

# HAT2054M

Silicon N Channel Power MOS FET  
Power Switching

# HITACHI

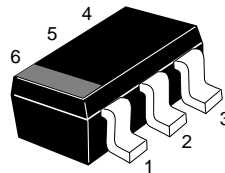
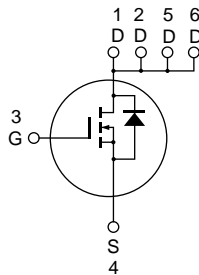
ADE-208-756B(Z)  
Preliminary  
3rd. Edition  
December 1998

## Features

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

## Outline

TSOP-6



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

Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	$V_{DSS}$	30	V
Gate to source voltage	$V_{GSS}$	$\pm 20$	V
Drain current	$I_D^{*2}$	6.3	A
Drain peak current	$I_{D(pulse)}^{*1}$	25.2	A
Body-drain diode reverse drain current	$I_{DR}^{*2}$	6.3	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),  $PW \leq 5s$ ,  $Ta=25^\circ C$   
3. When using the alumina ceramic board (50 x 50 x 0.7 mm) ,  $Ta=25^\circ C$

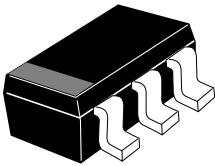
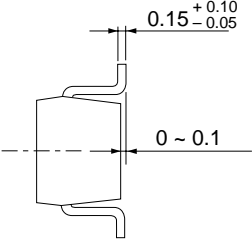
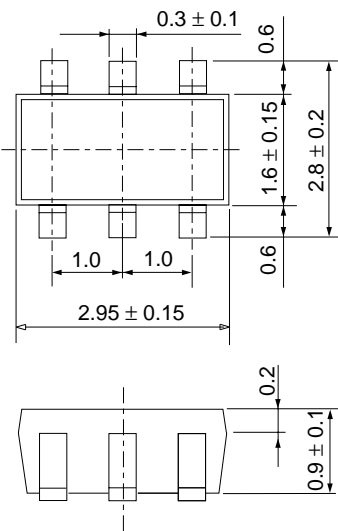
Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	30	—	—	V	$I_D = 10mA$ , $V_{GS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	$\pm 0.1$	$\mu A$	$V_{GS} = \pm 20V$ , $V_{DS} = 0$
Zero gate voltege drain current	$I_{DSS}$	—	—	1	$\mu A$	$V_{DS} = 30V$ , $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	1.0	—	2.5	V	$V_{DS} = 10V$ , $I_D = 1mA$
Static drain to source on state resistance	$R_{DS(on)}$	—	26	31	m $\Omega$	$I_D = 3A$ , $V_{GS} = 10V^{*1}$
	$R_{DS(on)}$	—	40	52	m $\Omega$	$I_D = 3A$ , $V_{GS} = 4.5V^{*1}$
Forward transfer admittance	$ y_{fs} $	4	7	—	S	$I_D = 3A$ , $V_{DS} = 10V^{*1}$
Input capacitance	Ciss	—	620	—	pF	$V_{DS} = 10V$
Output capacitance	Coss	—	170	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	Crss	—	110	—	pF	f = 1MHz
Turn-on delay time	$t_{d(on)}$	—	13	—	ns	$V_{GS} = 10V$ , $I_D = 3A$
Rise time	$t_r$	—	90	—	ns	$R_L = 3.3\Omega$
Turn-off delay time	$t_{d(off)}$	—	50	—	ns	
Fall time	$t_f$	—	40	—	ns	
Body–drain diode forward voltage	$V_{DF}$	—	0.95	—	V	IF = 6.3A, $V_{GS} = 0^{*1}$
Body–drain diode reverse recovery time	$t_{rr}$	—	(50)	—	ns	IF = 6.3A, $V_{GS} = 0$ diF/ dt =20A/ $\mu s$

Note: 1. Pulse test

Package Dimensions

Unit: mm



Hitachi Code	TSOP-6
EIAJ	-
JEDEC	-

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# HITACHI

## Hitachi, Ltd.

Semiconductor & Integrated Circuits.  
Nippon Bldg., 2-6-2, Ohte-machi, Chiyoda-ku, Tokyo 100-0004, Japan  
Tel: Tokyo (03) 3270-2111 Fax: (03) 3270-5109

URL	NorthAmerica	: <a href="http://semiconductor.hitachi.com/">http://semiconductor.hitachi.com/</a>
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## For further information write to:

Hitachi Semiconductor (America) Inc. 179 East Tasman Drive, San Jose, CA 95134 Tel: <1> (408) 433-1990 Fax: <1> (408) 433-0223	Hitachi Europe GmbH Electronic components Group Dornacher Straße 3 D-85622 Feldkirchen, Munich Germany Tel: <49> (89) 9 9180-0 Fax: <49> (89) 9 29 30 00  Hitachi Europe Ltd. Electronic Components Group. Whitebrook Park Lower Cookham Road Maidenhead Berkshire SL6 8YA, United Kingdom Tel: <44> (1628) 585000 Fax: <44> (1628) 778322
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Hitachi Asia Pte. Ltd.  
16 Collyer Quay #20-00  
Hitachi Tower  
Singapore 049318  
Tel: 535-2100  
Fax: 535-1533

Hitachi Asia Ltd.  
Taipei Branch Office  
3F, Hung Kuo Building, No.167,  
Tun-Hwa North Road, Taipei (105)  
Tel: <886> (2) 2718-3666  
Fax: <886> (2) 2718-8180

Hitachi Asia (Hong Kong) Ltd.  
Group III (Electronic Components)  
7/F., North Tower, World Finance Centre,  
Harbour City, Canton Road, Tsim Sha Tsui,  
Kowloon, Hong Kong  
Tel: <852> (2) 735 9218  
Fax: <852> (2) 730 0281  
Telex: 40815 HITEC HX

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