

# HAT2051T

Silicon N Channel Power MOS FET  
High Speed Power Switching

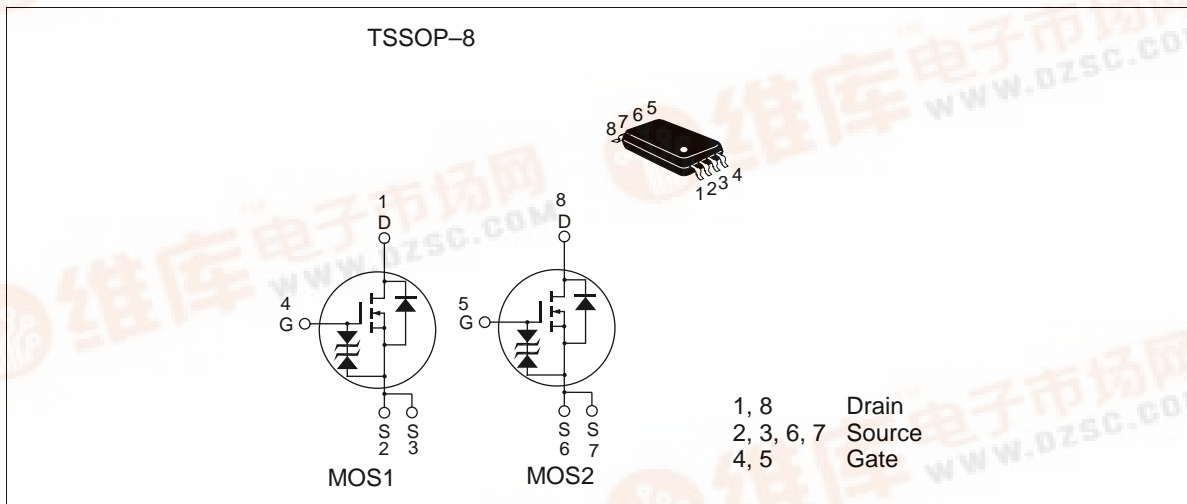
# HITACHI

ADE-208-661A (Z)  
2nd. Edition  
February 1999

## Features

- Low on-resistance
- Capable of 2.5 V gate drive
- Low drive current
- High density mounting

## Outline



## HAT2051T

### Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	$V_{DSS}$	30	V
Gate to source voltage	$V_{GSS}$	$\pm 10$	V
Drain current	$I_D$	1	A
Drain peak current	$I_{D(pulse)}$ <sup>Note1</sup>	4	A
Body-drain diode reverse drain current	$I_{DR}$	1	A
Channel dissipation	Pch <sup>Note2</sup>	0.8	W
Channel dissipation	Pch <sup>Note3</sup>	1.2	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	- 55 to + 150	°C

