

HAT2049T

Silicon N Channel Power MOS FET
High Speed Power Switching

HITACHI

ADE-208-723 (Z)

1st. Edition

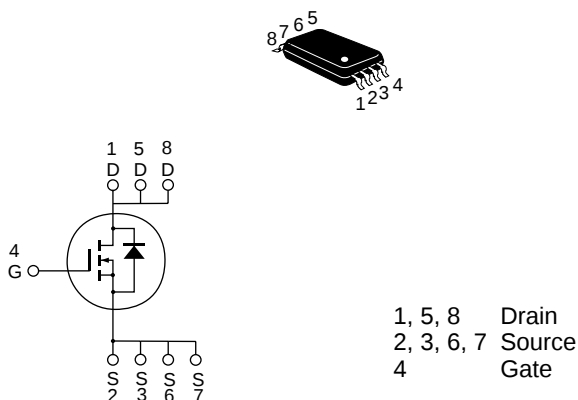
February 1999

Features

- Low on-resistance
- Capable of 2.5 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}	30	V
Gate to source voltage	V _{GSS}	± 12	V
Drain current	I _D	8	A
Drain peak current	I _{D(pulse)} ^{Note1}	64	A
Body-drain diode reverse drain current	I _{DR}	8	A
Channel dissipation	Pch ^{Note2}	1.3	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	– 55 to + 150	°C

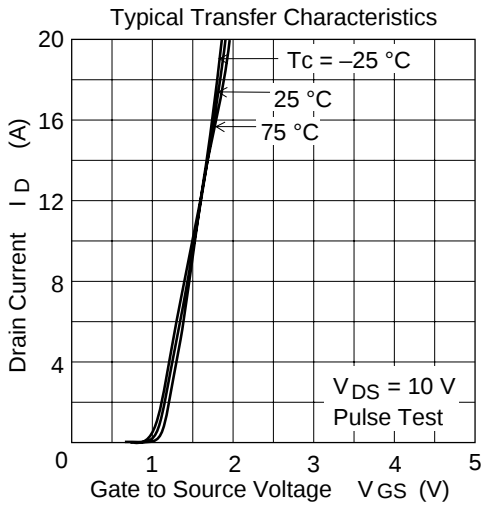
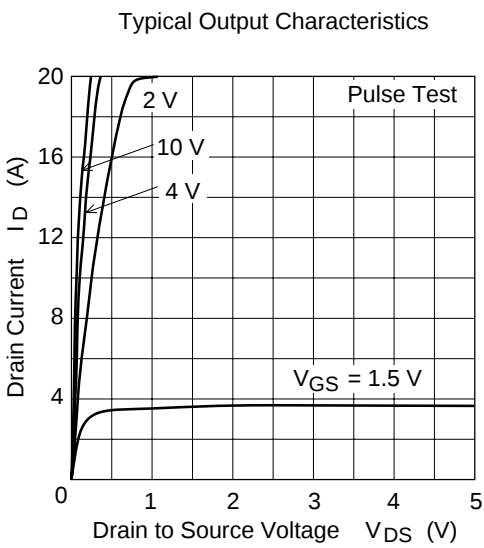
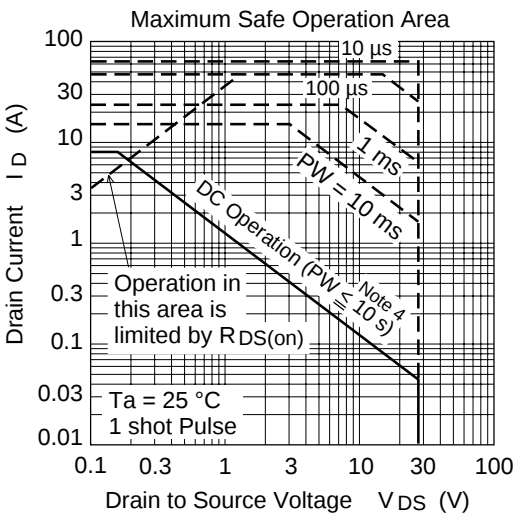
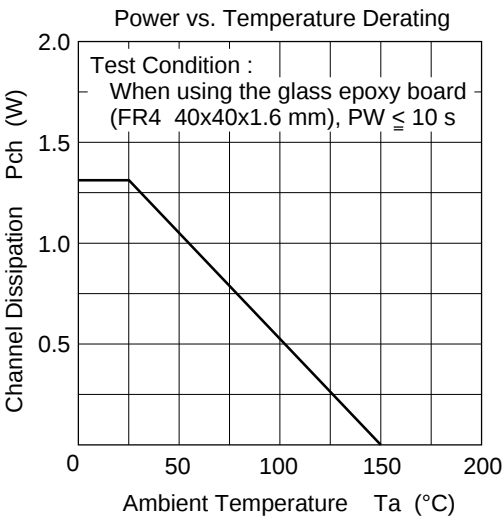
Note: 1. PW ≤ 10μs, duty cycle ≤ 1 %
2. When using the glass epoxy board (FR4 40 x 40 x 1.6 mm), PW ≤ 10s

