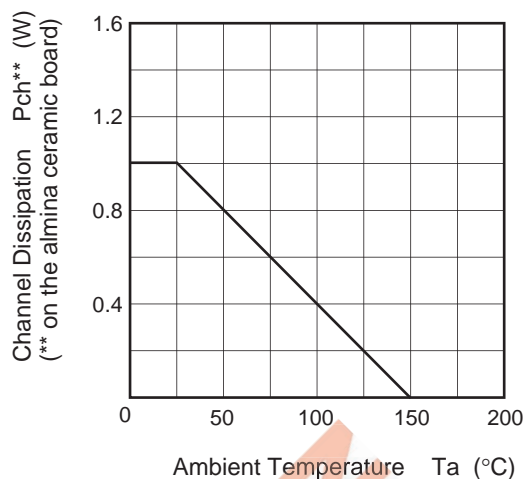
(Ta = 25°C)

| Item                                       | Symbol        | Min      | Typ  | Max     | Unit     | Test Conditions  |
|--|---------------|----------|------|---------|----------|--|
| Drain to source breakdown voltage          | $V_{(BR)DS}$  | 60       | —    | —       | V        | $I_D = 10 \text{ mA}$ , $V_{GS} = 0$                                 |
| Gate to source breakdown voltage           | $V_{(BR)GS}$  | $\pm 20$ | —    | —       | V        | $I_G = \pm 100 \mu A$ , $V_{DS} = 0$                                 |
| Gate to source leak current                | $I_{GSS}$     | —        | —    | $\pm 5$ | $\mu A$  | $V_{GS} = \pm 16 \text{ V}$ , $V_{DS} = 0$                           |
| Zero gate voltage drain current            | $I_{DSS}$     | —        | —    | 5       | $\mu A$  | $V_{DS} = 50 \text{ V}$ , $V_{GS} = 0$                               |
| Gate to source cutoff voltage              | $V_{GS(off)}$ | 0.5      | —    | 1.5     | V        | $I_D = 1 \text{ mA}$ , $V_{DS} = 10 \text{ V}$                       |
| Static drain to source on state resistance | $R_{DS(on)}$  | —        | 0.4  | 0.6     | $\Omega$ | $I_D = 0.3 \text{ A}$ , $V_{GS} = 3 \text{ V}^{*3}$                  |
|  |               | —        | 0.35 | 0.45    | $\Omega$ | $I_D = 1 \text{ A}$ , $V_{GS} = 4 \text{ V}^{*3}$                    |
| Forward transfer admittance                | $ y_{fs} $    | 1.5      | 1.8  | —       | S        | $I_D = 1 \text{ A}$ , $V_{DS} = 10 \text{ V}^{*3}$                   |
| Input capacitance                          | $C_{iss}$     | —        | 173  | —       | pF       | $V_{DS} = 10 \text{ V}$ , $V_{GS} = 0$ ,<br>$f = 1 \text{ MHz}$      |
| Output capacitance                         | $C_{oss}$     | —        | 85   | —       | pF       |  |
| Reverse transfer capacitance               | $C_{rss}$     | —        | 23   | —       | pF       |  |
| Turn-on time                               | $t_{on}$      | —        | 21   | —       | ns       | $I_D = 1 \text{ A}$ , $R_L = 30 \Omega$ ,<br>$V_{GS} = 10 \text{ V}$ |
| Turn-off time                              | $t_{off}$     | —        | 85   | —       | ns       |  |

