

## HAT1054R

Silicon P Channel Power MOS FET  
High Speed Power Switching

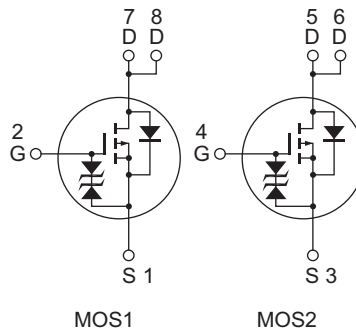
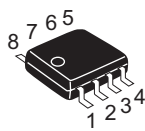
REJ03G1154-0300  
(Previous: ADE-208-1224A)  
Rev.3.00  
Sep 07, 2005

### Features

- Low on-resistance
- Capable of 2.5 V gate drive
- Low drive current
- High density mounting

### Outline

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



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

## Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Value	Unit
Drain to source voltage	V <sub>DSS</sub>	-20	V
Gate to source voltage	V <sub>GSS</sub>	±12	V
Drain current	I <sub>D</sub>	-6	A
Drain peak current	I <sub>D (pulse)</sub> <sup>Note 1</sup>	-48	A
Body-drain diode reverse drain current	I <sub>DR</sub>	-6	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

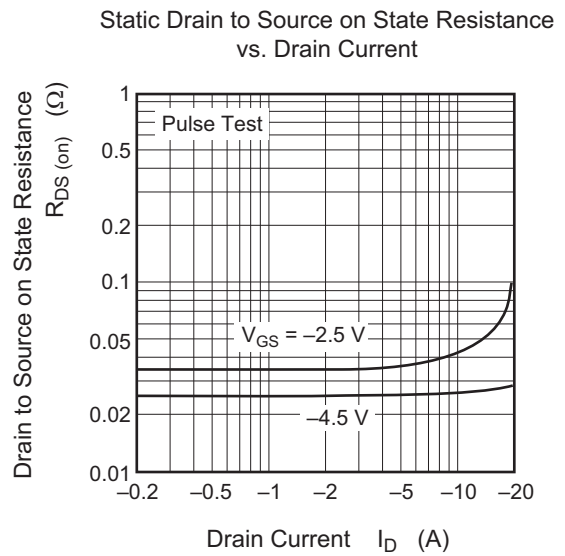
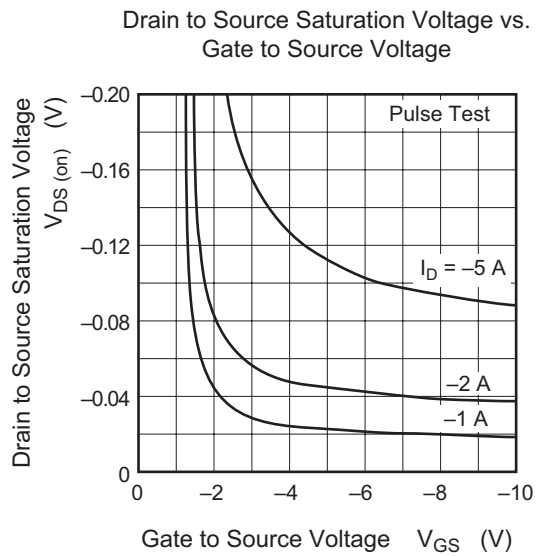
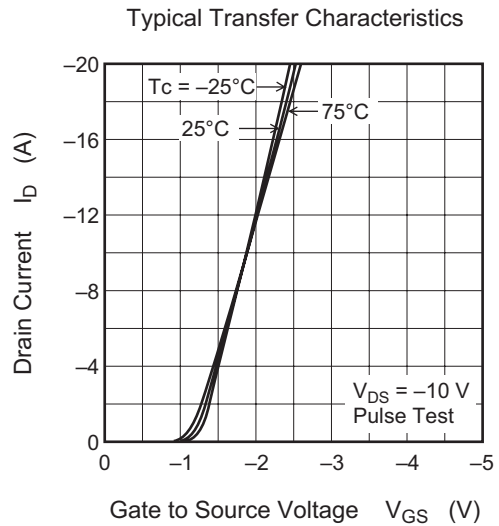
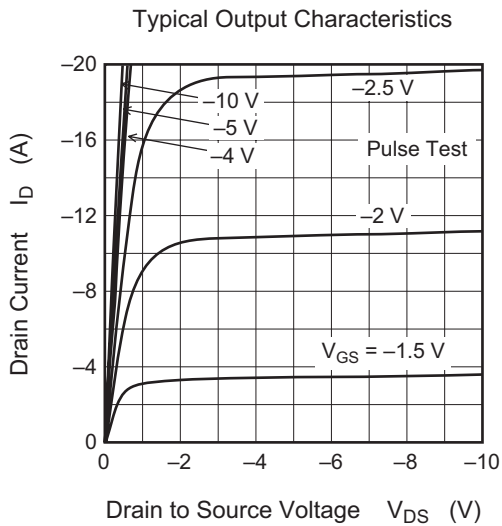
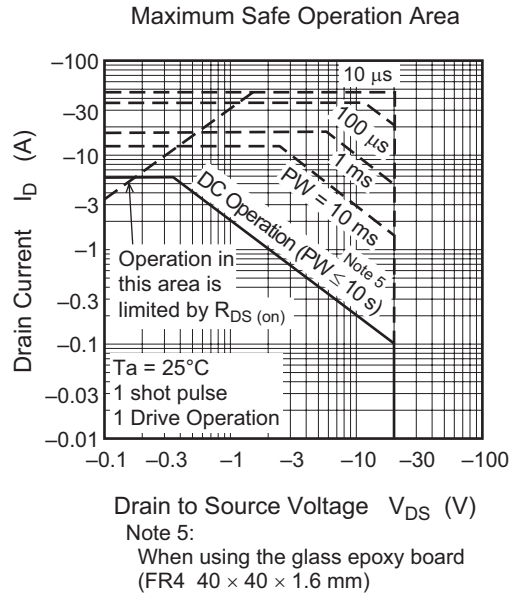
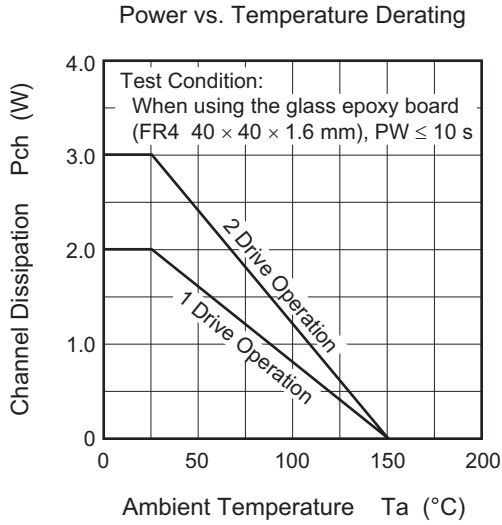
## Electrical Characteristics

