

To all our customers

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Renesas Technology Corp.  
Customer Support Dept.  
April 1, 2003

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# 2SK3380

Silicon N Channel MOS FET  
High Speed Switching

**RENESAS**

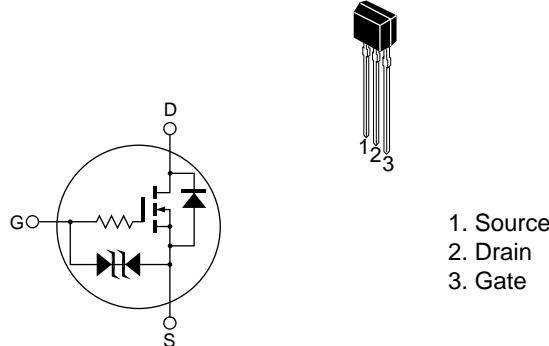
ADE-208-806 (Z)  
1st.Edition.  
June 1999

## Features

- Low on-resistance  
 $R_{DS} = 1.26 \Omega$  typ. ( $V_{GS} = 10$  V,  $I_D = 150$  mA)  
 $R_{DS} = 2.8 \Omega$  typ. ( $V_{GS} = 4$  V,  $I_D = 50$  mA)
- 4 V gate drive device.

## Outline

SPAK



## Absolute Maximum Ratings (Ta = 25°C)

| Item                                   | Symbol                                 | Ratings     | Unit |
|--|--|-------------|------|
| Drain to source voltage                | V <sub>DSS</sub>                       | 30          | V    |
| Gate to source voltage                 | V <sub>GSS</sub>                       | ±20         | V    |
| Drain current                          | I <sub>D</sub>                         | 300         | mA   |
| Drain peak current                     | I <sub>D(pulse)</sub> <sup>Note1</sup> | 1.2         | A    |
| Body-drain diode reverse drain current | I <sub>DR</sub>                        | 300         | mA   |
| Channel dissipation                    | Pch                                    | 300         | mW   |
| Channel temperature                    | T <sub>ch</sub>                        | 150         | °C   |
| Storage temperature                    | T <sub>stg</sub>                       | −55 to +150 | °C   |

Note: 1. PW ≤ 10 μs, duty cycle ≤ 1%

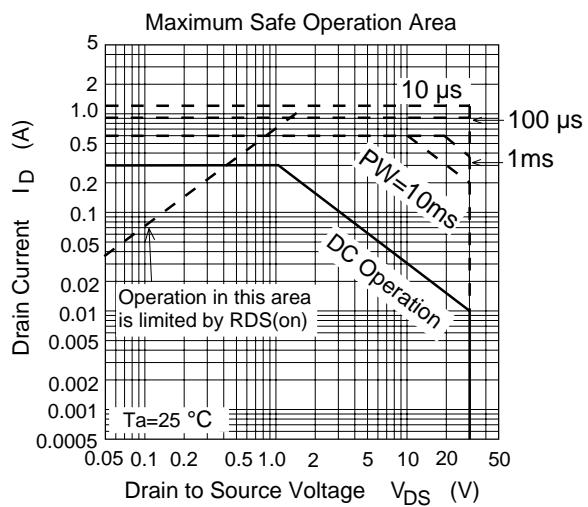
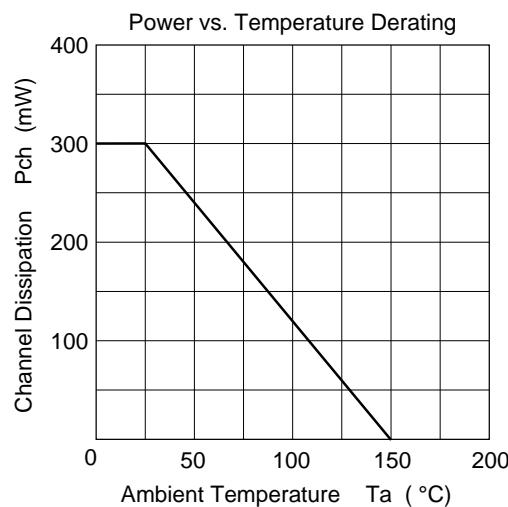
## Electrical Characteristics (Ta = 25°C)

