

# HAT2080T

Silicon N Channel MOS FET  
High Speed Power Switching

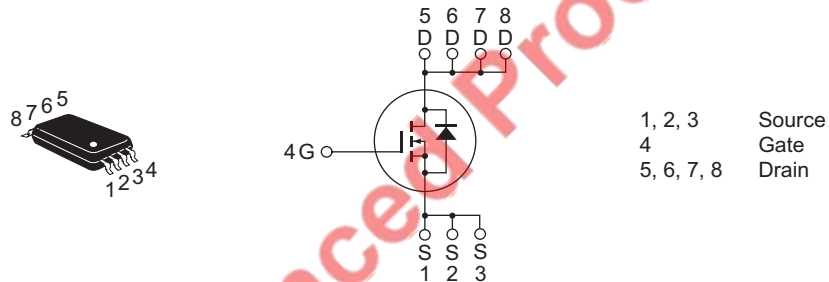
REJ03G0162-0500  
(Previous: ADE-208-1026C)  
Rev.5.00  
Sep 07, 2005

## Features

- Low on-resistance
- Low drive current
- High density mounting

## Outline

RENESAS Package code: PTSP0008JB-A  
(Package name: TSSOP-8 <TTP-8D> )



## Absolute Maximum Ratings

(Ta = 25°C)

| Item                                      | Symbol                           | Value       | Unit |
|-------------------------------------------|----------------------------------|-------------|------|
| Drain to source voltage                   | $V_{DSS}$                        | 250         | V    |
| Gate to source voltage                    | $V_{GSS}$                        | ±30         | V    |
| Drain current                             | $I_D$                            | 1.2         | A    |
| Drain peak current                        | $I_{D(pulse)}$ <sup>Note 1</sup> | 9.6         | A    |
| Body to drain diode reverse drain current | $I_{DR}$                         | 1.2         | A    |
| Channel dissipation                       | $P_{ch}$ <sup>Note 2</sup>       | 1.3         | W    |
| Channel temperature                       | $T_{ch}$                         | 150         | °C   |
| Storage temperature                       | $T_{stg}$                        | -55 to +150 | °C   |