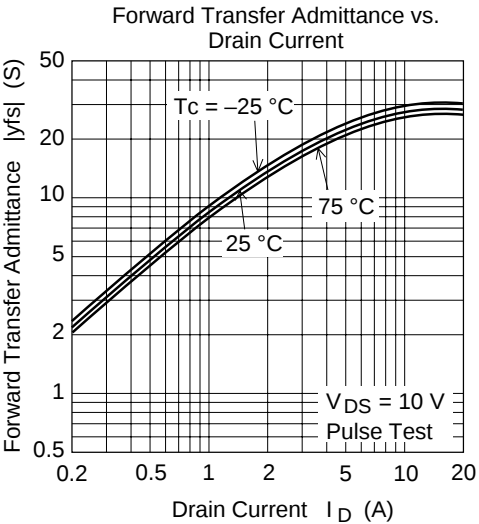
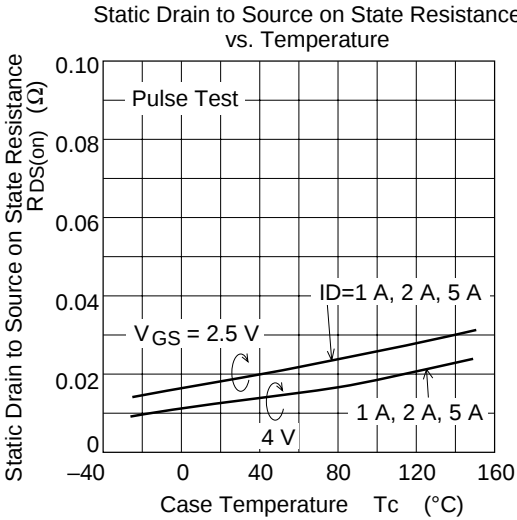
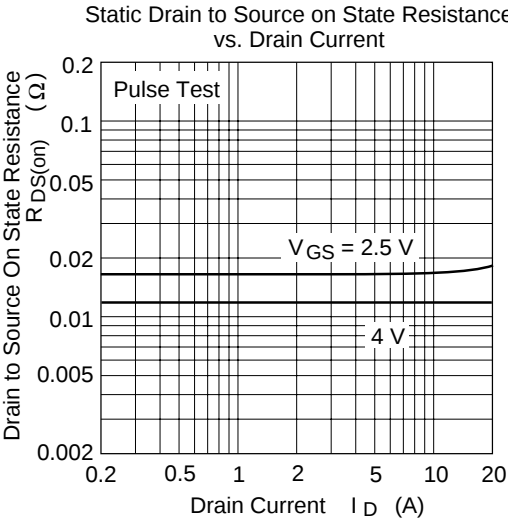
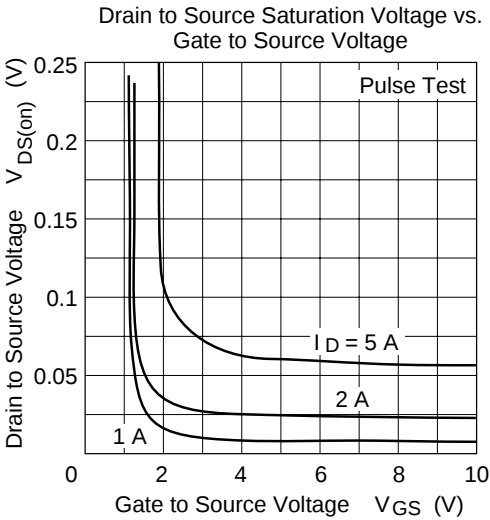
Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	V _{(BR)DSS}	30	—	—	V	I _D = 10 mA, V _{GS} = 0
Gate to source breakdown voltage	V _{(BR)GSS}	± 12	—	—	V	I _G = ± 100 μA, V _{DS} = 0
Gate to source leak current	I _{GSS}	—	—	± 0.1	μA	V _{GS} = ± 12 V, V _{DS} = 0
Zero gate voltage drain current	I _{DSS}	—	—	1	μA	V _{DS} = 30 V, V _{GS} = 0
Gate to source cutoff voltage	V _{GS(off)}	0.4	—	1.4	V	V _{DS} = 10 V, I _D = 1 mA
Static drain to source on state resistance	R _{DS(on)}	—	0.013	0.017	Ω	I _D = 4 A, V _{GS} = 4 V ^{Note3}
	R _{DS(on)}	—	0.017	0.025	Ω	I _D = 4 A, V _{GS} = 2.5 V ^{Note3}
Forward transfer admittance	y _{fs}	13	20	—	S	I _D = 4 A, V _{DS} = 10 V ^{Note3}
Input capacitance	Ciss	—	1430	—	pF	V _{DS} = 10 V
Output capacitance	Coss	—	410	—	pF	V _{GS} = 0
Reverse transfer capacitance	Crss	—	265	—	pF	f = 1MHz
Turn-on delay time	t _{d(on)}	—	23	—	ns	V _{GS} = 4 V, I _D = 4 A
Rise time	t _r	—	165	—	ns	V _{DD} ≅ 10 V
Turn-off delay time	t _{d(off)}	—	215	—	ns	
Fall time	t _f	—	185	—	ns	
Body–drain diode forward voltage	V _{DF}	—	0.83	1.08	V	IF = 8 A, V _{GS} = 0 ^{Note3}
Body–drain diode reverse recovery time	t _{rr}	—	30	—	ns	IF = 8 A, V _{GS} = 0 diF/ dt = 20 A/μs

