

HAT2050T

Silicon N Channel Power MOS FET
High Speed Power Switching

HITACHI

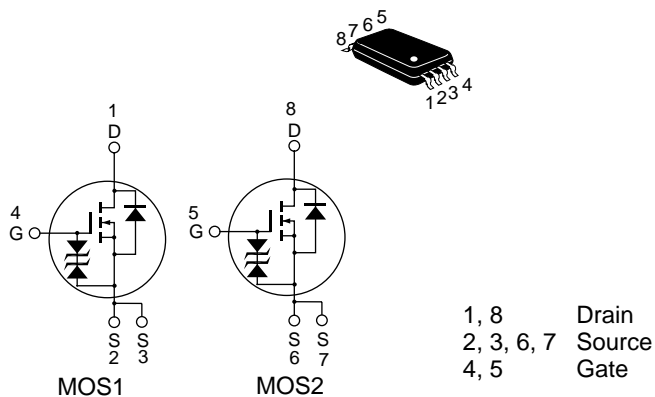
ADE-208-660A (Z)
2nd. Edition
February 1999

Features

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

Outline

TSSOP-8



Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	100	V
Gate to source voltage	V_{GSS}	± 20	V
Drain current	I_D	1	A
Drain peak current	$I_{D(pulse)}$ ^{Note1}	4	A
Body-drain diode reverse drain current	I_{DR}	1	A
Channel dissipation	P_{ch} ^{Note2}	1.0	W
Channel dissipation	P_{ch} ^{Note3}	1.5	W
Channel temperature	T_{ch}	150	°C
Storage temperature	T_{stg}	- 55 to + 150	°C

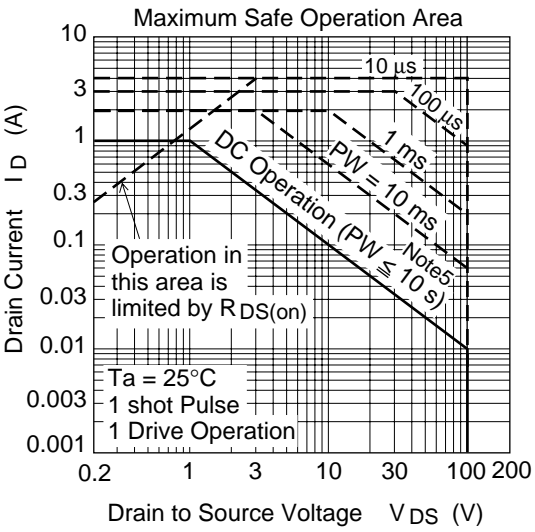
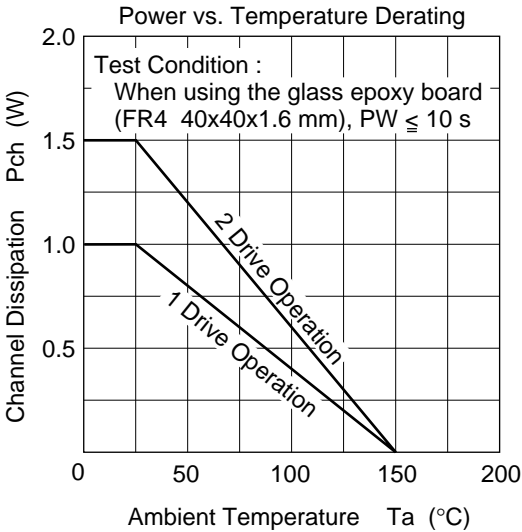
Note: 1. $PW \leq 10\mu s$, duty cycle $\leq 1\%$
2. 1 Drive operation : When using the glass epoxy board (FR4 40 x 40 x 1.6 mm), $PW \leq 10s$
3. 2 Drive operation : When using the glass epoxy board (FR4 40 x 40 x 1.6 mm), $PW \leq 10s$

Electrical Characteristics (Ta = 25°C)

