

HAT3037R

Silicon N/P Channel Power MOSFET Power Switching

R07DS1374EJ0501

Rev.5.01

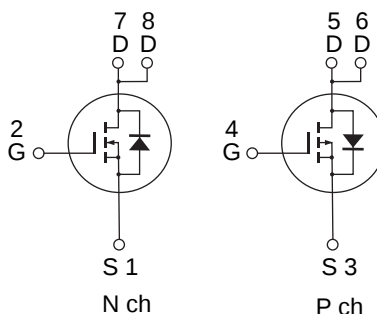
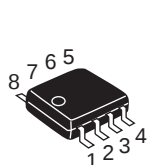
Jan 20, 2017

Features

- Capable of 4.5 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	Ratings		Unit
		Nch	Pch	
Drain to source voltage	V_{DSS}	45	-45	V
Gate to source voltage	V_{GSS}	±20	-20,+10	V
Drain current	I_D	5	-4	A
Drain peak current	$I_{D(pulse)}$ ^{Note1}	40	-32	A
Body-drain diode reverse drain current	I_{DR}	5	-4	A
Channel dissipation	P_{ch} ^{Note2}	1.5		W
Channel dissipation	P_{ch} ^{Note3}	2.3		W
Channel temperature	T_{ch}	150		°C
Storage temperature	T_{stg}	-55 to +150		°C

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

2. 1 Drive operation; When using the glass epoxy board (FR4 40 x 40 x 1.6 mm), $PW \leq 10s$

3. 2 Drive operation; When using the glass epoxy board (FR4 40 x 40 x 1.6 mm), $PW \leq 10s$

Electrical Characteristics

• N Channel

(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	45	—	—	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	$V_{DS} = 45 \text{ V}$, $V_{GS} = 0$
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	$R_{DS(on)}$	—	48	60	$\text{m}\Omega$	$I_D = 2.5 \text{ A}$, $V_{GS} = 10 \text{ V}$ Note4
	$R_{DS(on)}$	—	55	80	$\text{m}\Omega$	$I_D = 2.5 \text{ A}$, $V_{GS} = 4.5 \text{ V}$ Note4
Forward transfer admittance	$ y_{fs} $	5.4	9	—	S	$I_D = 2.5 \text{ A}$, $V_{DS} = 10 \text{ V}$ Note4
Input capacitance	C_{iss}	—	440	—	pF	$V_{DS} = 10 \text{ V}$ $V_{GS} = 0$ $f = 1 \text{ MHz}$
Output capacitance	C_{oss}	—	80	—	pF	
Reverse transfer capacitance	C_{rss}	—	30	—	pF	
Total gate charge	Q_g	—	3.5	—	nC	$V_{DD} = 10 \text{ V}$ $V_{GS} = 4.5 \text{ V}$ $I_D = 5 \text{ A}$
Gate to source charge	Q_{gs}	—	1.3	—	nC	
Gate to drain charge	Q_{gd}	—	0.6	—	nC	
Turn-on delay time	$t_{d(on)}$	—	10	—	ns	$V_{GS} = 10 \text{ V}$, $I_D = 2.5 \text{ A}$ $V_{DD} \approx 10 \text{ V}$ $R_L = 4 \Omega$ $R_g = 4.7 \Omega$
Rise time	t_r	—	12	—	ns	
Turn-off delay time	$t_{d(off)}$	—	40	—	ns	
Fall time	t_f	—	28	—	ns	
Body-drain diode forward voltage	V_{DF}	—	0.85	1.11	V	$I_F = 5 \text{ A}$, $V_{GS} = 0$ Note4
Body-drain diode reverse recovery time	t_{rr}	—	30	—	ns	$I_F = 5 \text{ A}$, $V_{GS} = 0$ $diF/dt = 100 \text{ A}/\mu\text{s}$