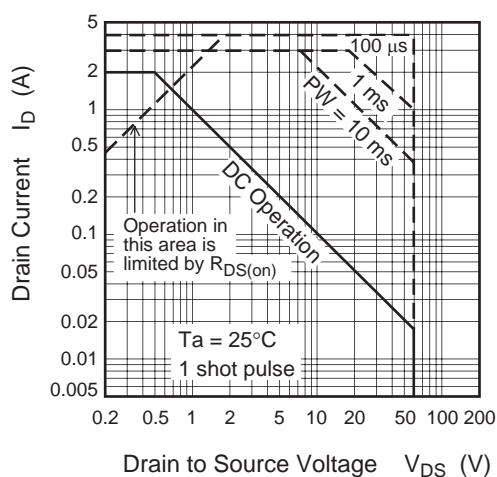
Note: 3. Pulse Test

## Main Characteristics

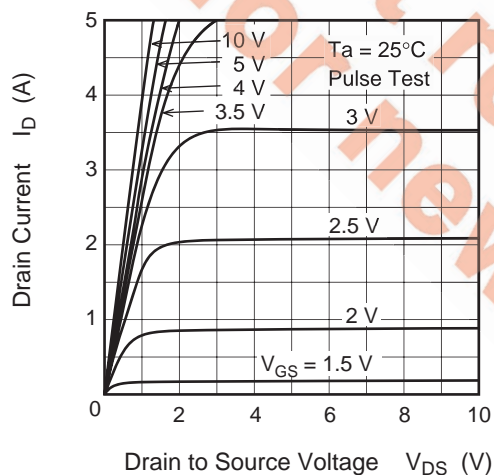
Power vs. Temperature Derating



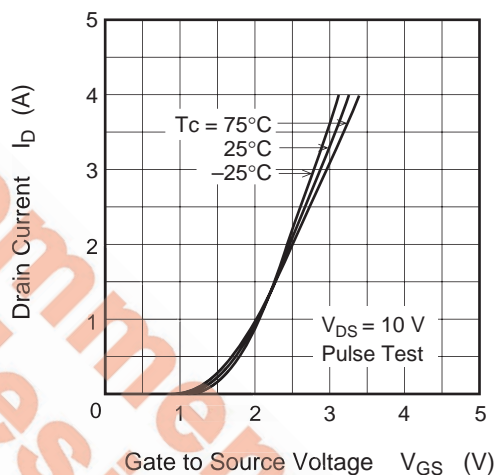
Maximum Safe Operation Area



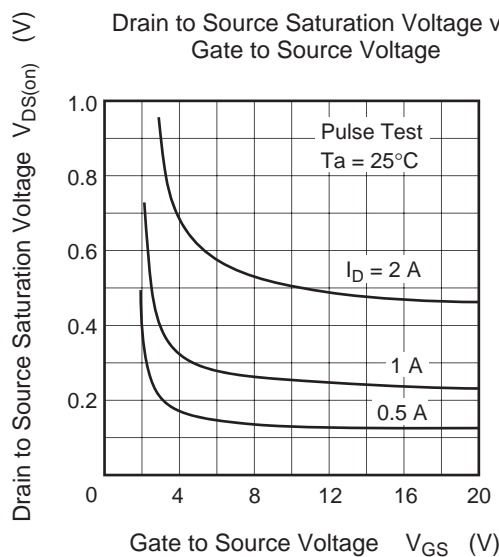
Typical Output Characteristics



