

To our customers,

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## Old Company Name in Catalogs and Other Documents

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April 1<sup>st</sup>, 2010  
Renesas Electronics Corporation

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## HAT2026R

Silicon N Channel Power MOS FET  
High Speed Power Switching

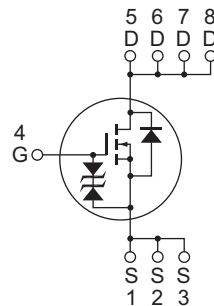
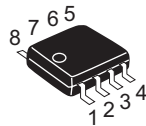
REJ03G1161-0500  
(Previous: ADE-208-523C)  
Rev.5.00  
Sep 07, 2005

### Features

- Low on-resistance
- Capable of 2.5 V gate drive
- Low drive current
- High density mounting

### Outline

RENESAS Package code: PRSP0008DD-D  
(Package name: SOP-8 <FP-8DAV> )



1, 2, 3 Source  
4 Gate  
5, 6, 7, 8 Drain

## Absolute Maximum Ratings

(Ta = 25°C)

| Item                                   | Symbol                                   | Value       | Unit |
|--|--|-------------|------|
| Drain to source voltage                | V <sub>DSS</sub>                         | 20          | V    |
| Gate to source voltage                 | V <sub>GSS</sub>                         | ±12         | V    |
| Drain current                          | I <sub>D</sub>                           | 11          | A    |
| Drain peak current                     | I <sub>D (pulse)</sub> <sup>Note 1</sup> | 88          | A    |
| Body-drain diode reverse drain current | I <sub>DR</sub>                          | 11          | A    |
| Channel dissipation                    | P <sub>ch</sub> <sup>Note 2</sup>        | 2.5         | 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. When using the glass epoxy board (FR4 40 × 40 × 1.6 mm), PW ≤ 10 s

