

HAT2276R

Silicon N Channel Power MOSFET Power Switching

R07DS1371EJ0301

Rev.3.01

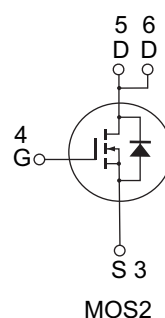
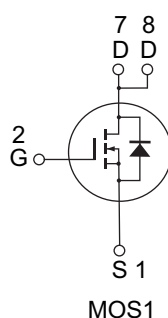
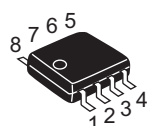
Jan 20, 2017

Features

- Capable of 4.5 V gate drive
- Low drive current
- High density mounting
- Low on-resistance
 $R_{DS(on)} = 21 \text{ m}\Omega$ typ. (at $V_{GS} = 10 \text{ V}$)

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

($T_a = 25^\circ\text{C}$)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	30	V
Gate to source voltage	V_{GSS}	± 20	V
Drain current	I_D	7.5	A
Drain peak current	$I_{D(pulse)}$ ^{Note1}	60	A
Body-drain diode reverse drain current	I_{DR}	7.5	A
Avalanche current	I_{AP} ^{Note 2}	7.5	A
Avalanche energy	E_{AR} ^{Note 2}	5.6	mJ
Channel dissipation	P_{ch} ^{Note3}	1.5	W
Channel dissipation	P_{ch} ^{Note4}	2.3	W
Channel temperature	T_{ch}	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

Notes: 1. $PW \leq 10 \mu\text{s}$, duty cycle $\leq 1\%$

2. Value at $T_{ch} = 25^\circ\text{C}$, $R_g \geq 50 \Omega$

3. 1 Drive operation : When using the glass epoxy board (FR4 40 x 40 x 1.6 mm), $PW \leq 10\text{s}$

4. 2 Drive operation : When using the glass epoxy board (FR4 40 x 40 x 1.6 mm), $PW \leq 10\text{s}$

