

HAT2020R

Silicon N Channel Power MOS FET
High Speed Power Switching

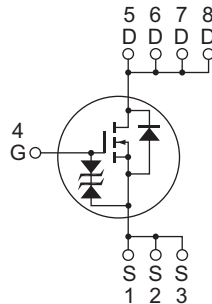
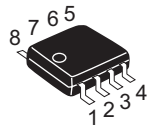
REJ03G1157-1200
(Previous: ADE-208-439J)
Rev.12.00
Sep 07, 2005

Features

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

Outline

RENESAS Package code: PRSP0008DD-D
(Package name: SOP-8 <FP-8DAV>)



1, 2, 3 Source
4 Gate
5, 6, 7, 8 Drain

Absolute Maximum Ratings

(Ta = 25°C)

| Item | Symbol | Value | Unit |
|--|--|-------------|------|
| Drain to source voltage | V _{DSS} | 30 | V |
| Gate to source voltage | V _{GSS} | ±20 | V |
| Drain current | I _D | 8 | A |
| Drain peak current | I _{D (pulse)} ^{Note 1} | 64 | A |
| Body-drain diode reverse drain current | I _{DR} | 8 | A |
| Channel dissipation | P _{ch} ^{Note 2} | 2.5 | W |
| Channel temperature | T _{ch} | 150 | °C |
| Storage temperature | T _{stg} | -55 to +150 | °C |

Notes: 1. PW ≤ 10 μs, duty cycle ≤ 1%

2. When using the glass epoxy board (FR4 40 × 40 × 1.6 mm), PW ≤ 10 s

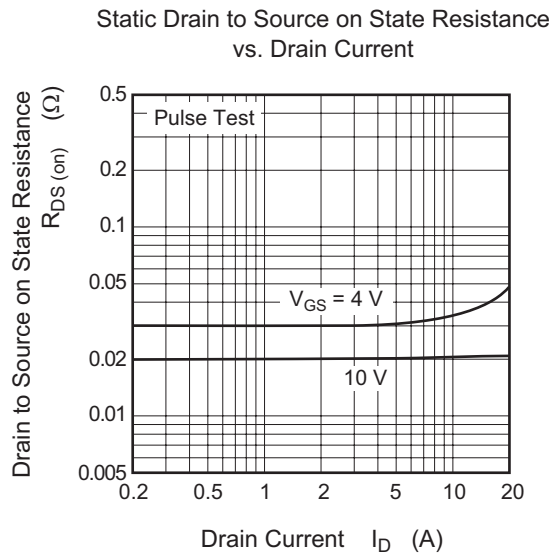
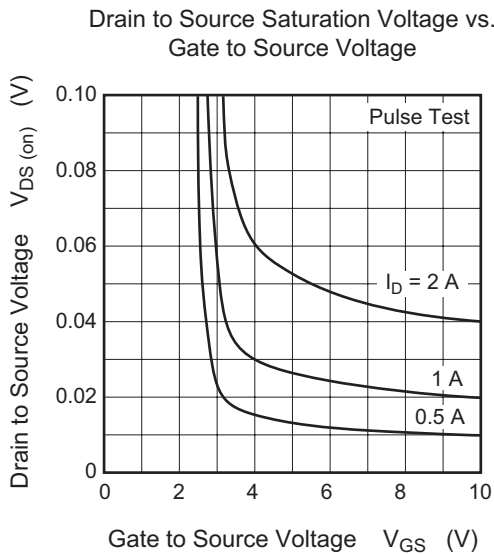
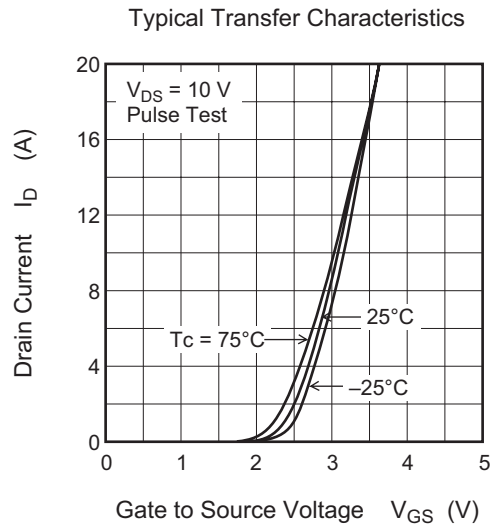
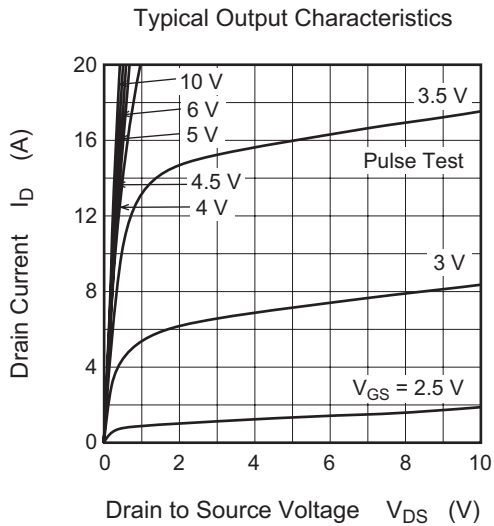
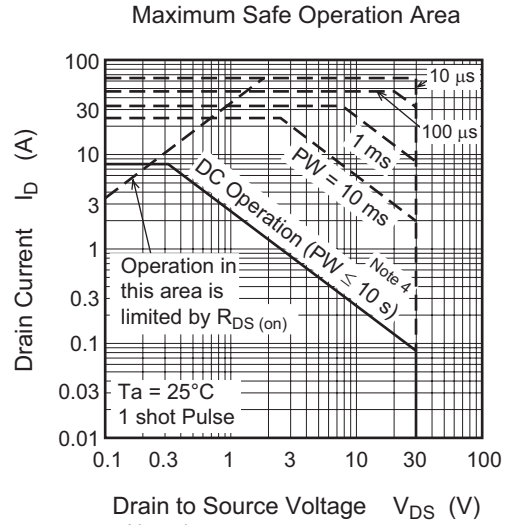
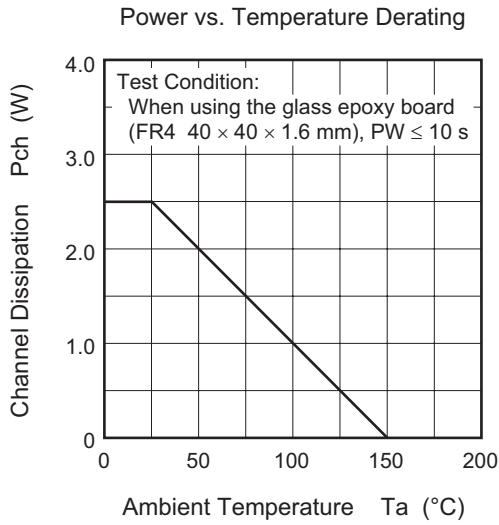
Electrical Characteristics

