

To our customers,

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## Old Company Name in Catalogs and Other Documents

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

April 1<sup>st</sup>, 2010  
Renesas Electronics Corporation

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## HAT2024R

Silicon N Channel Power MOS FET  
High Speed Power Switching

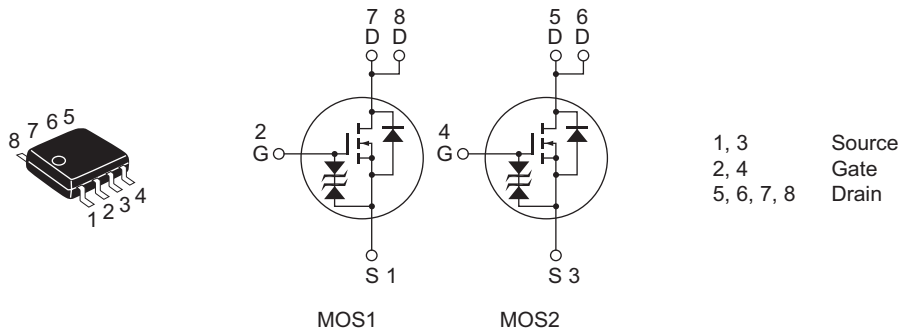
REJ03G1159-0500  
(Previous: ADE-208-494C)  
Rev.5.00  
Sep 07, 2005

### 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> )



## Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Value	Unit
Drain to source voltage	V <sub>DSS</sub>	30	V
Gate to source voltage	V <sub>GSS</sub>	±20	V
Drain current	I <sub>D</sub>	5.5	A
Drain peak current	I <sub>D (pulse)</sub> <sup>Note 1</sup>	44	A
Body-drain diode reverse drain current	I <sub>DR</sub>	5.5	A
Channel dissipation	P <sub>ch</sub> <sup>Note 2</sup>	2	W
Channel dissipation	P <sub>ch</sub> <sup>Note 3</sup>	3	W
Channel temperature	T <sub>ch</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55 to +150	°C

Notes: 1. PW ≤ 10 μs, duty cycle ≤ 1%

2. 1 Drive operation: When using the glass epoxy board (FR4 40 × 40 × 1.6 mm), PW ≤ 10 s

3. 2 Drive operation: When using the glass epoxy board (FR4 40 × 40 × 1.6 mm), PW ≤ 10 s