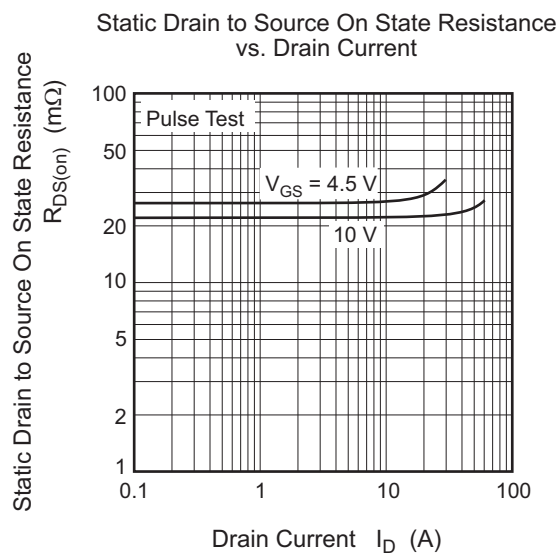
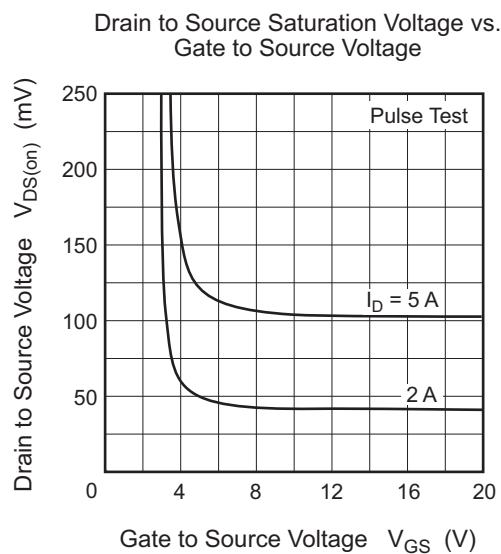
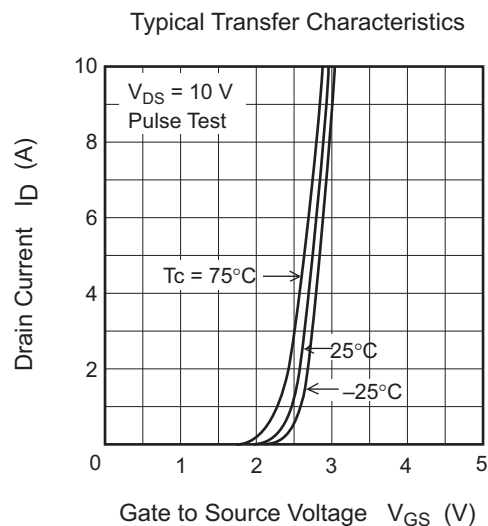
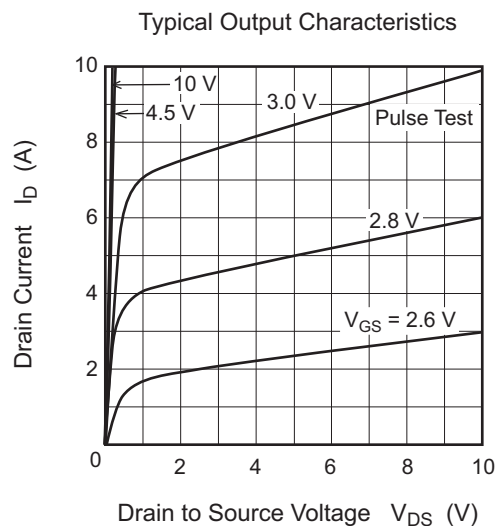
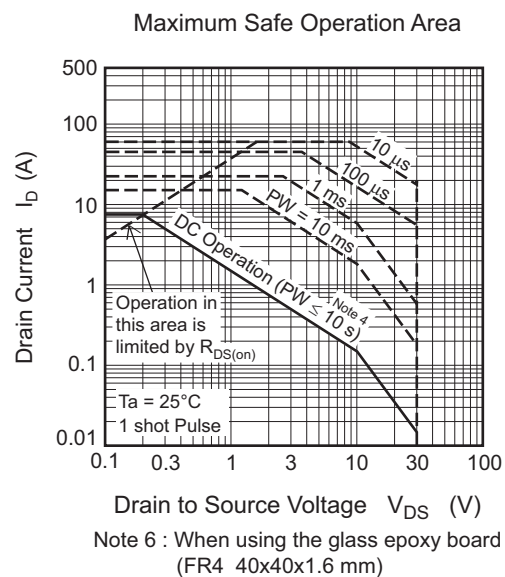
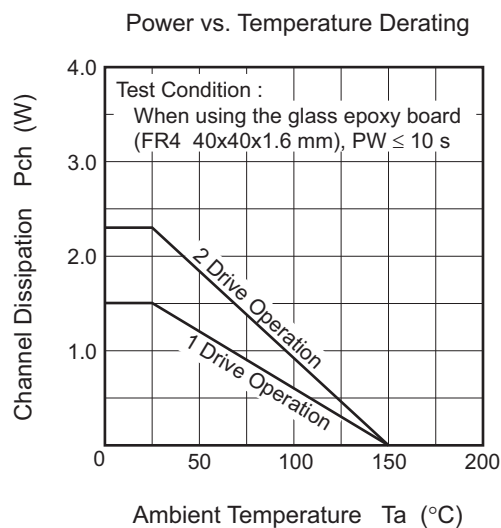
Electrical Characteristics