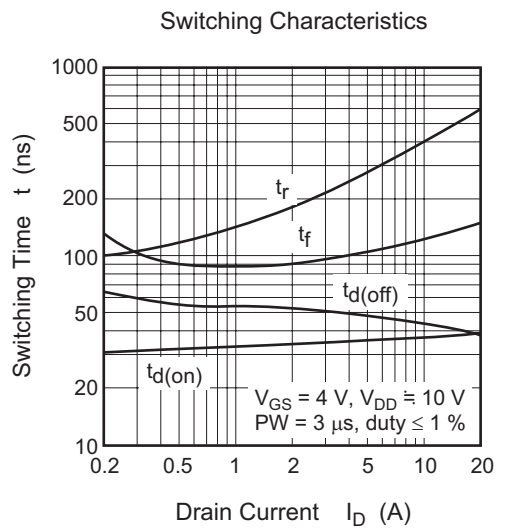
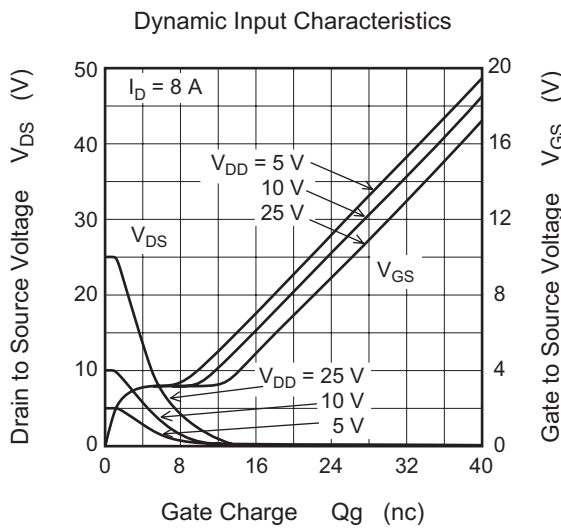
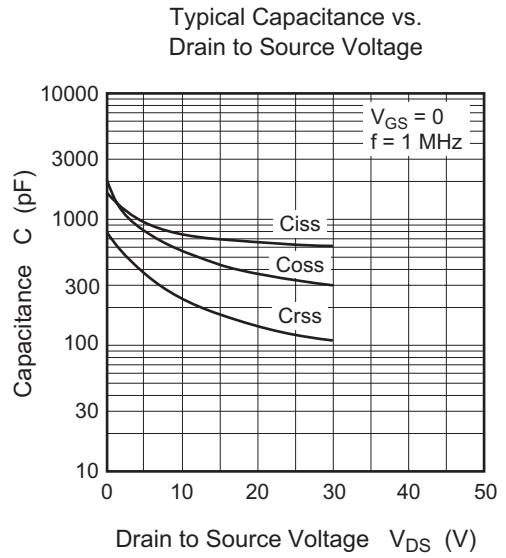
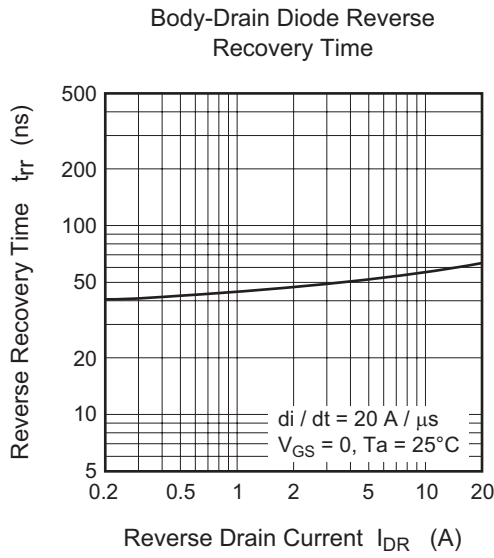
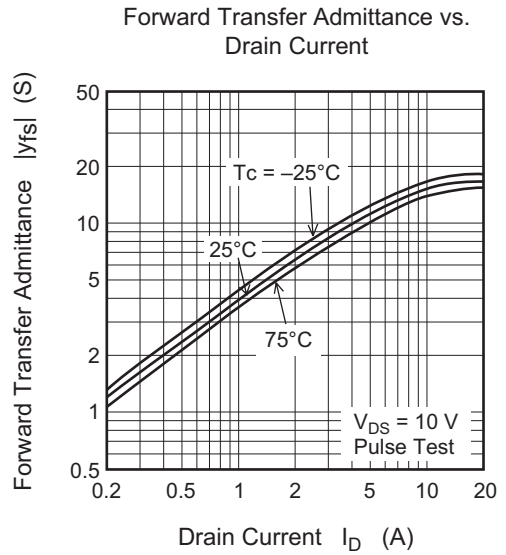
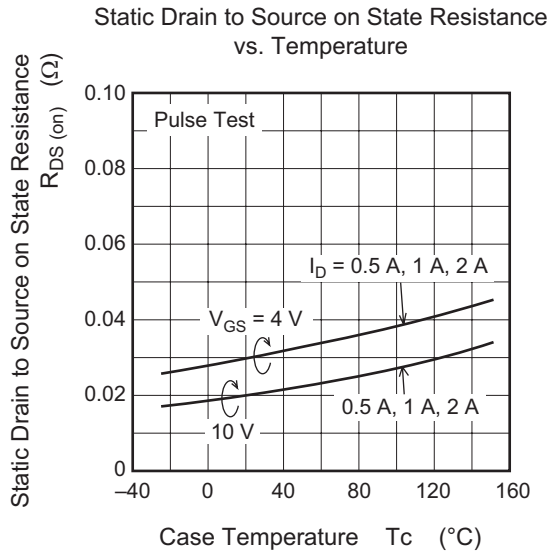
(Ta = 25°C)