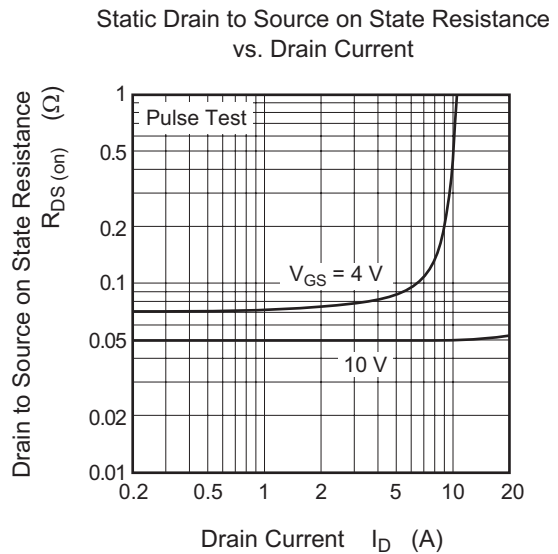
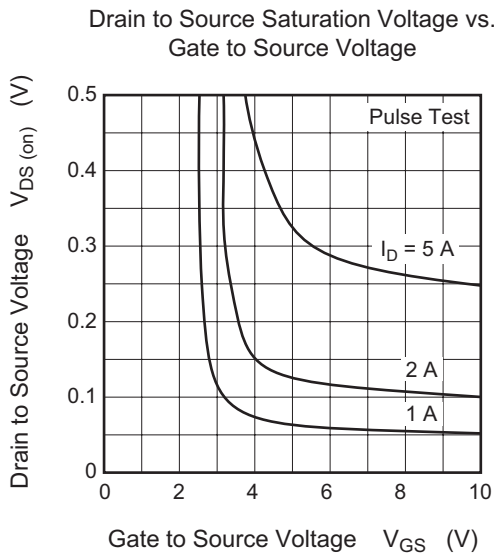
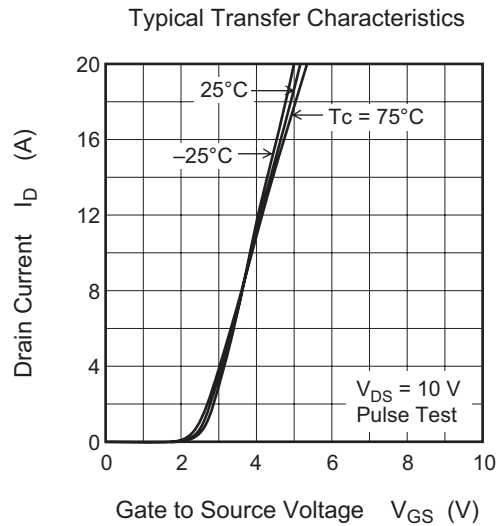
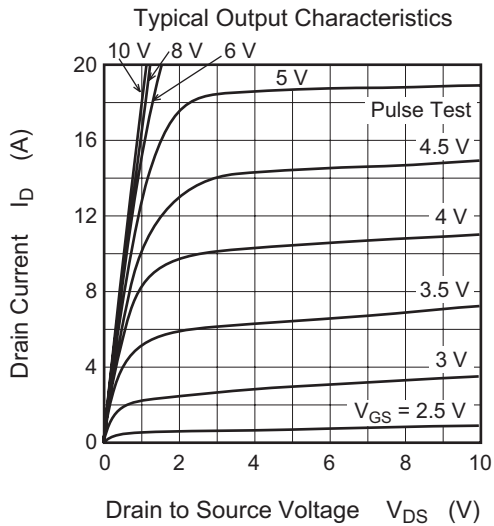
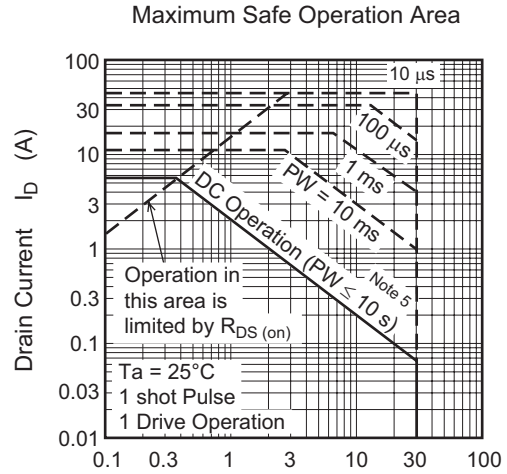
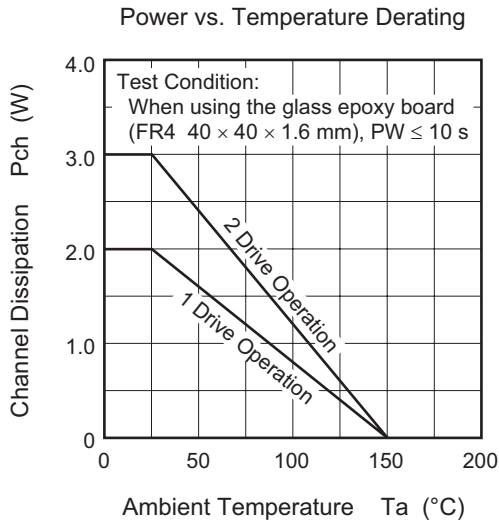
## Electrical Characteristics

