

HAT2201R

Silicon N Channel Power MOS FET
Power Switching

REJ03G0233-0301Z

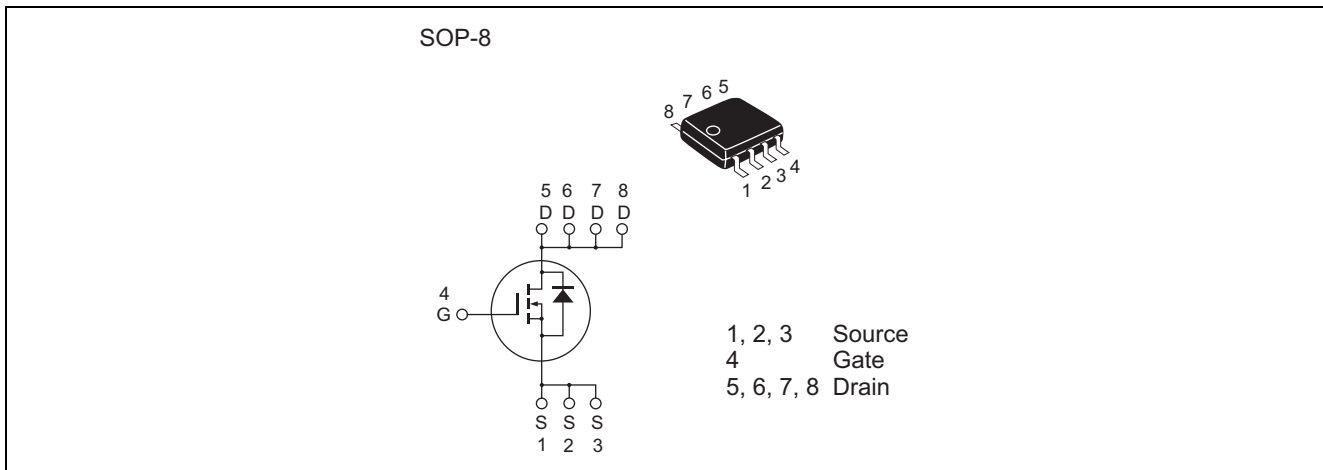
Rev.3.01

Nov.30.2016

Features

- Capable of 8 V gate drive
- Low drive current
- High density mounting
- Low on-resistance
 $R_{DS(on)} = 34 \text{ m}\Omega$ typ. (at $V_{GS} = 10 \text{ V}$)

Outline



Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	100	V
Gate to source voltage	V_{GSS}	± 20	V
Drain current	I_D	6	A
Drain peak current	$I_{D(pulse)}$ ^{Note1}	48	A
Body-drain diode reverse drain current	I_{DR}	6	A
Avalanche current	I_{AP} ^{Note 2}	6	A
Avalanche energy	E_{AR} ^{Note 2}	3.6	mJ
Channel dissipation	P_{ch} ^{Note3}	2.5	W
Channel to Ambient Thermal Impedance	θ_{ch-a} ^{Note3}	50	°C/W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	-55 to +150	°C

Notes: 1. $PW \leq 10 \mu s$, duty cycle $\leq 1\%$
 2. Value at Tch = 25°C, $R_g \geq 50 \Omega$
 3. When using the glass epoxy board (FR4 40 x 40 x 1.6 mm), $PW \leq 10s$

