

HAT2105R

Silicon N Channel Power MOS FET
High Speed Power Switching

REJ03G1369-0100

Rev.1.00

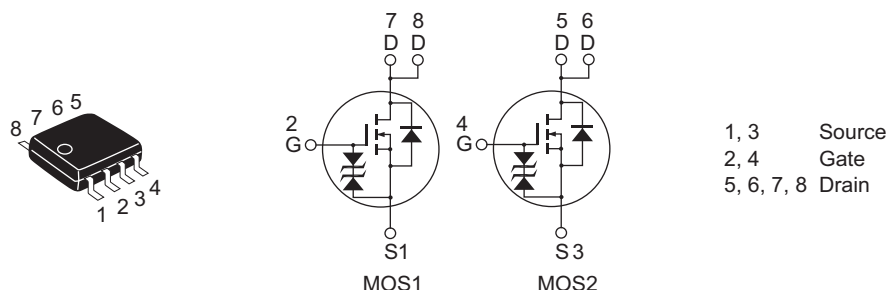
Apr 04, 2006

Features

- Low on-resistance
- Capable of 4 V gate drive
- High density mounting

Outline

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



Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DS}	200	V
Gate to source voltage	V_{GS}	± 15	V
Drain current	I_D	0.5	A
Drain peak current	$I_{D(pulse)}$ ^{Note1}	2	A
Body-drain diode reverse drain current	I_{DR}	0.5	A
Channel dissipation	P_{ch} ^{Note2}	1.3	W
	P_{ch} ^{Note3}	2	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), $PW \leq 10 s$

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

Electrical Characteristics

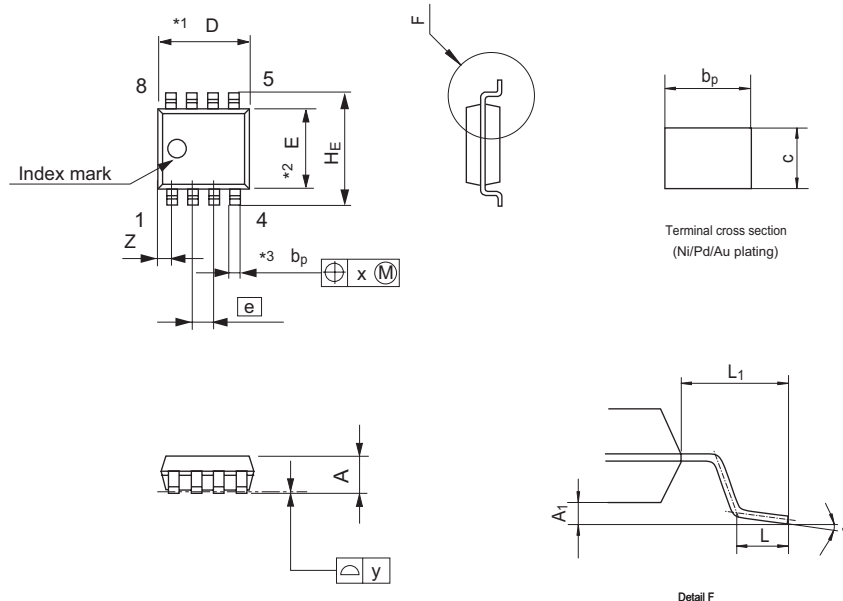
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	200	—	—	V	$I_D = 10 \text{ mA}$, $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	± 15	—	—	V	$I_G = \pm 100 \text{ }\mu\text{A}$, $V_{DS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 12 \text{ V}$, $V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	5	μA	$V_{DS} = 200 \text{ V}$, $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	1.0	—	2.1	V	$V_{DS} = 10 \text{ V}$, $I_D = 1 \text{ mA}$
Static drain to source on state resistance	$R_{DS(on)}$	—	1.6	2.2	Ω	$I_D = 0.5 \text{ A}$, $V_{GS} = 10 \text{ V}$ ^{Note4}
	$R_{DS(on)}$	—	1.9	2.7	Ω	$I_D = 0.5 \text{ A}$, $V_{GS} = 4 \text{ V}$ ^{Note4}
	$R_{DS(on)}$	—	2.4	5.5	Ω	$I_D = 2 \text{ A}$, $V_{GS} = 5 \text{ V}$ ^{Note4}
Forward transfer admittance	$ y_{fs} $	0.56	0.86	—	S	$I_D = 0.5 \text{ A}$, $V_{DS} = 10 \text{ V}$ ^{Note4}
Input capacitance	C_{iss}	—	120	—	pF	$V_{DS} = 10 \text{ V}$, $V_{GS} = 0$, $f = 1 \text{ MHz}$
Output capacitance	C_{oss}	—	29	—	pF	
Reverse transfer capacitance	C_{rss}	—	10	—	pF	
Turn-on delay time	$t_{d(on)}$	—	10	—	ns	$V_{GS} = 5 \text{ V}$, $I_D = 0.5 \text{ A}$, $V_{DD} \cong 30 \text{ V}$
Rise time	t_r	—	14	—	ns	
Turn-off delay time	$t_{d(off)}$	—	24	—	ns	
Fall time	t_f	—	9	—	ns	
Body-drain diode forward voltage	V_{DF}	—	0.9	1.4	V	$I_F = 0.5 \text{ A}$, $V_{GS} = 0$ ^{Note4}

Notes: 4. Pulse test

Package Dimensions

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
SOP-8	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
ϕ	—	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
HAT2105R-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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