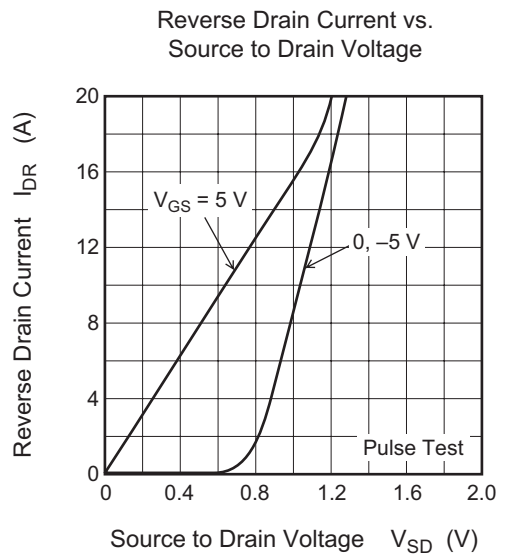
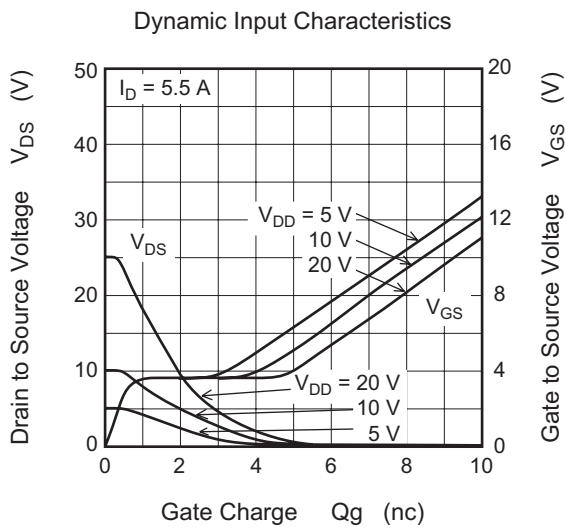
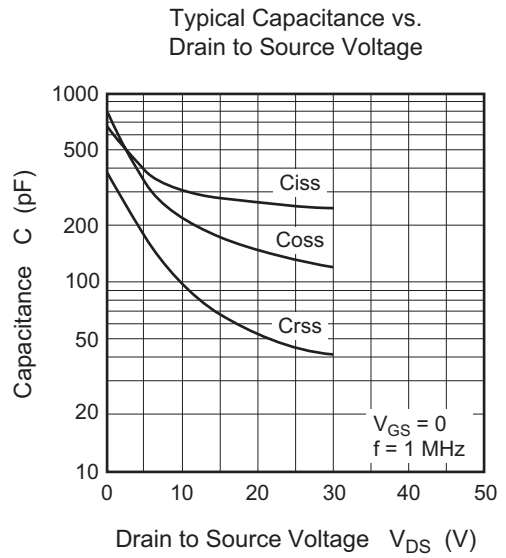
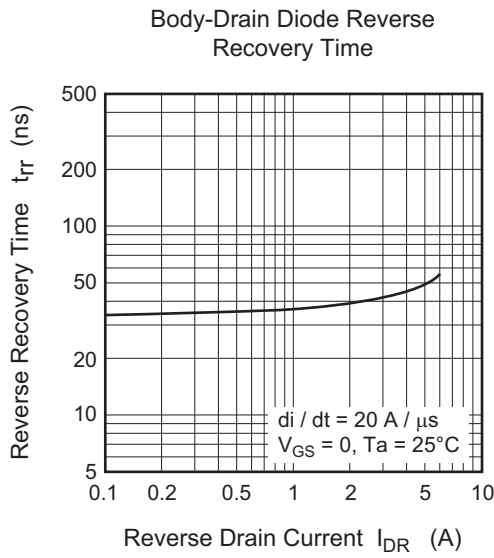
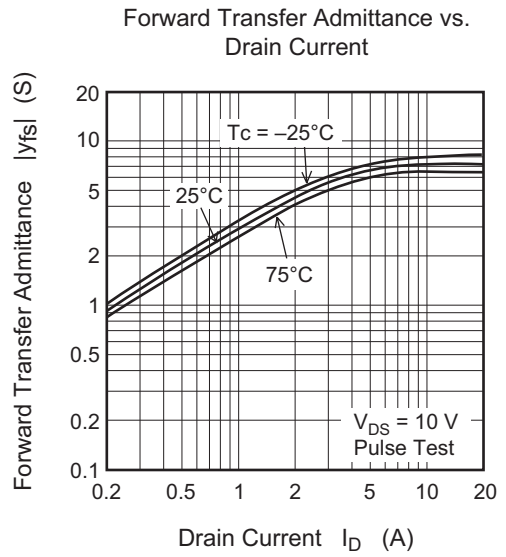
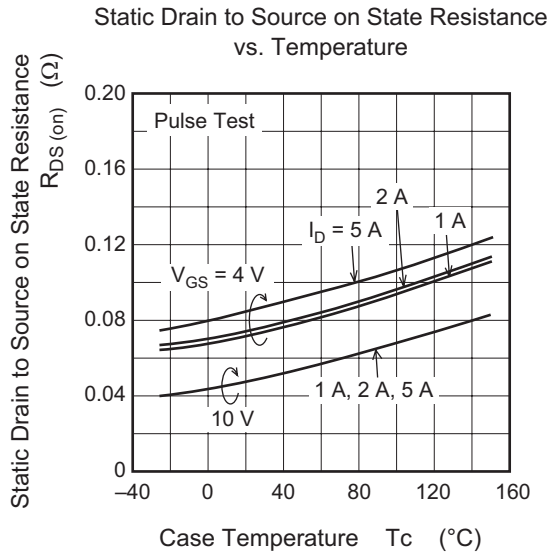
(Ta = 25°C)