| 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} | — | — | 10 | μA | V _{DS} = 30 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)} | — | 0.020 | 0.028 | Ω | I _D = 4 A, V _{GS} = 10 V ^{Note 3} |
| | R _{DS (on)} | — | 0.030 | 0.050 | Ω | I _D = 4 A, V _{GS} = 4 V ^{Note 3} |
| Forward transfer admittance | y _{fs} | 7 | 11 | — | S | I _D = 4 A, V _{DS} = 10 V ^{Note 3} |
| Input capacitance | C _{iss} | — | 780 | — | pF | V _{DS} = 10 V V _{GS} = 0 f = 1 MHz |
| Output capacitance | C _{oss} | — | 560 | — | pF | |
| Reverse transfer capacitance | C _{rss} | — | 240 | — | pF | |
| Turn-on delay time | t _{d (on)} | — | 35 | — | ns | V _{GS} = 4 V, I _D = 4 A, V _{DD} ≅ 10 V |
| Rise time | t _r | — | 240 | — | ns | |
| Turn-off delay time | t _{d (off)} | — | 50 | — | ns | |
| Fall time | t _f | — | 100 | — | ns | |
| Body-drain diode forward voltage | V _{DF} | — | 0.8 | 1.3 | V | I _F = 8 A, V _{GS} = 0 ^{Note 3} |
| Body-drain diode reverse recovery time | t _{rr} | — | 55 | — | ns | I _F = 8 A, V _{GS} = 0 di _F /dt = 20 A/μs |