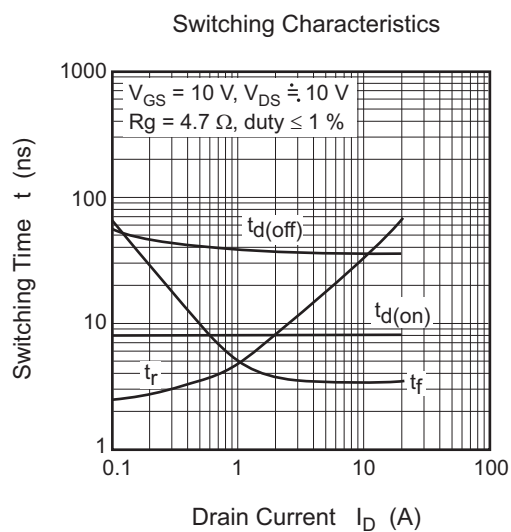
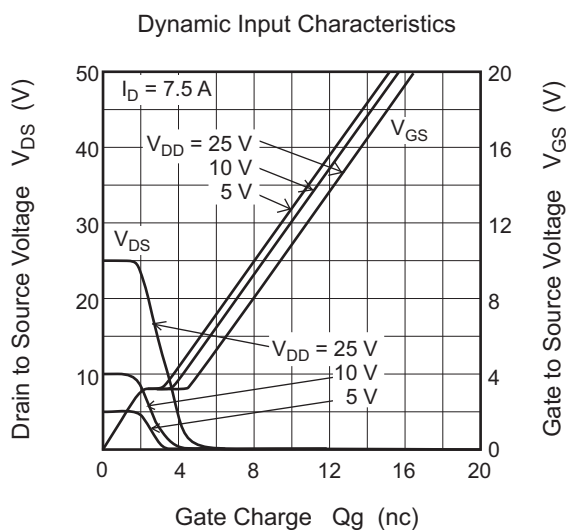
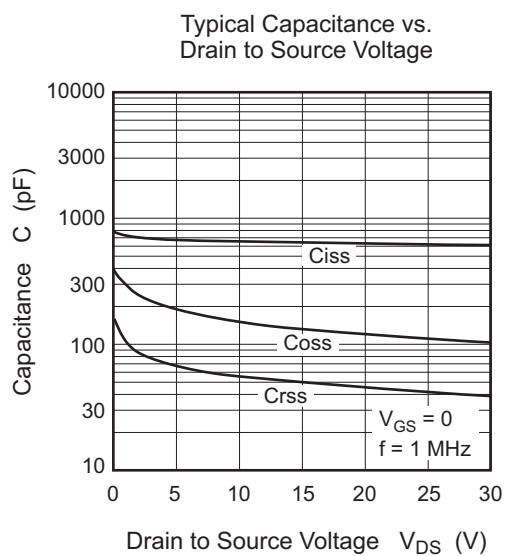
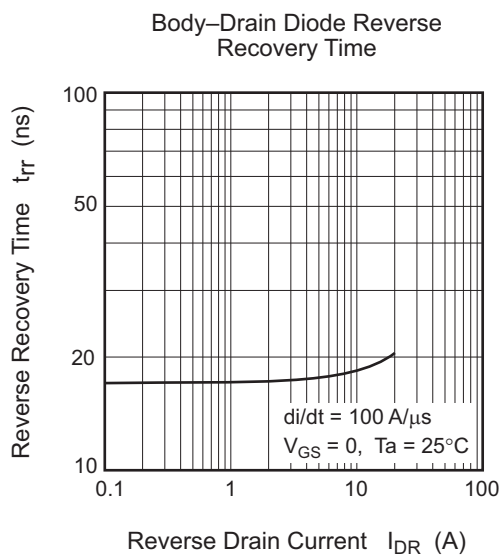
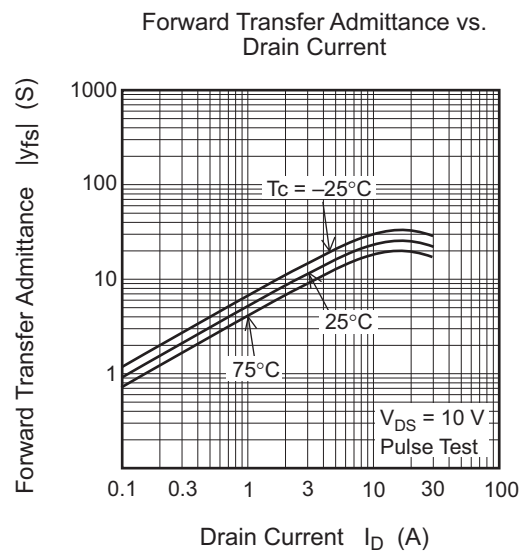
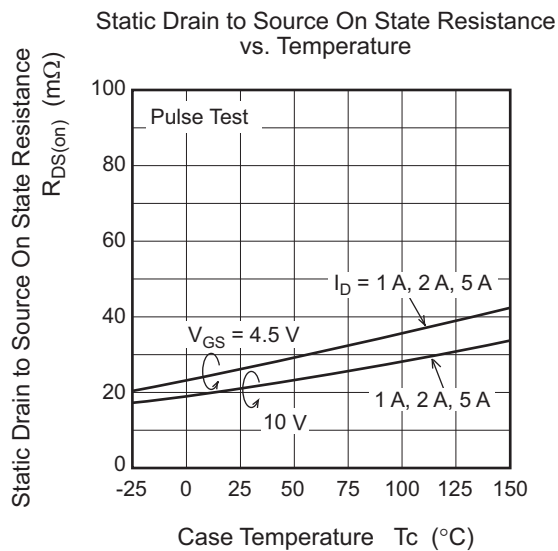
(Ta = 25°C)

