To our customers,

# Old Company Name in Catalogs and Other Documents

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Renesas Electronics website: http://www.renesas.com

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (http://www.renesas.com)

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# HAT2191WP

## Silicon N Channel Power MOS FET
## Power Switching

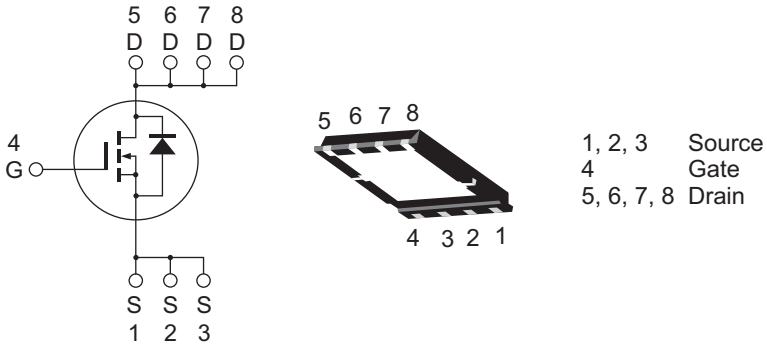
REJ03G1223-0500
Rev.5.00
Jun.02.2005

### Features

- Low on-resistance
- Low drive current
- High density mounting

### Outline

RENESAS Package code: PWSN0008DA-A
(Package name: WPAK)




### Absolute Maximum Ratings

(Ta = 25°C)

| Item | Symbol | Ratings | Unit |
|---|---|---|---|
| Drain to source voltage | $V_{DSS}$ | 250 | V |
| Gate to source voltage | $V_{GSS}$ | ±30 | V |
| Drain current | $I_D$ | 14 | A |
| Drain peak current | $I_{D\ (pulse)}$ Note1 | 28 | A |
| Body-drain diode reverse drain current | $I_{DR}$ | 14 | A |
| Body-drain diode reverse drain peak current | $I_{DR\ (pulse)}$ Note1 | 28 | A |
| Avalanche current | $I_{AP}$ Note3 | 7 | A |
| Avalanche energy | $E_{AR}$ Note3 | 3.0 | mJ |
| Channel dissipation | Pch Note2 | 30 | W |
| Channel to case thermal impedance | θch-c | 4.17 | °C/W |
| Channel temperature | Tch | 150 | °C |
| Storage temperature | Tstg | –55 to +150 | °C |

Notes: 1. PW ≤ 10 µs, duty cycle ≤ 1%
2. Value at Tc = 25°C
3. STch = 25°C, Tch ≤ 150°C

## Electrical Characteristics

(Ta = 25°C)

