To our customers,

Old Company Name in Catalogs and Other Documents

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Renesas Electronics website: http://www.renesas.com

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (http://www.renesas.com)

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HAT3005R

Silicon N/P Channel Power MOS FET
High Speed Power Switching

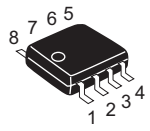
REJ03G0366-0300
Rev.3.00
Jun. 10, 2005

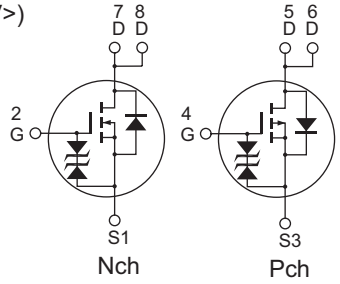
Features

- Low on-resistance
- Capable of 4 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}	150	–150	V
Gate to source voltage	V_{GSS}	±15	±15	V
Drain current	I_D	0.5	–0.25	A
Drain peak current	$I_{D(pulse)}$ Note1	2	–1	A
Body-drain diode reverse drain current	I_{DR}	0.5	–0.25	A
Channel dissipation	Pch Note2	1		W
Channel dissipation	Pch Note3	1.5		W
Channel temperature	Tch	150		°C
Storage temperature	Tstg	–55 to +150		°C

Notes: 1. PW ≤ 10 µs, duty cycle ≤ 1 %
2. 1 Drive operation : When using the glass epoxy board (FR4 40 x 40 x 1.6 mm)
3. 2 Drive operation : When using the glass epoxy board (FR4 40 x 40 x 1.6 mm)

Electrical Characteristics

• N channel

(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	150	—	—	V	I_D = 10 mA, V_{GS} = 0
Gate to source breakdown voltage	$V_{(BR)GSS}$	±15	—	—	V	I_G = ±100 µA, V_{DS} = 0
Gate to source leak current	I_{GSS}	—	—	±10	µA	V_{GS} = ±12 V, V_{DS} = 0
Zero gate voltage drain current	I_{DSS}	—	—	5	µA	V_{DS} = 150 V, V_{GS} = 0
Gate to source cutoff voltage	$V_{GS(off)}$	1.0	—	2.1	V	V_{DS} = 10 V, I_D = 1 mA
Static drain to source on state resistance	$R_{DS(on)}$	—	1.6	2.2	Ω	I_D = 0.5 A, V_{GS} = 10 V Note4
	$R_{DS(on)}$	—	1.9	2.7	Ω	I_D = 0.5 A, V_{GS} = 4 V Note4
	$R_{DS(on)}$	—	2.4	5.5	Ω	I_D = 2 A, V_{GS} = 5 V Note4
Forward transfer admittance	$\|y_{fs}\|$	0.56	0.86	—	S	I_D = 0.5 A, V_{DS} = 10 V Note4
Input capacitance	Ciss	—	95	—	pF	V_{DS} = 10 V, V_{GS} = 0, f = 1 MHz
Output capacitance	Coss	—	42	—	pF	
Reverse transfer capacitance	Crss	—	11	—	pF	
Turn-on delay time	$t_{d(on)}$	—	9	—	ns	V_{GS} = 5 V, I_D = 0.5 A, V_{DD} ≅ 30 V
Rise time	t_r	—	16	—	ns	
Turn-off delay time	$t_{d(off)}$	—	18	—	ns	
Fall time	t_f	—	14	—	ns	
Body–drain diode forward voltage	V_{DF}	—	0.9	1.4	V	IF = 0.5 A, V_{GS} = 0 Note4
Body–drain diode reverse recovery time	t_{rr}	—	90	—	ns	IF = 0.5 A, V_{GS} = 0 diF/ dt = 50 A/µs

