

# HAT2043R

Silicon N Channel Power MOS FET  
High Speed Power Switching

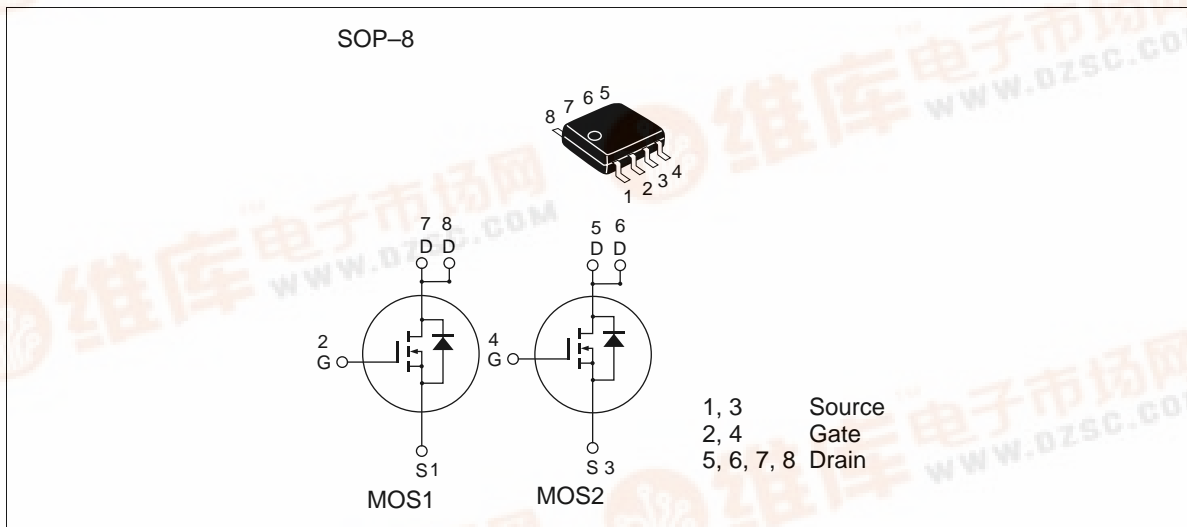
# HITACHI

ADE-208-668D (Z)  
5th. Edition  
February 1999

## Features

- Low on-resistance
- Capable of 4 V gate drive
- Low drive current
- High density mounting

## Outline



## HAT2043R

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

Item	Symbol	Ratings	Unit
Drain to source voltage	$V_{DSS}$	30	V
Gate to source voltage	$V_{GSS}$	± 20	V
Drain current	$I_D$	8	A
Drain peak current	$I_{D(pulse)}$ <sup>Note1</sup>	64	A
Body-drain diode reverse drain current	$I_{DR}$	8	A
Channel dissipation	Pch <sup>Note2</sup>	2.0	W
Channel dissipation	Pch <sup>Note3</sup>	3.0	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	- 55 to + 150	°C

