

HAT2143H

Silicon N Channel Power MOS FET
Power Switching

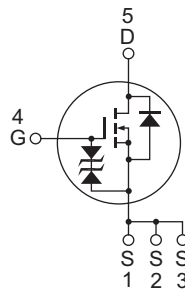
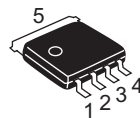
REJ03G1195-0300
(Previous: ADE-208-1584A)
Rev.3.00
Sep 07, 2005

Features

- Capable of 4.5 V gate drive
- Low drive current
- High density mounting
- Low on-resistance
 $R_{DS(on)} = 4.9 \text{ m}\Omega$ typ. (at $V_{GS} = 10 \text{ V}$)

Outline

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



1, 2, 3 Source
4 Gate
5 Drain

Absolute Maximum Ratings

(Ta = 25°C)

| Item | Symbol | Value | Unit |
|--|--|-------------|------|
| Drain to source voltage | V _{DS} | 30 | V |
| Gate to source voltage | V _{GSS} | ±20 | V |
| Drain current | I _D | 40 | A |
| Drain peak current | I _{D (pulse)} ^{Note 1} | 160 | A |
| Body-drain diode reverse drain current | I _{DR} | 40 | A |
| Avalanche current | I _{AP} ^{Note 3} | 16 | A |
| Avalanche energy | E _{AR} ^{Note 3} | 25 | mJ |
| Channel dissipation | P _{ch} ^{Note 2} | 20 | W |
| Channel temperature | T _{ch} | 150 | °C |
| Storage temperature | T _{stg} | -55 to +150 | °C |

- Notes: 1. PW ≤ 10 μs, duty cycle ≤ 1%
 2. T_c = 25 °C
 3. Value at T_{ch} = 25°C, R_g ≥ 50 Ω