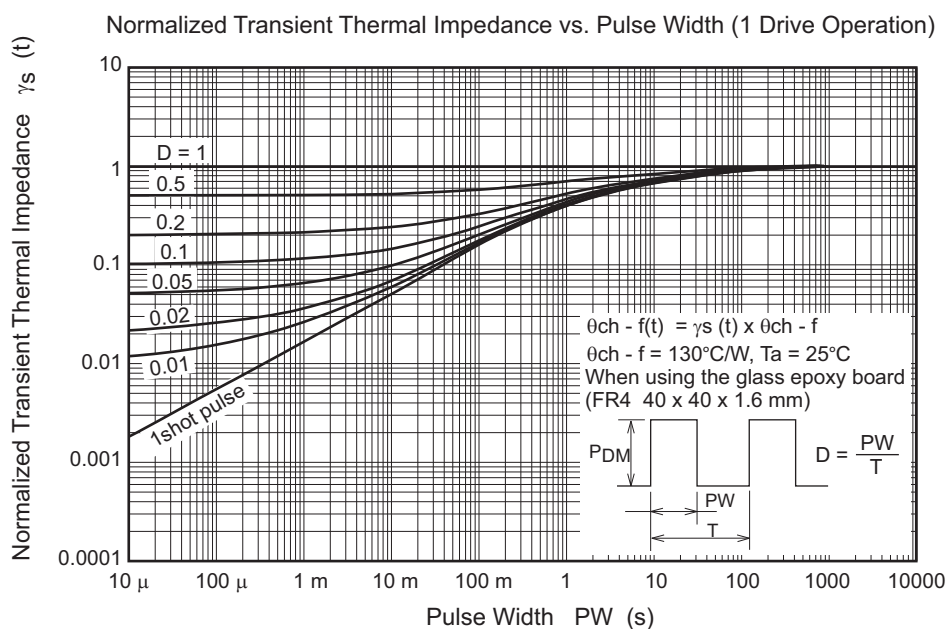
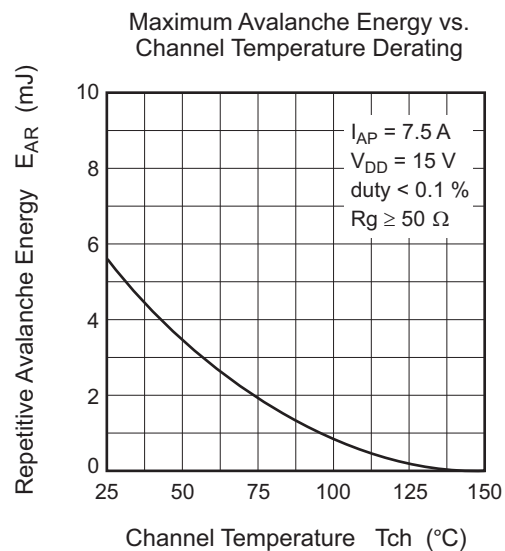
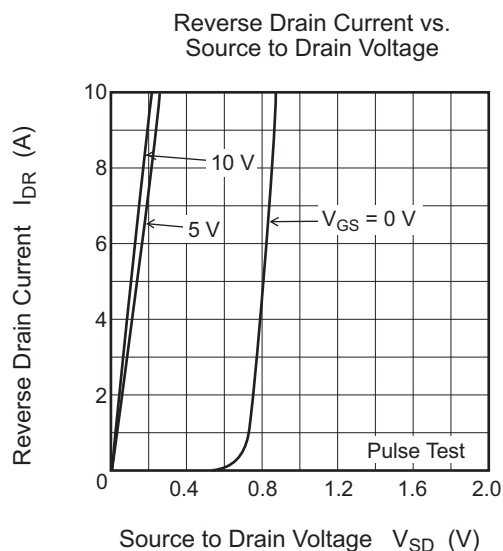
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	30	—	—	V	$I_D = 10 \text{ mA}$, $V_{GS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 0.1	μA	$V_{GS} = \pm 20 \text{ V}$, $V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	1	μA	$V_{DS} = 30 \text{ V}$, $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	1.0	—	2.5	V	$V_{DS} = 10 \text{ V}$, $I_D = 1 \text{ mA}$
Static drain to source on state resistance	$R_{DS(on)}$	—	21	26	$\text{m}\Omega$	$I_D = 3.75 \text{ A}$, $V_{GS} = 10 \text{ V}$ ^{Note5}
	$R_{DS(on)}$	—	26	37	$\text{m}\Omega$	$I_D = 3.75 \text{ A}$, $V_{GS} = 4.5 \text{ V}$ ^{Note5}
Forward transfer admittance	$ y_{fs} $	7.8	13	—	S	$I_D = 3.75 \text{ A}$, $V_{DS} = 10 \text{ V}$ ^{Note5}