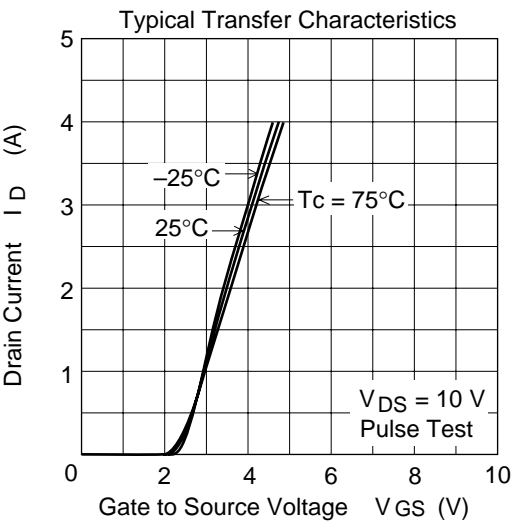
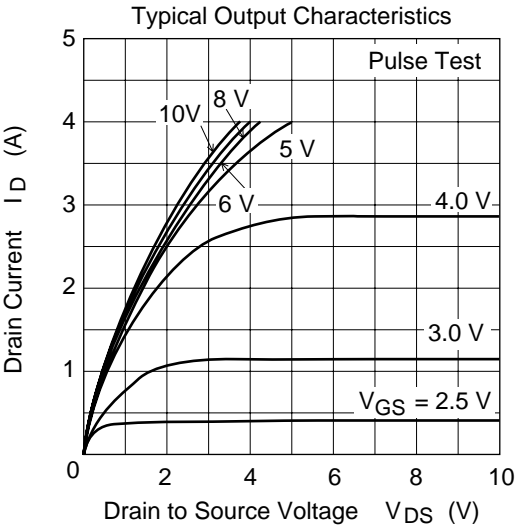
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	100	—	—	V	$I_D = 10\text{ mA}$, $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	± 20	—	—	V	$I_G = \pm 100\text{ }\mu\text{A}$, $V_{DS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 16\text{ V}$, $V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	1	μA	$V_{DS} = 100\text{ V}$, $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	1.3	—	2.3	V	$V_{DS} = 10\text{ V}$, $I_D = 1\text{ mA}$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.56	0.75	Ω	$I_D = 0.5\text{ A}$, $V_{GS} = 10\text{ V}$ ^{Note4}
	$R_{DS(on)}$	—	0.72	1.0	Ω	$I_D = 0.5\text{ A}$, $V_{GS} = 4\text{ V}$ ^{Note4}
Forward transfer admittance	$ y_{fs} $	0.7	1.1	—	S	$I_D = 0.5\text{ A}$, $V_{DS} = 10\text{ V}$ ^{Note4}
Input capacitance	C_{iss}	—	90	—	pF	$V_{DS} = 10\text{ V}$
Output capacitance	C_{oss}	—	42	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	C_{rss}	—	20	—	pF	$f = 1\text{ MHz}$
Turn-on delay time	$t_{d(on)}$	—	11	—	ns	$V_{GS} = 4\text{ V}$, $I_D = 0.5\text{ A}$ $V_{DD} \cong 10\text{ V}$
Rise time	t_r	—	24	—	ns	
Turn-off delay time	$t_{d(off)}$	—	14	—	ns	
Fall time	t_f	—	11	—	ns	
Body-drain diode forward voltage	V_{DF}	—	0.84	1.1	V	$I_F = 1\text{ A}$, $V_{GS} = 0$ ^{Note4}
Body-drain diode reverse recovery time	t_{rr}	—	85	—	ns	$I_F = 1\text{ A}$, $V_{GS} = 0$ $diF/dt = 20\text{ A}/\mu s$

