
HAT1043M

Silicon P Channel Power MOS FET
Power Switching

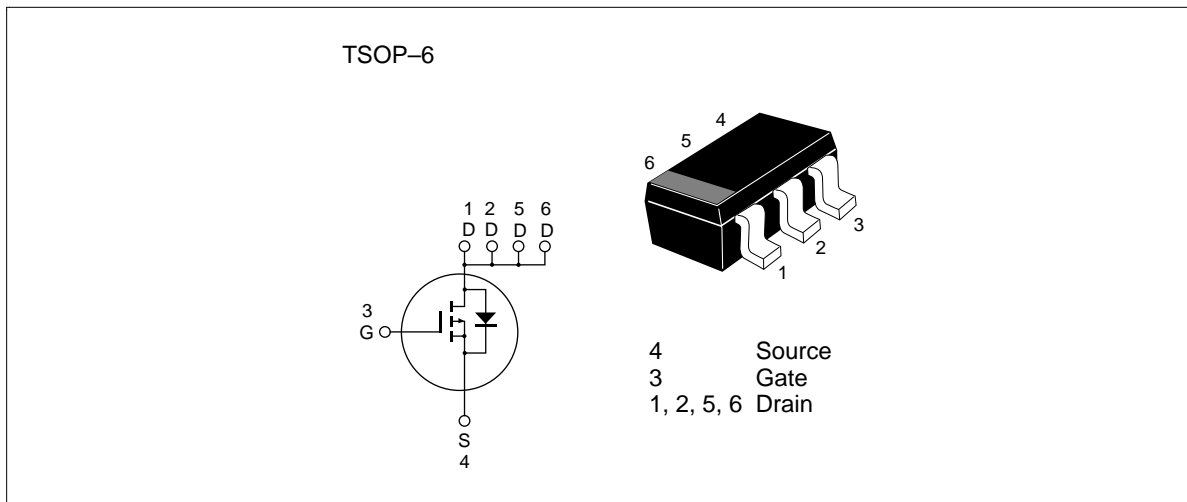
HITACHI

ADE-208-754C(Z)
Preliminary, 4th. Edition
Dec. 1, 1998

Features

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

Outline



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Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	-20	V
Gate to source voltage	V_{GSS}	±12	V
Drain current	I_D^{*2}	-4.4	A
Drain peak current	$I_{D(pulse)}^{*1}$	-17.6	A
Body-drain diode reverse drain current	I_{DR}^{*2}	-4.4	A
Channel dissipation	$Pch_{(pulse)}^{*2}$	2.0	W
	$Pch_{(continuous)}^{*3}$	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 x 50 x 0.7 mm), $PW \leq 5s$, $T_a = 25^\circ C$

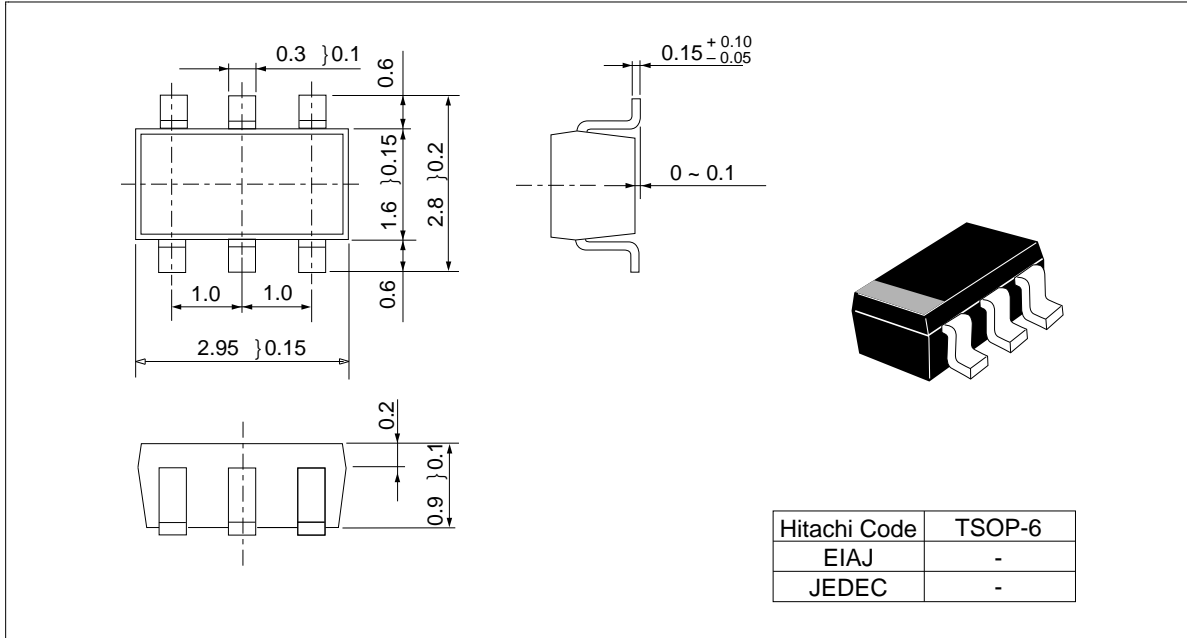
3. When using the alumina ceramic board (50 x 50 x 0.7 mm), $T_a = 25^\circ C$

Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	-20	—	—	V	$I_D = 10mA$, $V_{GS} = 0$
Gate to source leak current	I_{GSS}	—	—	±0.1	μA	$V_{GS} = \pm 12V$, $V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	-1	μA	$V_{DS} = -20V$, $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	-0.4	—	-1.4	V	$V_{DS} = -10V$, $I_D = -1mA$
Static drain to source on state resistance	$R_{DS(on)}$	—	55	65	mΩ	$I_D = -3A$, $V_{GS} = -4.5V^{*1}$
	$R_{DS(on)}$	—	85	110	mΩ	$I_D = -3A$, $V_{GS} = -2.5V^{*1}$
Forward transfer admittance	$ y_{fs} $	4	7	—	S	$I_D = -3A$, $V_{DS} = -10V^{*1}$
Input capacitance	Ciss	—	700	—	pF	$V_{DS} = -10V$
Output capacitance	Coss	—	180	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	Crss	—	120	—	pF	f = 1MHz
Turn-on delay time	$t_{d(on)}$	—	15	—	ns	$V_{GS} = -4.5V$, $I_D = -3A$
Rise time	t_r	—	100	—	ns	$R_L = 3.3\Omega$
Turn-off delay time	$t_{d(off)}$	—	70	—	ns	
Fall time	t_f	—	70	—	ns	
Body-drain diode forward voltage	V_{DF}	—	-0.95	—	V	IF = -4.4A, $V_{GS} = 0^{*1}$
Body-drain diode reverse recovery time	t_{rr}	—	50	—	ns	IF = -4.4A, $V_{GS} = 0$ diF/dt = -20A/μs

Note: 1. Pulse test

Package Dimensions (Unit: mm)



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