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

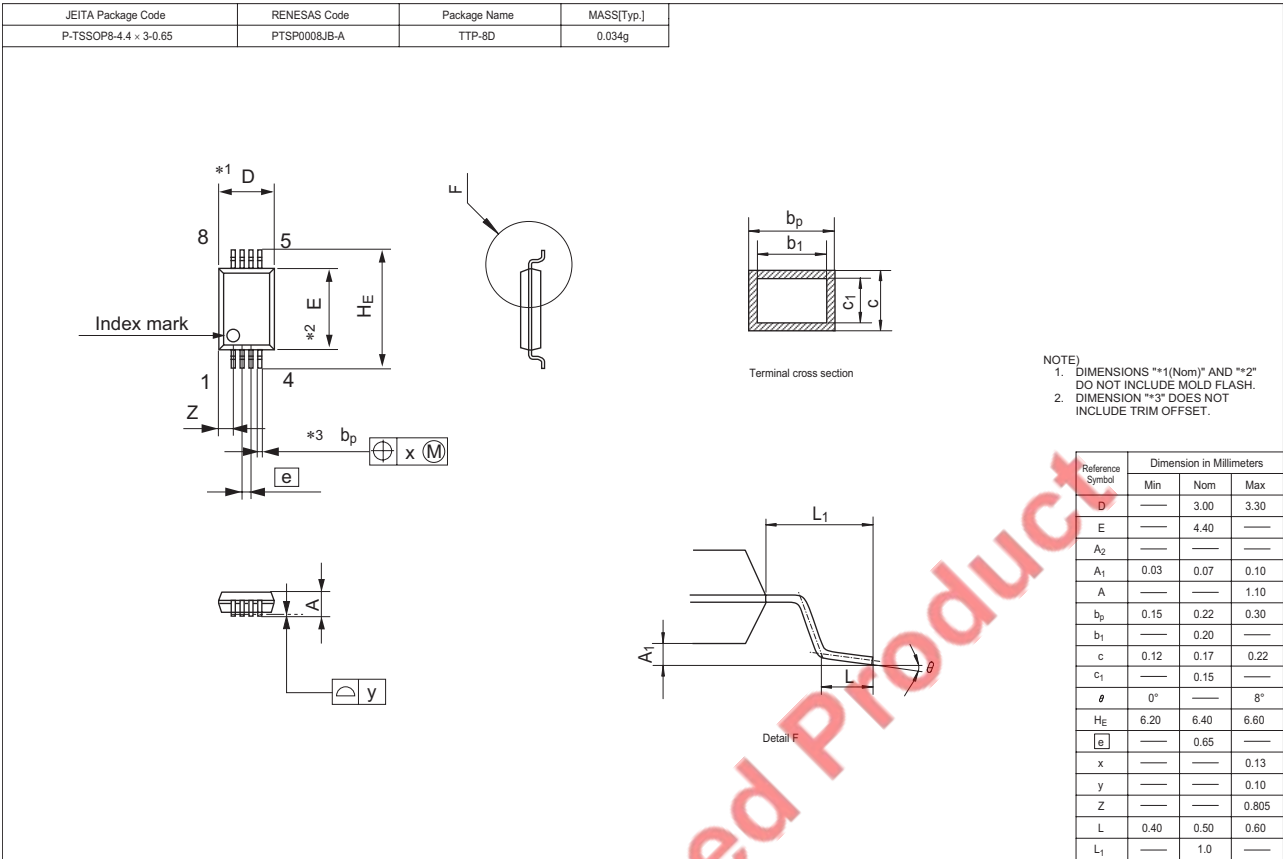
## Electrical Characteristics

(Ta = 25°C)

| Item                                       | Symbol         | Min | Typ  | Max  | Unit | Test Conditions                                                         |
|--------------------------------------------|----------------|-----|------|------|------|-------------------------------------------------------------------------|
| Drain to source breakdown voltage          | $V_{(BR) DSS}$ | 250 | —    | —    | V    | $I_D = 10 \text{ mA}$ , $V_{GS} = 0$                                    |
| Gate to source leak current                | $I_{GSS}$      | —   | —    | ±0.1 | μA   | $V_{GS} = \pm 30 \text{ V}$ , $V_{DS} = 0$                              |
| Zero gate voltage drain current            | $I_{DSS}$      | —   | —    | 1    | μA   | $V_{DS} = 250 \text{ V}$ , $V_{GS} = 0$                                 |
| Gate to source cutoff voltage              | $V_{GS(off)}$  | 3.0 | —    | 4.0  | V    | $I_D = 1 \text{ mA}$ , $V_{DS} = 10 \text{ V}$                          |
| Static drain to source on state resistance | $R_{DS(on)}$   | —   | 0.65 | 0.85 | Ω    | $I_D = 0.6 \text{ A}$ , $V_{GS} = 10 \text{ V}$ <sup>Note 3</sup>       |
| Forward transfer admittance                | $ y_{fs} $     | 0.9 | 1.5  | —    | S    | $I_D = 0.6 \text{ A}$ , $V_{DS} = 10 \text{ V}$ <sup>Note 3</sup>       |
| Input capacitance                          | $C_{iss}$      | —   | 300  | —    | pF   | $V_{DS} = 25 \text{ V}$                                                 |
| Output capacitance                         | $C_{oss}$      | —   | 42   | —    | pF   | $V_{GS} = 0$                                                            |
| Reverse transfer capacitance               | $C_{rss}$      | —   | 11   | —    | pF   | $f = 1 \text{ MHz}$                                                     |
| Turn-on delay time                         | $t_{d(on)}$    | —   | 18   | —    | ns   | $V_{DD} = 125 \text{ V}$ , $I_D = 0.6 \text{ A}$                        |
| Rise time                                  | $t_r$          | —   | 10   | —    | ns   | $V_{GS} = 10 \text{ V}$                                                 |
| Turn-off delay time                        | $t_{d(off)}$   | —   | 48   | —    | ns   | $R_L = 208 \Omega$                                                      |
| Fall time                                  | $t_f$          | —   | 23   | —    | ns   | $R_g = 10 \Omega$                                                       |
| Total gate charge                          | $Q_g$          | —   | 11   | —    | nC   | $V_{DD} = 200 \text{ V}$                                                |
| Gate to source charge                      | $Q_{gs}$       | —   | 1.5  | —    | nC   | $V_{GS} = 10 \text{ V}$                                                 |
| Gate to drain charge                       | $Q_{gd}$       | —   | 5    | —    | nC   | $I_D = 1.2 \text{ A}$                                                   |
| Body to drain diode forward voltage        | $V_{DF}$       | —   | 0.8  | 1.2  | V    | $I_F = 1.2 \text{ A}$ , $V_{GS} = 0$ <sup>Note 3</sup>                  |
| Body to drain diode reverse recovery time  | $t_{rr}$       | —   | 70   | —    | ns   | $I_F = 1.2 \text{ A}$ , $V_{GS} = 0$<br>$di_F/dt = 100 \text{ A}/\mu s$ |

Note: 3. Pulse test

Package Dimensions



Ordering Information

| Part Name     | Quantity | Shipping Container |
|---------------|----------|--------------------|
| HAT2080T-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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