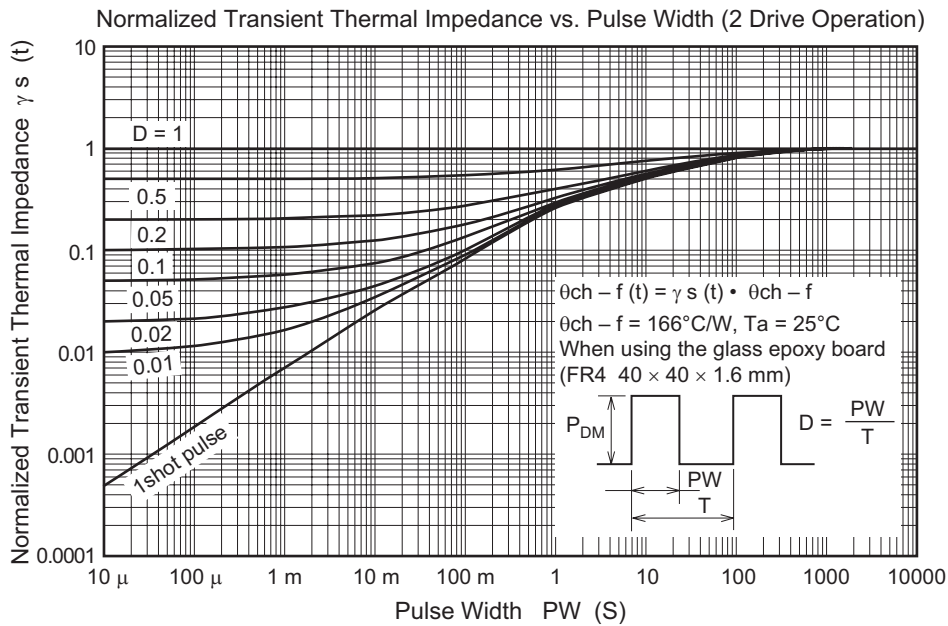
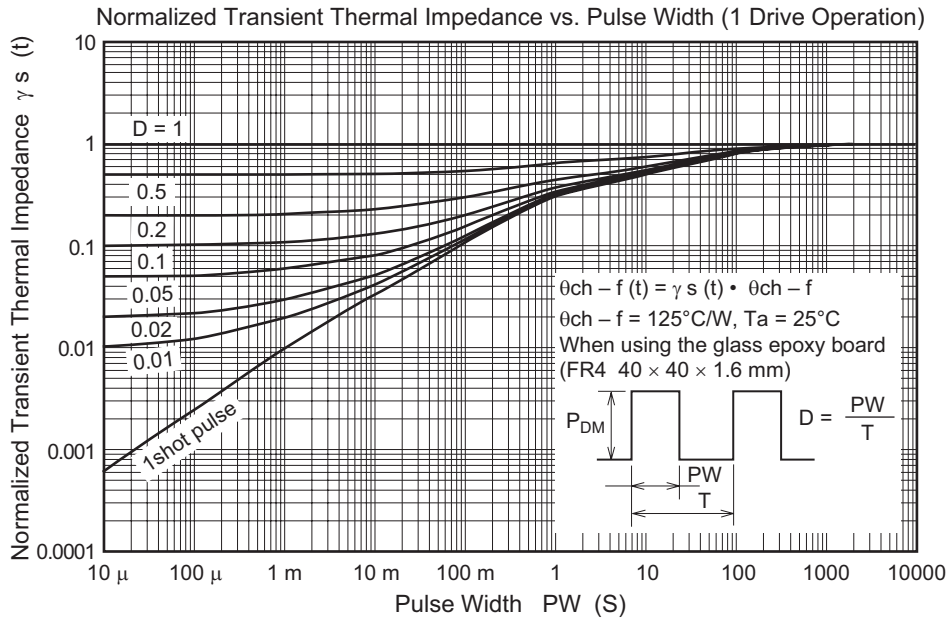
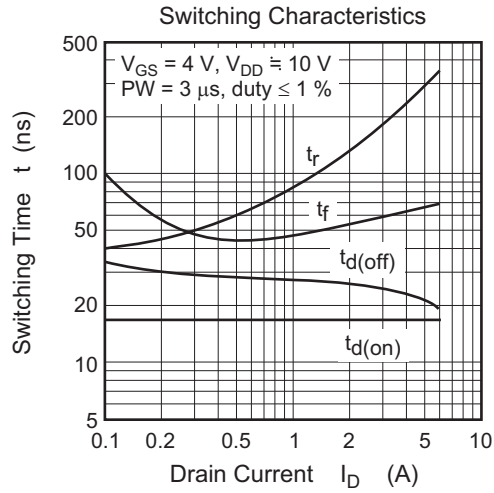
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	V <sub>(BR) DSS</sub>	30	—	—	V	I <sub>D</sub> = 10 mA, V <sub>GS</sub> = 0
Gate to source breakdown voltage	V <sub>(BR) GSS</sub>	±20	—	—	V	I <sub>G</sub> = ±100 μA, V <sub>DS</sub> = 0
Gate to source leak current	I <sub>GSS</sub>	—	—	±10	μA	V <sub>GS</sub> = ±16 V, V <sub>DS</sub> = 0
Zero gate voltage drain current	I <sub>DSS</sub>	—	—	10	μA	V <sub>DS</sub> = 30 V, V <sub>GS</sub> = 0
Gate to source cutoff voltage	V <sub>GS (off)</sub>	1.0	—	2.0	V	V <sub>DS</sub> = 10 V, I <sub>D</sub> = 1 mA
Static drain to source on state resistance	R <sub>DS (on)</sub>	—	0.05	0.065	Ω	I <sub>D</sub> = 3 A, V <sub>GS</sub> = 10 V <sup>Note 4</sup>