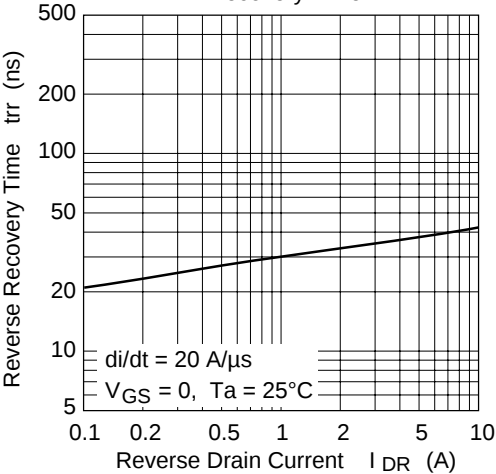
Note: 3. Pulse test

Main Characteristics

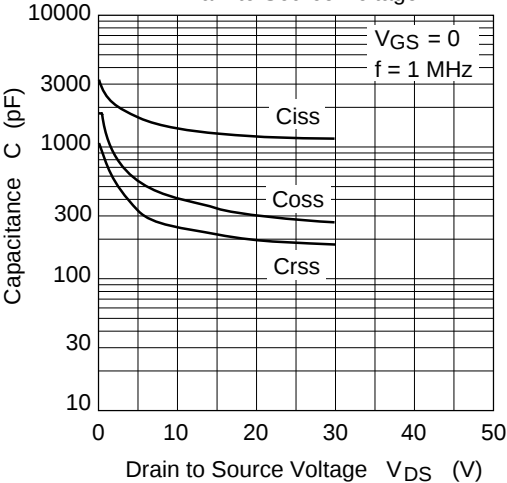




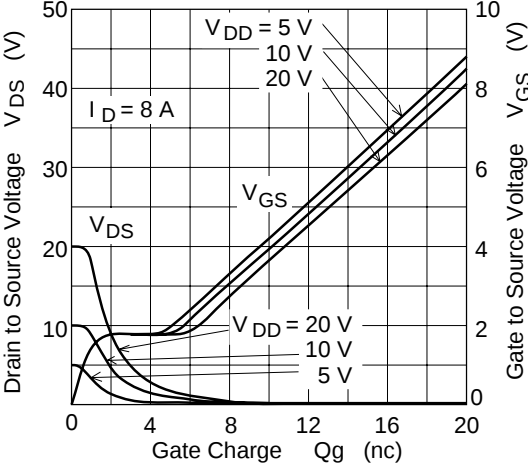
Body-Drain Diode Reverse Recovery Time



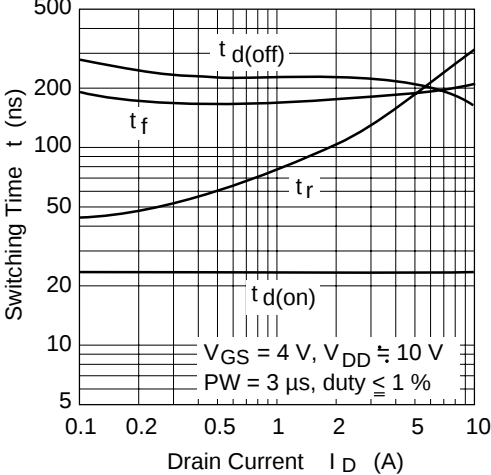
Typical Capacitance vs. Drain to Source Voltage