| Item                                       | Symbol               | Min | Typ  | Max  | Unit | Test Conditions   |
|--|----------------------|-----|------|------|------|---|
| Drain to source breakdown voltage          | V <sub>(BR)DSS</sub> | 30  | —    | —    | V    | I <sub>D</sub> = 100 μA, V <sub>GS</sub> = 0                      |
| Gate to source breakdown voltage           | V <sub>(BR)GSS</sub> | ±20 | —    | —    | V    | I <sub>G</sub> = ±100 μA, V <sub>DS</sub> = 0                     |
| Gate to source leak current                | I <sub>GSS</sub>     | —   | —    | ±5   | μA   | V <sub>GS</sub> = ±16 V, V <sub>DS</sub> = 0                      |
| Zero gate voltage drain current            | I <sub>DSS</sub>     | —   | —    | 1    | μA   | V <sub>DS</sub> = 30 V, V <sub>GS</sub> = 0                       |
| Gate to source cutoff voltage              | V <sub>GS(off)</sub> | 1.3 | —    | 2.3  | V    | I <sub>D</sub> = 10 μA, V <sub>DS</sub> = 5 V                     |
| Static drain to source on state resistance | R <sub>DS(on)</sub>  | —   | 1.26 | 1.44 | Ω    | I <sub>D</sub> = 150 mA, V <sub>GS</sub> = 10 V <sup>Note 2</sup> |
|  | R <sub>DS(on)</sub>  | —   | 2.8  | 3.44 | Ω    | I <sub>D</sub> = 50 mA, V <sub>GS</sub> = 4 V <sup>Note 2</sup>   |
| Forward transfer admittance                | y <sub>fs</sub>      | 145 | 220  | —    | mS   | I <sub>D</sub> = 150 mA, V <sub>DS</sub> = 10 V <sup>Note 2</sup> |
| Input capacitance                          | C <sub>iss</sub>     | —   | 6    | —    | pF   | V <sub>DS</sub> = 10 V  |
| Output capacitance                         | C <sub>oss</sub>     | —   | 18   | —    | pF   | V <sub>GS</sub> = 0   |
| Reverse transfer capacitance               | C <sub>rss</sub>     | —   | 2    | —    | pF   | f = 1 MHz   |
| Turn-on delay time                         | t <sub>d(on)</sub>   | —   | 200  | —    | ns   | I <sub>D</sub> = 150 mA, V <sub>GS</sub> = 10 V                   |
| Rise time                                  | t <sub>r</sub>       | —   | 600  | —    | ns   | R <sub>L</sub> = 66.6 Ω   |
| Turn-off delay time                        | t <sub>d(off)</sub>  | —   | 1100 | —    | ns   |   |
| Fall time                                  | t <sub>f</sub>       | —   | 1100 | —    | ns   |   |

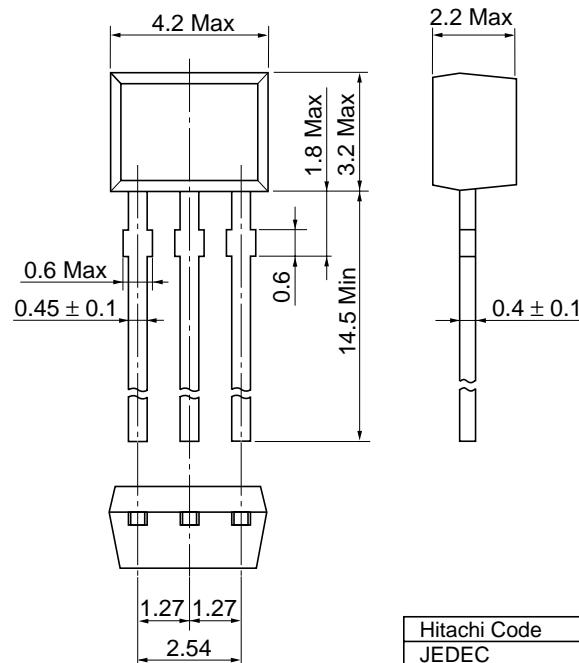
Note: 2. Pulse test

See characteristics curves of 2SK3288

## Main Characteristics



## Package Dimensions



As of January, 2001  
Unit: mm

|                        |        |
|------------------------|--------|
| Hitachi Code           | SPAK   |
| JEDEC                  | —      |
| EIAJ                   | —      |
| Mass (reference value) | 0.10 g |

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