

To all our customers

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

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Keep safety first in your circuit designs!

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HAT2108R

Silicon N Channel Power MOS FET
High Speed Power Switching

RENESAS

ADE-208-1574C (Z)

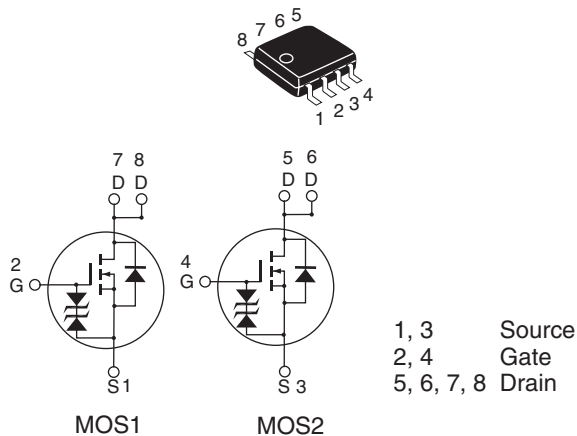
4th. Edition
Aug. 2002

Features

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

Outline

SOP-8



Absolute Maximum Ratings

(Ta = 25°C)

| Item | Symbol | Ratings | 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 | $I_{D(pulse)}$ ^{Note1} | 88 | A |
| Body–drain diode reverse drain current | I_{DR} | 11 | A |
| Channel dissipation | P_{ch} ^{Note2} | 2 | W |
| Channel dissipation | P_{ch} ^{Note3} | 3 | W |
| Channel temperature | Tch | 150 | °C |
| Storage temperature | Tstg | –55 to +150 | °C |

- Notes:
- 1. $PW \leq 10 \mu s$, duty cycle $\leq 1 \%$
 - 2. 1 Drive operation : When using the glass epoxy board (FR4 40 x 40 x 1.6 mm), $PW \leq 10s$
 - 3. 2 Drive operation : When using the glass epoxy board (FR4 40 x 40 x 1.6 mm), $PW \leq 10s$

Electrical Characteristics

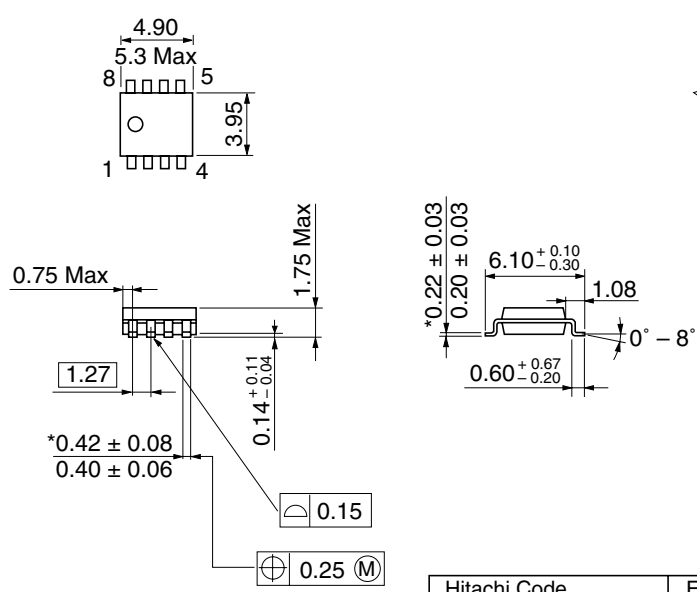
(Ta = 25°C)