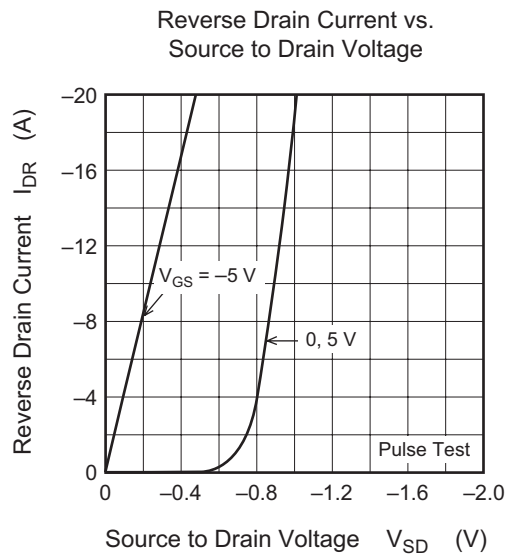
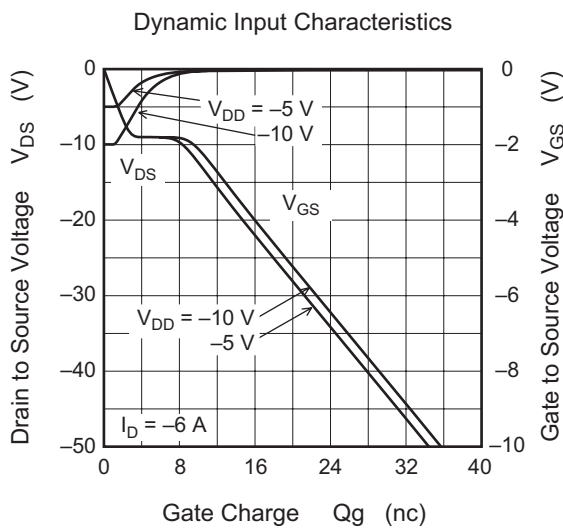
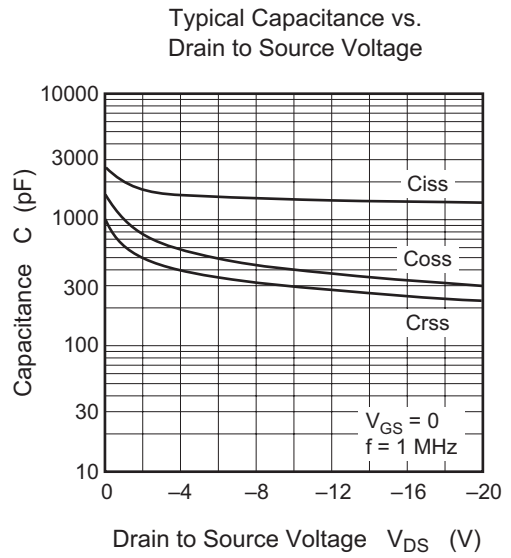
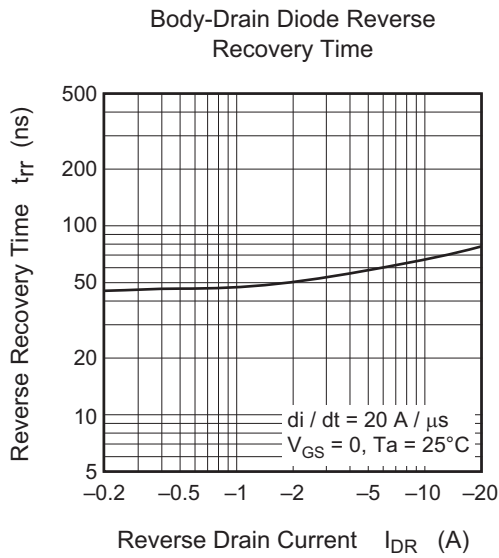
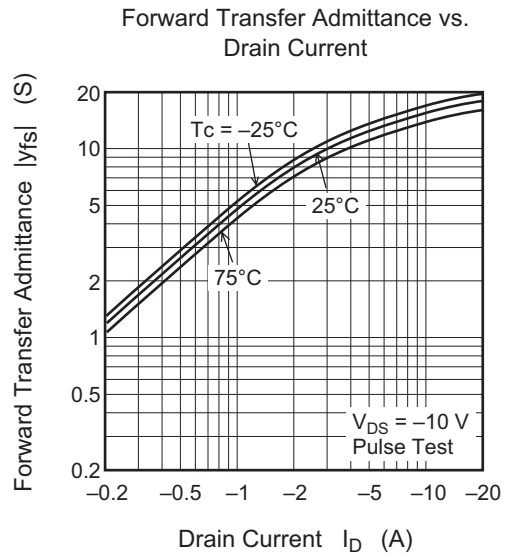
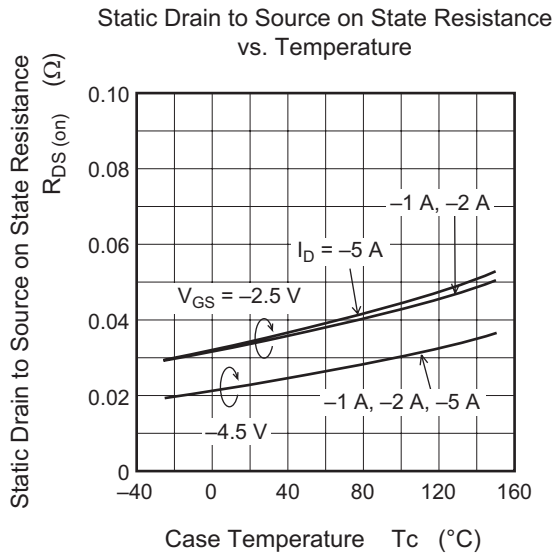
(Ta = 25°C)