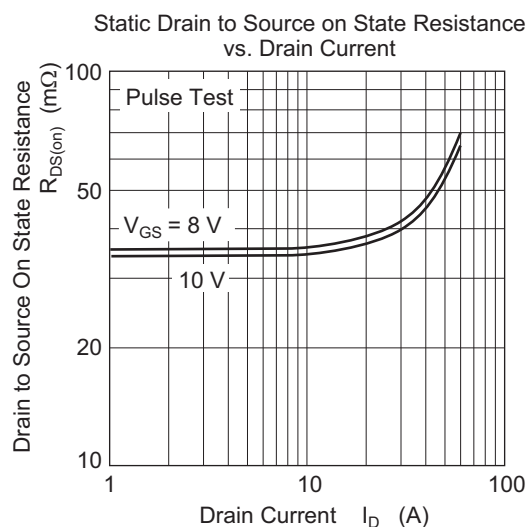
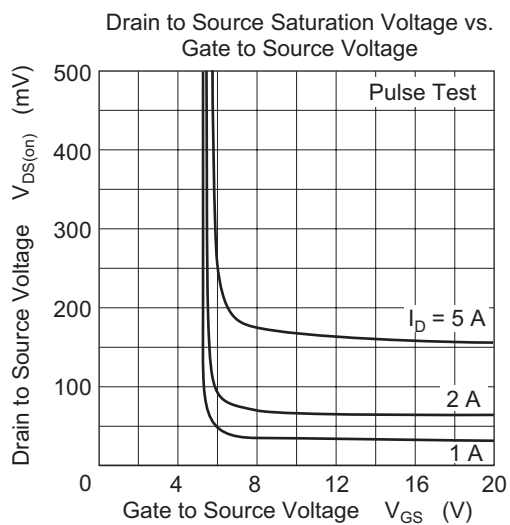
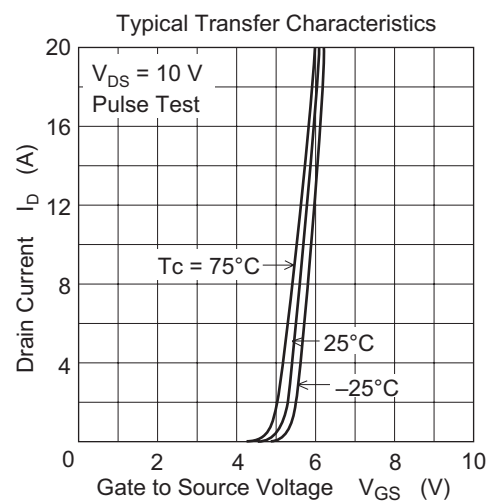
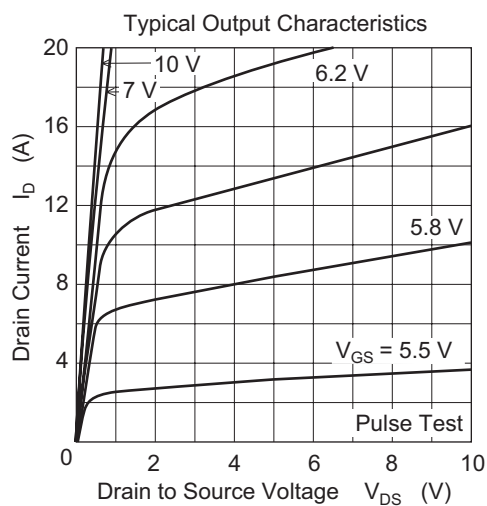
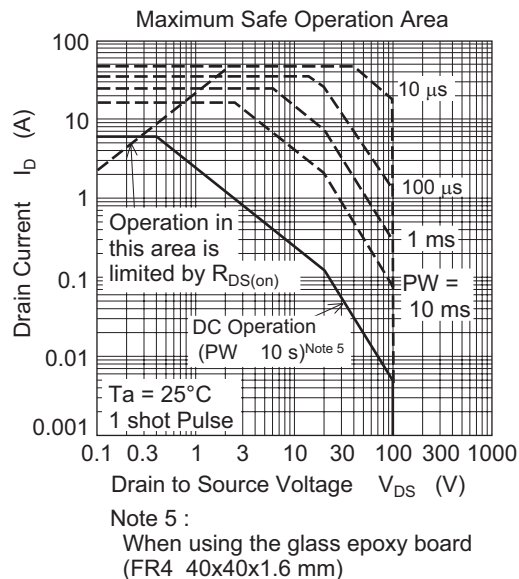
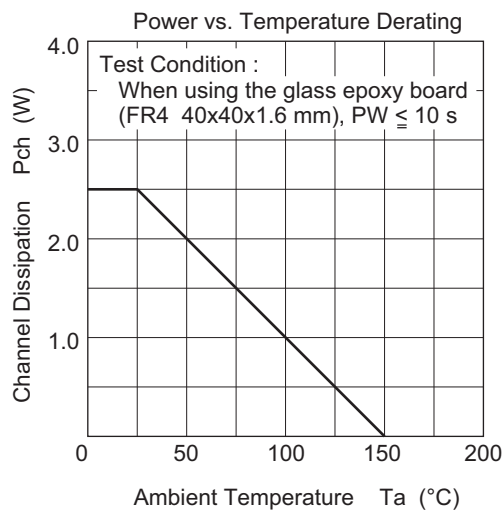
Electrical Characteristics