| Item | Symbol | Min | Typ | Max | Unit | Test Conditions |
|--|---------------|----------|------|----------|------------------|--|
| Drain to source breakdown voltage | $V_{(BR)DSS}$ | 28 | — | — | V | $I_D = 10 \text{ mA}$, $V_{GS} = 0$ |
| Gate to source breakdown voltage | $V_{(BR)GSS}$ | ± 12 | — | — | V | $I_G = \pm 100 \text{ }\mu\text{A}$, $V_{DS} = 0$ |
| Gate to source leak current | I_{GSS} | — | — | ± 10 | μA | $V_{GS} = \pm 10 \text{ V}$, $V_{DS} = 0$ |
| Zero gate voltage drain current | I_{DSS} | — | — | 1 | μA | $V_{DS} = 28 \text{ V}$, $V_{GS} = 0$ |
| Gate to source cutoff voltage | $V_{GS(off)}$ | 0.4 | — | 1.4 | V | $V_{DS} = 10 \text{ V}$, $I_D = 1 \text{ mA}$ |
| Static drain to source on state resistance | $R_{DS(on)}$ | — | 12 | 15 | $\text{m}\Omega$ | $I_D = 5.5 \text{ A}$, $V_{GS} = 4 \text{ V}$ ^{Note4} |
| | $R_{DS(on)}$ | — | 15 | 22 | $\text{m}\Omega$ | $I_D = 5.5 \text{ A}$, $V_{GS} = 2.5 \text{ V}$ ^{Note4} |
| Forward transfer admittance | $ y_{fs} $ | 17 | 28 | — | S | $I_D = 5.5 \text{ A}$, $V_{DS} = 10 \text{ V}$ ^{Note4} |
| Input capacitance | Ciss | — | 2200 | — | pF | $V_{DS} = 10 \text{ V}$ |
| Output capacitance | Coss | — | 400 | — | pF | $V_{GS} = 0$ |
| Reverse transfer capacitance | Crss | — | 240 | — | pF | $f = 1 \text{ MHz}$ |
| Total gate charge | Qg | — | 16 | — | nc | $V_{DD} = 10 \text{ V}$ |
| Gate to source charge | Qgs | — | 5.2 | — | nc | $V_{GS} = 4 \text{ V}$ |
| Gate to drain charge | Qgd | — | 4.8 | — | nc | $I_D = 11 \text{ A}$ |
| Turn-on delay time | $t_{d(on)}$ | — | 30 | — | ns | $V_{GS} = 4 \text{ A}$, $I_D = 5.5 \text{ A}$ |
| Rise time | t_r | — | 35 | — | ns | $V_{DD} \cong 10 \text{ V}$ |
| Turn-off delay time | $t_{d(off)}$ | — | 70 | — | ns | $R_L = 1.81 \text{ }\Omega$ |
| Fall time | t_f | — | 25 | — | ns | $R_g = 4.7 \text{ }\Omega$ |
| Body-drain diode forward voltage | V_{DF} | — | 0.85 | 1.11 | V | $I_F = 11 \text{ A}$, $V_{GS} = 0$ ^{Note4} |
| Body-drain diode reverse recovery time | t_{rr} | — | 40 | — | ns | $I_F = 11 \text{ A}$, $V_{GS} = 0$ $diF/dt = 50 \text{ A}/\mu\text{s}$ |

Notes: 4. Pulse test

Package Dimensions

As of January, 2002
Unit: mm



*Dimension including the plating thickness
Base material dimension

| | |
|------------------------|----------|
| Hitachi Code | FP-8DA |
| JEDEC | Conforms |
| JEITA | — |
| Mass (reference value) | 0.085 g |

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Sales Offices

HITACHI

Hitachi, Ltd.

Semiconductor & Integrated Circuits

Nippon Bldg., 2-6-2, Ohte-machi, Chiyoda-ku, Tokyo 100-0004, Japan

Tel: (03) 3270-2111 Fax: (03) 3270-5109

URL <http://www.hitachisemiconductor.com/>

For further information write to:

Hitachi Semiconductor (America) Inc.
179 East Tasman Drive
San Jose, CA 95134
Tel: <1> (408) 433-1990
Fax: <1> (408) 433-0223

Hitachi Europe Ltd.
Electronic Components Group
Whitebrook Park
Lower Cookham Road
Maidenhead
Berkshire SL6 8YA, United Kingdom
Tel: <44> (1628) 585000
Fax: <44> (1628) 585200

Hitachi Europe GmbH
Electronic Components Group
Dornacher Straße 3
D-85622 Feldkirchen
Postfach 201, D-85619 Feldkirchen
Germany
Tel: <49> (89) 9 9180-0
Fax: <49> (89) 9 29 30 00

Hitachi Asia Ltd.
Hitachi Tower
16 Collyer Quay #20-00
Singapore 049318
Tel: <65>-6538-6533/6538-8577
Fax: <65>-6538-6933/6538-3877
URL: <http://semiconductor.hitachi.com.sg>

Hitachi Asia Ltd.
(Taipei Branch Office)
4/F, No. 167, Tun Hwa North Road
Hung-Kuo Building
Taipei (105), Taiwan
Tel: <886>-(2)-2718-3666
Fax: <886>-(2)-2718-8180
Telex: 23222 HAS-TP
URL: <http://www.hitachi.com.tw>

Hitachi Asia (Hong Kong) Ltd.
Group III (Electronic Components)
7/F., North Tower
World Finance Centre,
Harbour City, Canton Road
Tsim Sha Tsui, Kowloon Hong Kong
Tel: <852>-2735-9218
Fax: <852>-2730-0281
URL: <http://semiconductor.hitachi.com.hk>

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