

HAT2050T

Silicon N Channel Power MOS FET
High Speed Power Switching

HITACHI

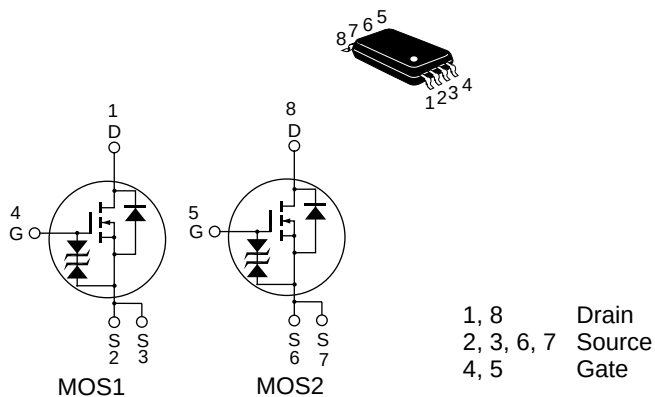
ADE-208-660A (Z)
2nd. Edition
February 1999

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	Pch ^{Note2}	1.0	W
Channel dissipation	Pch ^{Note3}	1.5	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	− 55 to + 150	°C

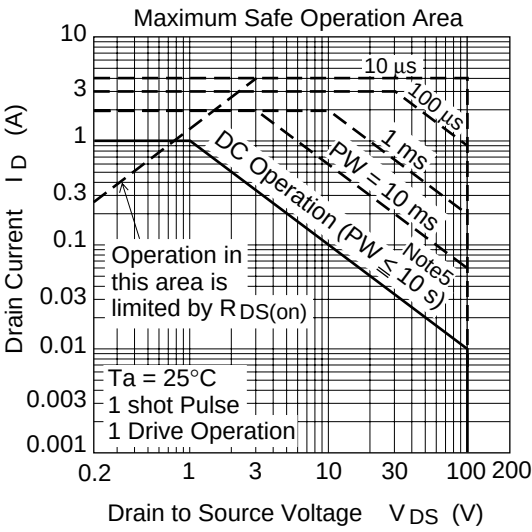
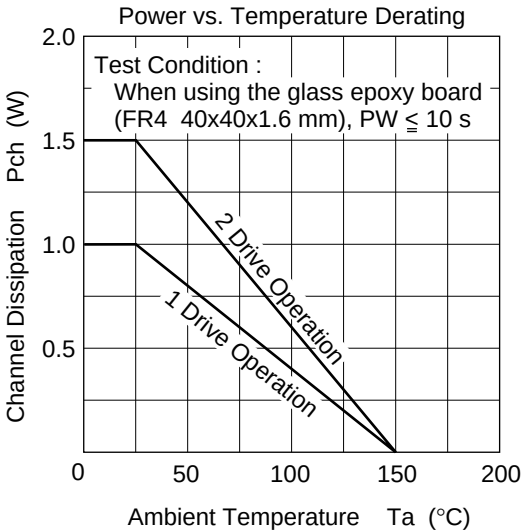
Note: 1. PW ≤ 10μs, duty cycle ≤ 1 %
2. 1 Drive operation : When using the glass epoxy board (FR4 40 x 40 x 1.6 mm), PW≤ 10s
3. 2 Drive operation : When using the glass epoxy board (FR4 40 x 40 x 1.6 mm), PW≤ 10s

Electrical Characteristics (Ta = 25°C)