## Electrical Characteristics

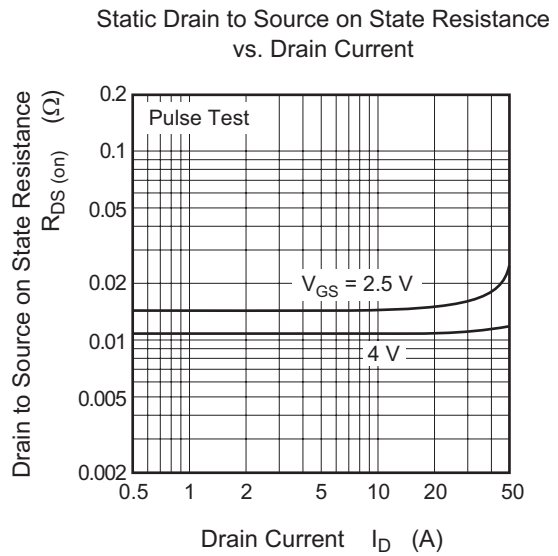
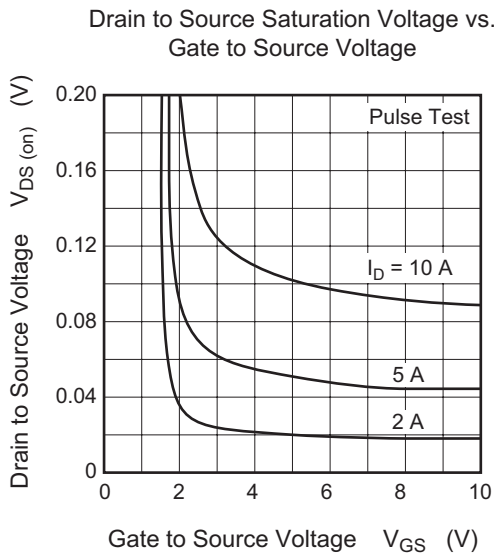
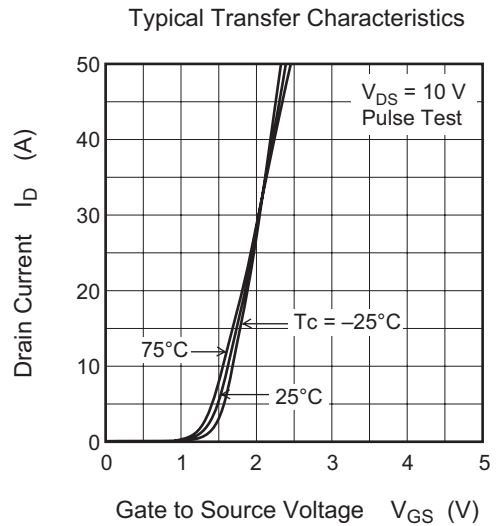
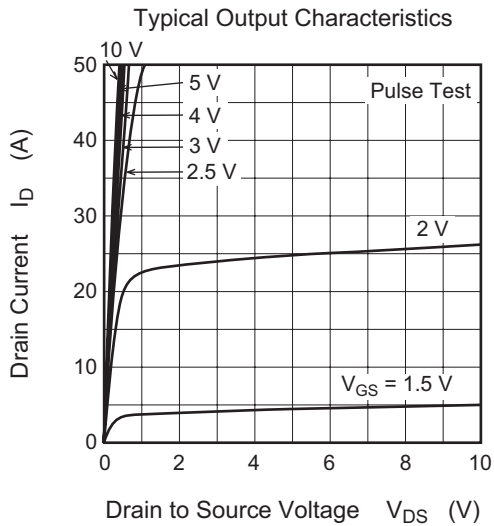
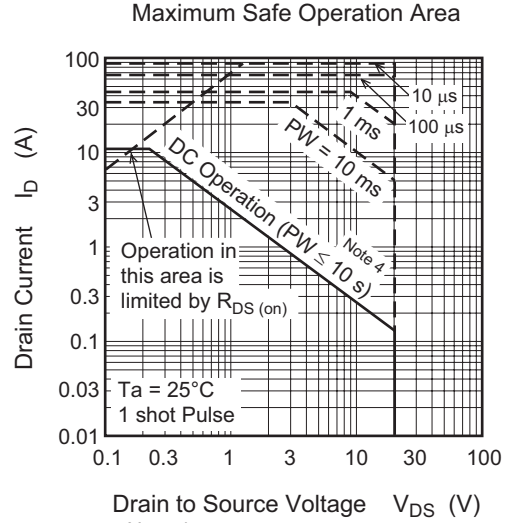
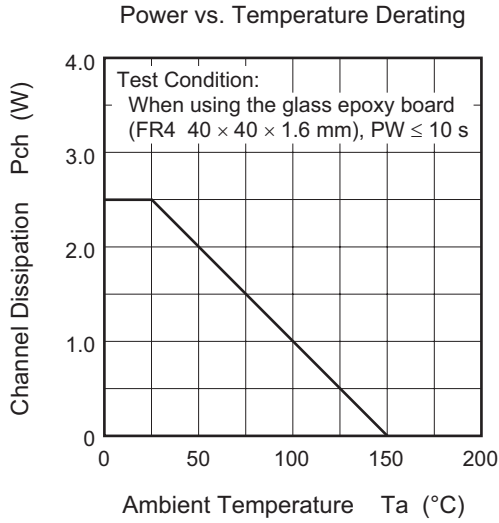
(Ta = 25°C)