Notes: 4. Pulse test

• P Channel

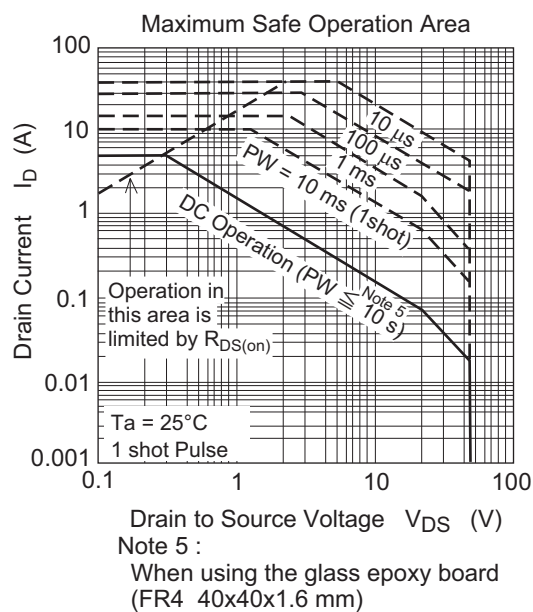
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	-45	—	—	V	$I_D = -10 \text{ mA}$, $V_{GS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 0.1	μA	$V_{GS} = -20, +10 \text{ V}$, $V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	-1	μA	$V_{DS} = -45 \text{ V}$, $V_{GS} = 0$
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	$R_{DS(on)}$	—	70	88	$\text{m}\Omega$	$I_D = -2 \text{ A}$, $V_{GS} = -10 \text{ V}$ Note4
	$R_{DS(on)}$	—	87	125	$\text{m}\Omega$	$I_D = -2 \text{ A}$, $V_{GS} = -4.5 \text{ V}$ Note4
Forward transfer admittance	$ y_{fs} $	3.3	5.5	—	S	$I_D = -2 \text{ A}$, $V_{DS} = -10 \text{ V}$ Note4
Input capacitance	C_{iss}	—	650	—	pF	$V_{DS} = -10 \text{ V}$ $V_{GS} = 0$ $f = 1 \text{ MHz}$
Output capacitance	C_{oss}	—	85	—	pF	
Reverse transfer capacitance	C_{rss}	—	55	—	pF	
Total gate charge	Q_g	—	5.2	—	nC	$V_{DD} = -10 \text{ V}$ $V_{GS} = -4.5 \text{ V}$ $I_D = -4 \text{ A}$
Gate to source charge	Q_{gs}	—	1.9	—	nC	
Gate to drain charge	Q_{gd}	—	0.8	—	nC	
Turn-on delay time	$t_{d(on)}$	—	16	—	ns	$V_{GS} = -10 \text{ V}$, $I_D = -2 \text{ A}$ $V_{DD} \approx -10 \text{ V}$ $R_L = 5 \Omega$ $R_g = 4.7 \Omega$
Rise time	t_r	—	17	—	ns	
Turn-off delay time	$t_{d(off)}$	—	32	—	ns	
Fall time	t_f	—	4	—	ns	
Body-drain diode forward voltage	V_{DF}	—	-0.86	-1.12	V	$I_F = -4 \text{ A}$, $V_{GS} = 0$ Note4
Body-drain diode reverse recovery time	t_{rr}	—	35	—	ns	$I_F = -4 \text{ A}$, $V_{GS} = 0$ $diF/dt = 100 \text{ A}/\mu\text{s}$