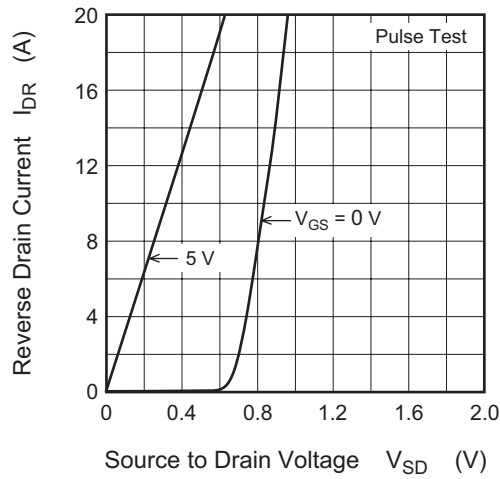
Note: 3. Pulse test

Main Characteristics

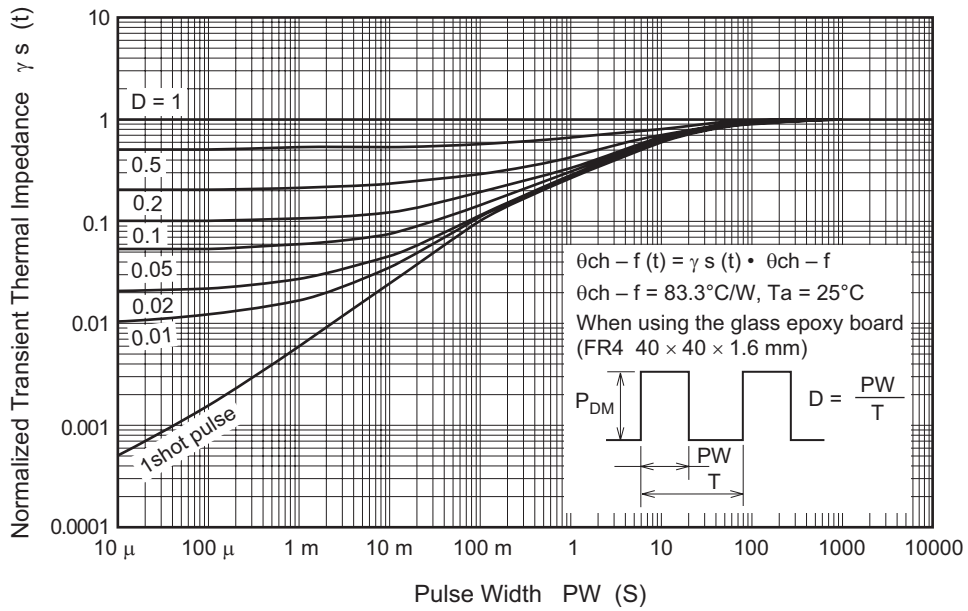




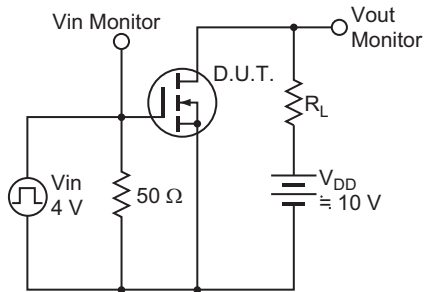
Reverse Drain Current vs. Source to Drain Voltage