	R <sub>DS (on)</sub>	—	0.078	0.11	Ω	I <sub>D</sub> = 3 A, V <sub>GS</sub> = 4 V <sup>Note 4</sup>
Forward transfer admittance	y <sub>fs</sub>	3.5	5.5	—	S	I <sub>D</sub> = 3 A, V <sub>DS</sub> = 10 V <sup>Note 4</sup>
Input capacitance	C <sub>iss</sub>	—	310	—	pF	V <sub>DS</sub> = 10 V V <sub>GS</sub> = 0 f = 1 MHz
Output capacitance	C <sub>oss</sub>	—	220	—	pF	
Reverse transfer capacitance	C <sub>rss</sub>	—	100	—	pF	
Turn-on delay time	t <sub>d (on)</sub>	—	17	—	ns	
Rise time	t <sub>r</sub>	—	190	—	ns	V <sub>DD</sub> ≅ 10 V
Turn-off delay time	t <sub>d (off)</sub>	—	25	—	ns	
Fall time	t <sub>f</sub>	—	60	—	ns	
Body-drain diode forward voltage	V <sub>DF</sub>	—	0.9	1.4	V	I <sub>F</sub> = 5.5 A, V <sub>GS</sub> = 0 <sup>Note 4</sup>
Body-drain diode reverse recovery time	t <sub>rr</sub>	—	50	—	ns	I <sub>F</sub> = 5.5 A, V <sub>GS</sub> = 0 di <sub>F</sub> /dt = 20 A/μs