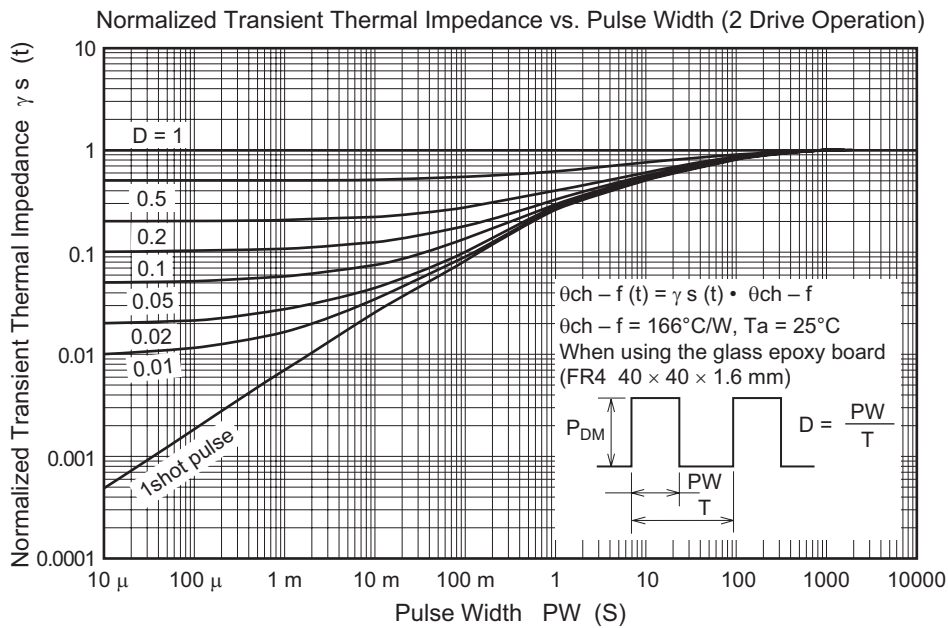
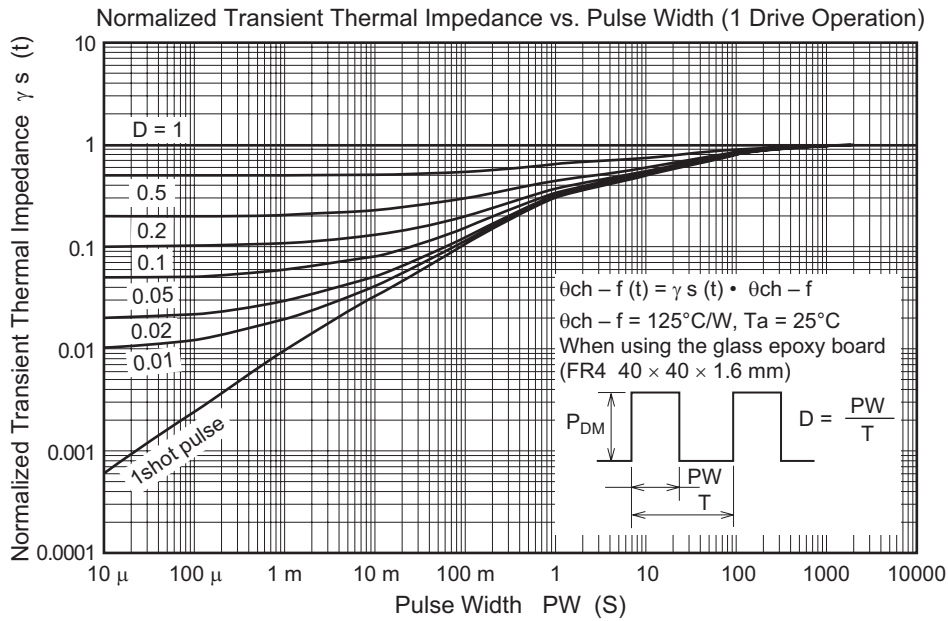
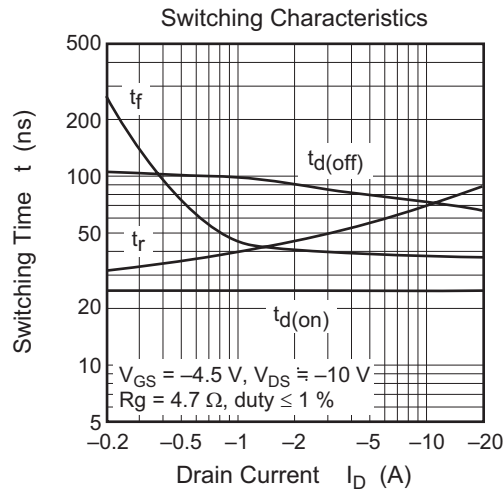
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	V <sub>(BR) DSS</sub>	-20	—	—	V	I <sub>D</sub> = -10 mA, V <sub>GS</sub> = 0
Gate to source breakdown voltage	V <sub>(BR) GSS</sub>	±12	—	—	V	I <sub>G</sub> = ±100 μA, V <sub>DS</sub> = 0
Gate to source leak current	I <sub>GSS</sub>	—	—	±10	μA	V <sub>GS</sub> = ±10 V, V <sub>DS</sub> = 0
Zero gate voltage drain current	I <sub>DSS</sub>	—	—	-1	μA	V <sub>DS</sub> = -20 V, V <sub>GS</sub> = 0
Gate to source cutoff voltage	V <sub>GS (off)</sub>	-0.4	—	-1.4	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>	—	24	30	mΩ	I <sub>D</sub> = -3 A, V <sub>GS</sub> = -4.5 V <sup>Note 4</sup>
	R <sub>DS (on)</sub>	—	35	50	mΩ	I <sub>D</sub> = -3 A, V <sub>GS</sub> = -2.5 V <sup>Note 4</sup>
Forward transfer admittance	y <sub>fs</sub>	6	10	—	S	I <sub>D</sub> = -3 A, V <sub>DS</sub> = -10 V <sup>Note 4</sup>