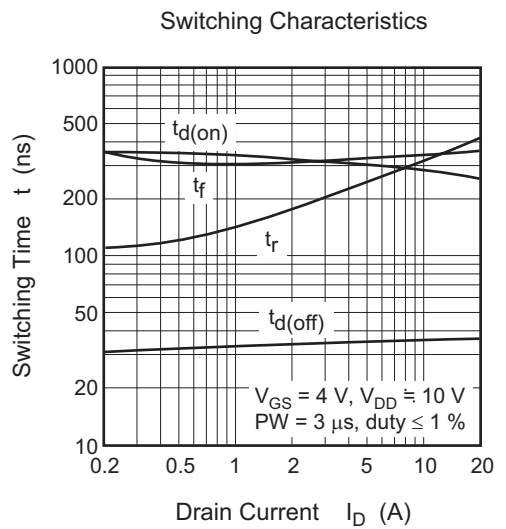
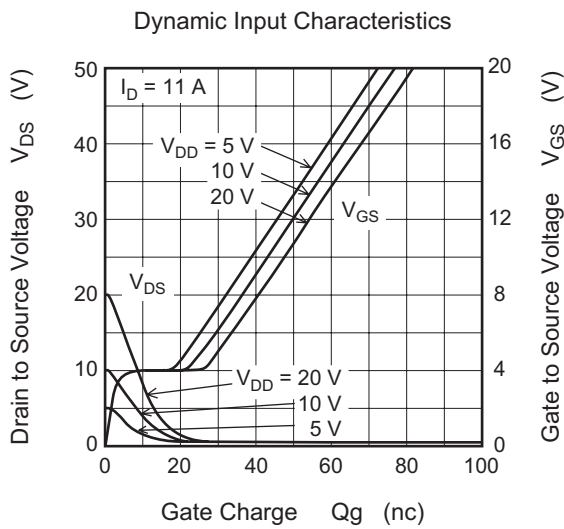
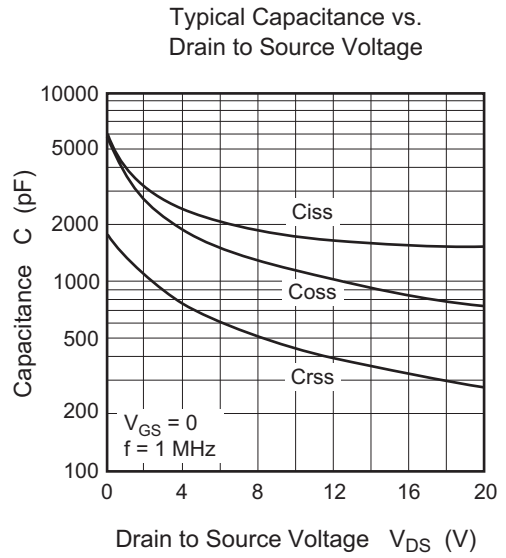
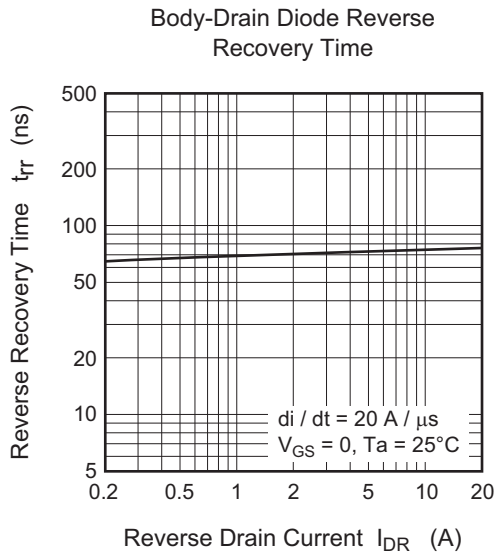
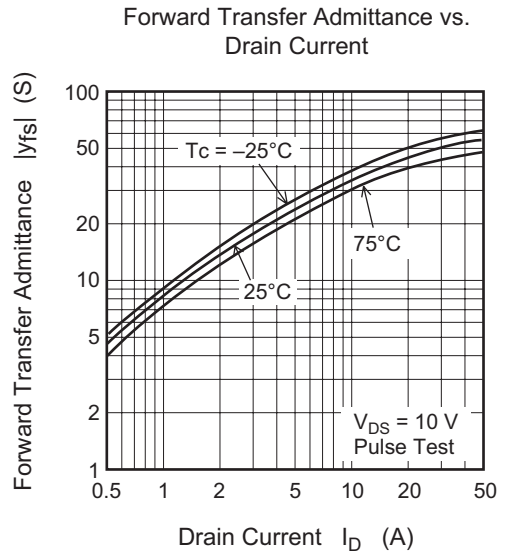
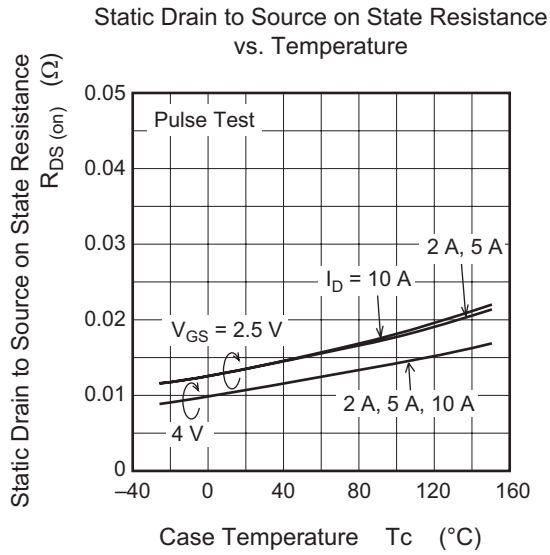
| Item                                       | Symbol                | Min | Typ   | Max   | Unit | Test Conditions   |
|--|-----------------------|-----|-------|-------|------|---|
| Drain to source breakdown voltage          | V <sub>(BR) DSS</sub> | 20  | —     | —     | V    | I <sub>D</sub> = 10 mA, V <sub>GS</sub> = 0                                 |
| Gate to source breakdown voltage           | V <sub>(BR) GSS</sub> | ±12 | —     | —     | 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> = ±10 V, V <sub>DS</sub> = 0                                |
| Zero gate voltage drain current            | I <sub>DSS</sub>      | —   | —     | 1     | μA   | V <sub>DS</sub> = 20 V, V <sub>GS</sub> = 0                                 |
| Gate to source cutoff voltage              | V <sub>GS (off)</sub> | 0.4 | —     | 1.4   | 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>  | —   | 0.011 | 0.015 | Ω    | I <sub>D</sub> = 6 A, V <sub>GS</sub> = 4 V <sup>Note 3</sup>               |
|  | R <sub>DS (on)</sub>  | —   | 0.014 | 0.021 | Ω    | I <sub>D</sub> = 6 A, V <sub>GS</sub> = 2.5 V <sup>Note 3</sup>             |
