

HAT1044M

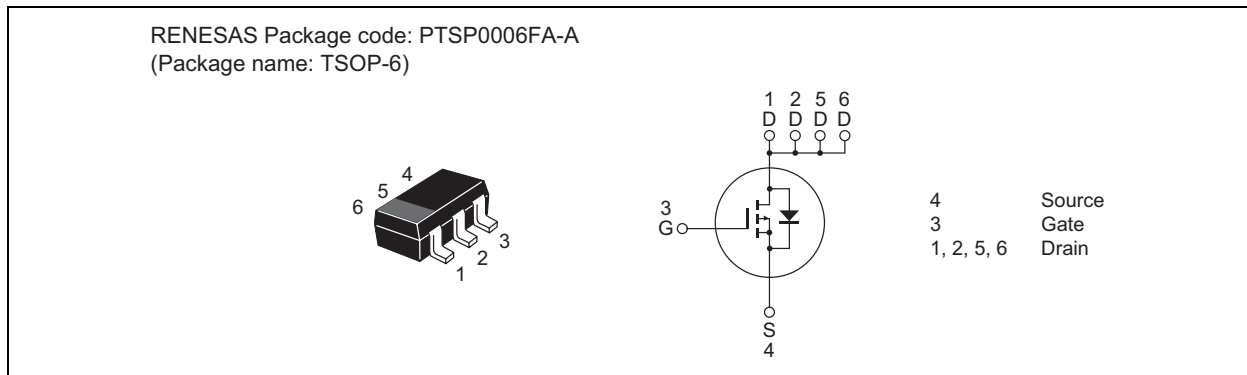
Silicon P Channel Power MOS FET
Power Switching

REJ03G1152-0600
(Previous: ADE-208-753D)
Rev.6.00
Sep 07, 2005

Features

- Low on-resistance
- Low drive current
- High density mounting
- 4.5 V gate drive device can be driven from 5 V source

Outline



Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Value	Unit
Drain to source voltage	V_{DSS}	-30	V
Gate to source voltage	V_{GSS}	± 20	V
Drain current	I_D ^{Note 2}	-4.5	A
Drain peak current	$I_{D(pulse)}$ ^{Note 1}	-18	A
Body-drain diode reverse drain current	I_{DR} ^{Note 2}	-4.5	A
Channel dissipation	$P_{ch(pulse)}$ ^{Note 2}	2.0	W
Channel dissipation	$P_{ch(continuous)}$ ^{Note 3}	1.05	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	-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), $PW \leq 5 s$, Ta = 25°C