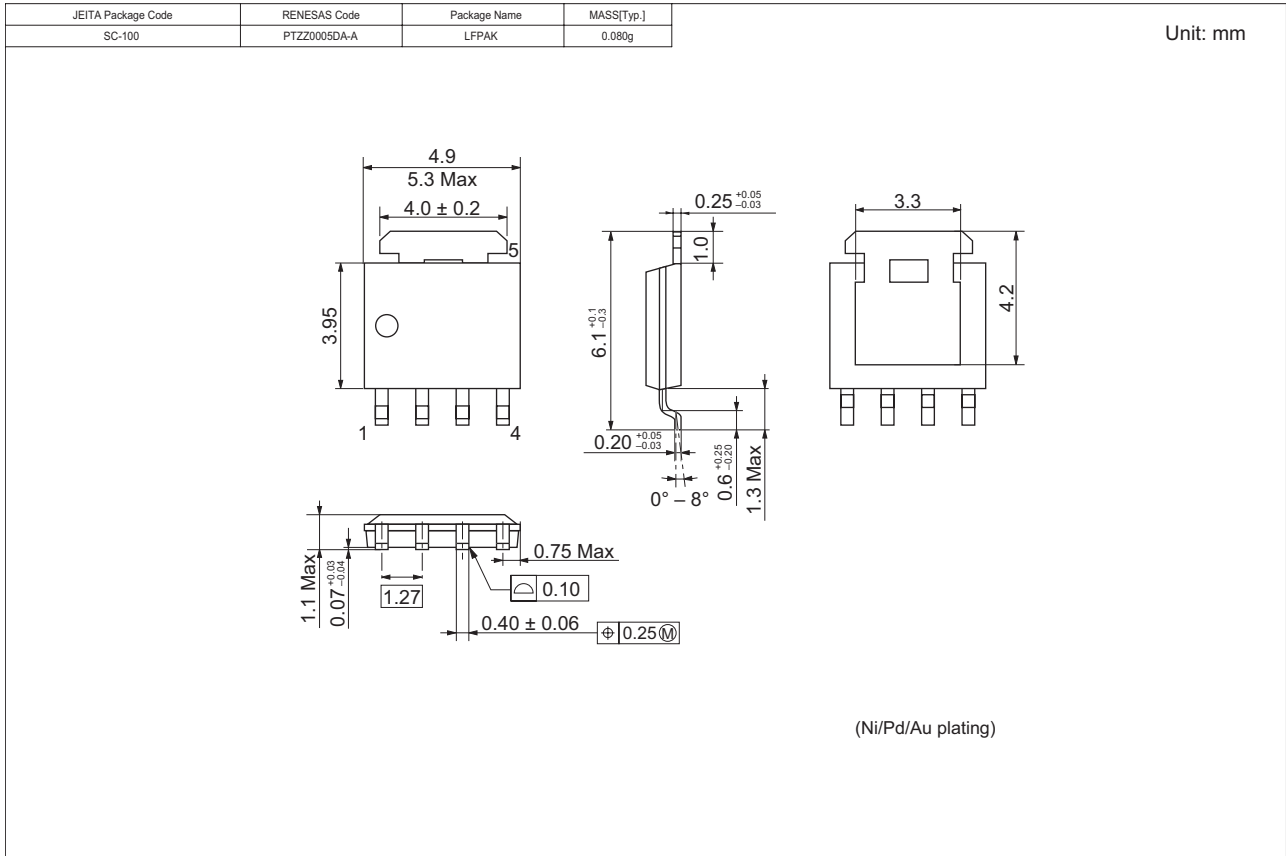
Electrical Characteristics

(Ta = 25°C)

| Item | Symbol | Min | Typ | Max | Unit | Test Conditions |
|--|-----------------------|-----|------|------|------|---|
| Drain to source breakdown voltage | V _{(BR) DSS} | 30 | — | — | 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} = 30 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)} | — | 4.9 | 6.1 | mΩ | I _D = 20 A, V _{GS} = 10 V ^{Note 4} |
| | R _{DS (on)} | — | 7.9 | 11.5 | mΩ | I _D = 20 A, V _{GS} = 4.5 V ^{Note 4} |
| Forward transfer admittance | y _{fs} | 30 | 50 | — | S | I _D = 20 A, V _{DS} = 10 V ^{Note 4} |
| Input capacitance | C _{iss} | — | 2450 | — | pF | V _{DS} = 10 V |
| Output capacitance | C _{oss} | — | 540 | — | pF | V _{GS} = 0 |
| Reverse transfer capacitance | C _{rss} | — | 280 | — | pF | f = 1 MHz |
| Total gate charge | Q _g | — | 40 | — | nC | V _{DD} = 10 V |
| Gate to source charge | Q _{gs} | — | 8 | — | nC | V _{GS} = 10 V |
| Gate to drain charge | Q _{gd} | — | 7 | — | nC | I _D = 40 A |
| Turn-on delay time | t _{d (on)} | — | 20 | — | ns | V _{GS} = 10 V, I _D = 20 A |
| Rise time | t _r | — | 56 | — | ns | V _{DD} ≅ 10 V |
| Turn-off delay time | t _{d (off)} | — | 76 | — | ns | R _L = 0.5 Ω |
| Fall time | t _f | — | 15 | — | ns | R _g = 4.7 Ω |
| Body-drain diode forward voltage | V _{DF} | — | 0.85 | 1.11 | V | I _F = 40 A, V _{GS} = 0 ^{Note 4} |
| Body-drain diode reverse recovery time | t _{rr} | — | 60 | — | ns | I _F = 40 A, V _{GS} = 0 di _F /dt = 50 A/μs |

Note: 4. Pulse test

Package Dimensions



Ordering Information

| Part Name | Quantity | Shipping Container |
|---------------|----------|--------------------|
| HAT2143H-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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Renesas Technology America, Inc.

450 Holger Way, San Jose, CA 95134-1368, U.S.A
Tel: <1> (408) 382-7500, Fax: <1> (408) 382-7501

Renesas Technology Europe Limited

Dukes Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, U.K.
Tel: <44> (1628) 585-100, Fax: <44> (1628) 585-900

Renesas Technology Hong Kong Ltd.

7th Floor, North Tower, World Finance Centre, Harbour City, 1 Canton Road, Tsimshatsui, Kowloon, Hong Kong
Tel: <852> 2265-6688, Fax: <852> 2730-6071

Renesas Technology Taiwan Co., Ltd.

10th Floor, No.99, Fushing North Road, Taipei, Taiwan
Tel: <886> (2) 2715-2888, Fax: <886> (2) 2713-2999

Renesas Technology (Shanghai) Co., Ltd.

Unit2607 Ruijing Building, No.205 Maoming Road (S), Shanghai 200020, China
Tel: <86> (21) 6472-1001, Fax: <86> (21) 6415-2952

Renesas Technology Singapore Pte. Ltd.

1 Harbour Front Avenue, #06-10, Keppel Bay Tower, Singapore 098632
Tel: <65> 6213-0200, Fax: <65> 6278-8001

Renesas Technology Korea Co., Ltd.

Kukje Center Bldg. 18th Fl., 191, 2-ka, Hangang-ro, Yongsan-ku, Seoul 140-702, Korea
Tel: <82> 2-796-3115, Fax: <82> 2-796-2145

Renesas Technology Malaysia Sdn. Bhd.

Unit 906, Block B, Menara Amcorp, Amcorp Trade Centre, No.18, Jalan Persiaran Barat, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia
Tel: <603> 7955-9390, Fax: <603> 7955-9510