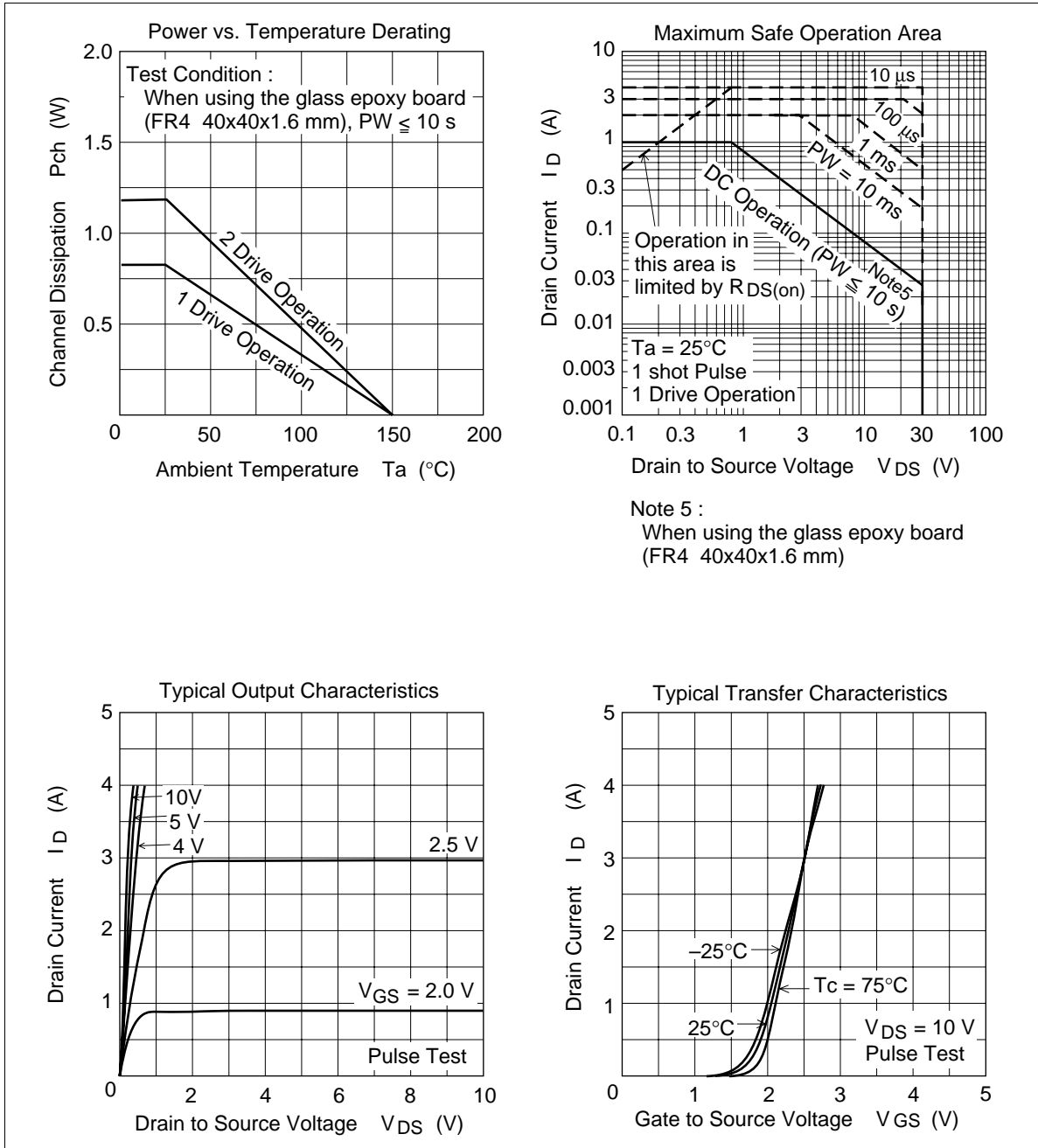
Note: 1.  $PW \leq 10\mu s$ , duty cycle  $\leq 1\%$   
 2. 1 Drive operation : When using the glass epoxy board (FR4 40 x 40 x 1.6 mm),  $PW \leq 10s$   
 3. 2 Drive operation : When using the glass epoxy board (FR4 40 x 40 x 1.6 mm),  $PW \leq 10s$