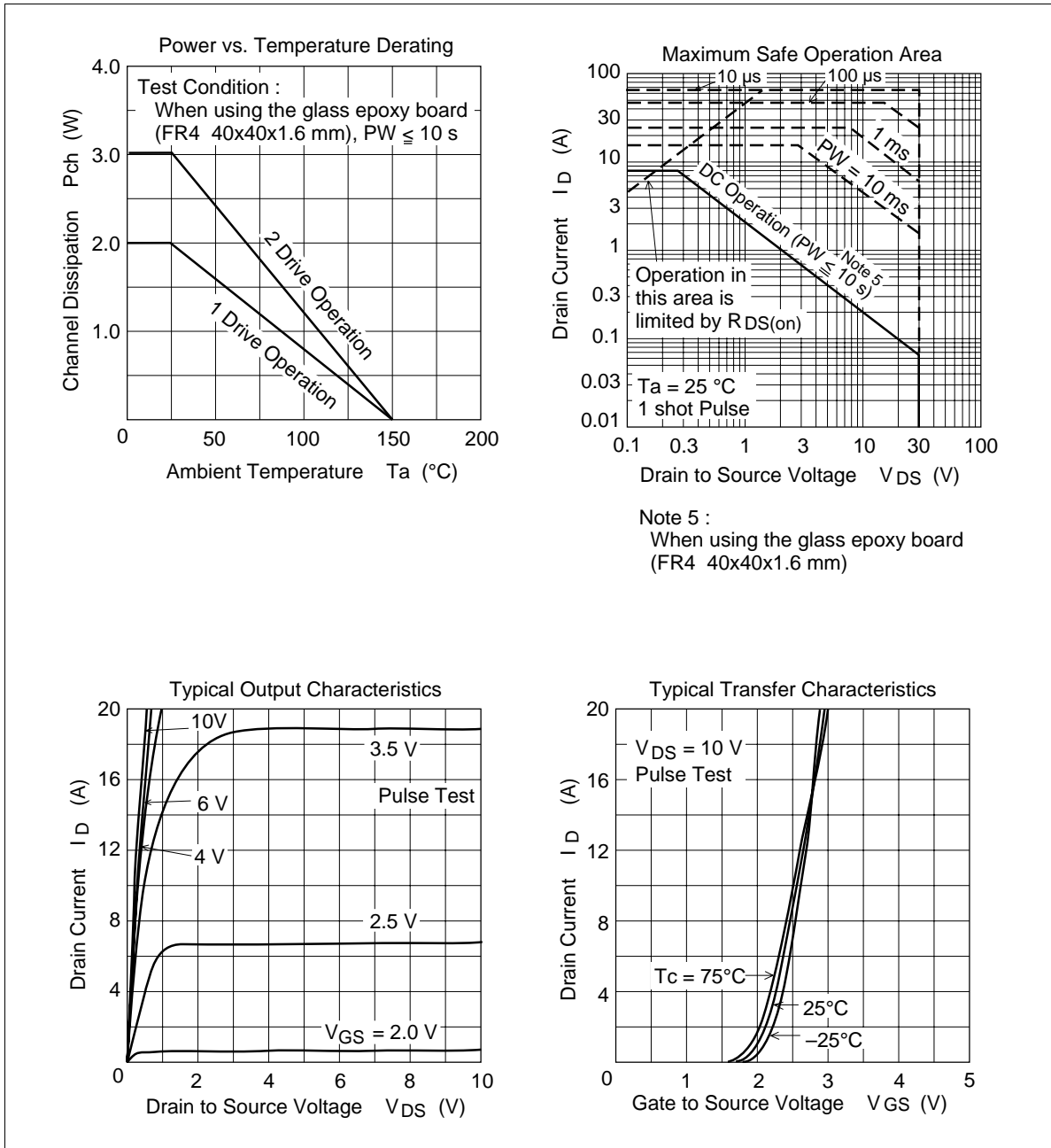
Note: 1.  $PW \leq 10 \mu s$ , duty cycle  $\leq 1\%$   
 2. 1 Drive operation ; When using the glass epoxy board (FR4 40 x 40 x 1.6 mm),  $PW \leq 10s$   
 3. 2 Drive operation ; When using the glass epoxy board (FR4 40 x 40 x 1.6 mm),  $PW \leq 10s$