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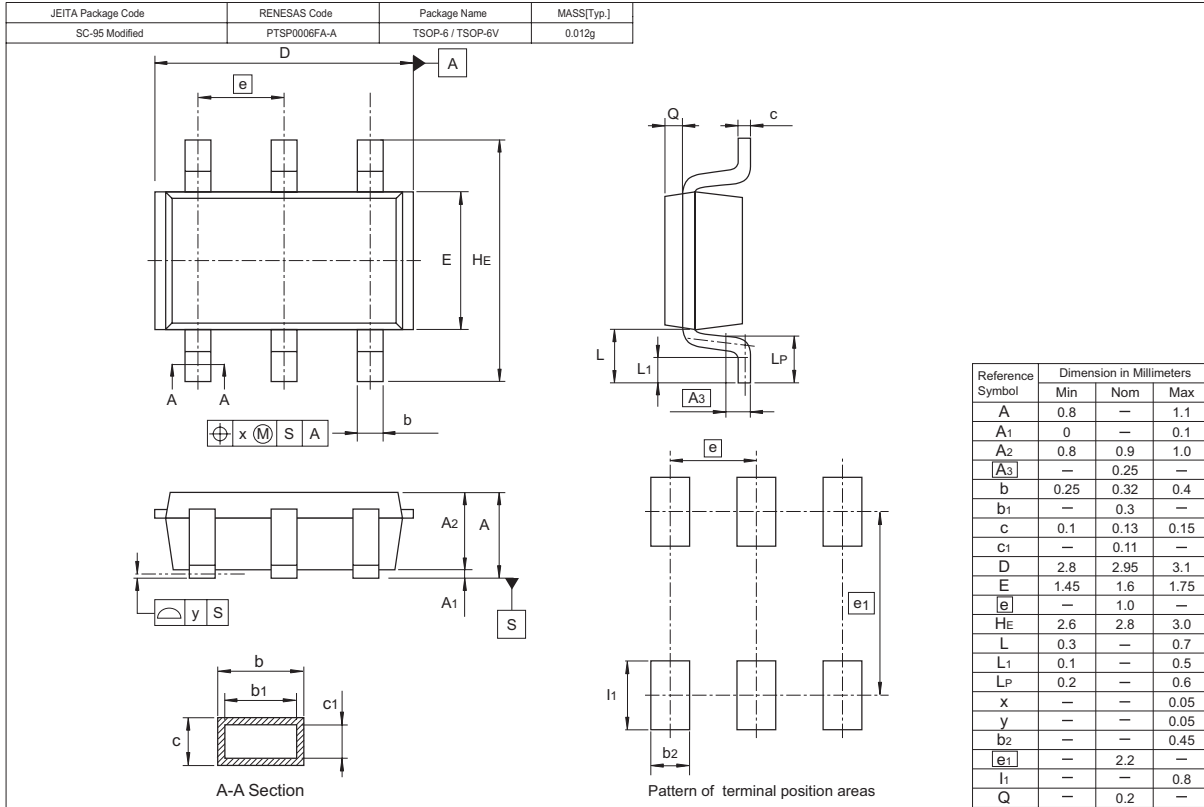
Electrical Characteristics

(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	-30	—	—	V	$I_D = -10 \text{ mA}$, $V_{GS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 0.1	μA	$V_{GS} = \pm 20 \text{ V}$, $V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	-1	μA	$V_{DS} = -30 \text{ V}$, $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	-1.0	—	-2.5	V	$V_{DS} = -10 \text{ V}$, $I_D = -1 \text{ mA}$
Static drain to source on state resistance	$R_{DS(on)}$	—	50	60	m Ω	$I_D = -3 \text{ A}$, $V_{GS} = -10 \text{ V}$ ^{Note 4}
	$R_{DS(on)}$	—	80	105	m Ω	$I_D = -3 \text{ A}$, $V_{GS} = -4.5 \text{ V}$ ^{Note 4}
Forward transfer admittance	$ y_{fs} $	3	5.5	—	S	$I_D = -3 \text{ A}$, $V_{DS} = -10 \text{ V}$ ^{Note 4}
Input capacitance	C_{iss}	—	600	—	pF	$V_{DS} = -10 \text{ V}$
Output capacitance	C_{oss}	—	220	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	C_{rss}	—	150	—	pF	f = 1 MHz
Total gate charge	Q_g	—	13	—	nC	$V_{DS} = 10 \text{ V}$
Gate to source charge	Q_{gs}	—	2	—	nC	$V_{GS} = 0$
Gate to drain charge	Q_{gd}	—	3	—	nC	f = 1 MHz
Turn-on delay time	$t_{d(on)}$	—	12	—	ns	$V_{GS} = -10 \text{ V}$, $I_D = -3 \text{ A}$,
Rise time	t_r	—	85	—	ns	$R_L = 3.3 \Omega$
Turn-off delay time	$t_{d(off)}$	—	55	—	ns	
Fall time	t_f	—	55	—	ns	
Body-drain diode forward voltage	V_{DF}	—	-0.95	—	V	$I_F = -4.5 \text{ A}$, $V_{GS} = 0$ ^{Note 4}
Body-drain diode reverse recovery time	t_{rr}	—	50	—	ns	$I_F = -4.5 \text{ A}$, $V_{GS} = 0$ $di_F/dt = -20 \text{ A}/\mu s$

Note: 4. Pulse test

Package Dimensions



Ordering Information

Part Name	Quantity	Shipping Container
HAT1044M-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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