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Renesas Electronics website: <http://www.renesas.com>

April 1st, 2010
Renesas Electronics Corporation

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

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HAT2040R

Silicon N Channel Power MOS FET
Power Switching

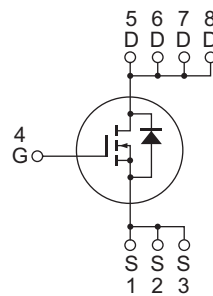
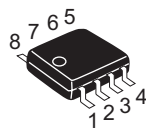
REJ03G1168-0600
(Previous: ADE-208-565D)
Rev.6.00
Sep 07, 2005

Features

- Low on-resistance
 $R_{DS(on)} = 6.2 \text{ m}\Omega$ typ
- 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	15	A
Drain peak current	I _{D (pulse)} ^{Note 1}	120	A
Body-drain diode reverse drain current	I _{DR}	15	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

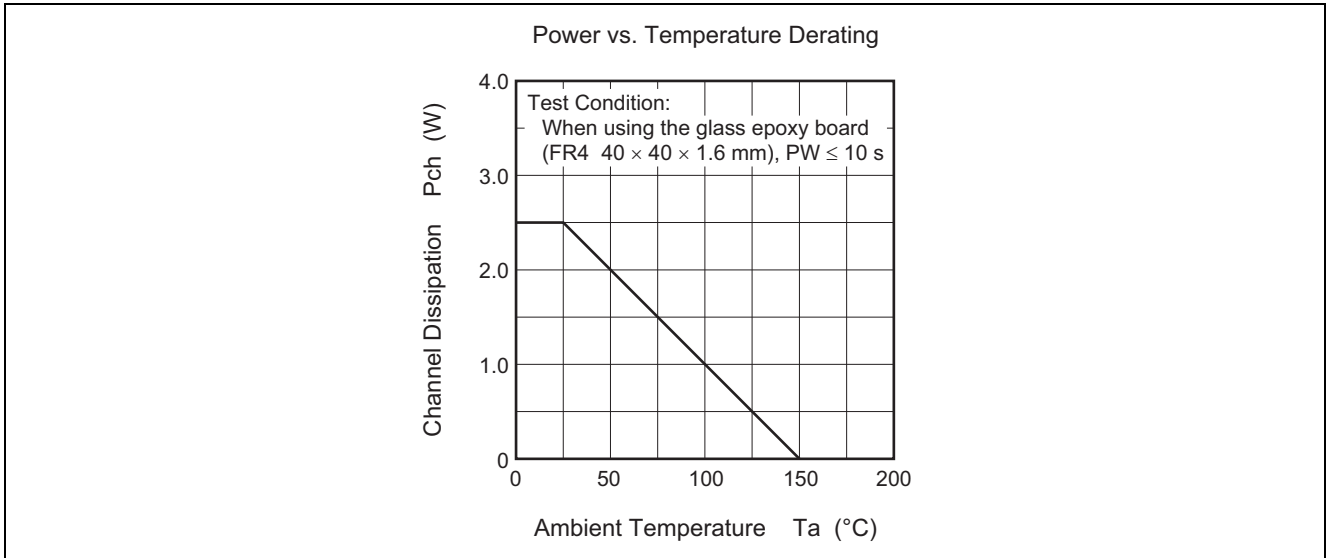
Electrical Characteristics

(Ta = 25°C)

