

# HAT2090R

Silicon N Channel MOS FET  
High Speed Power Switching

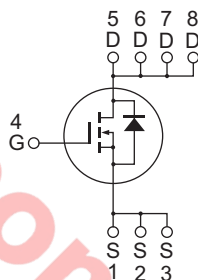
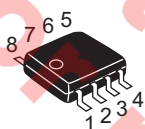
REJ03G1316-0100  
(Previous: ADE-208-1474)  
Rev.1.00  
Nov 08, 2005

## Features

- Low on-resistance
- Low drive current
- High density mounting

## Outline

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



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

## Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	$V_{DSS}$	350	V
Gate to source voltage	$V_{GSS}$	±30	V
Drain current	$I_D$	0.9	A
Drain peak current	$I_{D(pulse)}$ <sup>Note1</sup>	7.2	A
Body-drain diode reverse drain current	$I_{DR}$	0.9	A
Channel dissipation	$P_{ch}$ <sup>Note2</sup>	2.5	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	-55 to +150	°C

Notes: 1. PW ≤ 10 μs, duty cycle ≤ 1%

2. When using the glass epoxy board (FR4 40 x 40 x 1.6 mm), PW ≤ 10 s

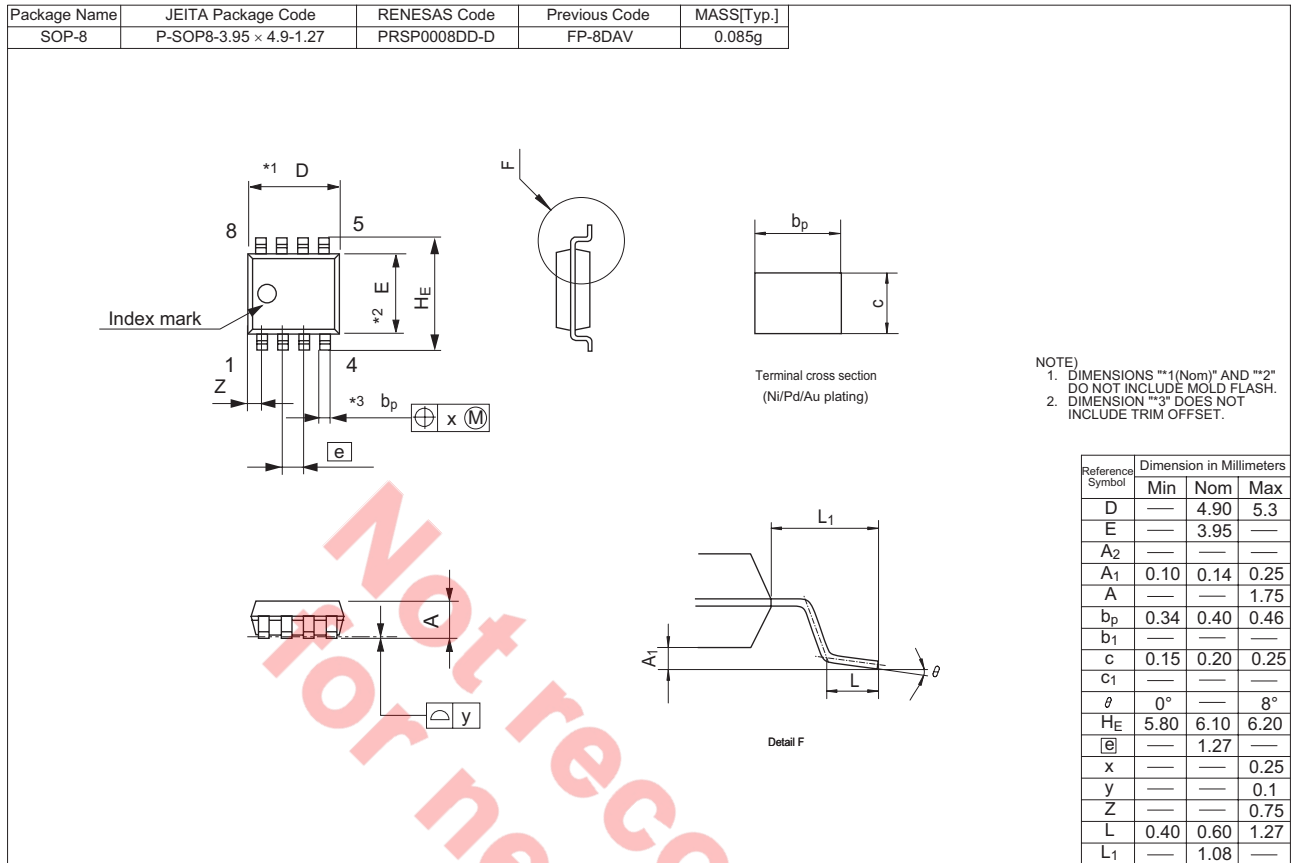
## Electrical Characteristics

(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	350	—	—	V	$I_D = 10 \text{ mA}$ , $V_{GS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	1	$\mu\text{A}$	$V_{DS} = 350 \text{ V}$ , $V_{GS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	$\pm 0.1$	$\mu\text{A}$	$V_{GS} = \pm 30 \text{ V}$ , $V_{DS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	3.0	—	4.5	V	$V_{DS} = 10 \text{ V}$ , $I_D = 1 \text{ mA}$
Forward transfer admittance	$ y_{fs} $	0.7	1.2	—	S	$I_D = 0.45 \text{ A}$ , $V_{DS} = 10 \text{ V}$ <sup>Note3</sup>
Static drain to source on state resistance	$R_{DS(on)}$	—	2.5	3.0	$\Omega$	$I_D = 0.45 \text{ A}$ , $V_{GS} = 10 \text{ V}$ <sup>Note3</sup>
Input capacitance	$C_{iss}$	—	365	—	pF	$V_{DS} = 25 \text{ V}$ $V_{GS} = 0$ $f = 1 \text{ MHz}$
Output capacitance	$C_{oss}$	—	35	—	pF	
Reverse transfer capacitance	$C_{rss}$	—	8	—	pF	
Turn-on delay time	$t_{d(on)}$	—	20	—	ns	$I_D = 0.45 \text{ A}$ $V_{GS} = 10 \text{ V}$ $R_L = 556 \Omega$ $R_g = 10 \Omega$
Rise time	$t_r$	—	10	—	ns	
Turn-off delay time	$t_{d(off)}$	—	50	—	ns	
Fall time	$t_f$	—	50	—	ns	
Total gate charge	$Q_g$	—	12	—	nC	$V_{DD} = 250 \text{ V}$
Gate to source charge	$Q_{gs}$	—	2	—	nC	$V_{GS} = 10 \text{ V}$
Gate to drain charge	$Q_{gd}$	—	6	—	nC	$I_D = 0.9 \text{ A}$
Body-drain diode forward voltage	$V_{DF}$	—	0.8	1.2	V	$I_F = 0.9 \text{ A}$ , $V_{GS} = 0$ <sup>Note3</sup>
Body-drain diode reverse recovery time	$t_{rr}$	—	210	—	ns	$I_F = 0.9 \text{ A}$ , $V_{GS} = 0$ $di_F/dt = 100 \text{ A}/\mu\text{s}$

Notes: 3. Pulse test

Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
HAT2090R-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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