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

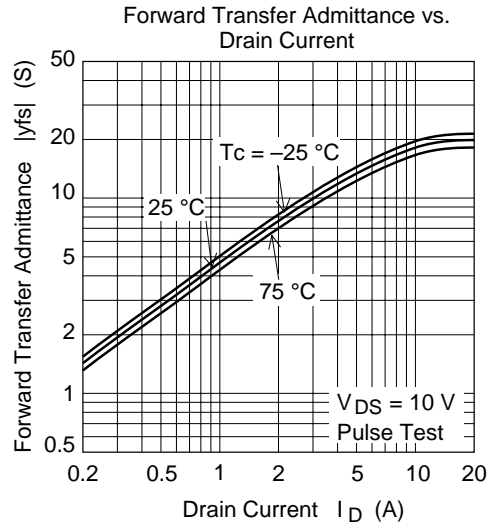
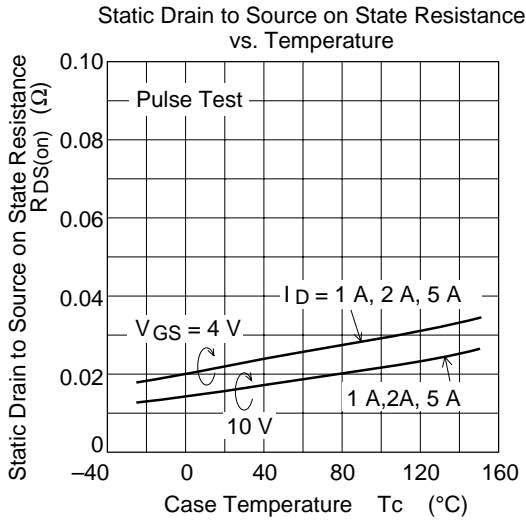
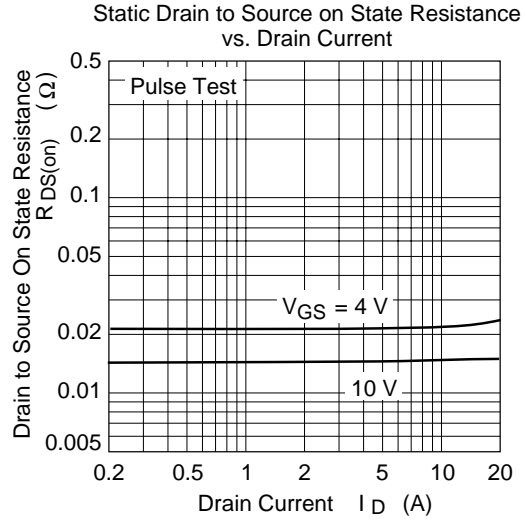
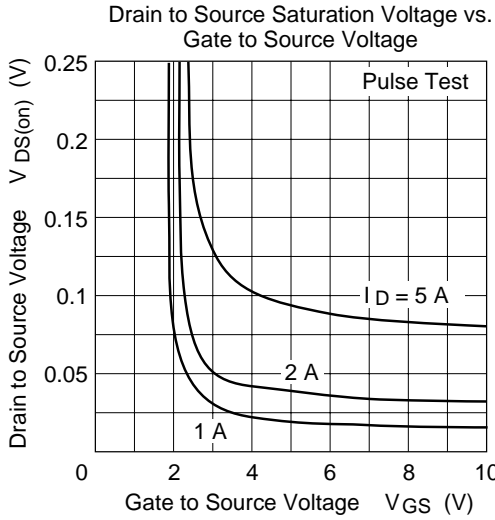
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	30	—	—	V	$I_D = 10 \text{ mA}$ , $V_{GS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	± 0.1	μA	$V_{GS} = \pm 20 \text{ V}$ , $V_{DS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	1	μA	$V_{DS} = 30 \text{ V}$ , $V_{GS} = 0$
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	$R_{DS(on)}$	—	0.016	0.022	Ω	$I_D = 4 \text{ A}$ , $V_{GS} = 10 \text{ V}$ <sup>Note4</sup>
	$R_{DS(on)}$	—	0.022	0.029	Ω	$I_D = 4 \text{ A}$ , $V_{GS} = 4 \text{ V}$ <sup>Note4</sup>
Forward transfer admittance	$ y_{fs} $	9	14	—	S	$I_D = 4 \text{ A}$ , $V_{DS} = 10 \text{ V}$ <sup>Note4</sup>
Input capacitance	Ciss	—	1170	—	pF	$V_{DS} = 10 \text{ V}$
Output capacitance	Coss	—	390	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	Crss	—	240	—	pF	$f = 1 \text{ MHz}$
Total gate charge	Qg	—	32	—	nc	$V_{DD} = 10 \text{ V}$
Gate to source charge	Qgs	—	22	—	nc	$V_{GS} = 10 \text{ V}$
Gate to drain charge	Qgd	—	10	—	nc	$I_D = 8 \text{ A}$
Turn-on delay time	$t_{d(on)}$	—	32	—	ns	$V_{GS} = 4 \text{ V}$ , $I_D = 4 \text{ A}$
Rise time	$t_r$	—	190	—	ns	$V_{DD} \cong 10 \text{ V}$
Turn-off delay time	$t_{d(off)}$	—	85	—	ns	
Fall time	$t_f$	—	110	—	ns	
Body–drain diode forward voltage	$V_{DF}$	—	0.84	1.09	V	$IF = 8 \text{ A}$ , $V_{GS} = 0$ <sup>Note4</sup>
Body–drain diode reverse recovery time	$t_{rr}$	—	35	—	ns	$IF = 8 \text{ A}$ , $V_{GS} = 0$ $diF/dt = 20 \text{ A}/\mu s$