### Electrical Characteristics (Ta = 25°C)

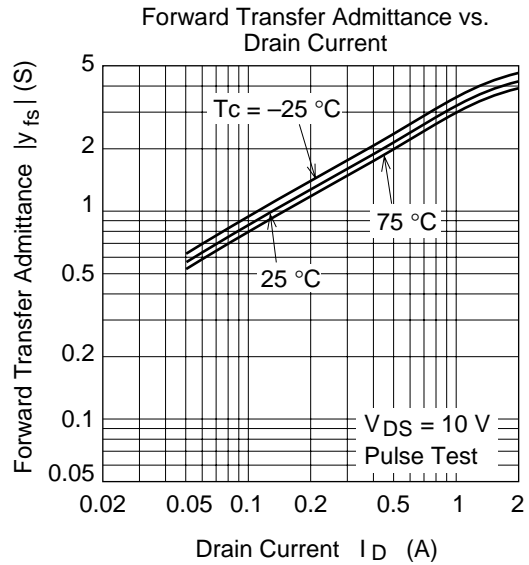
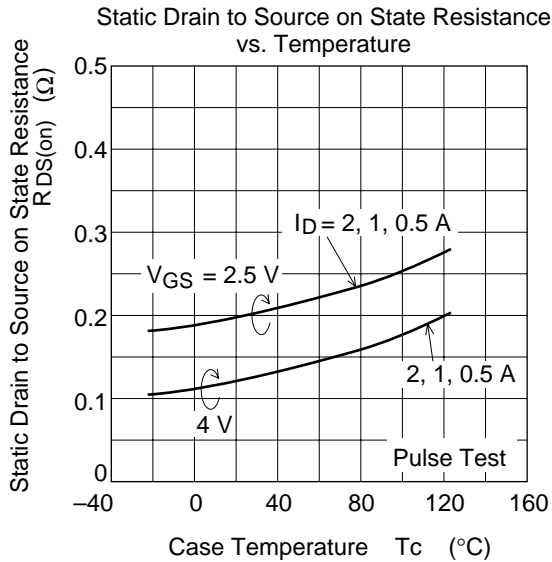
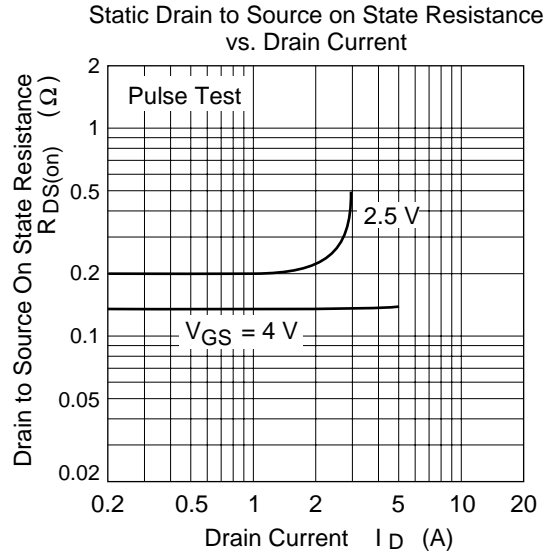
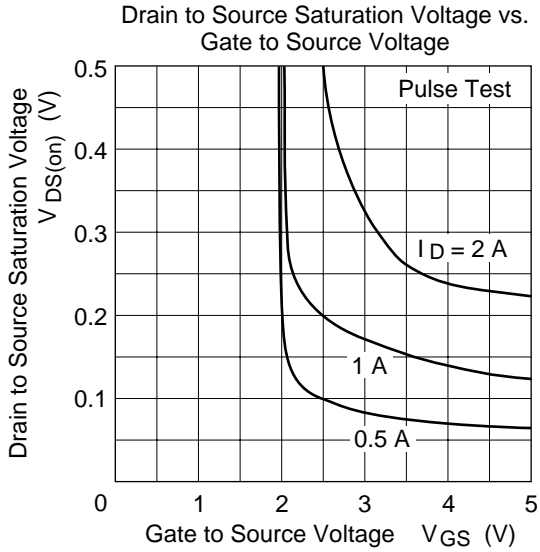
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	30	—	—	V	$I_D = 10\text{ mA}$ , $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	$\pm 10$	—	—	V	$I_G = \pm 100\ \mu A$ , $V_{DS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	$\pm 10$	$\mu A$	$V_{GS} = \pm 8\text{ V}$ , $V_{DS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	1	$\mu A$	$V_{DS} = 30\text{ V}$ , $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	0.75	—	1.75	V	$V_{DS} = 10\text{ V}$ , $I_D = 1\text{ mA}$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.14	0.2	$\Omega$	$I_D = 0.5\text{ A}$ , $V_{GS} = 10\text{ V}$ <sup>Note4</sup>
	$R_{DS(on)}$	—	0.2	0.3	$\Omega$	$I_D = 0.5\text{ A}$ , $V_{GS} = 4\text{ V}$ <sup>Note4</sup>
Forward transfer admittance	$ y_{fs} $	1.4	2.2	—	S	$I_D = 0.5\text{ A}$ , $V_{DS} = 10\text{ V}$ <sup>Note4</sup>
Input capacitance	Ciss	—	155	—	pF	$V_{DS} = 10\text{ V}$
Output capacitance	Coss	—	75	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	Crss	—	35	—	pF	$f = 1\text{ MHz}$
Turn-on delay time	$t_{d(on)}$	—	12	—	ns	$V_{GS} = 4\text{ V}$ , $I_D = 0.5\text{ A}$
Rise time	$t_r$	—	30	—	ns	$V_{DD} \cong 10\text{ V}$
Turn-off delay time	$t_{d(off)}$	—	35	—	ns	
Fall time	$t_f$	—	25	—	ns	
Body-drain diode forward voltage	$V_{DF}$	—	0.81	1.1	V	$I_F = 1\text{ A}$ , $V_{GS} = 0$ <sup>Note4</sup>
Body-drain diode reverse recovery time	$t_{rr}$	—	35	—	ns	$I_F = 1\text{ A}$ , $V_{GS} = 0$ $diF/dt = 20\text{ A}/\mu s$