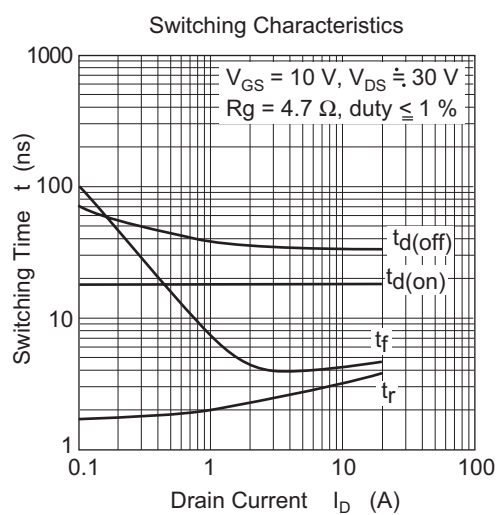
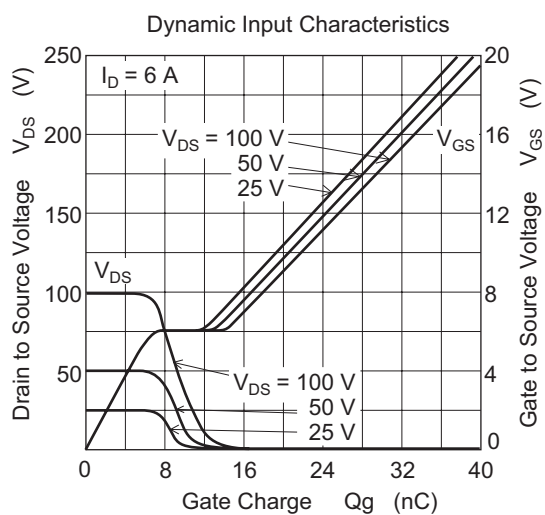
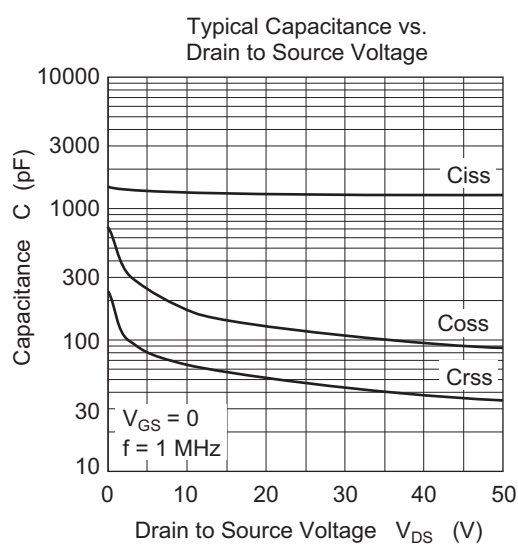
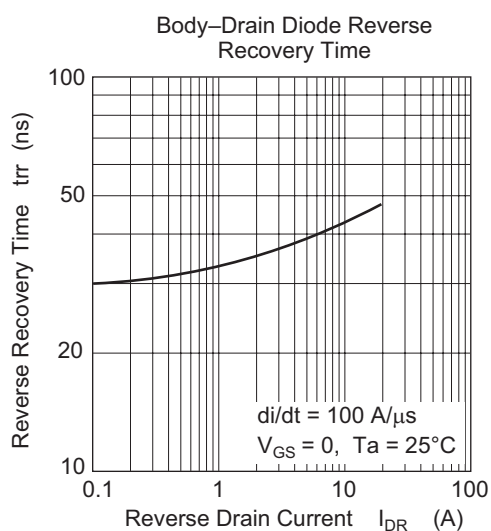
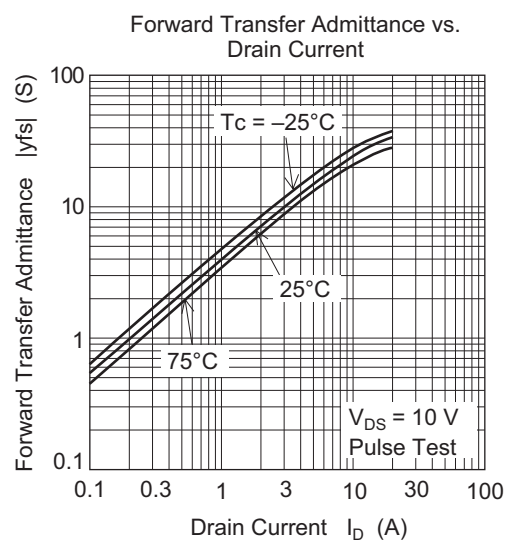
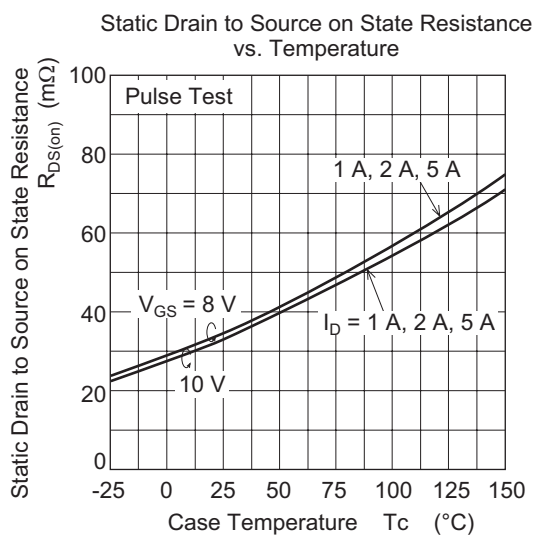
(Ta = 25°C)

