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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# HAT2108R

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

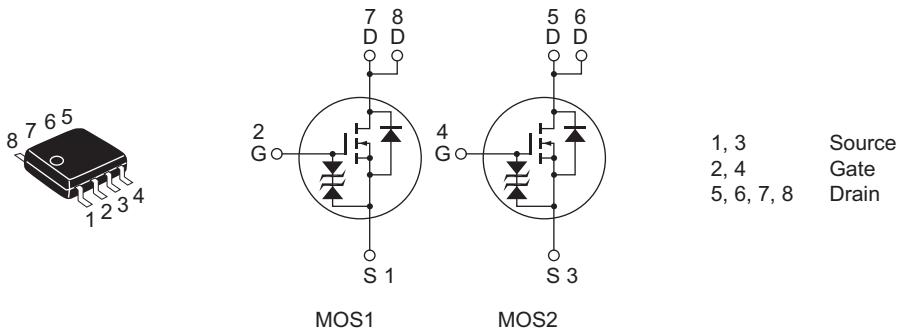
REJ03G1188-0500
(Previous: ADE-208-1574C)
Rev.5.00
Sep 07, 2005

### 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> )



## Absolute Maximum Ratings

(Ta = 25°C)

| Item | Symbol | Value | Unit |
|---|---|---|---|
| Drain to source voltage | $V_{DSS}$ | 28 | V |
| Gate to source voltage | $V_{GSS}$ | ±12 | V |
| Drain current | $I_D$ | 11 | A |
| Drain peak current | $I_{D\ (pulse)}$ Note 1 | 88 | A |
| Body-drain diode reverse drain current | $I_{DR}$ | 11 | A |
| Channel dissipation | Pch Note 2 | 2 | W |
| Channel dissipation | Pch Note 3 | 3 | W |
| Channel temperature | Tch | 150 | °C |
| Storage temperature | Tstg | –55 to +150 | °C |

Notes: 1. PW ≤ 10 µs, duty cycle ≤ 1%
2. 1 Drive operation: When using the glass epoxy board (FR4 40 × 40 × 1.6 mm), PW ≤ 10 s
3. 2 Drive operation: When using the glass epoxy board (FR4 40 × 40 × 1.6 mm), PW ≤ 10 s

## Electrical Characteristics

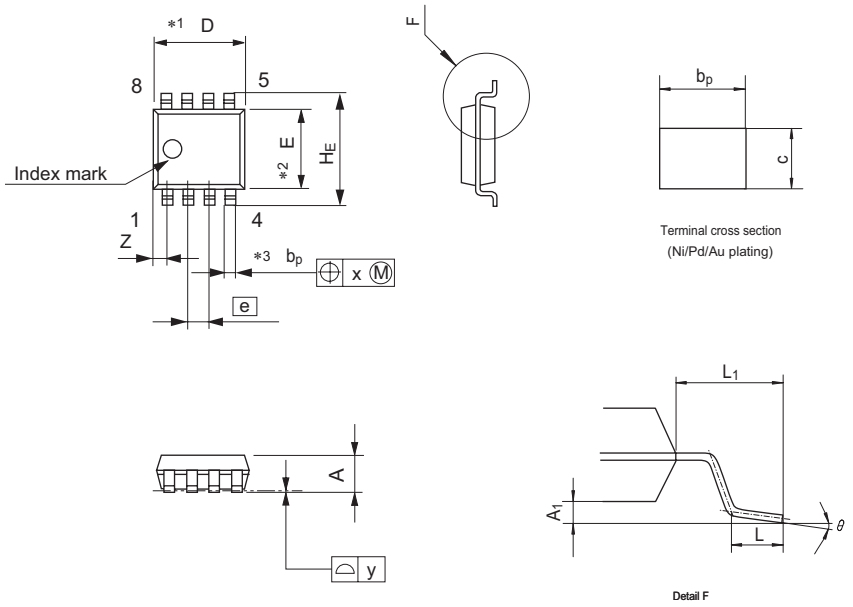
(Ta = 25°C)