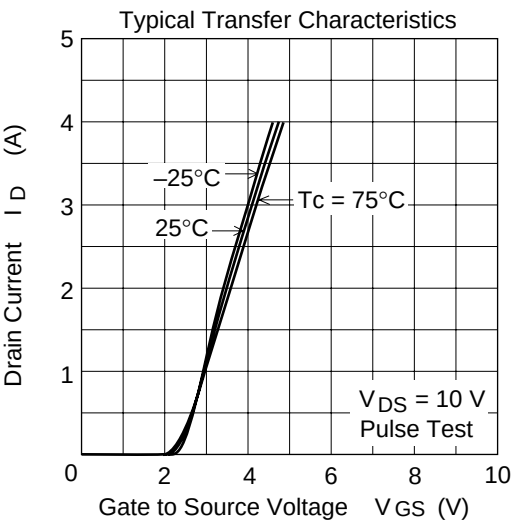
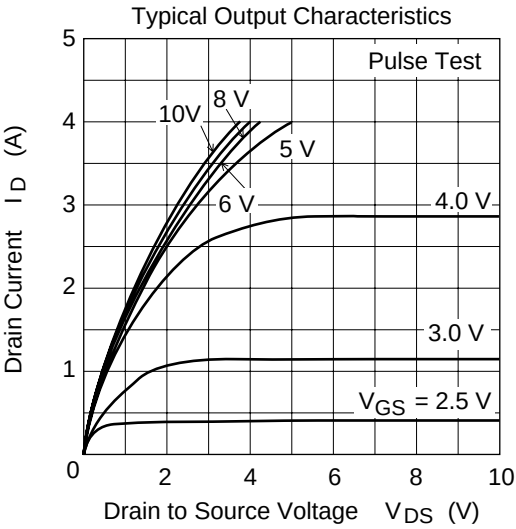
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	V _{(BR)DSS}	100	—	—	V	I _D = 10 mA, V _{GS} = 0
Gate to source breakdown voltage	V _{(BR)GSS}	± 20	—	—	V	I _G = ± 100 μA, V _{DS} = 0
Gate to source leak current	I _{GSS}	—	—	± 10	μA	V _{GS} = ± 16 V, V _{DS} = 0
Zero gate voltage drain current	I _{DSS}	—	—	1	μA	V _{DS} = 100 V, V _{GS} = 0
Gate to source cutoff voltage	V _{GS(off)}	1.3	—	2.3	V	V _{DS} = 10 V, I _D = 1 mA
Static drain to source on state resistance	R _{DS(on)}	—	0.56	0.75	Ω	I _D = 0.5 A, V _{GS} = 10 V ^{Note4}
	R _{DS(on)}	—	0.72	1.0	Ω	I _D = 0.5 A, V _{GS} = 4 V ^{Note4}
Forward transfer admittance	y _{fs}	0.7	1.1	—	S	I _D = 0.5 A, V _{DS} = 10 V ^{Note4}
Input capacitance	Ciss	—	90	—	pF	V _{DS} = 10 V
Output capacitance	Coss	—	42	—	pF	V _{GS} = 0
Reverse transfer capacitance	Crss	—	20	—	pF	f = 1MHz
Turn-on delay time	t _{d(on)}	—	11	—	ns	V _{GS} = 4 V, I _D = 0.5 A V _{DD} ≅ 10 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 A, V _{GS} = 0 ^{Note4}
Body–drain diode reverse recovery time	t _{rr}	—	85	—	ns	I _F = 1 A, V _{GS} = 0 diF/ dt = 20 A/μs