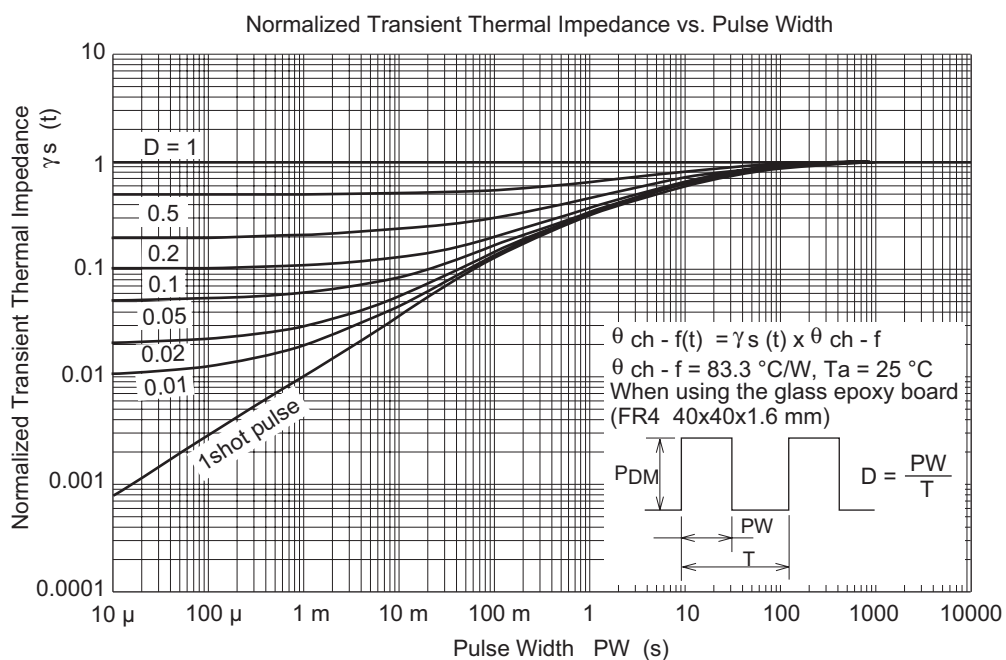
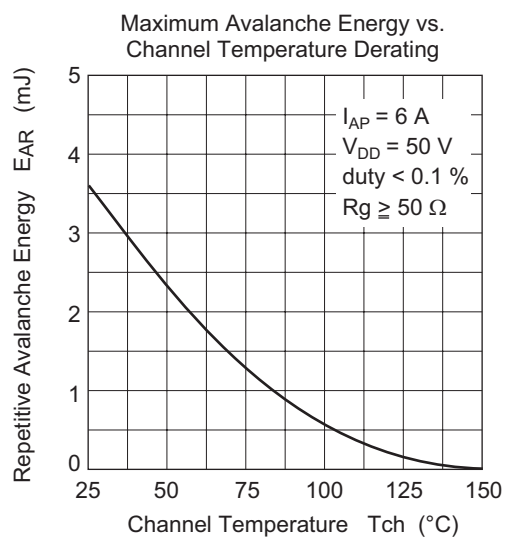
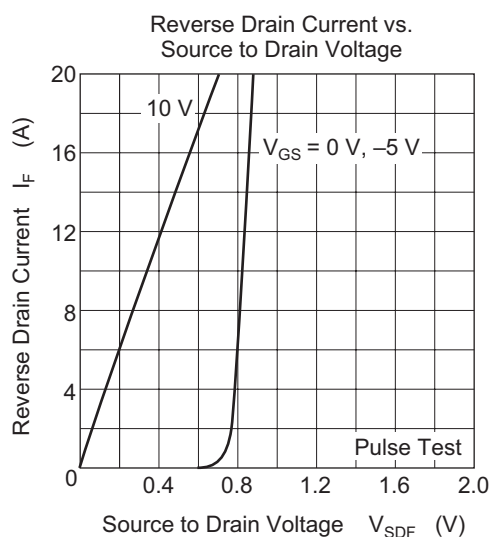
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	100	—	—	V	$I_D = 10 \text{ mA}$, $V_{GS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 0.1	μA	$V_{GS} = \pm 20 \text{ V}$, $V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	1	μA	$V_{DS} = 100 \text{ V}$, $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	3.5	—	5.0	V	$V_{DS} = 10 \text{ V}$, $I_D = 1 \text{ mA}$
Static drain to source on state resistance	$R_{DS(on)}$	—	34	43	$m\Omega$	$I_D = 3 \text{ A}$, $V_{GS} = 10 \text{ V}$ ^{Note4}
	$R_{DS(on)}$	—	35	49	$m\Omega$	$I_D = 3 \text{ A}$, $V_{GS} = 8 \text{ V}$ ^{Note4}
Forward transfer admittance	$ y_{fs} $	6	10	—	S	$I_D = 3 \text{ A}$, $V_{DS} = 10 \text{ V}$ ^{Note4}