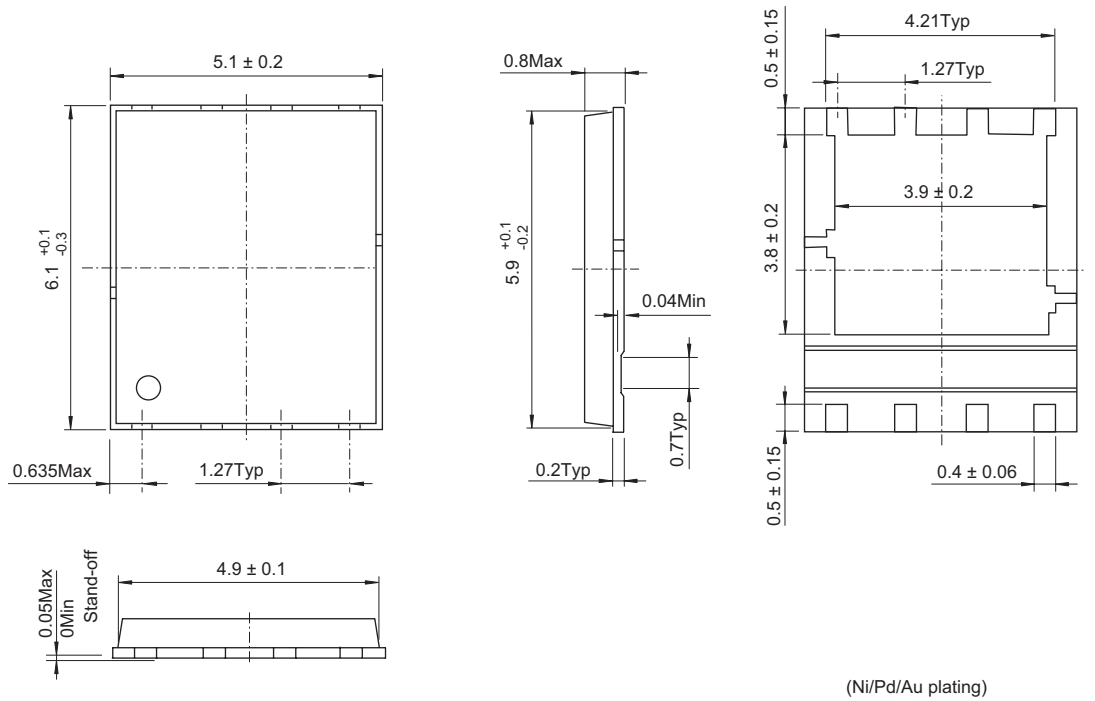
| Item | Symbol | Min | Typ | Max | Unit | Test conditions |
|---|---|---|---|---|---|---|
| Drain to source breakdown voltage | $V_{(BR)DSS}$ | 250 | — | — | V | $I_D$ = 10 mA, $V_{GS}$ = 0 |
| Zero gate voltage drain current | $I_{DSS}$ | — | — | 1 | µA | $V_{DS}$ = 250 V, $V_{GS}$ = 0 |
| Gate to source leak current | $I_{GSS}$ | — | — | ±0.1 | µA | $V_{GS}$ = ±30 V, $V_{DS}$ = 0 |
| Gate to source cutoff voltage | $V_{GS(off)}$ | 3.0 | — | 4.5 | V | $V_{DS}$ = 10 V, $I_D$ = 1 mA |
| Forward transfer admittance | \|yfs\| | 7 | 12 | — | S | $I_D$ = 7 A, $V_{DS}$ = 10 V Note4 |
| Static drain to source on state resistance | $R_{DS(on)}$ | — | 0.120 | 0.138 | Ω | $I_D$ = 7 A, $V_{GS}$ = 10 V Note4 |
| Input capacitance | Ciss | — | 1200 | — | pF | $V_{DS}$ = 25 V<br>$V_{GS}$ = 0<br>f = 1 MHz |
| Output capacitance | Coss | — | 185 | — | pF | |
| Reverse transfer capacitance | Crss | — | 14 | — | pF | |
| Turn-on delay time | $t_{d(on)}$ | — | 30 | — | ns | $I_D$ = 7 A<br>$V_{GS}$ = 10 V<br>$R_L$ = 25 Ω<br>Rg = 17.9 Ω |
| Rise time | $t_r$ | — | 45 | — | ns | |
| Turn-off delay time | $t_{d(off)}$ | — | 60 | — | ns | |
| Fall time | $t_f$ | — | 15 | — | ns | |
| Total gate charge | Qg | — | 27 | — | nC | $V_{DD}$ = 200 V<br>$V_{GS}$ = 10 V<br>$I_D$ = 14 A |
| Gate to source charge | Qgs | — | 7 | — | nC | |
| Gate to drain charge | Qgd | — | 10 | — | nC | |
| Body-drain diode forward voltage | $V_{DF}$ | — | 0.86 | 1.40 | V | $I_F$ = 14 A, $V_{GS}$ = 0 Note4 |
| Body-drain diode reverse recovery time | trr | — | 150 | — | ns | $I_F$ = 14 A, $V_{GS}$ = 0<br>diF/dt = 100 A/µs |

Notes: 4. Pulse test

## Package Dimensions

| JEITA Package Code | RENESAS Code | Package Name | MASS[Typ.] |
|---|---|---|---|
| — | PWSN0008DA-A | WPAK | 0.085g |

Unit: mm




(Ni/Pd/Au plating)

## Ordering Information

| Part Name | Quantity | Shipping Container |
|---|---|---|
| HAT2191WP-EL-E | 2500 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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