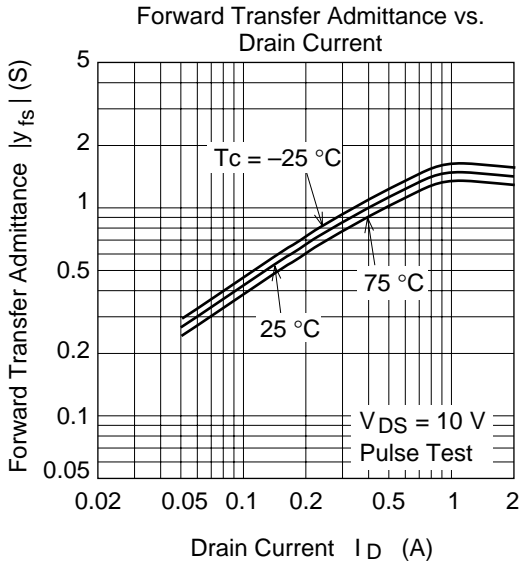
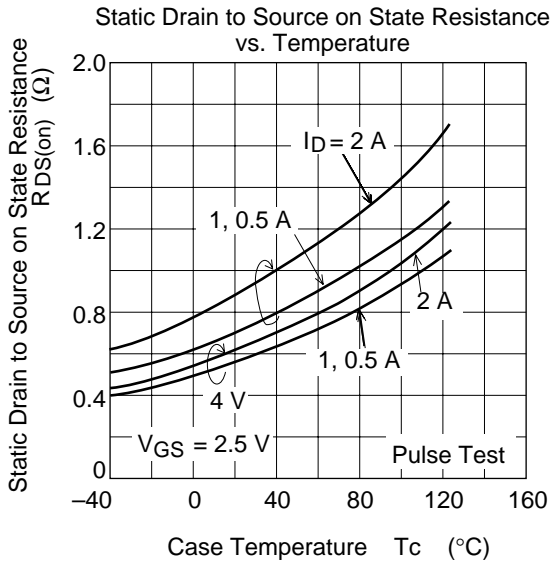
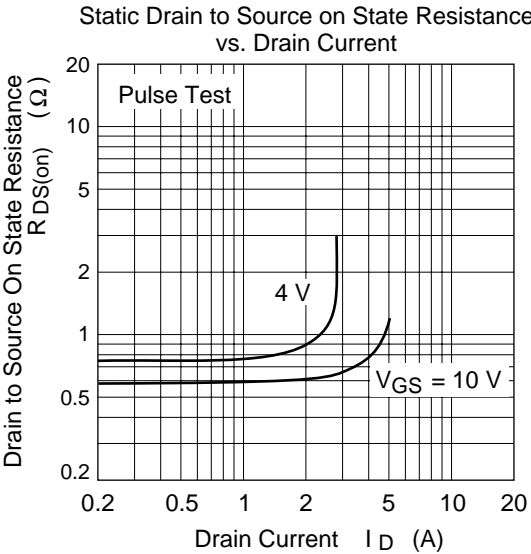
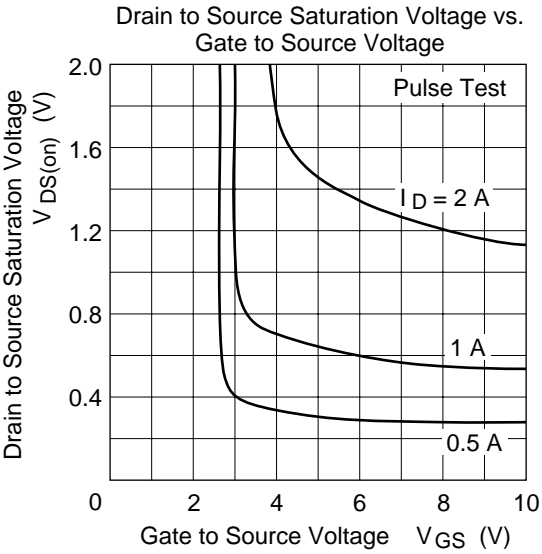
Note: 4. Pulse test

