

HAT2053M

Silicon N Channel Power MOS FET
Power Switching

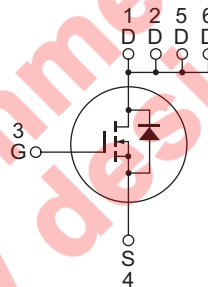
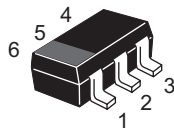
REJ03G1172-0500
(Previous: ADE-208-755C)
Rev.5.00
Sep 07, 2005

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_{DS}	20	V
Gate to source voltage	V_{GS}	±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. $PW \leq 10 \mu s$, duty cycle $\leq 1\%$ 2. When using the alumina ceramic board (50 × 50 × 0.7 mm), $PW \leq 5 s$, $T_a = 25^\circ C$ 3. When using the alumina ceramic board (50 × 50 × 0.7 mm), $T_a = 25^\circ C$

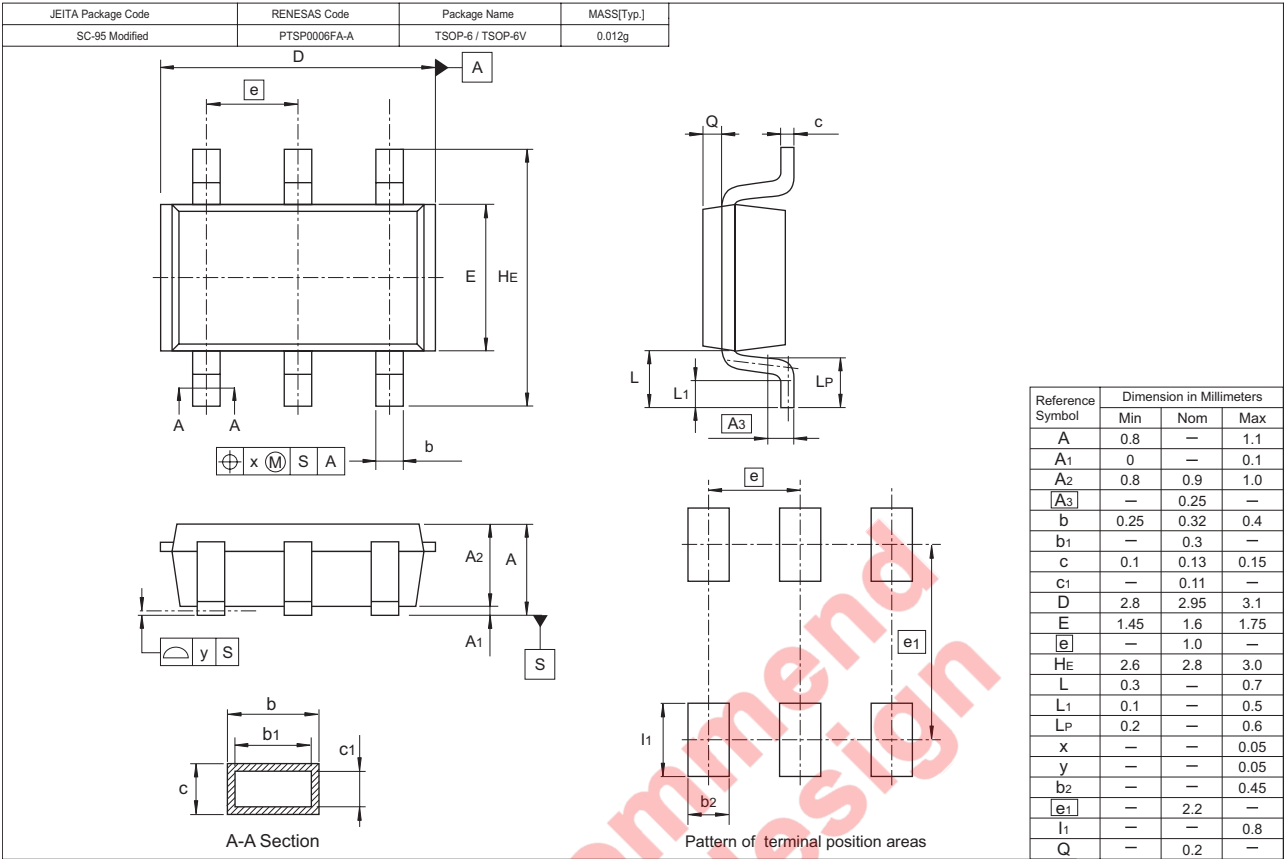
Electrical Characteristics

(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	20	—	—	V	$I_D = 10 \text{ mA}$, $V_{GS} = 0$
Gate to source leak current	I_{GSS}	—	—	±0.1	μA	$V_{GS} = \pm 12 \text{ V}$, $V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	1	μA	$V_{DS} = 20 \text{ V}$, $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	0.4	—	1.4	V	$V_{DS} = 10 \text{ V}$, $I_D = 1 \text{ mA}$
Static drain to source on state resistance	$R_{DS(on)}$	—	28	33	mΩ	$I_D = 3 \text{ A}$, $V_{GS} = 4.5 \text{ V}$ ^{Note 4}
	$R_{DS(on)}$	—	37	48	mΩ	$I_D = 3 \text{ A}$, $V_{GS} = 2.5 \text{ V}$ ^{Note 4}
Forward transfer admittance	$ y_{fs} $	6.0	10	—	S	$I_D = 3 \text{ A}$, $V_{DS} = 10 \text{ V}$ ^{Note 4}
Input capacitance	C_{iss}	—	570	—	pF	$V_{DS} = 10 \text{ V}$ $V_{GS} = 0$ $f = 1 \text{ MHz}$
Output capacitance	C_{oss}	—	220	—	pF	
Reverse transfer capacitance	C_{rss}	—	160	—	pF	
Turn-on delay time	$t_{d(on)}$	—	15	—	ns	$V_{GS} = 4.5 \text{ V}$, $I_D = 3 \text{ A}$, $R_L = 3.3 \Omega$
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	$I_F = 6.1 \text{ A}$, $V_{GS} = 0$ ^{Note 4}
Body to drain diode reverse recovery time	t_{rr}	—	(50)	—	ns	$I_F = 6.1 \text{ A}$, $V_{GS} = 0$ $di_F/dt = 20 \text{ A}/\mu s$

Note: 4. Pulse test

Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
HAT2053M-EL-E	3000 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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