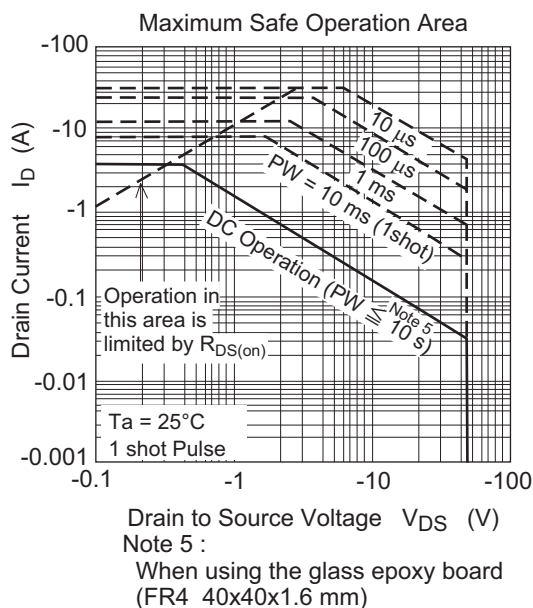
Notes: 4. Pulse test

Main Characteristics

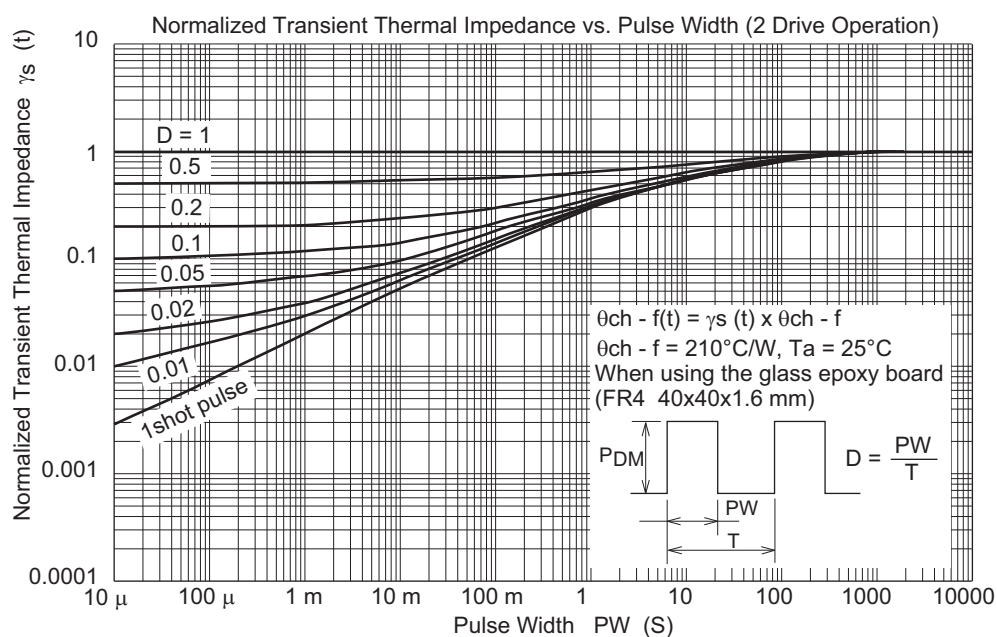
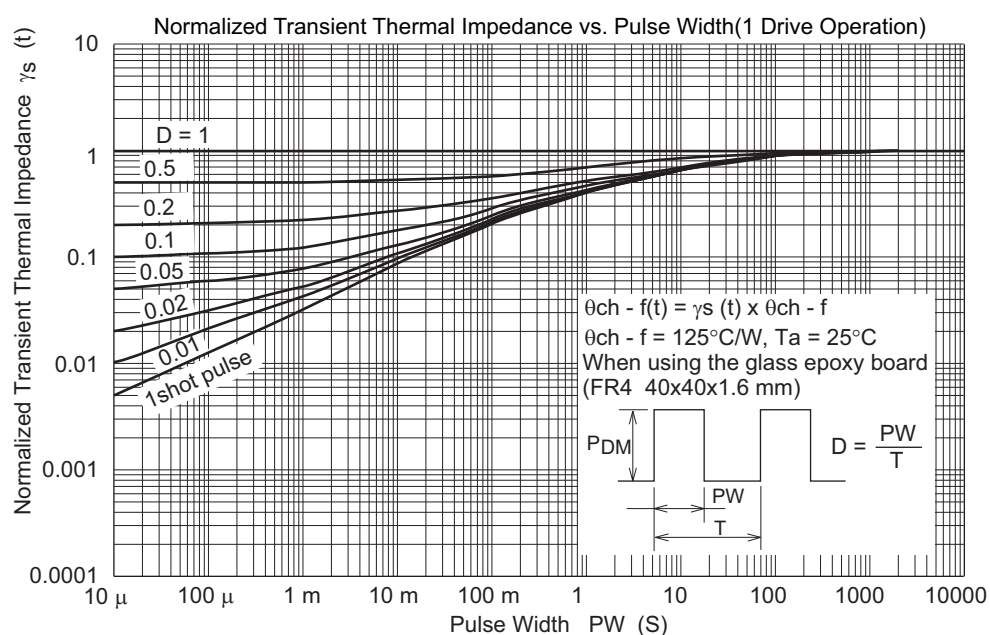
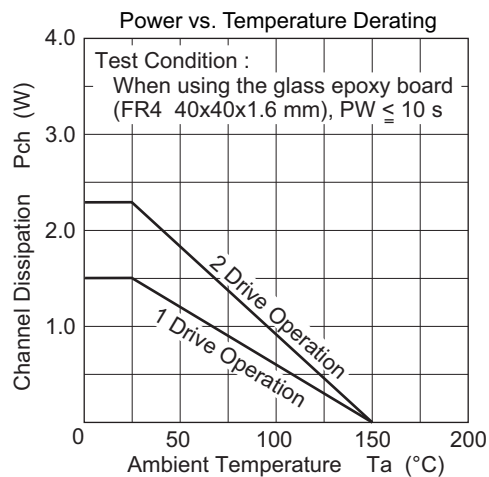
• N Channel