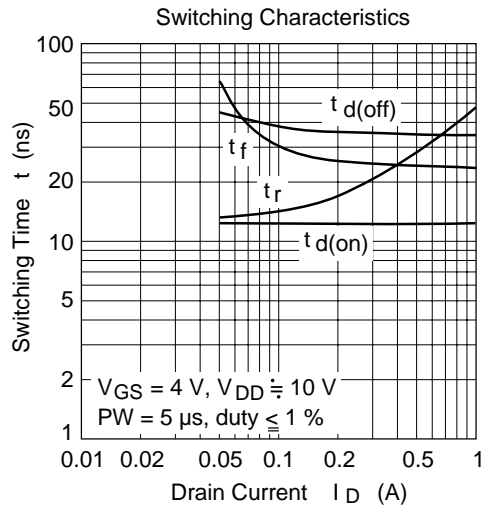
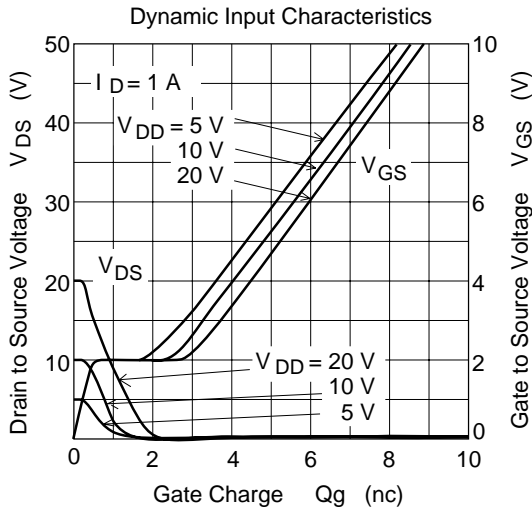
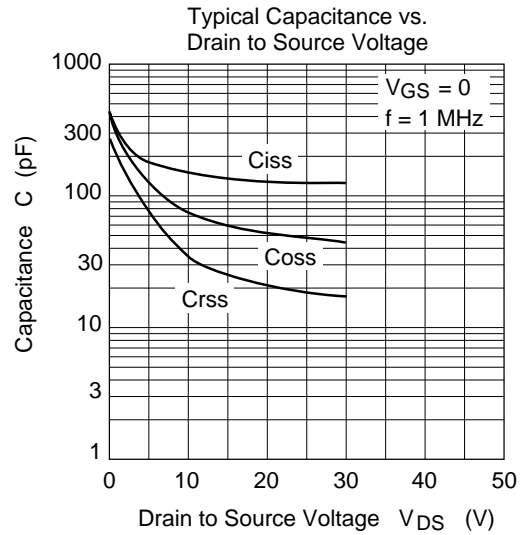
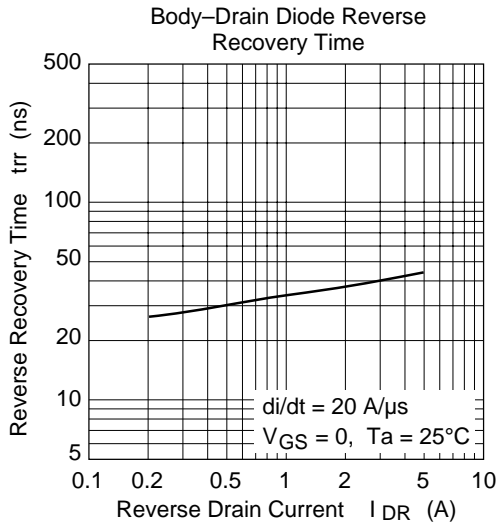
Note: 4. Pulse test