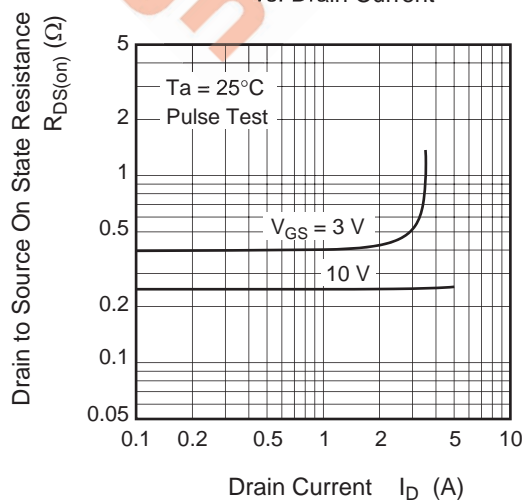
Typical Transfer Characteristics

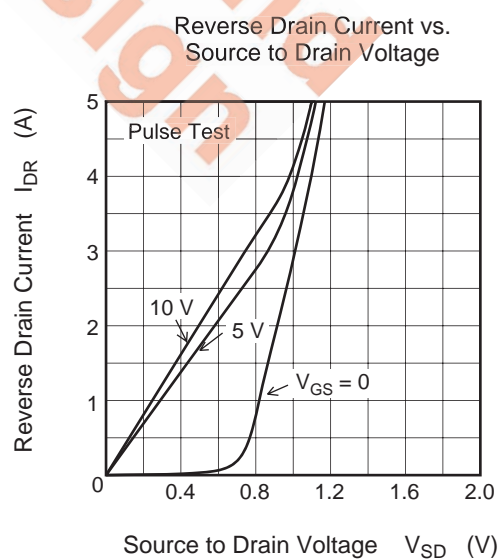
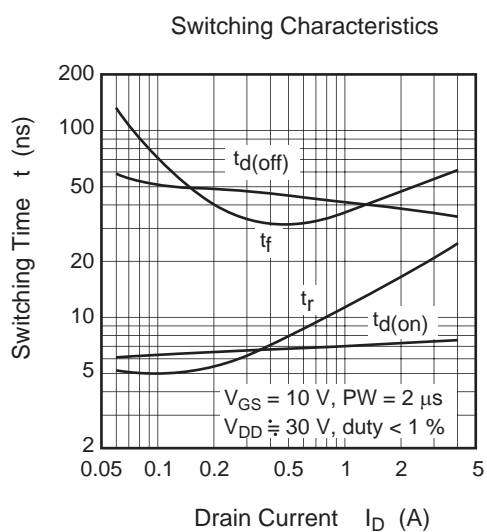
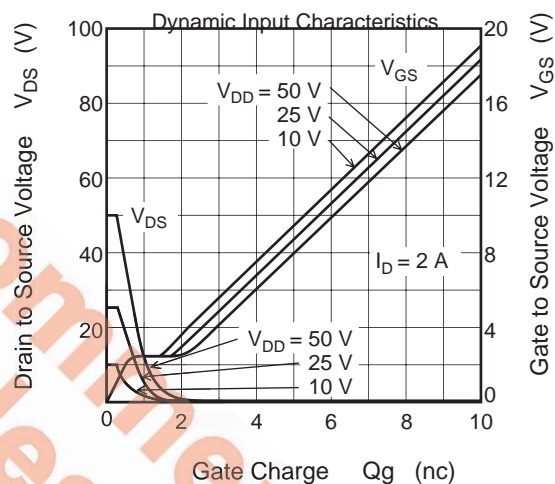
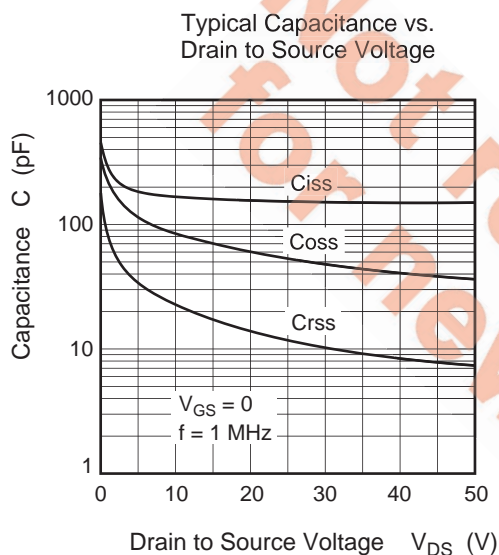
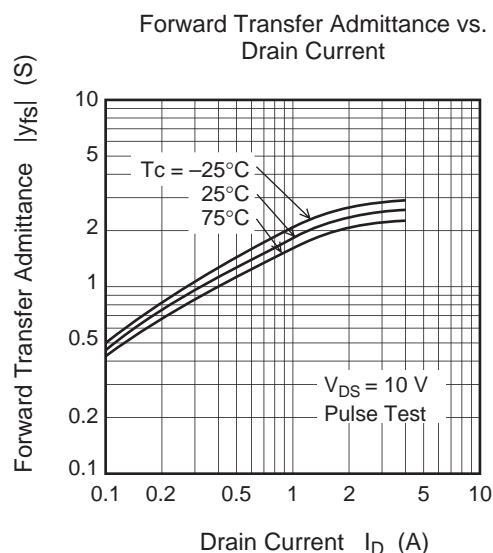
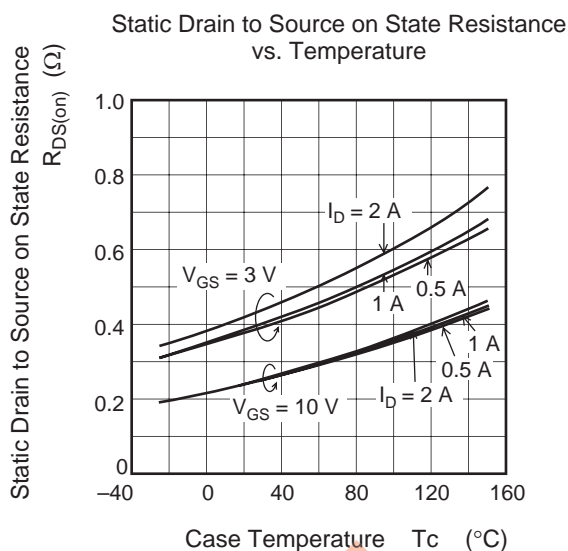