Input capacitance	C_{iss}	—	630	—	pF	$V_{DS} = 10 \text{ V}$, $V_{GS} = 0$, $f = 1 \text{ MHz}$
Output capacitance	C_{oss}	—	155	—	pF	
Reverse transfer capacitance	C_{rss}	—	57	—	pF	
Total gate charge	Q_g	—	4.6	—	nc	$V_{DD} = 10 \text{ V}$, $V_{GS} = 4.5 \text{ V}$, $I_D = 7.5 \text{ A}$
Gate to source charge	Q_{gs}	—	2.2	—	nc	
Gate to drain charge	Q_{gd}	—	1.2	—	nc	
Turn-on delay time	$t_{d(on)}$	—	7	—	ns	$V_{GS} = 10 \text{ V}$, $I_D = 3.75 \text{ A}$, $V_{DD} \cong 10 \text{ V}$, $R_L = 2.66 \Omega$, $R_g = 4.7 \Omega$
Rise time	t_r	—	14	—	ns	
Turn-off delay time	$t_{d(off)}$	—	36	—	ns	
Fall time	t_f	—	3.4	—	ns	
Body-drain diode forward voltage	V_{DF}	—	0.85	1.11	V	$I_F = 7.5 \text{ A}$, $V_{GS} = 0$ ^{Note5}
Body-drain diode reverse recovery time	t_{rr}	—	17	—	ns	$I_F = 7.5 \text{ A}$, $V_{GS} = 0$ $diF/dt = 100 \text{ A}/\mu\text{s}$