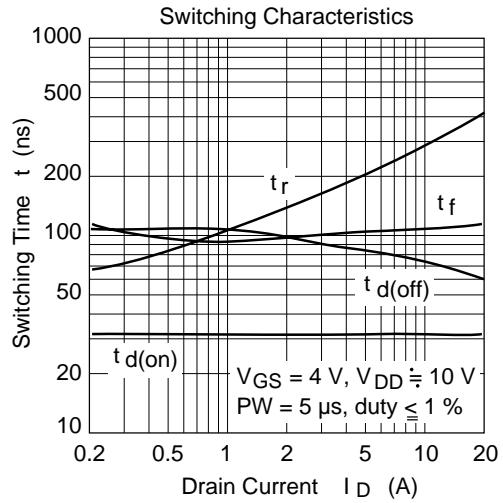
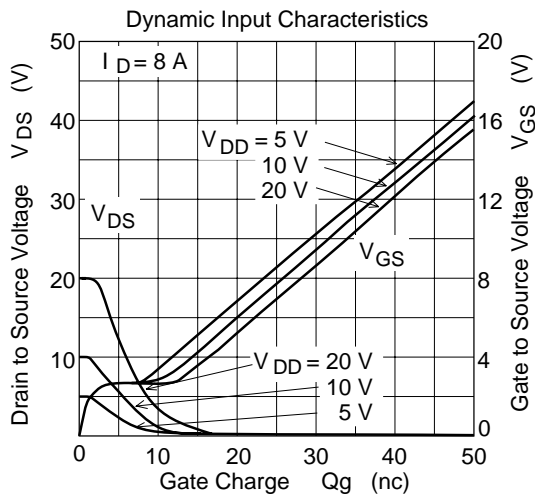
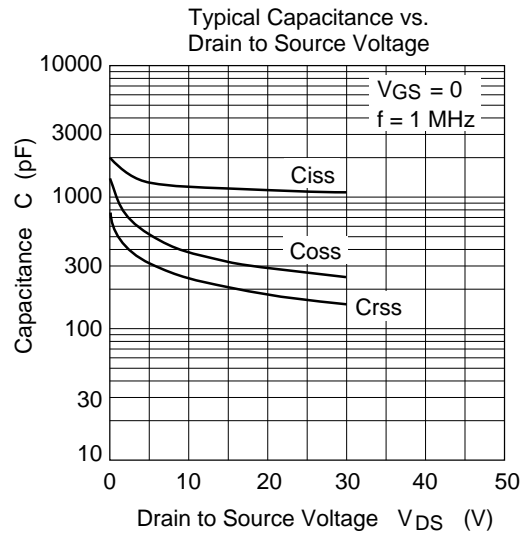
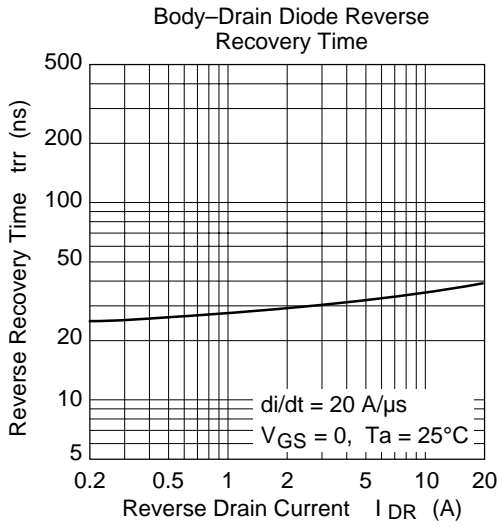
Note: 4. Pulse test

