

H5N3007FN

Silicon N Channel MOS FET
High Speed Power Switching

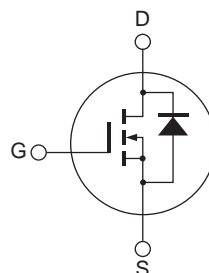
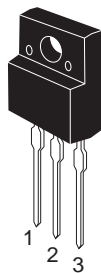
REJ03G1860-0100
Rev.1.00
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Features

- Low on-resistance
- Low leakage current
- High speed switching
- Built-in fast recovery diode

Outline

RENESAS Package code: PRSS0003AB-A
(Package name: TO-220FN)



1. Gate
2. Drain
3. Source

Absolute Maximum Ratings

(Ta = 25°C)

| Item | Symbol | Ratings | Unit |
|---------------------------------------------|----------------------------------|-------------|------|
| Drain to source voltage | V_{DSS} | 300 | V |
| Gate to source voltage | V_{GSS} | ±30 | V |
| Drain current | I_D | 15 | A |
| Drain peak current | $I_{D(pulse)}$ ^{Note1} | 60 | A |
| Body-drain diode reverse drain current | I_{DR} | 15 | A |
| Body-drain diode reverse drain peak current | $I_{DR(pulse)}$ ^{Note1} | 60 | A |
| Avalanche current | I_{AP} ^{Note3} | 15 | A |
| Avalanche energy | E_{AR} ^{Note3} | 13.5 | mJ |
| Channel to case thermal impedance | θ_{ch-c} | 3.57 | °C/W |
| Channel dissipation | P_{ch} ^{Note2} | 35 | 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. Value at $T_c = 25^\circ C$
 3. $STch = 25^\circ C$, $T_{ch} \leq 150^\circ C$

Electrical Characteristics

(Ta = 25°C)

| Item | Symbol | Min | Typ | Max | Unit | Test conditions |
|--------------------------------------------|---------------|-----|------|-----------|---------------|--------------------------------------------------------------------------------------------|
| Drain to source breakdown voltage | $V_{(BR)DSS}$ | 300 | — | — | V | $I_D = 10 \text{ mA}$, $V_{GS} = 0$ |
| Zero gate voltage drain current | I_{DSS} | — | — | 10 | μA | $V_{DS} = 300 \text{ V}$, $V_{GS} = 0$ |
| Gate to source leak current | I_{GSS} | — | — | ± 0.1 | μA | $V_{GS} = \pm 30 \text{ V}$, $V_{DS} = 0$ |
| Gate to source cutoff voltage | $V_{GS(off)}$ | 1.5 | — | 4.0 | V | $V_{DS} = 10 \text{ V}$, $I_D = 1 \text{ mA}$ |
| Forward transfer admittance | $ y_{fs} $ | 9 | 15 | — | S | $I_D = 7.5 \text{ A}$, $V_{DS} = 10 \text{ V}$ ^{Note4} |
| Static drain to source on state resistance | $R_{DS(on)}$ | — | 0.12 | 0.16 | Ω | $I_D = 7.5 \text{ A}$, $V_{GS} = 10 \text{ V}$ ^{Note4} |
| Input capacitance | C_{iss} | — | 2180 | — | pF | $V_{DS} = 25 \text{ V}$ $V_{GS} = 0$ $f = 1 \text{ MHz}$ |
| Output capacitance | C_{oss} | — | 275 | — | pF | |
| Reverse transfer capacitance | C_{rss} | — | 77 | — | pF | |
| Turn-on delay time | $t_{d(on)}$ | — | 35 | — | ns | $I_D = 7.5 \text{ A}$ $V_{GS} = 10 \text{ V}$ $R_L = 20 \Omega$ $R_g = 10 \Omega$ |
| Rise time | t_r | — | 50 | — | ns | |
| Turn-off delay time | $t_{d(off)}$ | — | 160 | — | ns | |
| Fall time | t_f | — | 40 | — | ns | |
| Total gate charge | Q_g | — | 81 | — | nC | $V_{DD} = 240 \text{ V}$ $V_{GS} = 10 \text{ V}$ $I_D = 15 \text{ A}$ |
| Gate to source charge | Q_{gs} | — | 10 | — | nC | |
| Gate to drain charge | Q_{gd} | — | 38 | — | nC | |
| Body-drain diode forward voltage | V_{DF} | — | 0.85 | 1.30 | V | $I_F = 15 \text{ A}$, $V_{GS} = 0$ ^{Note4} |
| Body-drain diode reverse recovery time | t_{rr} | — | 110 | — | ns | $I_F = 15 \text{ A}$, $V_{GS} = 0$ $di_F/dt = 100 \text{ A}/\mu\text{s}$ |

Notes: 4. Pulse test

Package Dimensions

| Package Name | JEITA Package Code | RENESAS Code | Previous Code | MASS[Typ.] |
|--------------|--------------------|--------------|---------------|------------|
| TO-220FN | — | PRSS0003AB-A | — | 2.0g |

Unit: mm

The technical drawing illustrates the dimensions of the H5N3007FN TO-220FN package. It includes a top view, a side view, and a detail view of the lead. The top view shows a square body with a width of 10 ± 0.3 mm and a height of 15 ± 0.3 mm. The mounting holes are spaced 3 ± 0.3 mm from the top edge and 6.5 ± 0.3 mm from the right edge. The diameter of the mounting holes is $\phi 3.2 \pm 0.2$ mm. The side view shows a total height of 14 ± 0.5 mm, with a lead length of 3.6 ± 0.3 mm. The lead thickness is 0.75 ± 0.15 mm, and the lead width at the base is 2.54 ± 0.25 mm. The detail view shows a lead thickness of 0.75 ± 0.15 mm and a lead width of 2.6 ± 0.2 mm at the base. The overall package width is 2.8 ± 0.2 mm.

Ordering Information

| Part No. | Quantity | Shipping Container |
|-------------|----------|--------------------|
| H5N3007FN-E | 1050 pcs | Box (Tube) |

Notes:

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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 (Shanghai) Co., Ltd.
Unit 204, 205, AZIACenter, No.1233 Lujiazui Ring Rd, Pudong District, Shanghai, China 200120
Tel: <86> (21) 5877-1818, Fax: <86> (21) 6887-7858/7898

Renesas Technology Hong Kong Ltd.
7th Floor, North Tower, World Finance Centre, Harbour City, Canton Road, Tsimshatsui, Kowloon, Hong Kong
Tel: <852> 2265-6688, Fax: <852> 2377-3473

Renesas Technology Taiwan Co., Ltd.
10th Floor, No.99, Fushing North Road, Taipei, Taiwan
Tel: <886> (2) 2715-2888, Fax: <886> (2) 3518-3399

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, Jln Persiaran Barat, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia
Tel: <603> 7955-9390, Fax: <603> 7955-9510