Input capacitance	C_{iss}	—	1450	—	pF	$V_{DS} = 10 \text{ V}$
Output capacitance	C_{oss}	—	180	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	C_{rss}	—	65	—	pF	$f = 1 \text{ MHz}$
Gate Resistance	R_g	—	0.9	—	Ω	
Total gate charge	Q_g	—	21	—	nC	$V_{DD} = 50 \text{ V}$
Gate to source charge	Q_{gs}	—	7.6	—	nC	$V_{GS} = 10 \text{ V}$
Gate to drain charge	Q_{gd}	—	5.2	—	nC	$I_D = 6 \text{ A}$
Turn-on delay time	$t_{d(on)}$	—	18	—	ns	$V_{GS} = 10 \text{ V}$, $I_D = 3 \text{ A}$
Rise time	t_r	—	2.5	—	ns	$V_{DD} \cong 30 \text{ V}$
Turn-off delay time	$t_{d(off)}$	—	36	—	ns	$R_L = 10 \Omega$
Fall time	t_f	—	4.0	—	ns	$R_g = 4.7 \Omega$
Body-drain diode forward voltage	V_{DF}	—	0.79	1.03	V	$I_F = 6 \text{ A}$, $V_{GS} = 0$ ^{Note4}
Body-drain diode reverse recovery time	t_{rr}	—	40	—	ns	$I_F = 6 \text{ A}$, $V_{GS} = 0$ $diF/dt = 100 \text{ A}/\mu s$