Notes: 4. Pulse test

• P channel

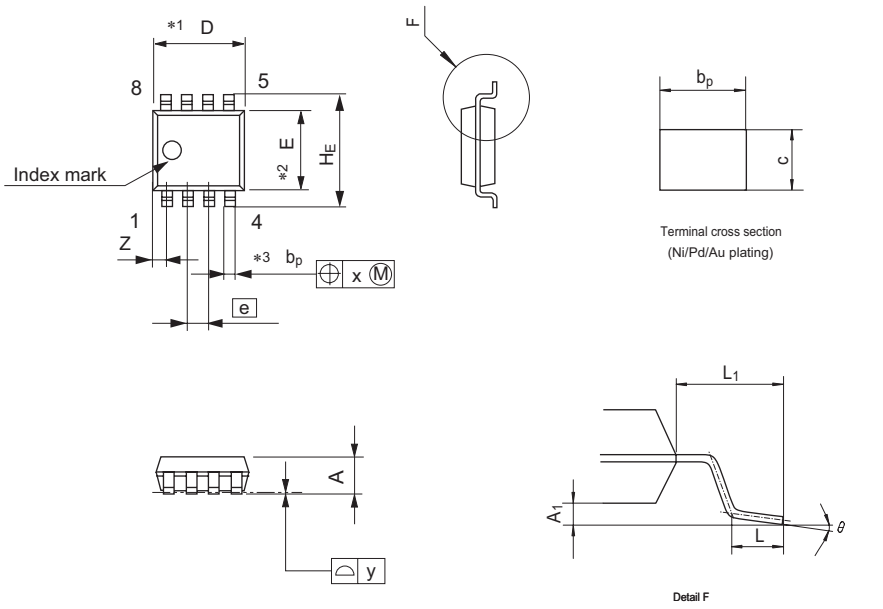
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	–150	—	—	V	I_D = –10 mA, V_{GS} = 0
Gate to source breakdown voltage	$V_{(BR)GSS}$	±15	—	—	V	I_G = ±100 µA, V_{DS} = 0
Gate to source leak current	I_{GSS}	—	—	±10	µA	V_{GS} = ±12 V, V_{DS} = 0
Zero gate voltage drain current	I_{DSS}	—	—	–5	µA	V_{DS} = –150 V, V_{GS} = 0
Gate to source cutoff voltage	$V_{GS(off)}$	–1.0	—	–2.0	V	V_{DS} = –10V, I_D = –1mA
Static drain to source on state resistance	$R_{DS(on)}$	—	5.0	6.2	Ω	I_D = –0.25 A, V_{GS} = –10 V Note5
	$R_{DS(on)}$	—	6.0	7.5	Ω	I_D = –0.25 A, V_{GS} = –4 V Note5
	$R_{DS(on)}$	—	7.0	10.0	Ω	I_D = –1 A, V_{GS} = –5 V Note5
Forward transfer admittance	$\|y_{fs}\|$	0.29	0.45	—	S	I_D = –0.25 A, V_{DS} = –10 V Note5
Input capacitance	Ciss	—	92	—	pF	V_{DS} = –10 V, V_{GS} = 0, f = 1 MHz
Output capacitance	Coss	—	37	—	pF	
Reverse transfer capacitance	Crss	—	10	—	pF	
Turn-on delay time	$t_{d(on)}$	—	10	—	ns	V_{GS} = –5 V, I_D = –0.25 A, V_{DD} ≅ –30 V
Rise time	t_r	—	13	—	ns	
Turn-off delay time	$t_{d(off)}$	—	22	—	ns	
Fall time	t_f	—	15	—	ns	
Body–drain diode forward voltage	V_{DF}	—	–0.9	–1.4	V	IF = –0.25 A, V_{GS} = 0 Note5
Body–drain diode reverse recovery time	t_{rr}	—	80	—	ns	IF = –0.25 A, V_{GS} = 0 diF/ dt = 50 A/µs

Notes: 5. Pulse test

Package Dimensions

JEITA Package Code	RENESAS Code	Package Name	MASS[Typ.]
P-SOP8-3.95 × 4.9-1.27	PRSP0008DD-D	FP-8DAV	0.085g



NOTE)
1. DIMENSIONS "*1(Nom)" AND "*2" DO NOT INCLUDE MOLD FLASH.
2. DIMENSION "*3" DOES NOT INCLUDE TRIM OFFSET.

Reference Symbol	Dimension in Millimeters		
	Min	Nom	Max
D	—	4.90	5.3
E	—	3.95	—
A_2	—	—	—
A_1	0.10	0.14	0.25
A	—	—	1.75
b_p	0.34	0.40	0.46
b_1	—	—	—
c	0.15	0.20	0.25
c_1	—	—	—
θ	0°	—	8°
H_E	5.80	6.10	6.20
e	—	1.27	—
x	—	—	0.25
y	—	—	0.1
Z	—	—	0.75
L	0.40	0.60	1.27
L_1	—	1.08	—

Ordering Information

Part Name	Quantity	Shipping Container
HAT3005R-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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http://www.renesas.com

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