Drain to Source Saturation Voltage vs. Gate to Source Voltage

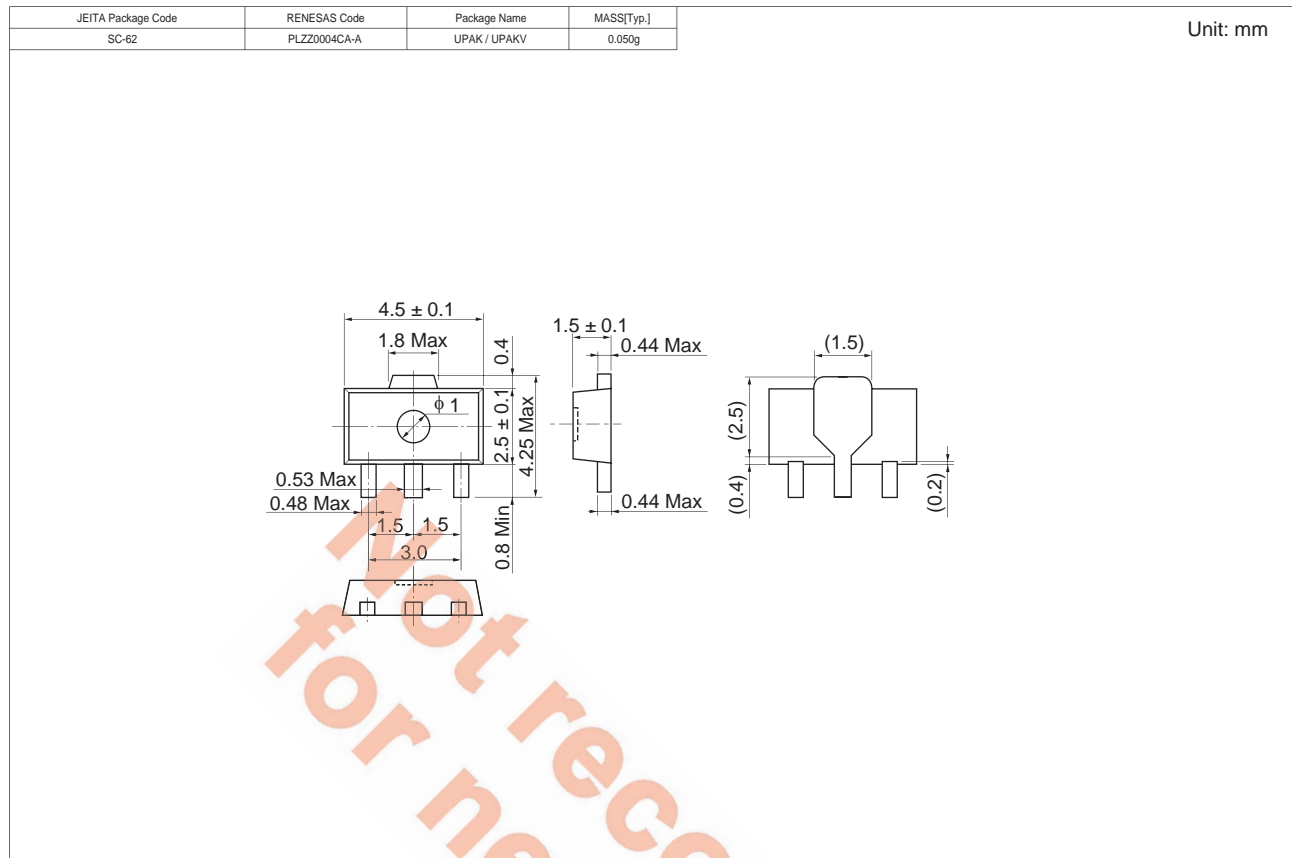


Static Drain to Source State Resistance vs. Drain Current





## Package Dimensions



## Ordering Information

| Part Name     | Quantity | Shipping Container |
|---------------|----------|--------------------|
| 2SK2315TYTL-E | 1000 pcs | Taping             |
| 2SK2315TYTR-E | 1000 pcs | Taping             |

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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