

HAT2191WP

Silicon N Channel Power MOS FET Power Switching

REJ03G1223-0500

Rev.5.00

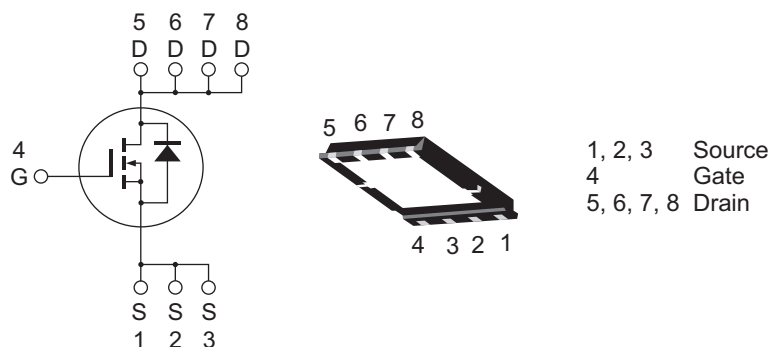
Jun.02.2005

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 | P_{ch} ^{Note2} | 30 | W |
| Channel to case thermal impedance | θ_{ch-c} | 4.17 | °C/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. Value at $T_c = 25^\circ C$

3. $STch = 25^\circ C$, $T_{ch} \leq 150^\circ C$

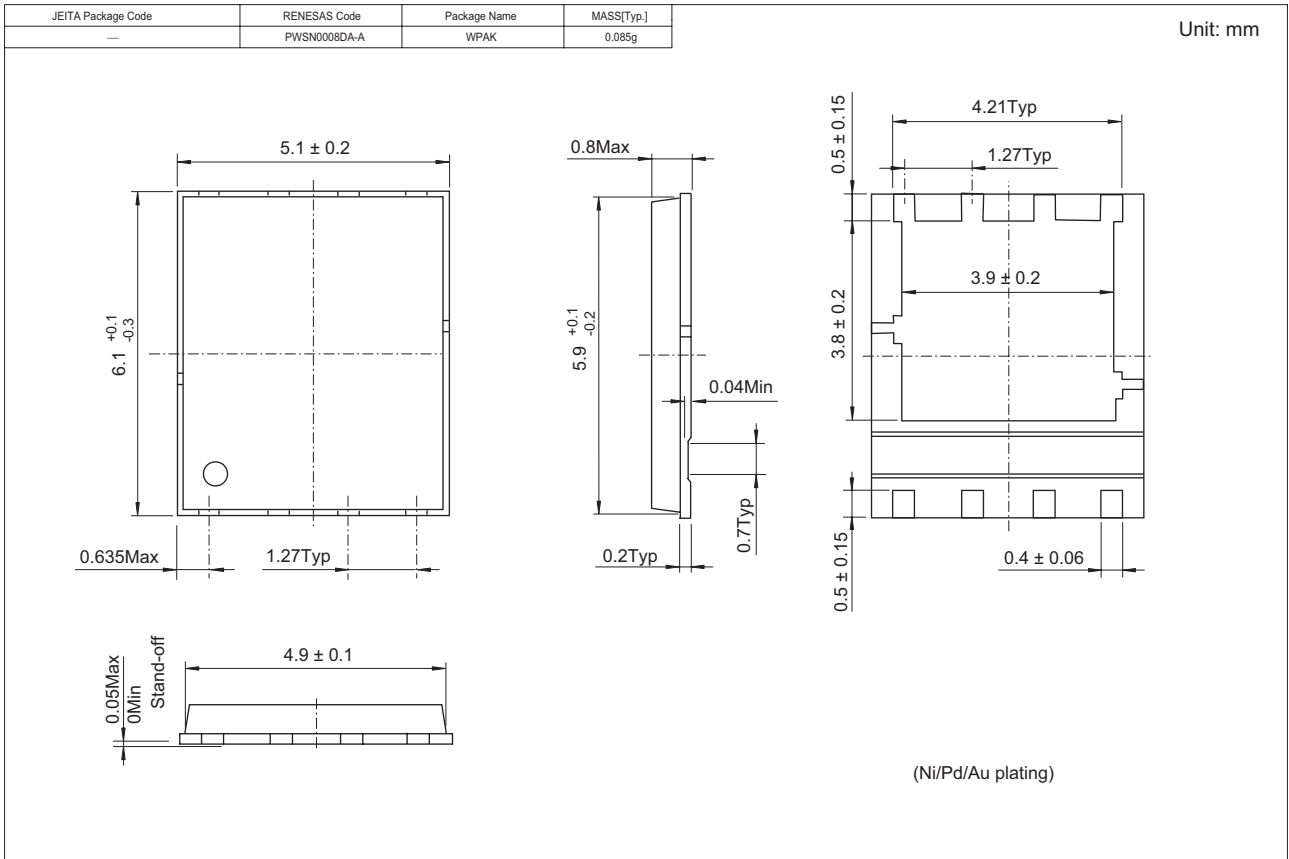
Electrical Characteristics

(Ta = 25°C)

| Item | Symbol | Min | Typ | Max | Unit | Test conditions |
|--|---------------|-----|-------|-----------|---------------|---|
| Drain to source breakdown voltage | $V_{(BR)DSS}$ | 250 | — | — | V | $I_D = 10 \text{ mA}$, $V_{GS} = 0$ |
| Zero gate voltage drain current | I_{DSS} | — | — | 1 | μA | $V_{DS} = 250 \text{ V}$, $V_{GS} = 0$ |
| Gate to source leak current | I_{GSS} | — | — | ± 0.1 | μA | $V_{GS} = \pm 30 \text{ V}$, $V_{DS} = 0$ |
| Gate to source cutoff voltage | $V_{GS(off)}$ | 3.0 | — | 4.5 | V | $V_{DS} = 10 \text{ V}$, $I_D = 1 \text{ mA}$ |
| Forward transfer admittance | $ y_{fs} $ | 7 | 12 | — | S | $I_D = 7 \text{ A}$, $V_{DS} = 10 \text{ V}$ ^{Note4} |