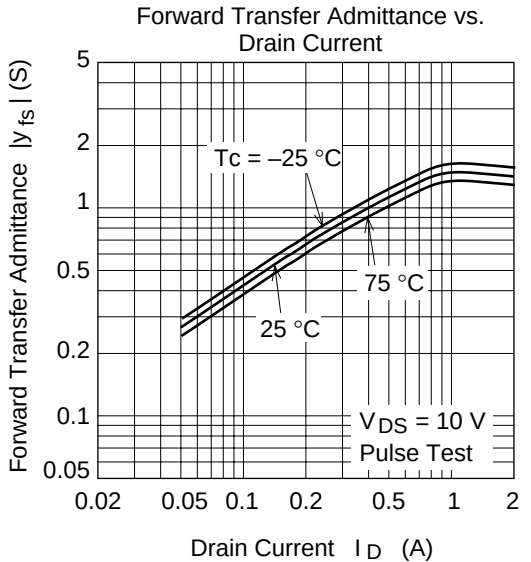
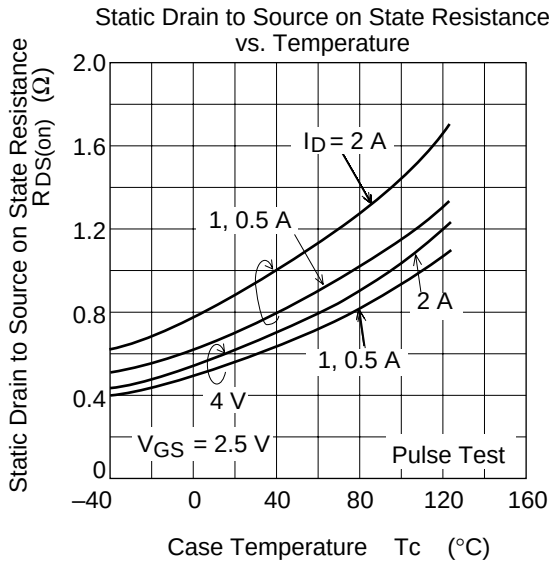
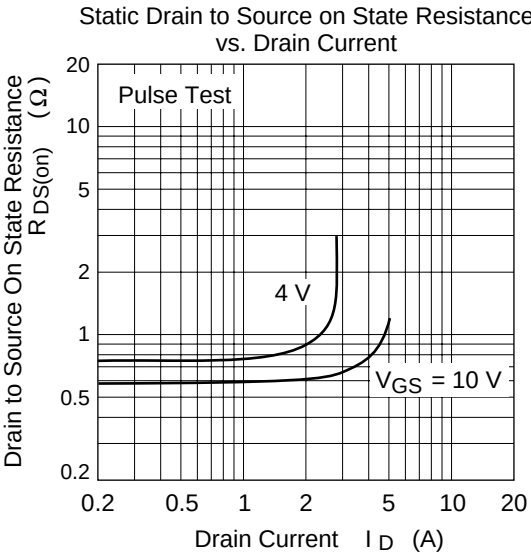
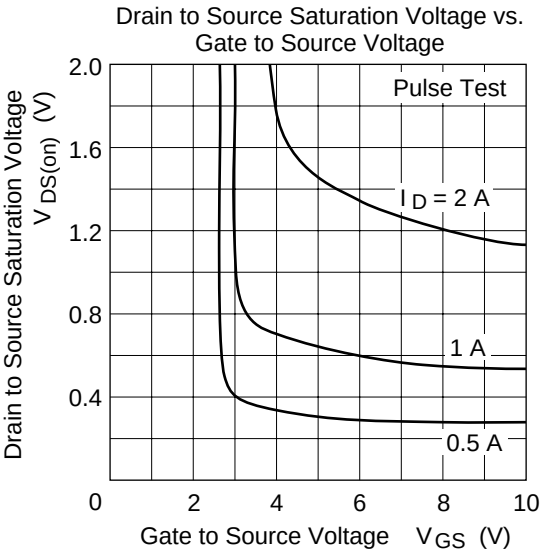
Note: 4. Pulse test

