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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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Not recommended
for new design

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HAT2053M

Silicon N Channel Power MOS FET
Power Switching

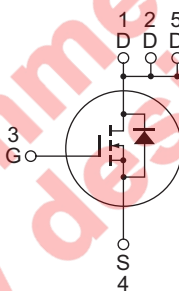
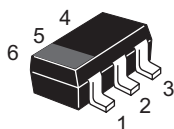
REJ03G1172-0500
(Previous: ADE-208-755C)
Rev.5.00
Sep 07, 2005

Features

- Low on-resistance
- Low drive current
- High density mounting
- 2.5 V gate drive device can be driven from 3 V source

Outline

RENESAS Package code: PTSP0006FA-A
(Package name: TSOP-6)



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

Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Value	Unit
Drain to source voltage	V _{DSS}	20	V
Gate to source voltage	V _{GSS}	±12	V
Drain current	I _D ^{Note 2}	6.1	A
Drain peak current	I _{D (pulse)} ^{Note 1}	24.4	A
Body to drain diode reverse drain current	I _{DR} ^{Note 2}	6.1	A
Channel dissipation	P _{ch} ^{Note 2}	2.0	W
	P _{ch} ^{Note 3}	1.05	W
Channel temperature	T _{ch}	150	°C
Storage temperature	T _{stg}	-55 to +150	°C

Notes: 1. PW ≤ 10 μs, duty cycle ≤ 1%

2. When using the alumina ceramic board (50 × 50 × 0.7 mm), PW ≤ 5 s, Ta = 25°C

3. When using the alumina ceramic board (50 × 50 × 0.7 mm), Ta = 25°C

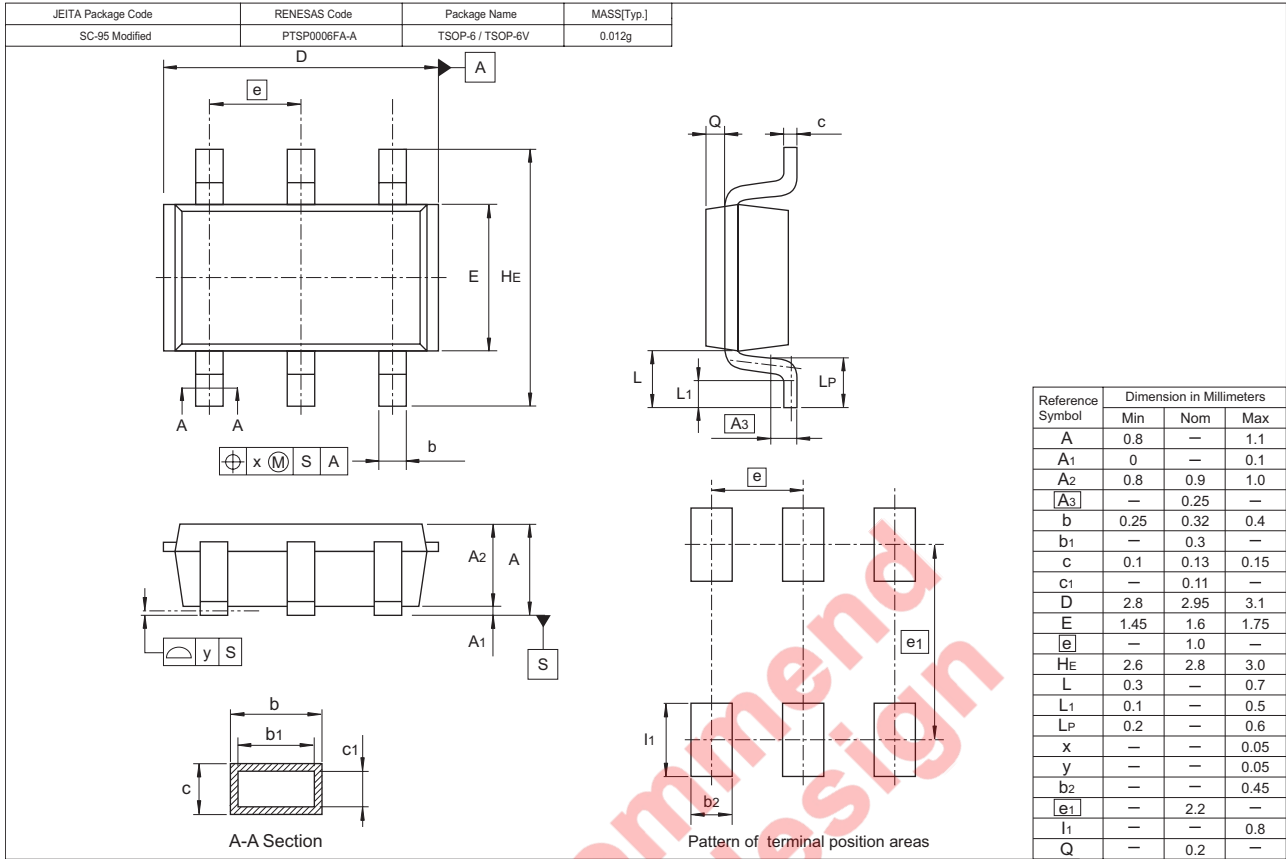
Electrical Characteristics

(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	V _{(BR)DSS}	20	—	—	V	I _D = 10 mA, V _{GS} = 0
Gate to source leak current	I _{GSS}	—	—	±0.1	μA	V _{GS} = ±12 V, V _{DS} = 0
Zero gate voltage drain current	I _{DSS}	—	—	1	μA	V _{DS} = 20 V, V _{GS} = 0
Gate to source cutoff voltage	V _{GS (off)}	0.4	—	1.4	V	V _{DS} = 10 V, I _D = 1 mA
Static drain to source on state resistance	R _{DS (on)}	—	28	33	mΩ	I _D = 3 A, V _{GS} = 4.5 V ^{Note 4}
	R _{DS (on)}	—	37	48	mΩ	I _D = 3 A, V _{GS} = 2.5 V ^{Note 4}
Forward transfer admittance	y _{fs}	6.0	10	—	S	I _D = 3 A, V _{DS} = 10 V ^{Note 4}
Input capacitance	C _{iss}	—	570	—	pF	V _{DS} = 10 V
Output capacitance	C _{oss}	—	220	—	pF	V _{GS} = 0
Reverse transfer capacitance	C _{rss}	—	160	—	pF	f = 1 MHz
Turn-on delay time	t _{d (on)}	—	15	—	ns	V _{GS} = 4.5 V, I _D = 3 A, R _L = 3.3 Ω
Rise time	t _r	—	100	—	ns	
Turn-off delay time	t _{d (off)}	—	90	—	ns	
Fall time	t _f	—	105	—	ns	
Body to drain diode forward voltage	V _{DF}	—	0.95	—	V	I _F = 6.1 A, V _{GS} = 0 ^{Note 4}
Body to drain diode reverse recovery time	t _{rr}	—	(50)	—	ns	I _F = 6.1 A, V _{GS} = 0 di _F /dt = 20 A/μs

Note: 4. Pulse test

Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
HAT2053M-EL-E	3000 pcs	Taping

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