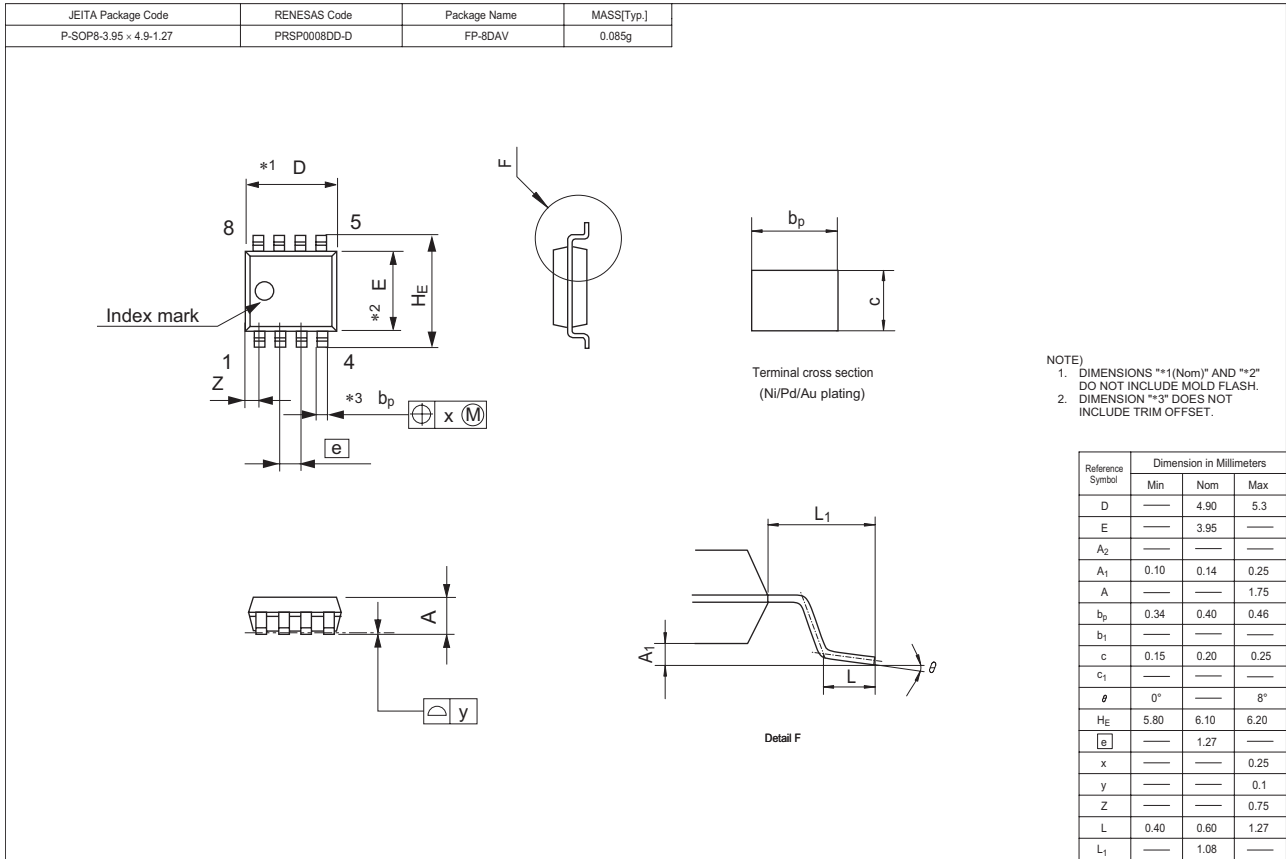
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	V _{(BR) DSS}	30	—	—	V	I _D = 10 mA, V _{GS} = 0
Gate to source leak current	I _{GSS}	—	—	±0.1	μA	V _{GS} = ±20 V, V _{DS} = 0
Zero gate voltage drain current	I _{DSS}	—	—	1	μA	V _{DS} = 30 V, V _{GS} = 0
Gate to source cutoff 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)}	—	6.2	8.0	mΩ	I _D = 8 A, V _{GS} = 10 V ^{Note 3}
	R _{DS (on)}	—	9.0	13.0	mΩ	I _D = 8 A, V _{GS} = 4 V ^{Note 3}
Forward transfer admittance	y _{fs}	18	30	—	S	I _D = 8 A, V _{DS} = 10 V ^{Note 3}
Input capacitance	C _{iss}	—	4400	—	pF	V _{DS} = 10 V
Output capacitance	C _{oss}	—	1100	—	pF	V _{GS} = 0
Reverse transfer capacitance	C _{rss}	—	500	—	pF	f = 1 MHz
Total gate charge	Q _g	—	90	—	nC	V _{DD} = 10 V
Gate to source charge	Q _{gs}	—	15	—	nC	V _{GS} = 10 V
Gate to drain charge	Q _{gd}	—	18	—	nC	I _D = 15 A
Turn-on delay time	t _{d (on)}	—	110	—	ns	V _{GS} = 4 V, I _D = 8 A,
Rise time	t _r	—	410	—	ns	V _{DD} ≅ 10 V
Turn-off delay time	t _{d (off)}	—	200	—	ns	
Fall time	t _f	—	230	—	ns	
Body-drain diode forward voltage	V _{DF}	—	0.9	—	V	I _F = 15 A, V _{GS} = 0 ^{Note 3}
Body-drain diode reverse recovery time	t _{rr}	—	55	—	ns	I _F = 15 A, V _{GS} = 0 di _F /dt = 20 A/μs

Note: 3. Pulse test

Main Characteristics



Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
HAT2040R-EL-E	2500 pcs	Taping

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Renesas Technology Corp. Sales Strategic Planning Div. Nippon Bldg., 2-6-2, Ohte-machi, Chiyoda-ku, Tokyo 100-0004, Japan

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