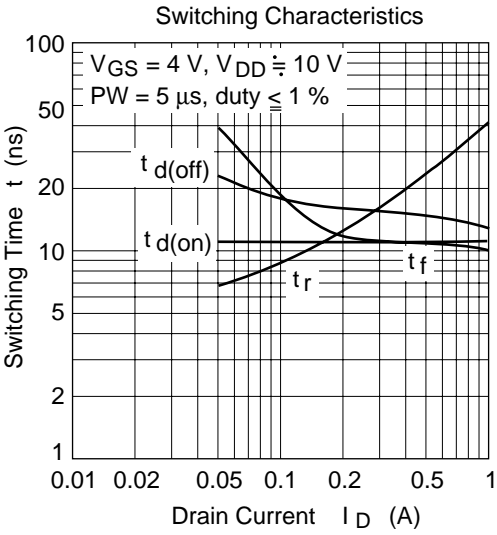
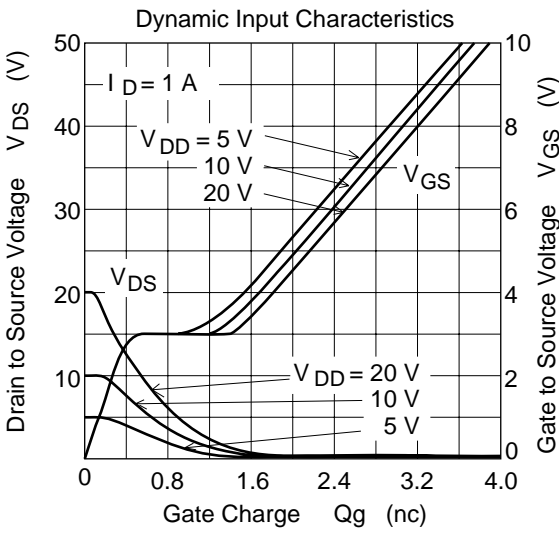
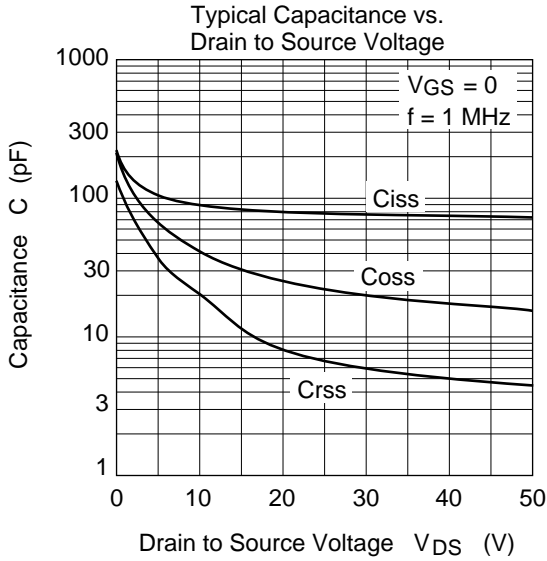
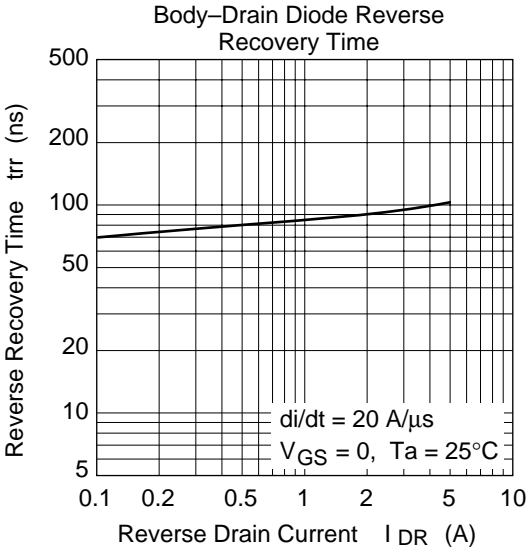
Main Characteristics