Main Characteristics

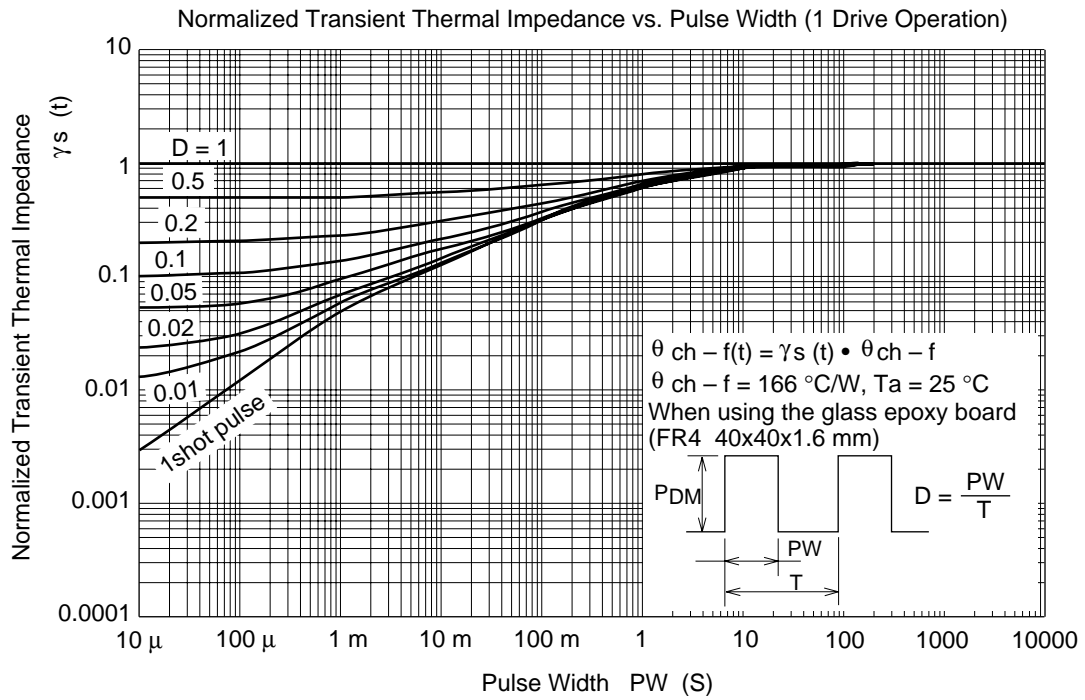
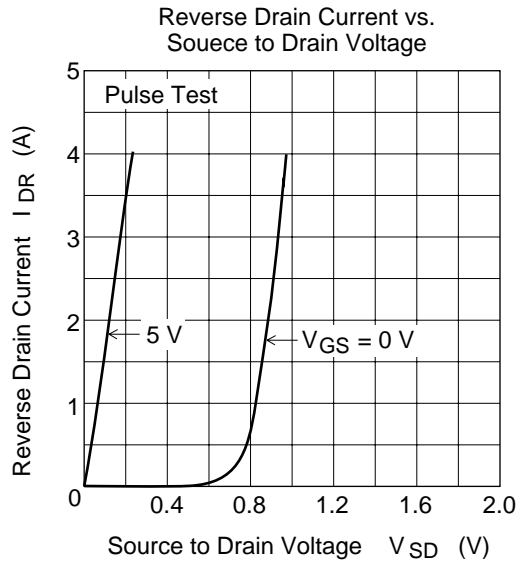


