To our customers,

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April 1st, 2010
Renesas Electronics Corporation



Issued by: Renesas Electronics Corporation (http://www.renesas.com)

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# HAT3015T

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

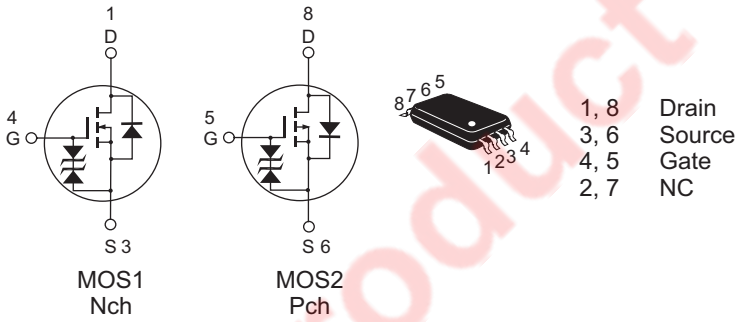
REJ03G0405-0200
Rev.2.00
Sep.07.2004

### Features

- Low on-resistance
- Capable of 4 V gate drive
- High density mounting

### Outline

TSSOP-8






### Absolute Maximum Ratings

(Ta = 25°C)

| Item | Symbol | Ratings | | Unit |
|---|---|---|---|---|
| | | Nch | Pch | |
| Drain to Source voltage | $V_{DSS}$ | 200 | –200 | V |
| Gate to Source voltage | $V_{GSS}$ | ±15 | ±15 | V |
| Drain current | $I_D$ | 0.5 | –0.25 | A |
| Drain peak current | $I_{D(pulse)}$ Note1 | 2 | –1 | A |
| Body-Drain diode reverse drain current | $I_{DR}$ | 0.5 | –0.25 | A |
| Channel dissipation | Pch Note2 | 1 | 1 | W |
| | Pch Note3 | 1.5 | 1.5 | W |
| Channel temperature | Tch | 150 | 150 | °C |
| Storage temperature | Tstg | –55 to +150 | –55 to +150 | °C |

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

## Electrical Characteristics

(Ta = 25°C)

### • N Channel

| Item | Symbol | Min | Typ | Max | Unit | Test Conditions |
|---|---|---|---|---|---|---|
| Drain to Source breakdown voltage | $V_{(BR)DSS}$ | 200 | — | — | V | $I_D$ = 10 mA, $V_{GS}$ = 0 |
| Gate to Source breakdown voltage | $V_{(BR)GSS}$ | ±15 | — | — | V | $I_G$ = ±100 µA, $V_{DS}$ = 0 |
| Gate to Source leak current | $I_{GSS}$ | — | — | ±10 | µA | $V_{GS}$ = ±12 V, $V_{DS}$ = 0 |
| Zero Gate voltage Drain current | $I_{DSS}$ | — | — | 5 | µA | $V_{DS}$ = 200 V, $V_{GS}$ = 0 |
| Gate to Source cutoff voltage | $V_{GS(off)}$ | 1.0 | — | 2.1 | V | $V_{DS}$ = 10 V, $I_D$ = 1 mA |
| Static Drain to Source on state resistance | $R_{DS(on)}$ | — | 1.6 | 2.2 | Ω | $I_D$ = 0.5 A, $V_{GS}$ = 10 V Note4 |
| | $R_{DS(on)}$ | — | 1.9 | 2.7 | Ω | $I_D$ = 0.5 A, $V_{GS}$ = 4 V Note4 |
| | $R_{DS(on)}$ | — | 2.4 | 5.5 | Ω | $I_D$ = 2 A, $V_{GS}$ = 5 V Note4 |
| Forward transfer admittance | $\|y_{fs}\|$ | 0.56 | 0.86 | — | S | $I_D$ = 0.5 A, $V_{DS}$ = 10 V Note4 |
| Input capacitance | Ciss | — | 120 | — | pF | $V_{DS}$ = 10 V, $V_{GS}$ = 0 |
| Output capacitance | Coss | — | 29 | — | pF | f = 1 MHz |
| Reverse transfer capacitance | Crss | — | 10 | — | pF | |
| Turn-on delay time | $t_{d(on)}$ | — | 10 | — | ns | $V_{GS}$ = 5 V, $I_D$ = 0.5 A |
| Rise time | $t_r$ | — | 14 | — | ns | $V_{DD}$ ≅ 30 V |
| Turn-off delay time | $t_{d(off)}$ | — | 24 | — | ns | |
| Fall time | $t_f$ | — | 9 | — | ns | |
| Body–Drain diode forward voltage | $V_{DF}$ | — | 0.9 | 1.4 | V | IF = 0.5 A, $V_{GS}$ = 0 Note4 |