| Static drain to source on state resistance | $R_{DS(on)}$ | — | 0.120 | 0.138 | Ω | $I_D = 7 \text{ A}$, $V_{GS} = 10 \text{ V}$ ^{Note4} |
| Input capacitance | C_{iss} | — | 1200 | — | pF | $V_{DS} = 25 \text{ V}$ |
| Output capacitance | C_{oss} | — | 185 | — | pF | $V_{GS} = 0$ |
| Reverse transfer capacitance | C_{rss} | — | 14 | — | pF | $f = 1 \text{ MHz}$ |
| Turn-on delay time | $t_{d(on)}$ | — | 30 | — | ns | $I_D = 7 \text{ A}$ |
| Rise time | t_r | — | 45 | — | ns | $V_{GS} = 10 \text{ V}$ |
| Turn-off delay time | $t_{d(off)}$ | — | 60 | — | ns | $R_L = 25 \Omega$ |
| Fall time | t_f | — | 15 | — | ns | $R_g = 17.9 \Omega$ |
| Total gate charge | Q_g | — | 27 | — | nC | $V_{DD} = 200 \text{ V}$ |
| Gate to source charge | Q_{gs} | — | 7 | — | nC | $V_{GS} = 10 \text{ V}$ |
| Gate to drain charge | Q_{gd} | — | 10 | — | nC | $I_D = 14 \text{ A}$ |
| Body-drain diode forward voltage | V_{DF} | — | 0.86 | 1.40 | V | $I_F = 14 \text{ A}$, $V_{GS} = 0$ ^{Note4} |
| Body-drain diode reverse recovery time | t_{rr} | — | 150 | — | ns | $I_F = 14 \text{ A}$, $V_{GS} = 0$ $diF/dt = 100 \text{ A}/\mu\text{s}$ |

Notes: 4. Pulse test

Package Dimensions



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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