| Forward transfer admittance                | y <sub>fs</sub>       | 18  | 27    | —     | S    | I <sub>D</sub> = 6 A, V <sub>DS</sub> = 10 V <sup>Note 3</sup>              |
| Input capacitance                          | C <sub>iss</sub>      | —   | 1760  | —     | pF   | V <sub>DS</sub> = 10 V<br>V <sub>GS</sub> = 0<br>f = 1 MHz                  |
| Output capacitance                         | C <sub>oss</sub>      | —   | 1130  | —     | pF   |   |
| Reverse transfer capacitance               | C <sub>rss</sub>      | —   | 450   | —     | pF   |   |
| Turn-on delay time                         | t <sub>d (on)</sub>   | —   | 35    | —     | ns   | V <sub>GS</sub> = 4 V, I <sub>D</sub> = 6 A,<br>V <sub>DD</sub> ≅ 10 V      |
| Rise time                                  | t <sub>r</sub>        | —   | 275   | —     | ns   |   |
| Turn-off delay time                        | t <sub>d (off)</sub>  | —   | 300   | —     | ns   |   |
| Fall time                                  | t <sub>f</sub>        | —   | 340   | —     | ns   |   |
| Body-drain diode forward voltage           | V <sub>DF</sub>       | —   | 0.83  | 1.08  | V    | I <sub>F</sub> = 11 A, V <sub>GS</sub> = 0 <sup>Note 3</sup>                |
| Body-drain diode reverse recovery time     | t <sub>rr</sub>       | —   | 75    | —     | ns   | I <sub>F</sub> = 11 A, V <sub>GS</sub> = 0<br>di <sub>F</sub> /dt = 20 A/μs |