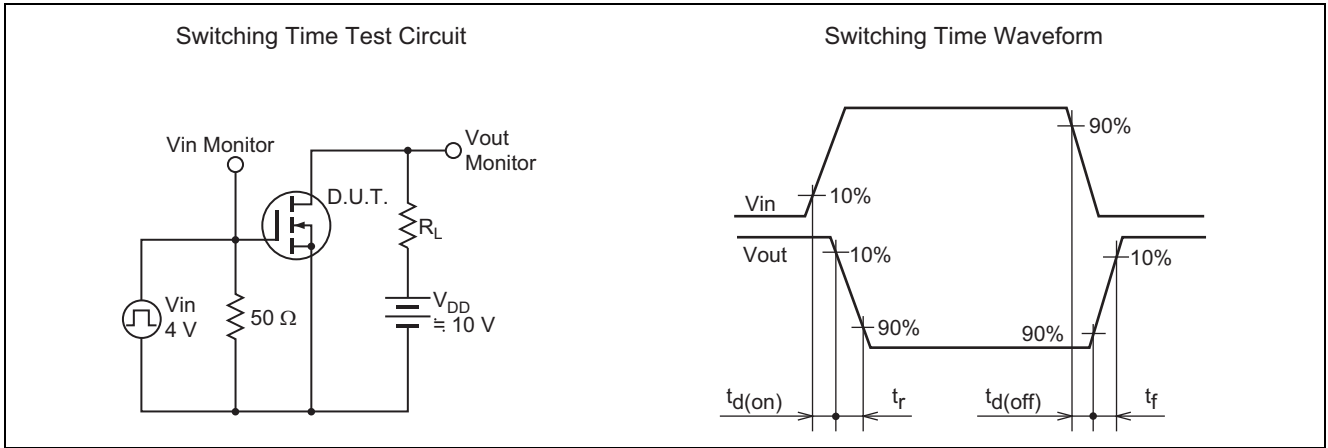
Note: 4. Pulse test

Main Characteristics



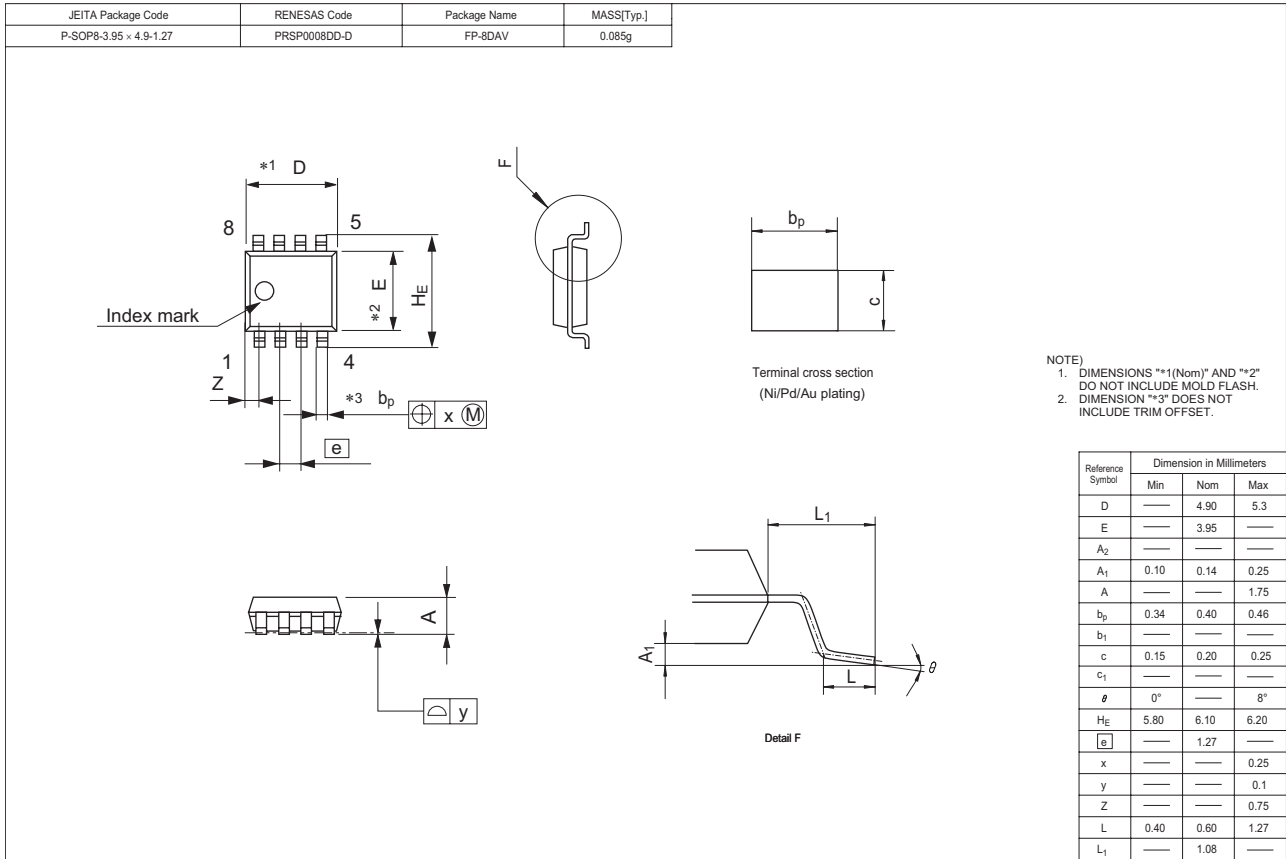








### Package Dimensions



### Ordering Information

Part Name	Quantity	Shipping Container
HAT2024R-EL-E	2500 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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Tel: <1> (408) 382-7500, Fax: <1> (408) 382-7501

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Unit2607 Ruijing Building, No.205 Maoming Road (S), Shanghai 200020, China  
Tel: <86> (21) 6472-1001, Fax: <86> (21) 6415-2952

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Tel: <82> 2-796-3115, Fax: <82> 2-796-2145

#### **Renesas Technology Malaysia Sdn. Bhd.**

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