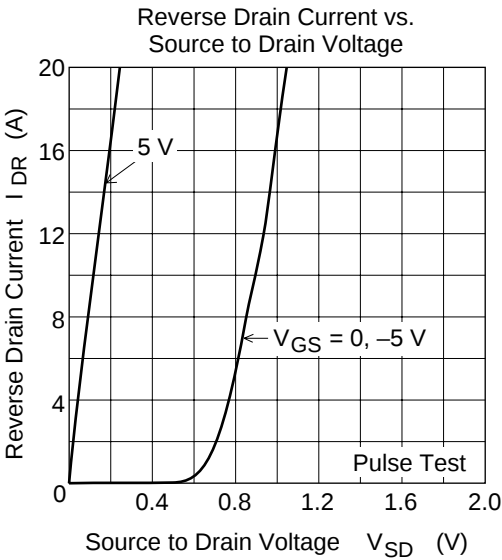


Dynamic Input Characteristics

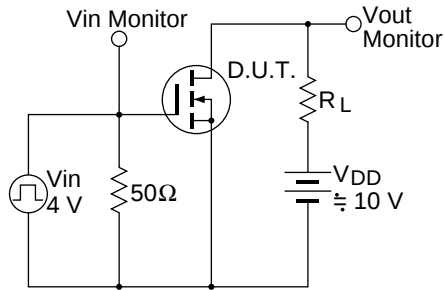


Switching Characteristics

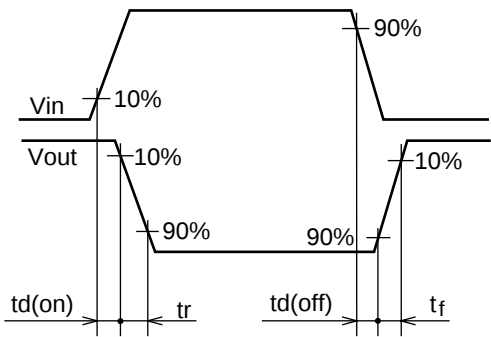




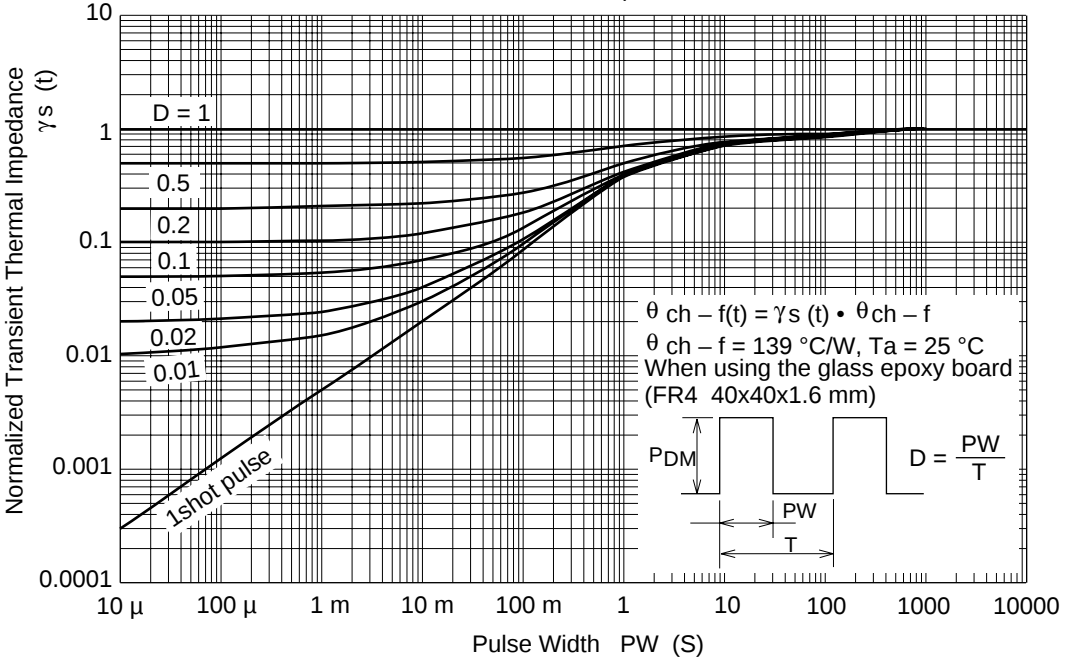
Switching Time Test Circuit



Switching Time Waveform

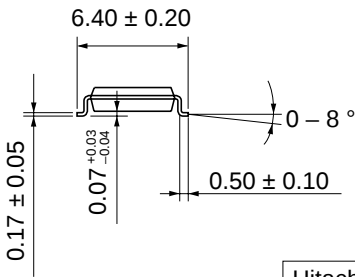
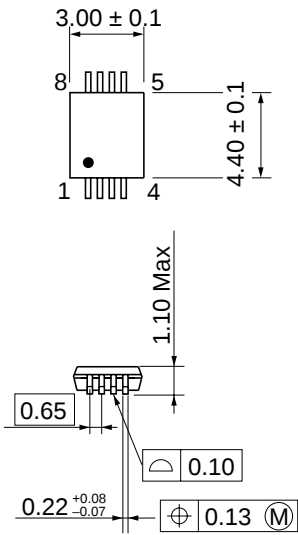


Normalized Transient Thermal Impedance vs. Pulse Width



Package Dimensions

Unit: mm



Hitachi code	TTP-8D
EIAJ	—
JEDEC	—

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