Input capacitance	C <sub>iss</sub>	—	1550	—	pF	V <sub>DS</sub> = -10 V V <sub>GS</sub> = 0 f = 1 MHz
Output capacitance	C <sub>oss</sub>	—	400	—	pF	
Reverse transfer capacitance	C <sub>rss</sub>	—	300	—	pF	
Total gate charge	Q <sub>g</sub>	—	18	—	nC	V <sub>DD</sub> = -10 V
Gate to source charge	Q <sub>gs</sub>	—	3	—	nC	V <sub>GS</sub> = -4.5 V
Gate to drain charge	Q <sub>gd</sub>	—	6.5	—	nC	I <sub>D</sub> = -6 A
Turn-on delay time	t <sub>d (on)</sub>	—	25	—	ns	V <sub>GS</sub> = -4.5 V, I <sub>D</sub> = -3 A, V <sub>DD</sub> ≅ -10 V R <sub>L</sub> = 3.3 Ω R <sub>g</sub> = 4.7 Ω
Rise time	t <sub>r</sub>	—	50	—	ns	
Turn-off delay time	t <sub>d (off)</sub>	—	85	—	ns	
Fall time	t <sub>f</sub>	—	40	—	ns	
Body-drain diode forward voltage	V <sub>DF</sub>	—	-0.85	-1.10	V	I <sub>F</sub> = -6 A, V <sub>GS</sub> = 0 <sup>Note 4</sup>
Body-drain diode reverse recovery time	t <sub>rr</sub>	—	60	—	ns	I <sub>F</sub> = -6 A, V <sub>GS</sub> = 0 di <sub>F</sub> /dt = 20 A/μs