| Item | Symbol | Min | Typ | Max | Unit | Test Conditions |
|---|---|---|---|---|---|---|
| Drain to source breakdown voltage | $V_{(BR)\ DSS}$ | 28 | — | — | V | $I_D$ = 10 mA, $V_{GS}$ = 0 |
| Gate to source breakdown voltage | $V_{(BR)\ GSS}$ | ±12 | — | — | V | $I_G$ = ±100 µA, $V_{DS}$ = 0 |
| Gate to source leak current | $I_{GSS}$ | — | — | ±10 | µA | $V_{GS}$ = ±10 V, $V_{DS}$ = 0 |
| Zero gate voltage drain current | $I_{DSS}$ | — | — | 1 | µA | $V_{DS}$ = 28 V, $V_{GS}$ = 0 |
| Gate to source cutoff voltage | $V_{GS\ (off)}$ | 0.4 | — | 1.4 | V | $V_{DS}$ = 10 V, $I_D$ = 1 mA |
| Static drain to source on state resistance | $R_{DS\ (on)}$ | — | 12 | 15 | mΩ | $I_D$ = 5.5 A, $V_{GS}$ = 4 V Note 4 |
| | $R_{DS\ (on)}$ | — | 15 | 22 | mΩ | $I_D$ = 5.5 A, $V_{GS}$ = 2.5 V Note 4 |
| Forward transfer admittance | $\|y_{fs}\|$ | 17 | 28 | — | S | $I_D$ = 5.5 A, $V_{DS}$ = 10 V Note 4 |
| Input capacitance | Ciss | — | 2200 | — | pF | $V_{DS}$ = 10 V |
| Output capacitance | Coss | — | 400 | — | pF | $V_{GS}$ = 0 |
| Reverse transfer capacitance | Crss | — | 240 | — | pF | f = 1 MHz |
| Total gate charge | Qg | — | 16 | — | nC | $V_{DD}$ = 10 V |
| Gate to source charge | Qgs | — | 5.2 | — | nC | $V_{GS}$ = 4 V |
| Gate to drain charge | Qgd | — | 4.8 | — | nC | $I_D$ = 11 A |
| Turn-on delay time | $t_{d\ (on)}$ | — | 30 | — | ns | $V_{GS}$ = 4 V, $I_D$ = 5.5 A |
| Rise time | $t_r$ | — | 35 | — | ns | $V_{DD}$ ≅ 10 V |
| Turn-off delay time | $t_{d\ (off)}$ | — | 70 | — | ns | $R_L$ = 1.81 Ω |
| Fall time | $t_f$ | — | 25 | — | ns | Rg = 4.7 Ω |
| Body-drain diode forward voltage | $V_{DF}$ | — | 0.85 | 1.11 | V | $I_F$ = 11 A, $V_{GS}$ = 0 Note 4 |
| Body-drain diode reverse recovery time | $t_{rr}$ | — | 40 | — | ns | $I_F$ = 11 A, $V_{GS}$ = 0<br>$di_F/dt$ = 50 A/µs |

Note: 4. Pulse test

## Package Dimensions

| JEITA Package Code | RENESAS Code | Package Name | MASS[Typ.] |
|---|---|---|---|
| P-SOP8-3.95 × 4.9-1.27 | PRSP0008DD-D | FP-8DAV | 0.085g |




NOTE)
1. DIMENSIONS "*1(Nom)" AND "*2" DO NOT INCLUDE MOLD FLASH.
2. DIMENSION "*3" DOES NOT INCLUDE TRIM OFFSET.

| Reference Symbol | Dimension in Millimeters | | |
|---|---|---|---|
| | Min | Nom | Max |
| D | — | 4.90 | 5.3 |
| E | — | 3.95 | — |
| $A_2$ | — | — | — |
| $A_1$ | 0.10 | 0.14 | 0.25 |
| A | — | — | 1.75 |
| $b_p$ | 0.34 | 0.40 | 0.46 |
| $b_1$ | — | — | — |
| c | 0.15 | 0.20 | 0.25 |
| $c_1$ | — | — | — |
| θ | 0° | — | 8° |
| $H_E$ | 5.80 | 6.10 | 6.20 |
| e | — | 1.27 | — |
| x | — | — | 0.25 |
| y | — | — | 0.1 |
| Z | — | — | 0.75 |
| L | 0.40 | 0.60 | 1.27 |
| $L_1$ | — | 1.08 | — |

## Ordering Information

| Part Name | Quantity | Shipping Container |
|---|---|---|
| HAT2108R-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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