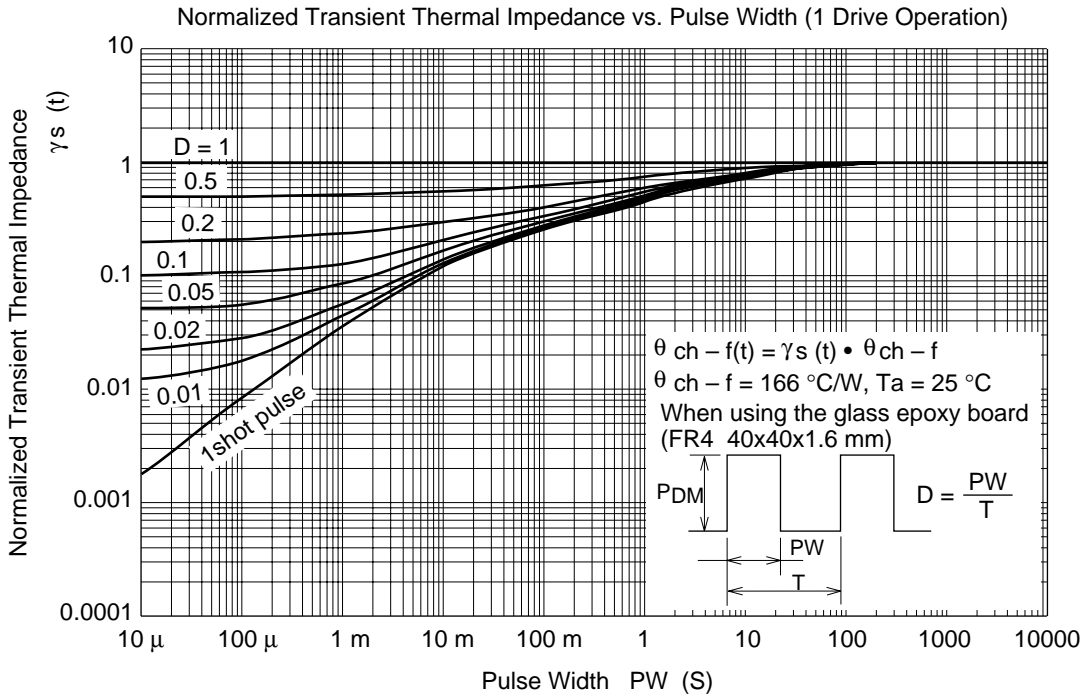
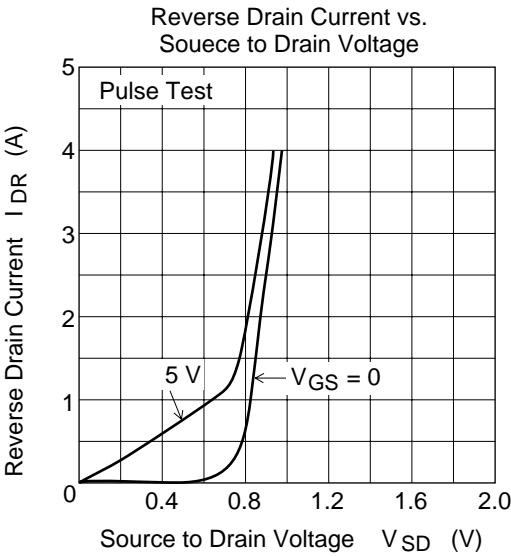


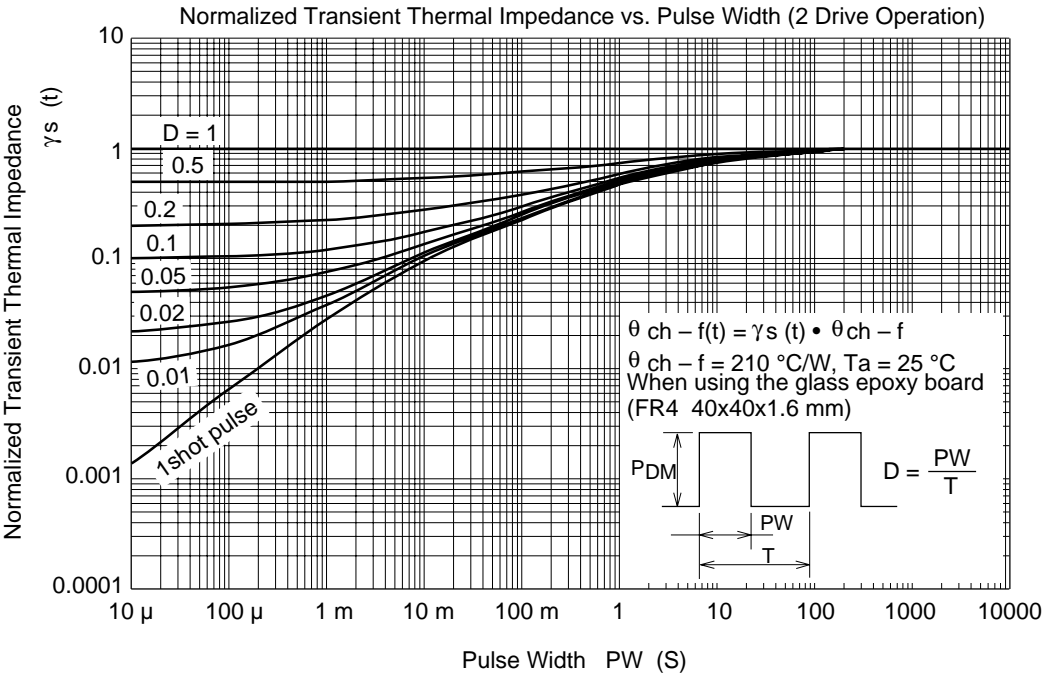
Note 5 :
When using the glass epoxy board
(FR4 40x40x1.6 mm)