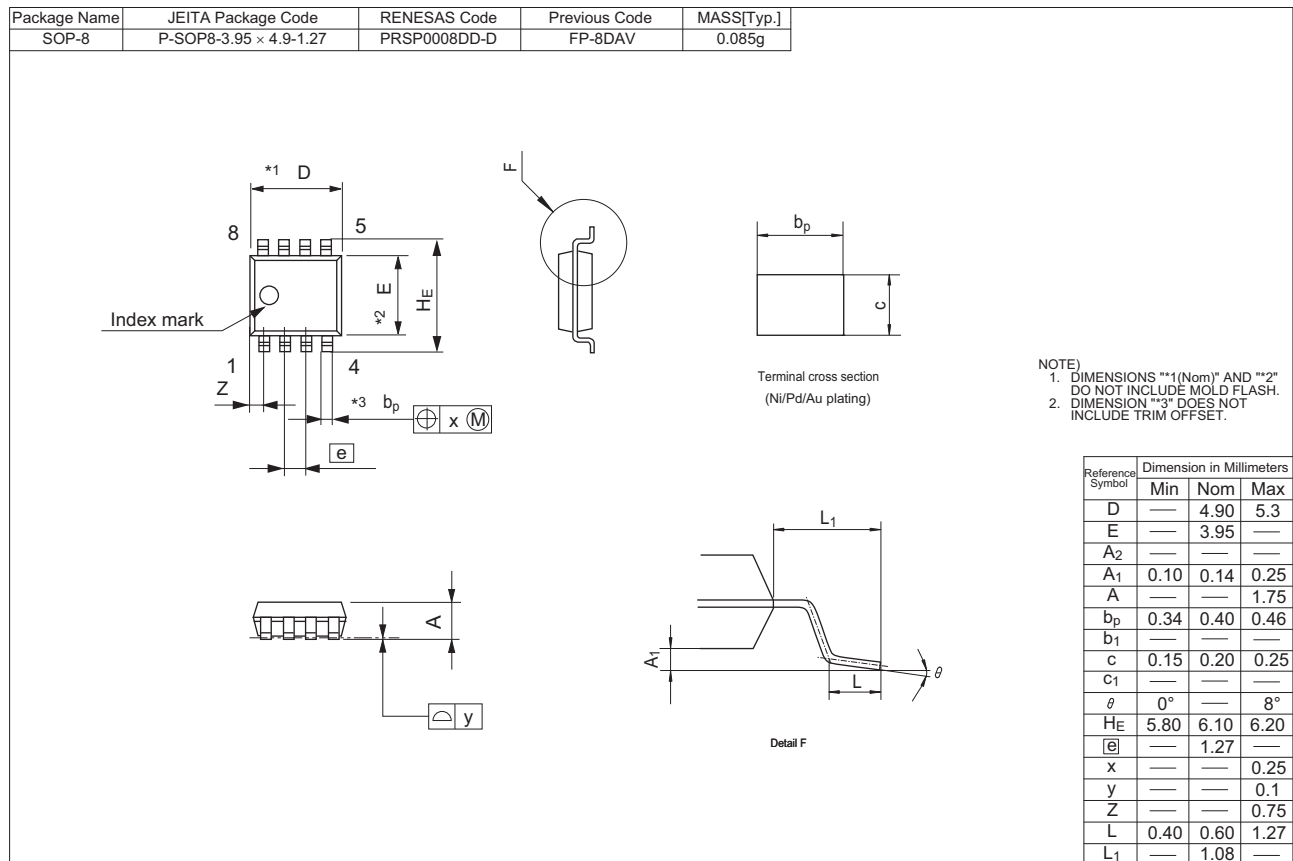
• P Channel



• Common



Package Dimensions



Ordering Information

Orderable Part Number	Quantity	Shipping Container
HAT3037R-EL-E	2500 pcs	Taping

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