Notes: 5. Pulse test

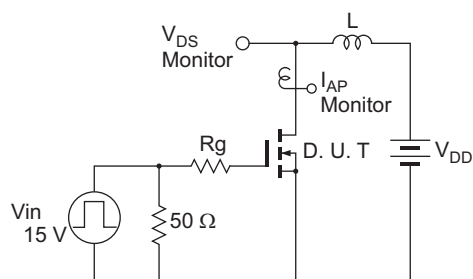
Main Characteristics



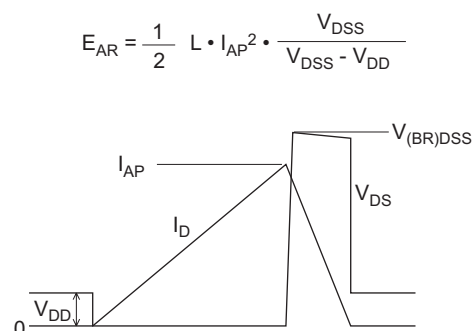




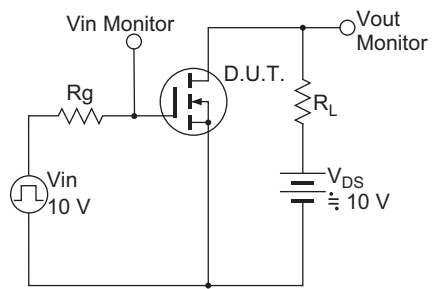
Avalanche Test Circuit



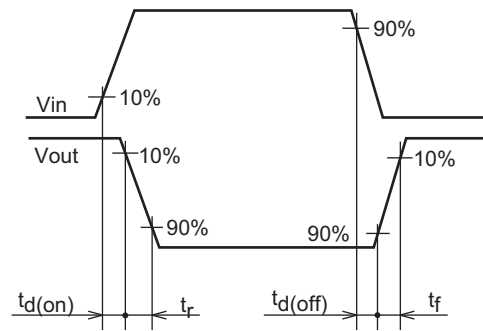
Avalanche Waveform



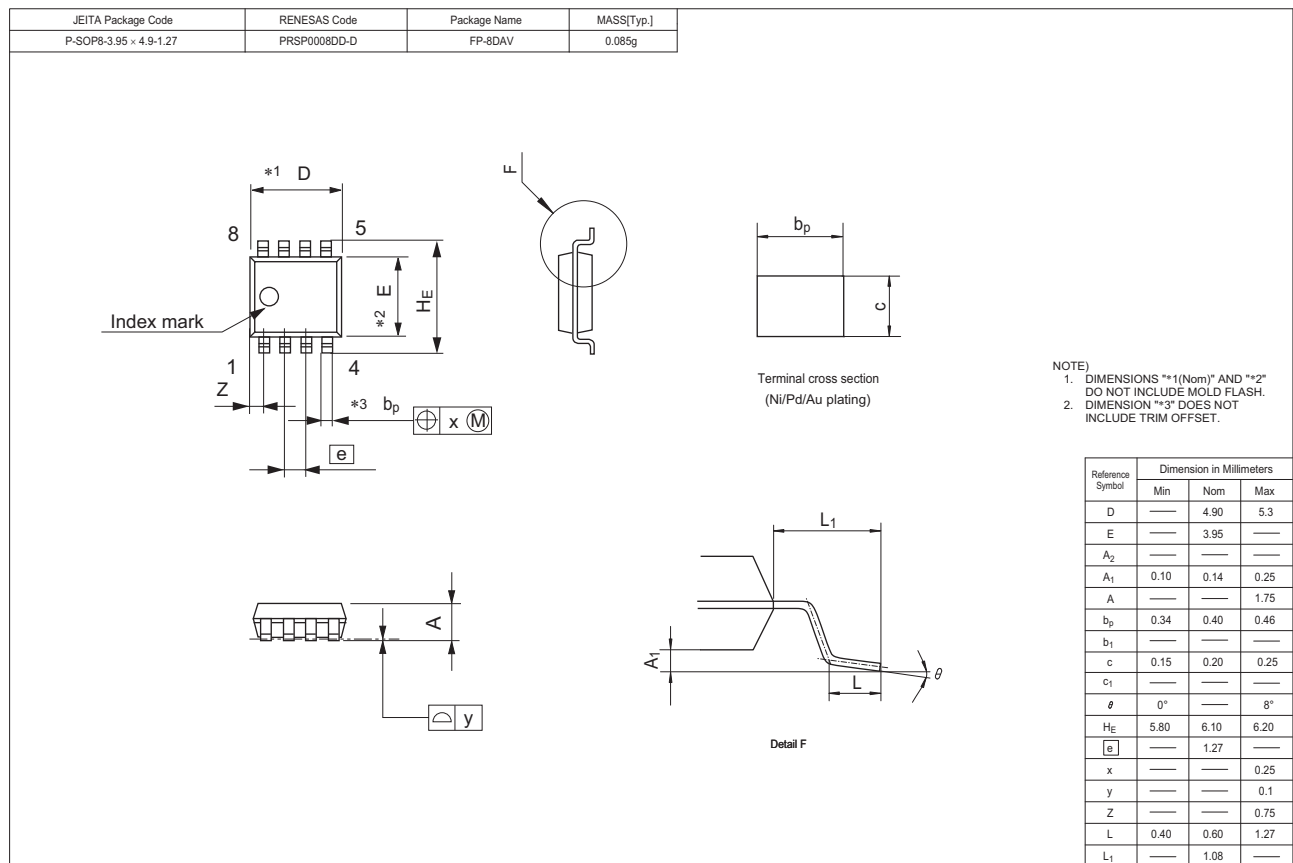
Switching Time Test Circuit



Switching Time Waveform



Package Dimensions



Ordering Information

Orderable Part Number	Quantity	Shipping Container
HAT2276R-EL-E	2500 pcs	Taping

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