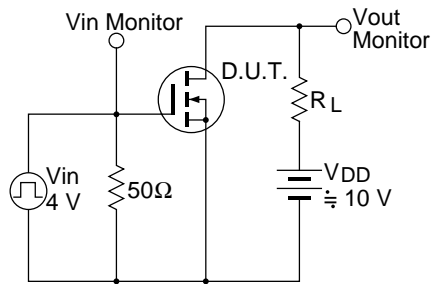




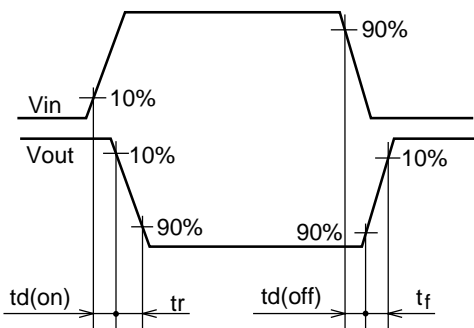




Switching Time Test Circuit

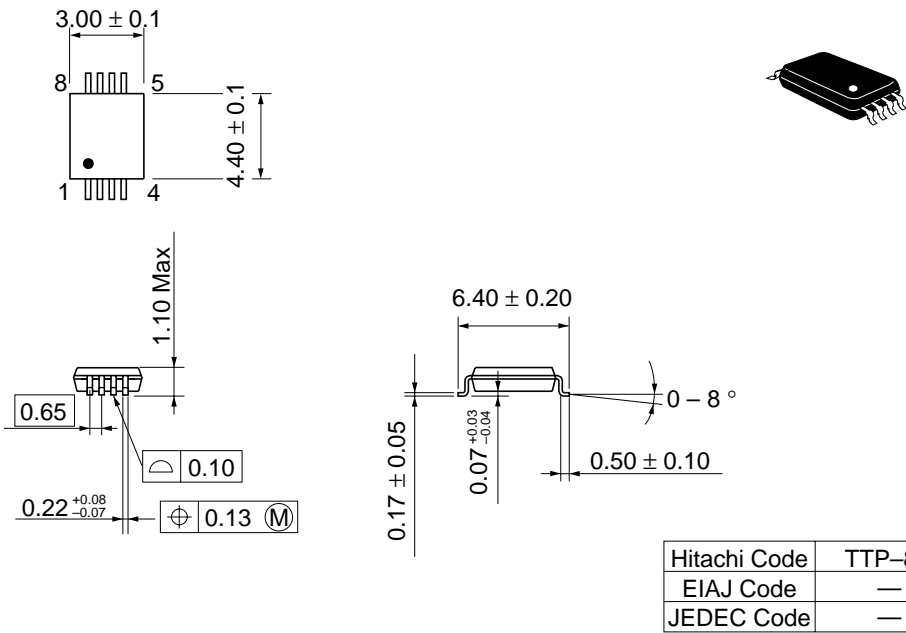


Switching Time Waveform



Package Dimensions

Unit: mm



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