

# HAT2045T

Silicon N Channel Power MOS FET  
High Speed Power Switching

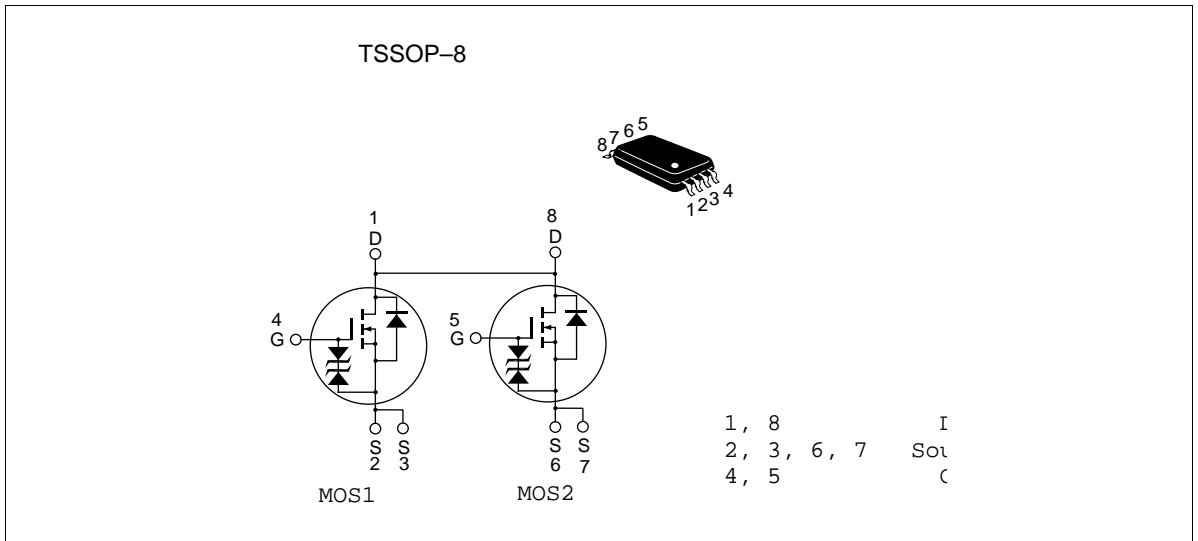
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Target Specification  
5th. Edition  
February 1999

## Features

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

## Outline



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

Item	Symbol	Ratings	Unit
Drain to source voltage	$V_{DSS}$	28	V
Gate to source voltage	$V_{GSS}$	±12	V
Drain current	$I_D$	6.0	A
Drain peak current	$I_{D(pulse)}$ <sup>Note1</sup>	48	A
Body-drain diode reverse drain current	$I_{DR}$	6.0	A
Channel dissipation	$P_{ch}$ <sup>Note2</sup>	1.0	W
Channel dissipation	$P_{ch}$ <sup>Note3</sup>	1.5	W
Channel temperature	$T_{ch}$	150	°C
Storage temperature	$T_{stg}$	-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)

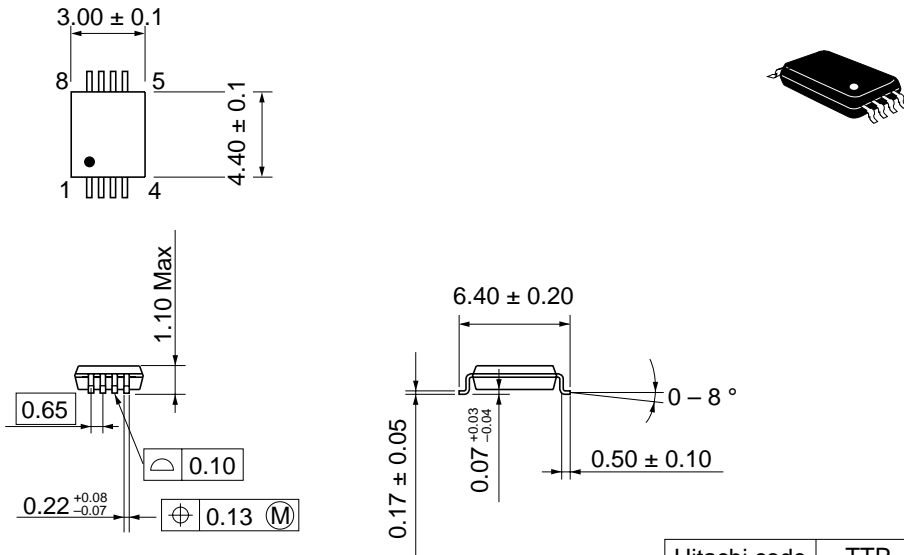
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	28	—	—	V	$I_D = 10\text{mA}$ , $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	$\pm 12$	—	—	V	$I_G = \pm 100\mu\text{A}$ , $V_{DS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	$\pm 10$	$\mu\text{A}$	$V_{GS} = \pm 10\text{V}$ , $V_{DS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	1	$\mu\text{A}$	$V_{DS} = 28\text{V}$ , $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	0.4	—	1.4	V	$V_{DS} = 10\text{V}$ , $I_D = 1\text{mA}$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.020	0.025	$\Omega$	$I_D = 3\text{A}$ , $V_{GS} = 4\text{V}$ <sup>Note4</sup>
	$R_{DS(on)}$	—	0.027	0.037	$\Omega$	$I_D = 3\text{A}$ , $V_{GS} = 2.5\text{V}$ <sup>Note4</sup>
Forward transfer admittance	$ y_{fs} $	8	13	—	S	$I_D = 3\text{A}$ , $V_{DS} = 10\text{V}$ <sup>Note4</sup>
Input capacitance	$C_{iss}$	—	680	—	pF	$V_{DS} = 10\text{V}$
Output capacitance	$C_{oss}$	—	240	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	$C_{rss}$	—	170	—	pF	$f = 1\text{MHz}$
Turn-on delay time	$t_{d(on)}$	—	12	—	ns	$V_{GS} = 4\text{V}$ , $I_D = 3\text{A}$
Rise time	$t_r$	—	110	—	ns	$V_{DD} \cong 10\text{V}$
Turn-off delay time	$t_{d(off)}$	—	90	—	ns	
Fall time	$t_f$	—	100	—	ns	
Body-drain diode forward voltage	$V_{DF}$	—	0.85	1.1	V	$I_F = 6.0\text{A}$ , $V_{GS} = 0$ <sup>Note4</sup>
Body-drain diode reverse recovery time	$t_{rr}$	—	40	—	ns	$I_F = 6.0\text{A}$ , $V_{GS} = 0$ $diF/dt = 20\text{A}/\mu\text{s}$

Note: 4. Pulse test

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## Package Dimensions

Unit: mm



Hitachi code	TTP-8D
EIAJ	—
JEDEC	—

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