Note: 3. Pulse test

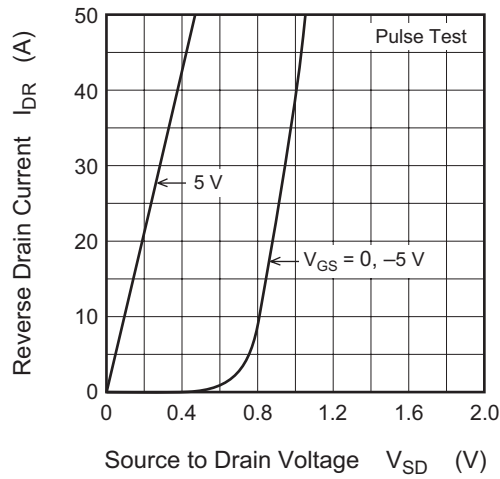
The specifications may be change without notice.

### Main Characteristics

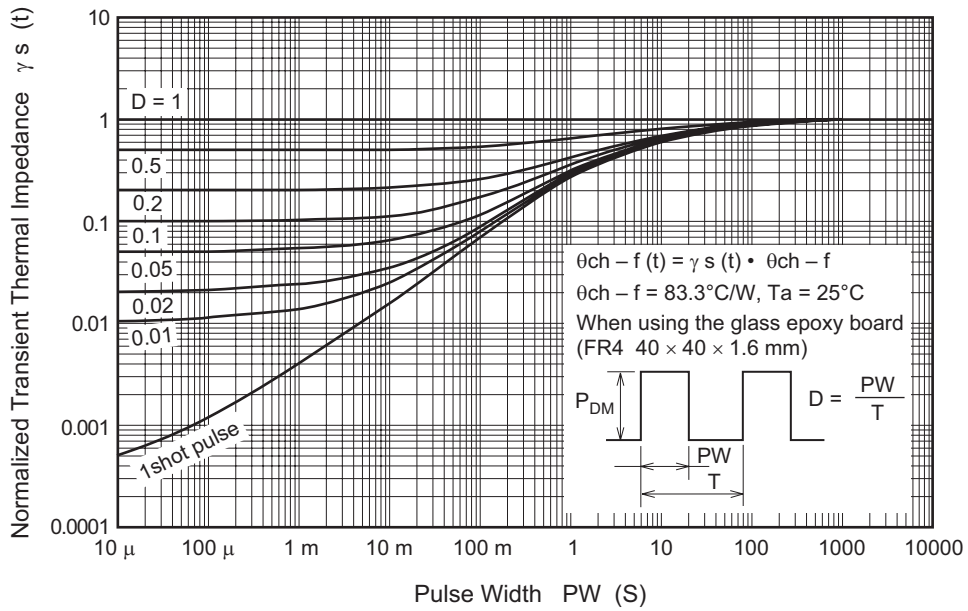




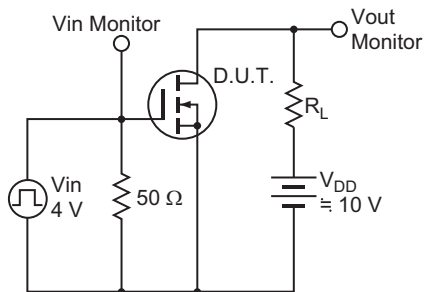
Reverse Drain Current vs. Source to Drain Voltage



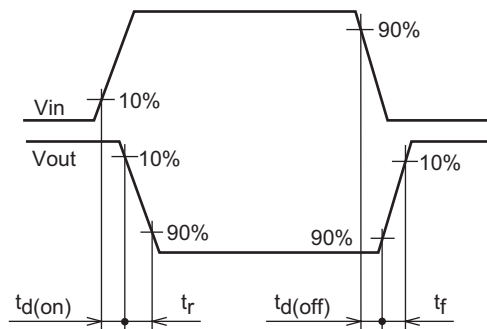
Normalized Transient Thermal Impedance vs. Pulse Width