Notes: 4. Pulse test

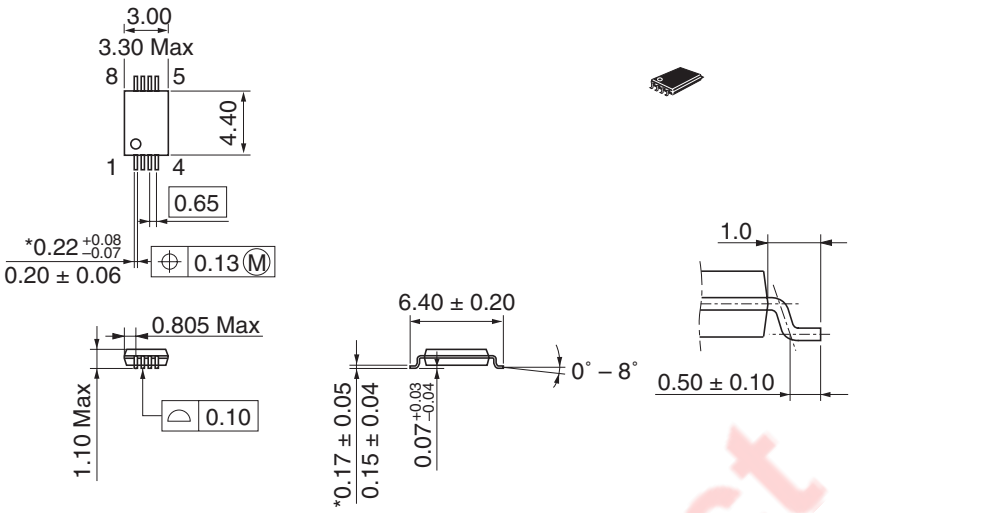
### • P Channel

| Item | Symbol | Min | Typ | Max | Unit | Test Conditions |
|---|---|---|---|---|---|---|
| Drain to Source breakdown voltage | $V_{(BR)DSS}$ | –200 | — | — | V | $I_D$ = –10 mA, $V_{GS}$ = 0 |
| Gate to Source breakdown voltage | $V_{(BR)GSS}$ | ±15 | — | — | V | $I_G$ = ±100 µA, $V_{DS}$ = 0 |
| Gate to Source leak current | $I_{GSS}$ | — | — | ±10 | µA | $V_{GS}$ = ±12 V, $V_{DS}$ = 0 |
| Zero Gate voltage Drain current | $I_{DSS}$ | — | — | –5 | µA | $V_{DS}$ = –200 V, $V_{GS}$ = 0 |
| Gate to Source cutoff voltage | $V_{GS(off)}$ | –1.0 | — | –2.0 | V | $V_{DS}$ = –10 V, $I_D$ = –1 mA |
| Static Drain to Source on state resistance | $R_{DS(on)}$ | — | 5.0 | 6.2 | Ω | $I_D$ = –0.25 A, $V_{GS}$ = –10 V Note4 |
| | $R_{DS(on)}$ | — | 6.0 | 7.5 | Ω | $I_D$ = –0.25 A, $V_{GS}$ = – 4 V Note4 |
| | $R_{DS(on)}$ | — | 7.0 | 10.0 | Ω | $I_D$ = –1 A, $V_{GS}$ = – 5 V Note4 |
| Forward transfer admittance | $\|y_{fs}\|$ | 0.29 | 0.45 | — | S | $I_D$ = –0.25 A, $V_{DS}$ = –10 V Note4 |
| Input capacitance | Ciss | — | 140 | — | pF | $V_{DS}$ = –10 V, $V_{GS}$ = 0 |
| Output capacitance | Coss | — | 37 | — | pF | f = 1 MHz |
| Reverse transfer capacitance | Crss | — | 10 | — | pF | |
| Turn-on delay time | $t_{d(on)}$ | — | 12 | — | ns | $V_{GS}$ = –5 V, $I_D$ = –0.25 A |
| Rise time | $t_r$ | — | 9 | — | ns | $V_{DD}$ ≅ –30 V |
| Turn-off delay time | $t_{d(off)}$ | — | 25 | — | ns | |
| Fall time | $t_f$ | — | 15 | — | ns | |
| Body–Drain diode forward voltage | $V_{DF}$ | — | –0.9 | –1.4 | V | IF = –0.25 A, $V_{GS}$ = 0 Note4 |

Notes: 4. Pulse test

## Package Dimensions

As of January, 2003
Unit: mm




| Package Code | TTP-8D |
|---|---|
| JEDEC | — |
| JEITA | — |
| Mass (reference value) | — |

*Dimension including the plating thickness
Base material dimension

## Ordering Information

| Part Name | Quantity | Shipping Container |
|---|---|---|
| HAT3015T-EL-E | 3000 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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