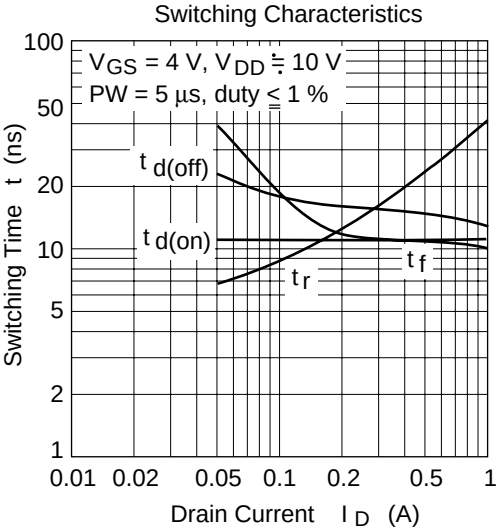
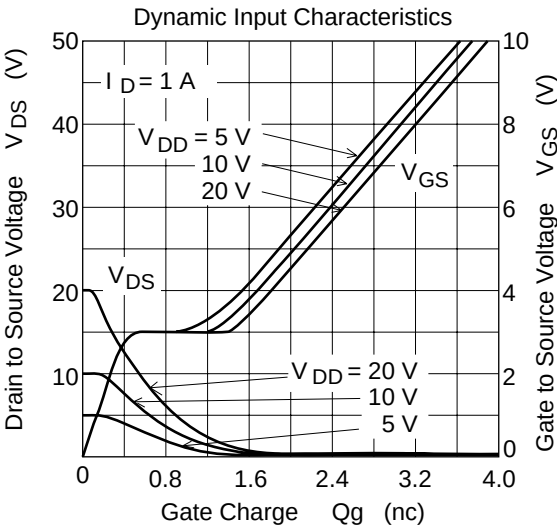
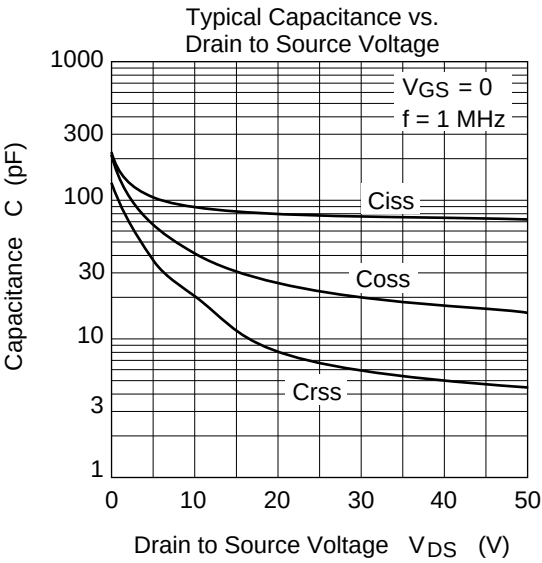
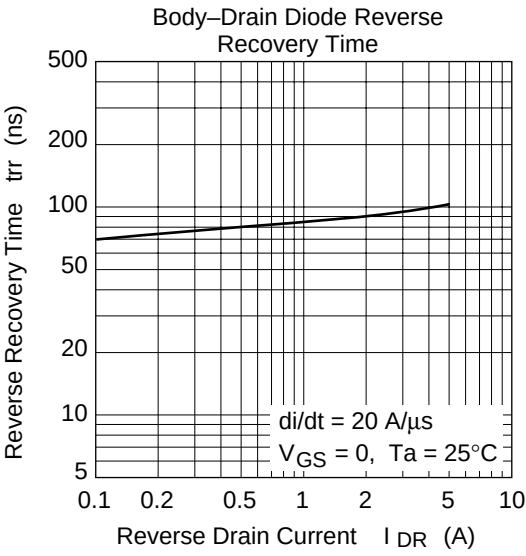
Main Characteristics