Main Characteristics

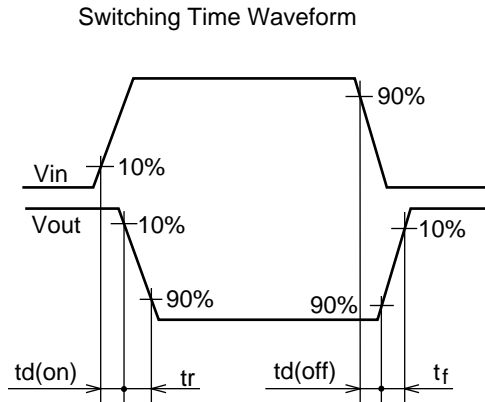
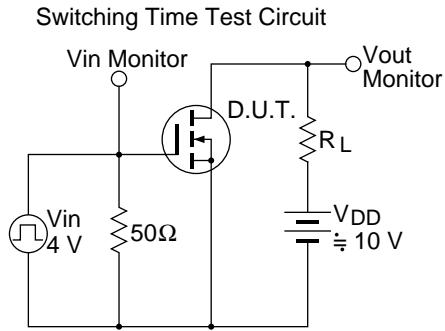
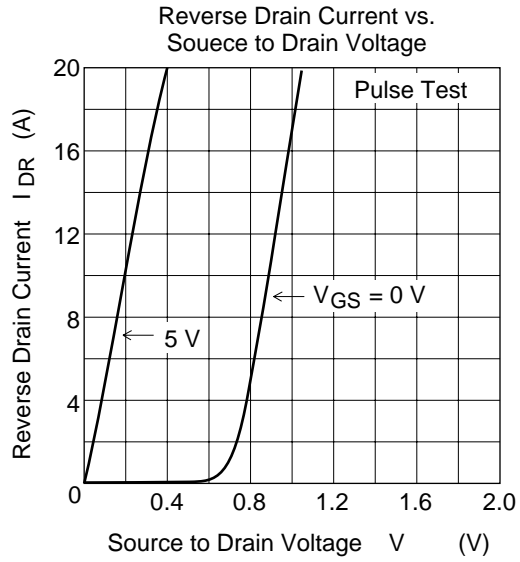