Notes: 4. Pulse test

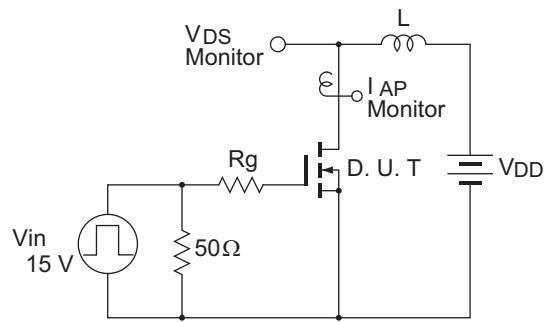
Main Characteristics



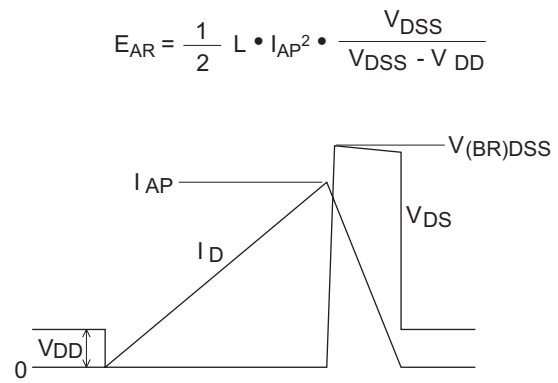




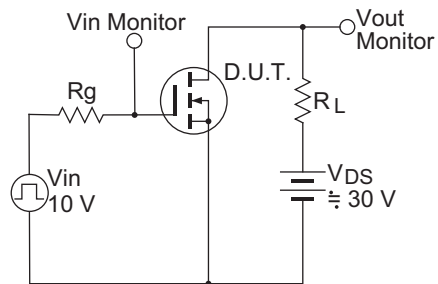
Avalanche Test Circuit



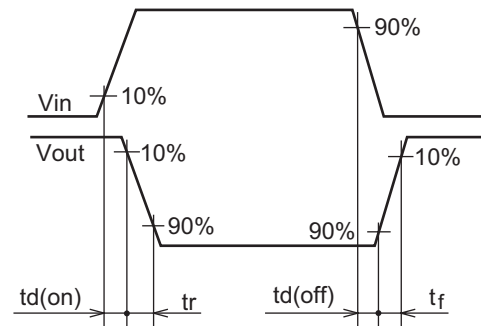
Avalanche Waveform