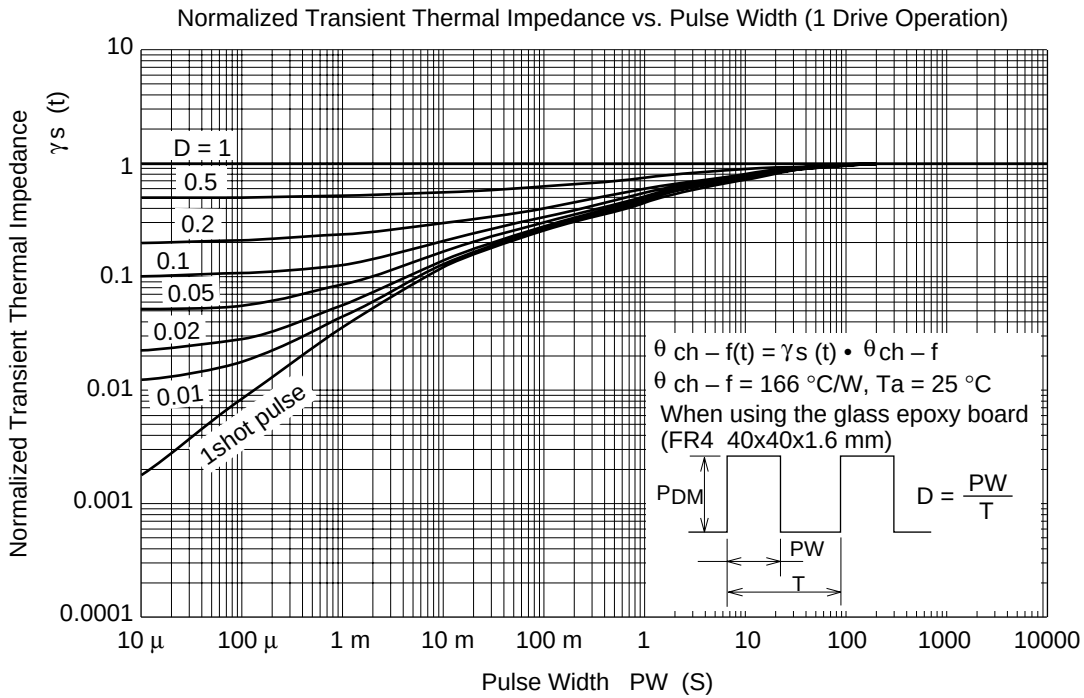
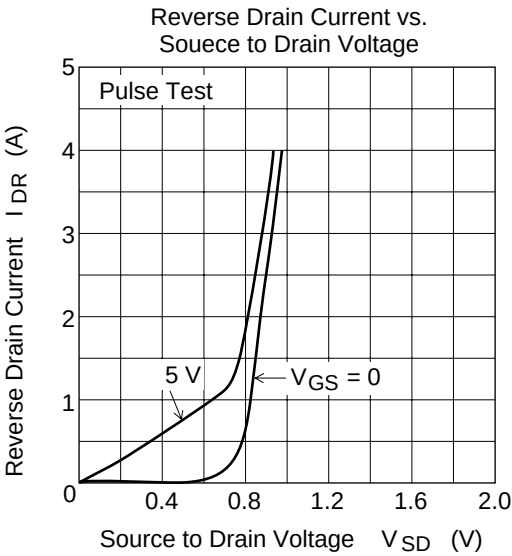


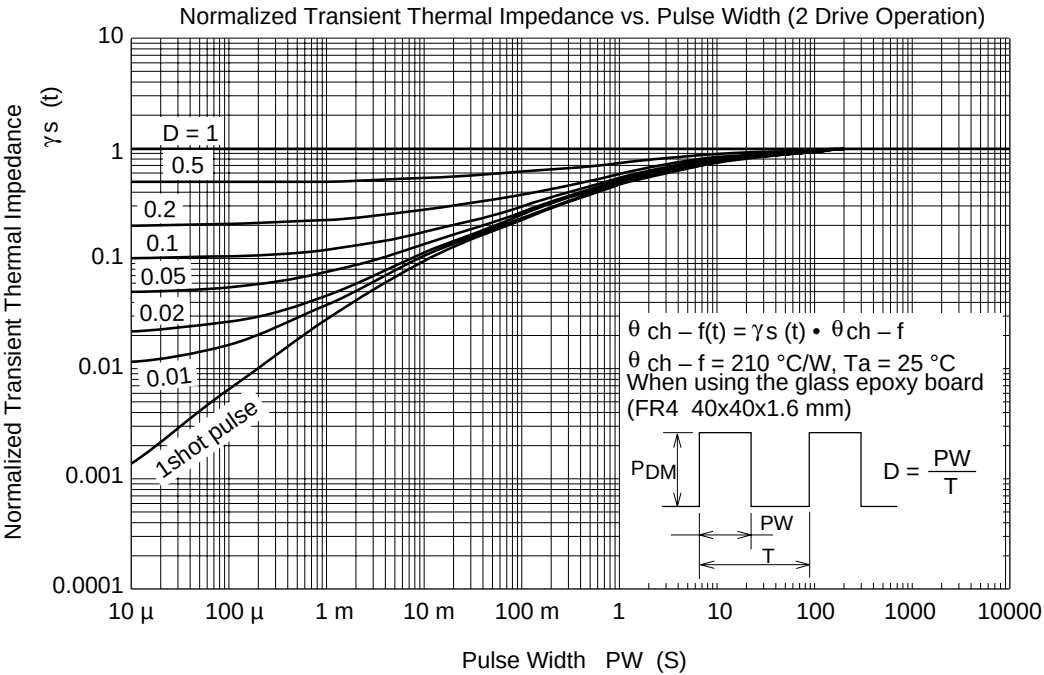
Note 5 :
When using the glass epoxy board
(FR4 40x40x1.6 mm)