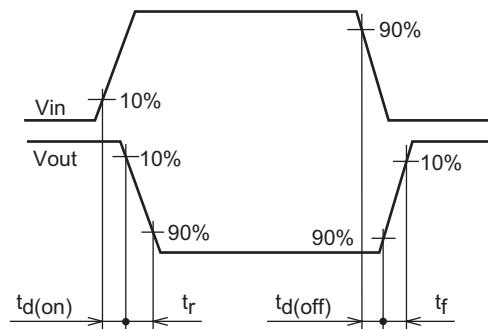
Normalized Transient Thermal Impedance vs. Pulse Width



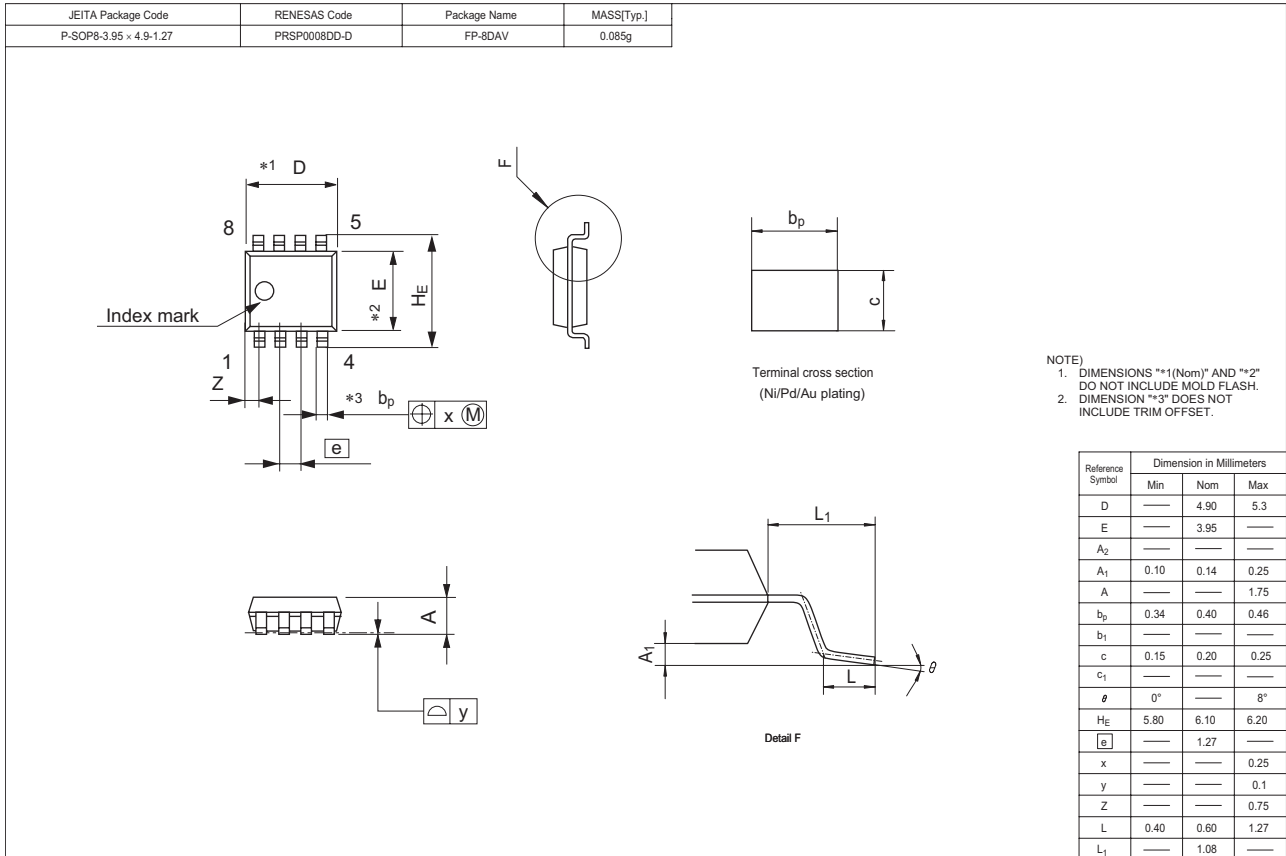
Switching Time Test Circuit



Switching Time Waveform



Package Dimensions



Ordering Information

| Part Name | Quantity | Shipping Container |
|---------------|----------|--------------------|
| HAT2020R-EL-E | 2500 pcs | Taping |

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