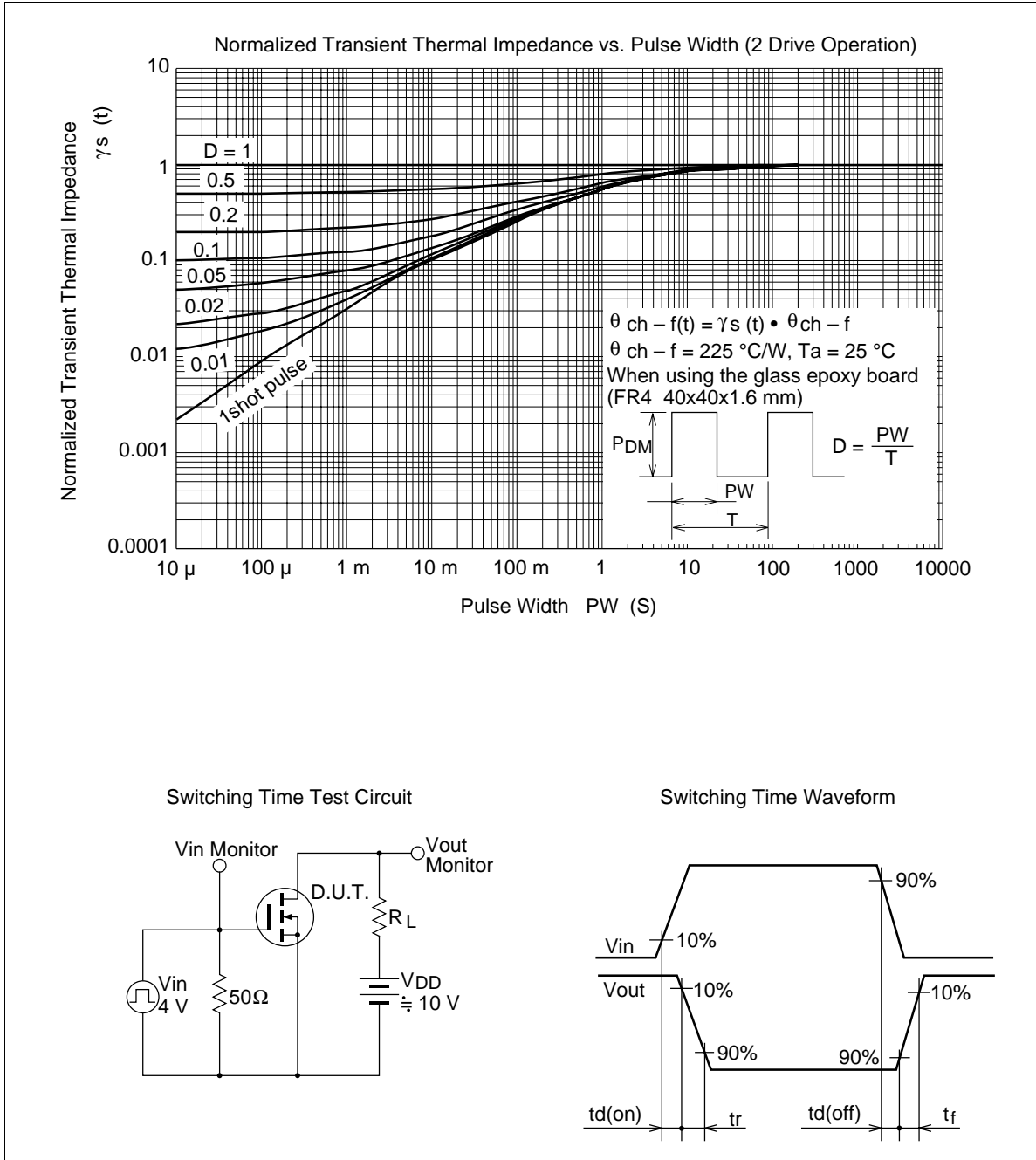
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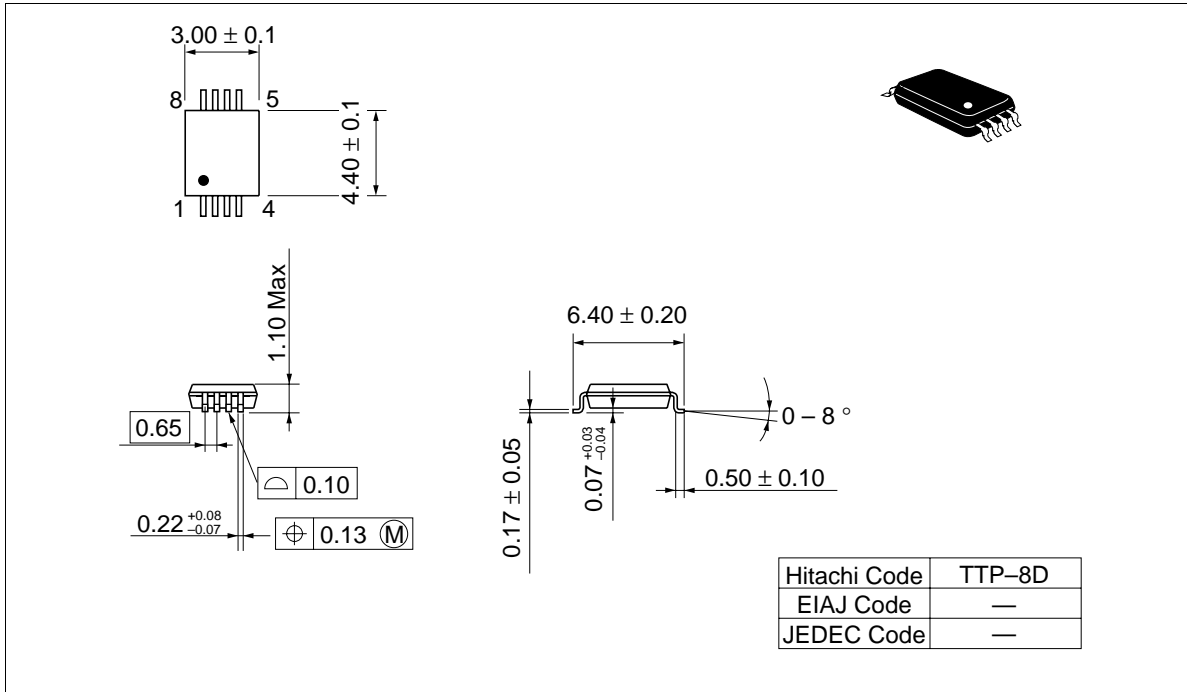




# HAT2051T

## Package Dimensions

Unit: mm





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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      : <http://semiconductor.hitachi.com/>  
             Europe                 : <http://www.hitachi-eu.com/hel/ecg>  
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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 StraÙe 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

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