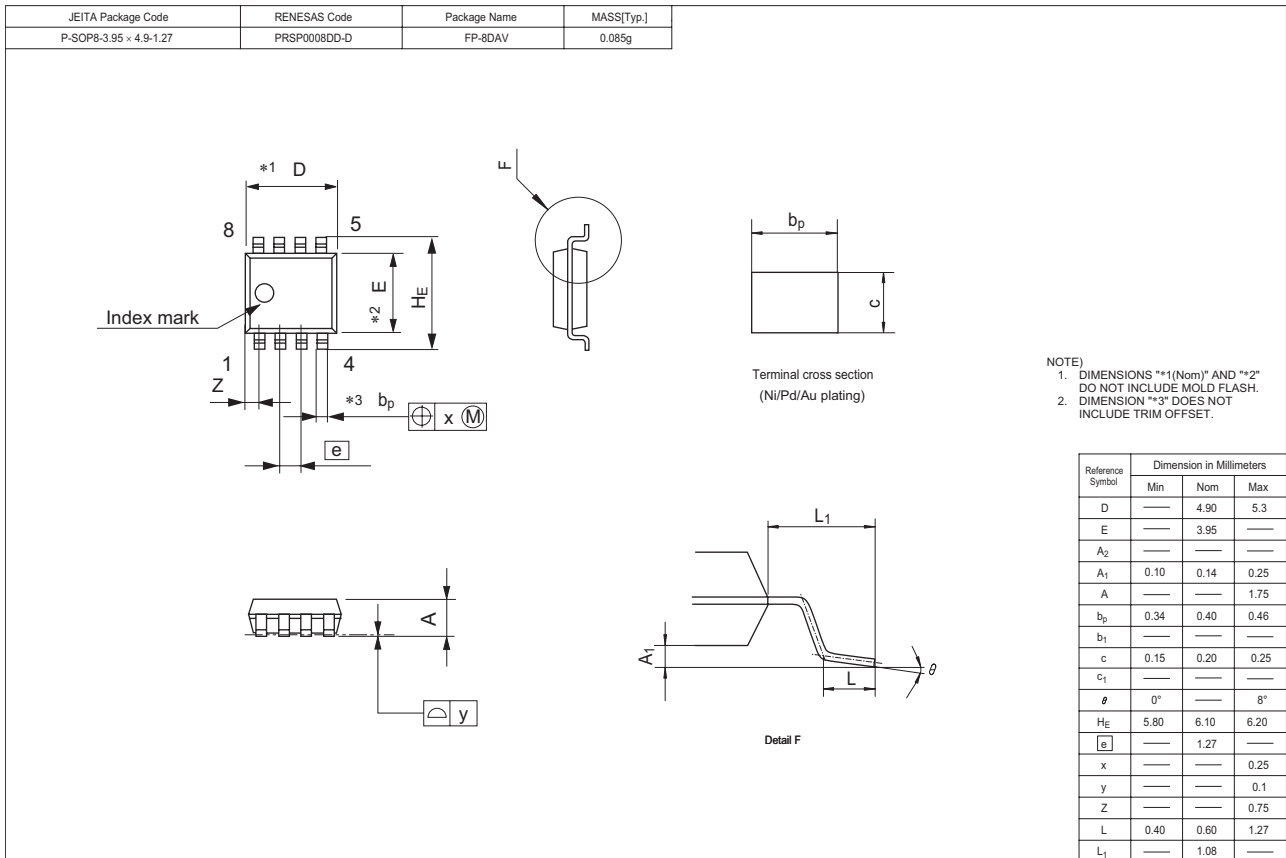
Switching Time Test Circuit



Switching Time Waveform



### Package Dimensions



### Ordering Information

| Part Name     | Quantity | Shipping Container |
|---------------|----------|--------------------|
| HAT2026R-EL-E | 2500 pcs | Taping             |

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