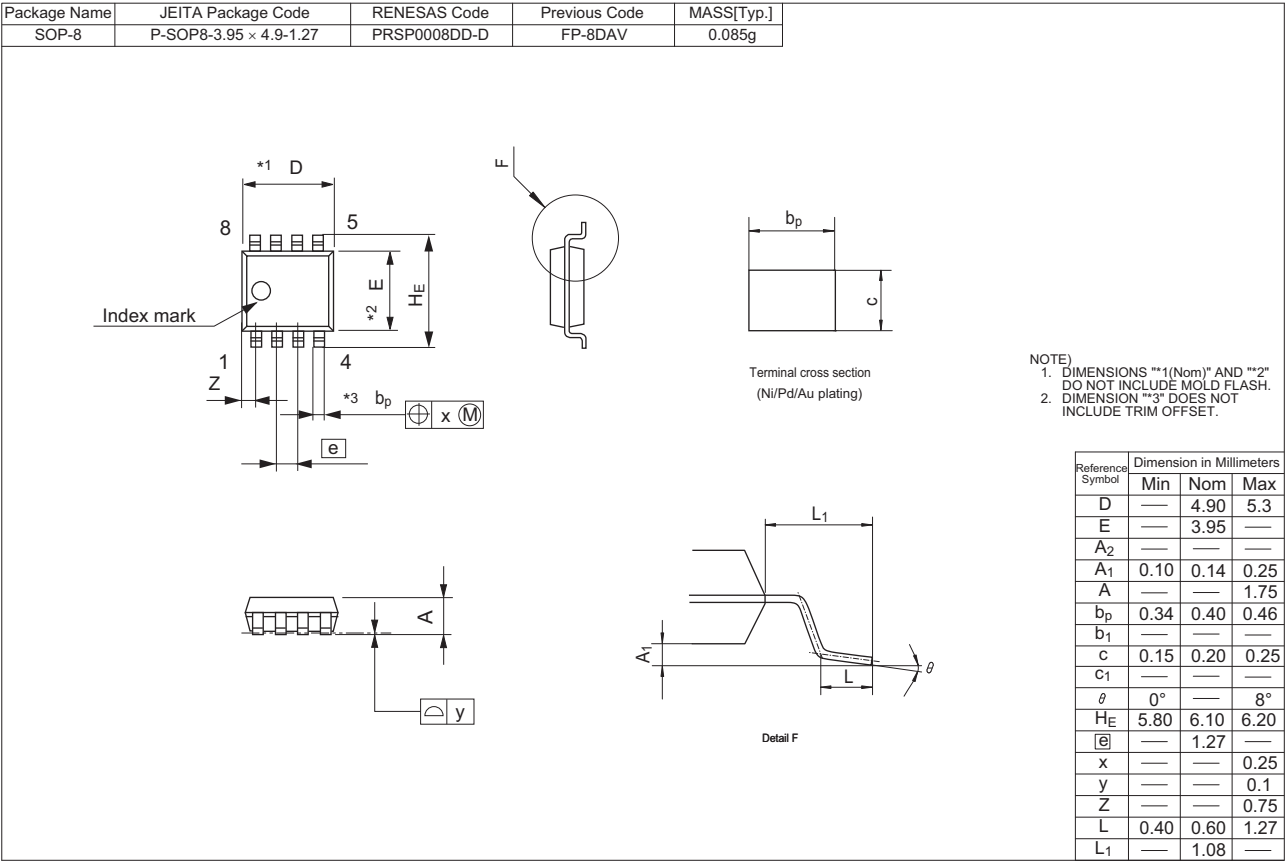
Switching Time Test Circuit



Switching Time Waveform



Package Dimensions



Ordering Information

Orderable Part Number	Quantity	Shipping Container
HAT2201R-EL-E	2500 pcs	Taping

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