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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# HAT2134H

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

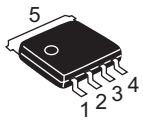
REJ03G1190-0300
(Previous: ADE-208-1578A)
Rev.3.00
Sep 07, 2005

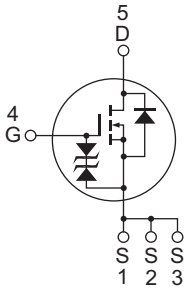
### Features

- Capable of 4.5 V gate drive
- Low drive current
- High density mounting
- Low on-resistance
  $R_{DS\ (on)}$ = 2.3 mΩ typ. (at $V_{GS}$ = 10 V)

### Outline

RENESAS Package code: PTZZ0005DA-A
(Package name: LFPAK)




| | |
|---|---|
| 1, 2, 3 | Source |
| 4 | Gate |
| 5 | Drain |

## Absolute Maximum Ratings

(Ta = 25°C)

| Item | Symbol | Value | Unit |
|---|---|---|---|
| Drain to source voltage | $V_{DSS}$ | 20 | V |
| Gate to source voltage | $V_{GSS}$ | ±20 | V |
| Drain current | $I_D$ | 60 | A |
| Drain peak current | $I_{D\ (pulse)}$ Note 1 | 240 | A |
| Body-drain diode reverse drain current | $I_{DR}$ | 60 | A |
| Avalanche current | $I_{AP}$ Note 3 | 20 | A |
| Avalanche energy | $E_{AR}$ Note 3 | 40 | mJ |
| Channel dissipation | Pch Note 2 | 30 | W |
| Channel temperature | Tch | 150 | °C |
| Storage temperature | Tstg | –55 to +150 | °C |

Notes: 1. PW ≤ 10 µs, duty cycle ≤ 1%
2. Tc = 25 °C
3. Value at Tch = 25°C, Rg ≥ 50 Ω

## Electrical Characteristics

(Ta = 25°C)

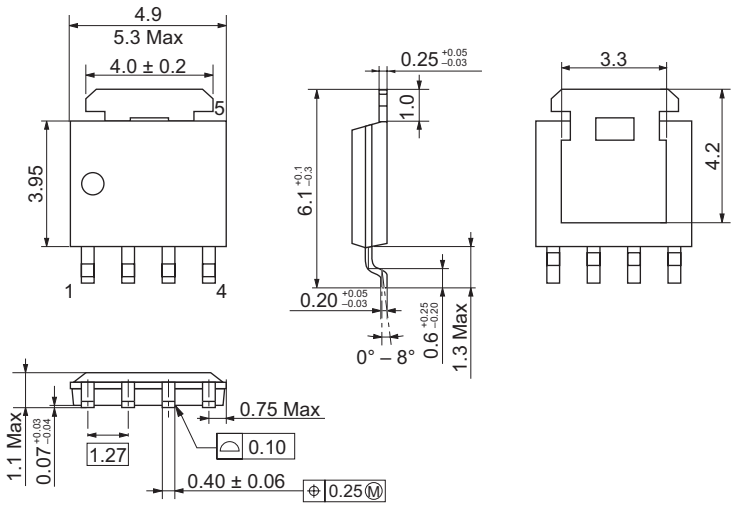
| Item | Symbol | Min | Typ | Max | Unit | Test Conditions |
|---|---|---|---|---|---|---|
| Drain to source breakdown voltage | $V_{(BR)\ DSS}$ | 20 | — | — | V | $I_D$ = 10 mA, $V_{GS}$ = 0 |
| Gate to source breakdown voltage | $V_{(BR)\ GSS}$ | ±20 | — | — | V | $I_G$ = ±100 µA, $V_{DS}$ = 0 |
| Gate to source leak current | $I_{GSS}$ | — | — | ±10 | µA | $V_{GS}$ = ±16 V, $V_{DS}$ = 0 |
| Zero gate voltage drain current | $I_{DSS}$ | — | — | 1 | µA | $V_{DS}$ = 20 V, $V_{GS}$ = 0 |
| Gate to source cutoff voltage | $V_{GS\ (off)}$ | 1.0 | — | 2.5 | V | $V_{DS}$ = 10 V, $I_D$ = 1 mA |
| Static drain to source on state resistance | $R_{DS\ (on)}$ | — | 2.3 | 2.9 | mΩ | $I_D$ = 30 A, $V_{GS}$ = 10 V Note 4 |
| | $R_{DS\ (on)}$ | — | 4.0 | 5.8 | mΩ | $I_D$ = 30 A, $V_{GS}$ = 4.5 V Note 4 |
| Forward transfer admittance | $\|y_{fs}\|$ | 51 | 85 | — | S | $I_D$ = 30 A, $V_{DS}$ = 10 V Note 4 |
| Input capacitance | Ciss | — | 4500 | — | pF | $V_{DS}$ = 10 V |
| Output capacitance | Coss | — | 1200 | — | pF | $V_{GS}$ = 0 |
| Reverse transfer capacitance | Crss | — | 560 | — | pF | f = 1 MHz |
| Total gate charge | Qg | — | 70 | — | nC | $V_{DD}$ = 10 V |
| Gate to source charge | Qgs | — | 15 | — | nC | $V_{GS}$ = 10 V |
| Gate to drain charge | Qgd | — | 11 | — | nC | $I_D$ = 60 A |
| Turn-on delay time | $t_{d\ (on)}$ | — | 20 | — | ns | $V_{GS}$ = 10 V, $I_D$ = 30 A |
| Rise time | $t_r$ | — | 60 | — | ns | $V_{DD}$ ≅ 10 V |
| Turn-off delay time | $t_{d\ (off)}$ | — | 85 | — | ns | $R_L$ = 0.33 Ω |
| Fall time | $t_f$ | — | 17 | — | ns | Rg = 4.7 Ω |
| Body-drain diode forward voltage | $V_{DF}$ | — | 0.85 | 1.10 | V | $I_F$ = 60 A, $V_{GS}$ = 0 Note 4 |
| Body-drain diode reverse recovery time | $t_{rr}$ | — | 50 | — | ns | $I_F$ = 60 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.] |
|---|---|---|---|
| SC-100 | PTZZ0005DA-A | LFPAK | 0.080g |

Unit: mm




(Ni/Pd/Au plating)

## Ordering Information

| Part Name | Quantity | Shipping Container |
|---|---|---|
| HAT2134H-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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