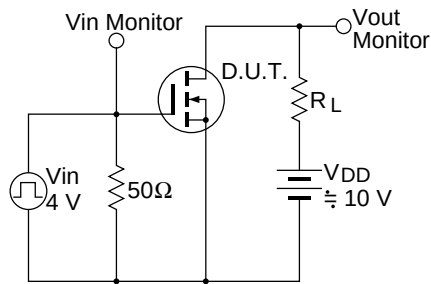




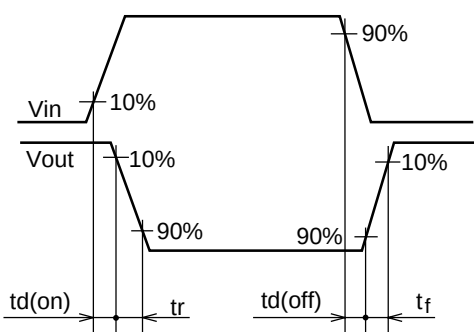




Switching Time Test Circuit

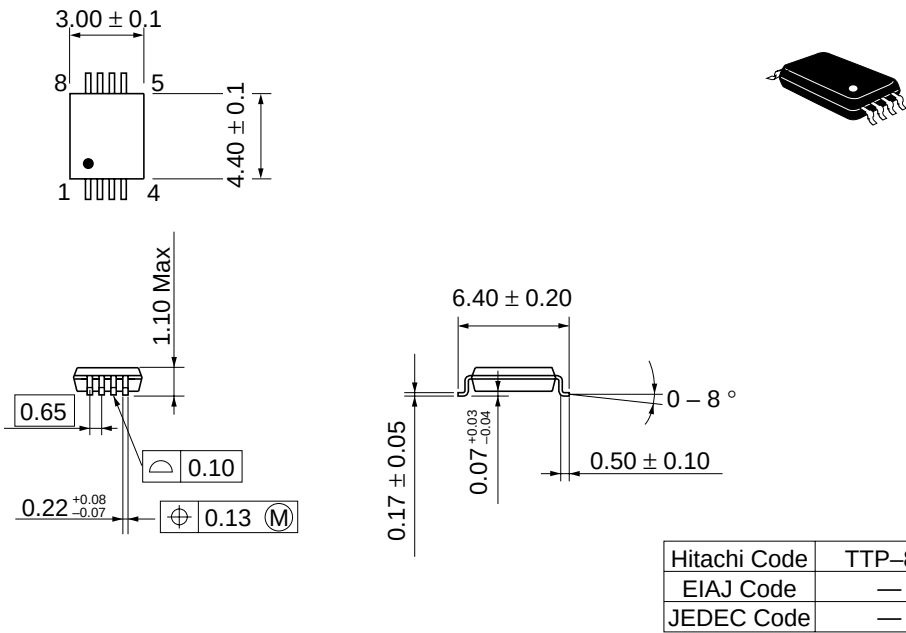


Switching Time Waveform



Package Dimensions

Unit: mm



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