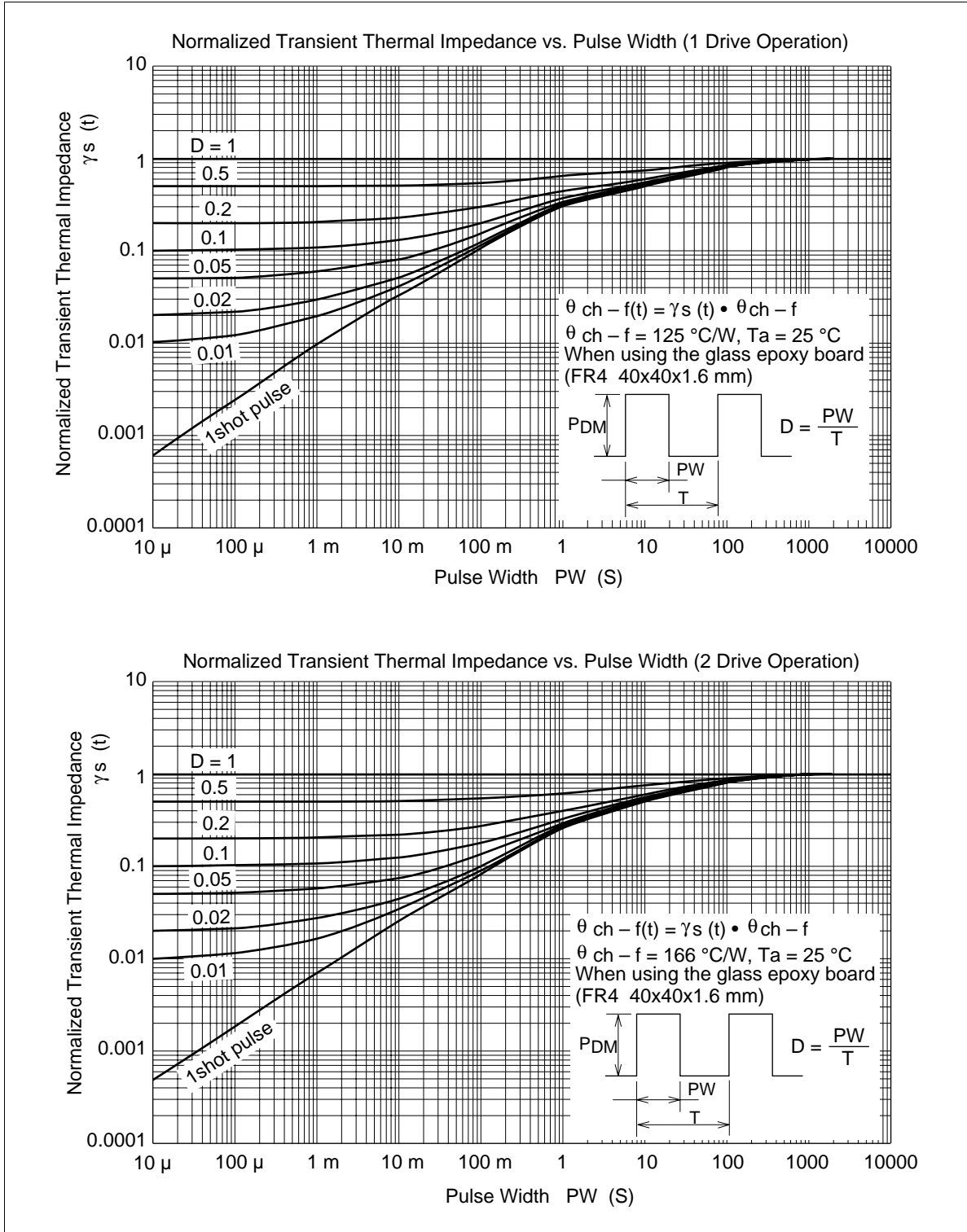
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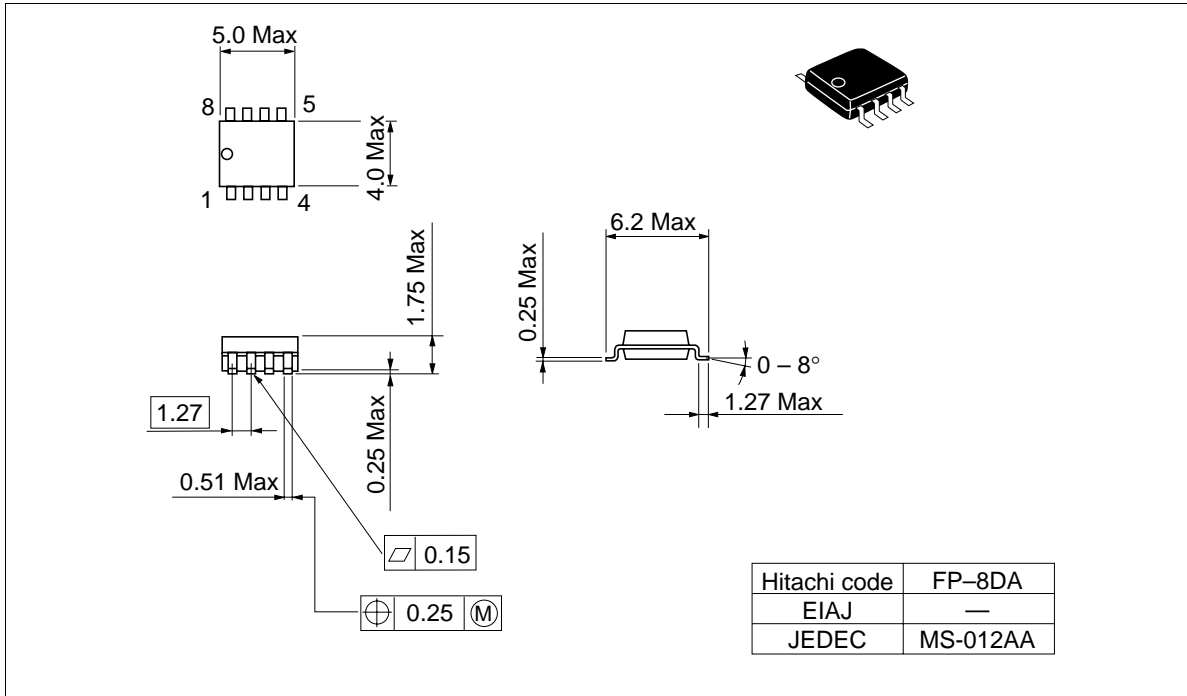




# HAT2043R

## Package Dimensions

Unit: mm





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