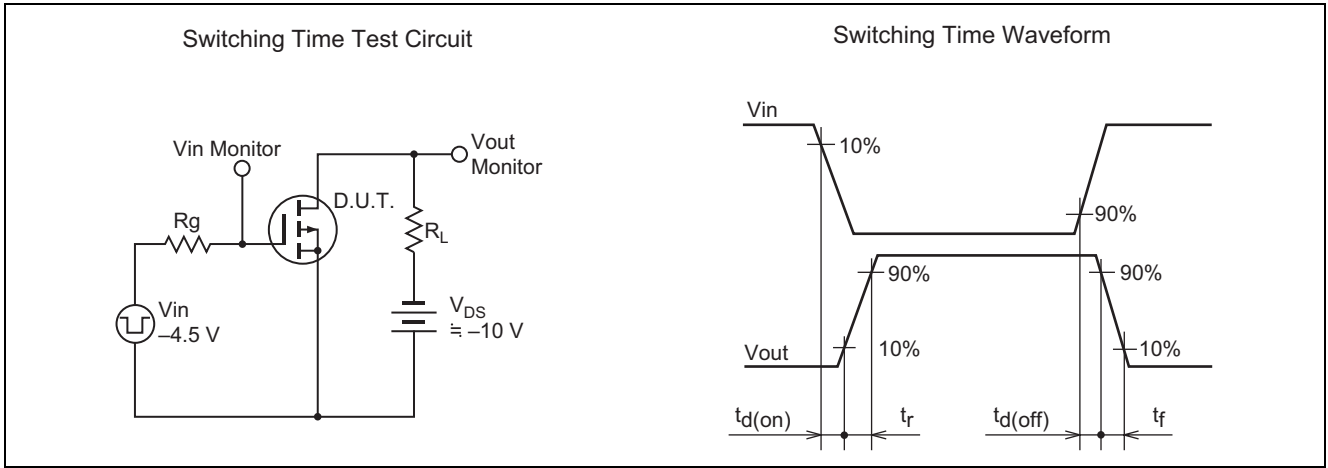
Note: 4. Pulse test

Main Characteristics

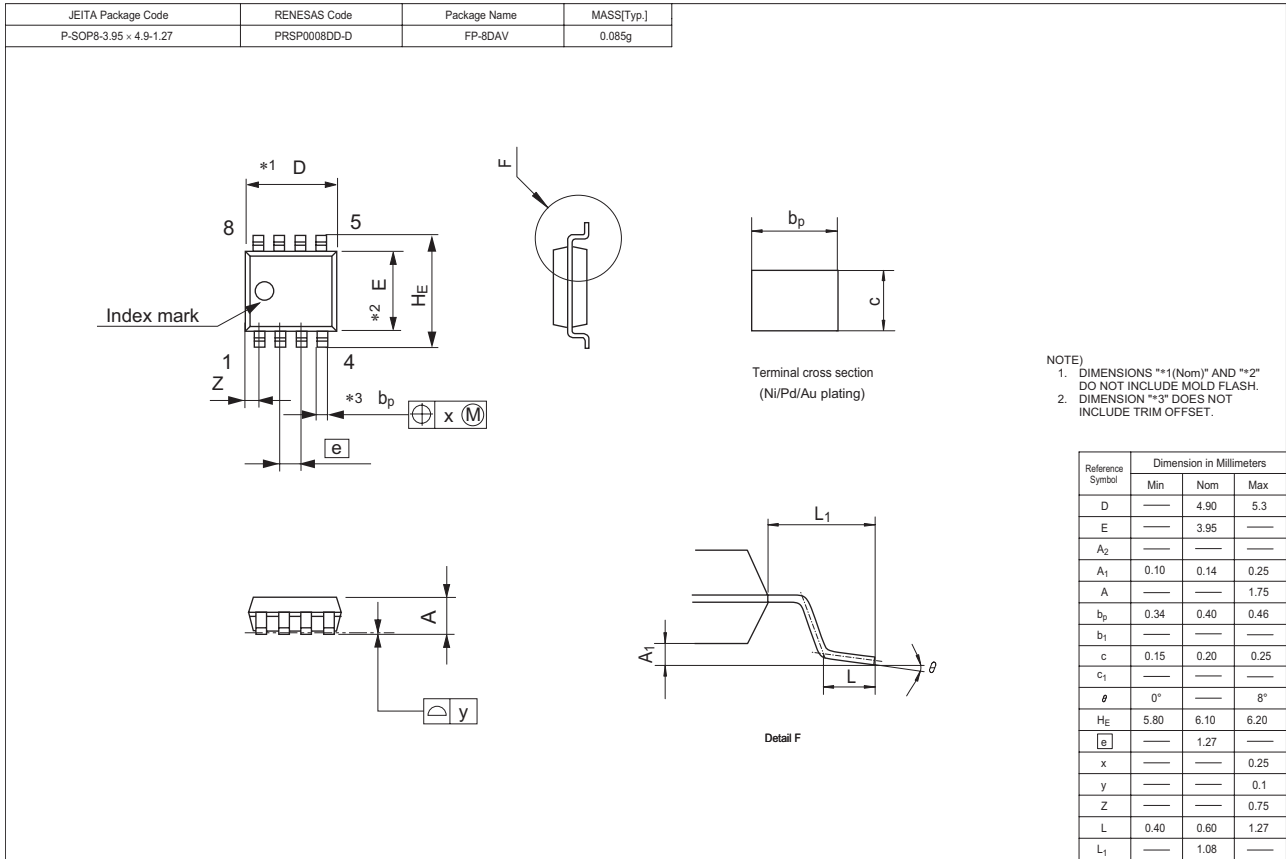








### Package Dimensions



### Ordering Information

Part Name	Quantity	Shipping Container
HAT1054R-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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