

HAT2052T

Silicon N Channel Power MOS FET
High Speed Power Switching

HITACHI

ADE-208-724C (Z)

4th. Edition

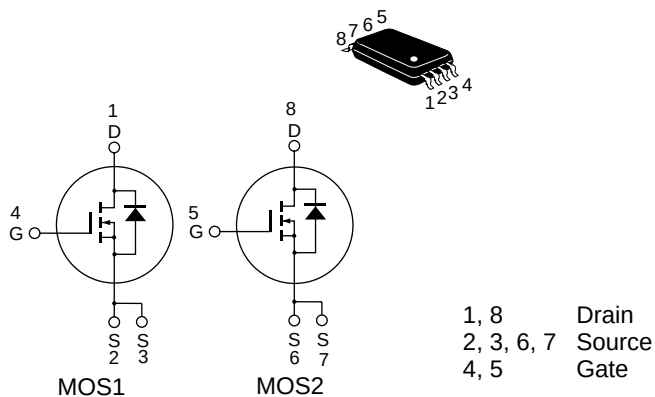
February 1999

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}	28	V
Gate to source voltage	V _{GSS}	± 12	V
Drain current	I _D	5.0	A
Drain peak current	I _{D(pulse)} ^{Note1}	40	A
Body-drain diode reverse drain current	I _{DR}	5.0	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

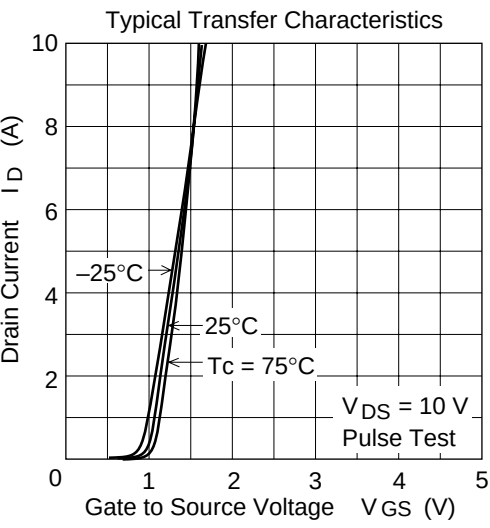
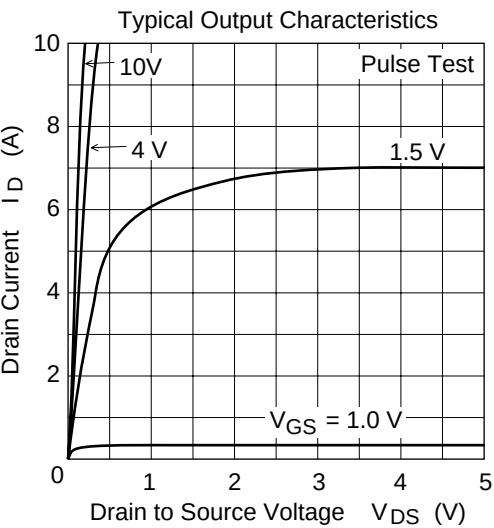
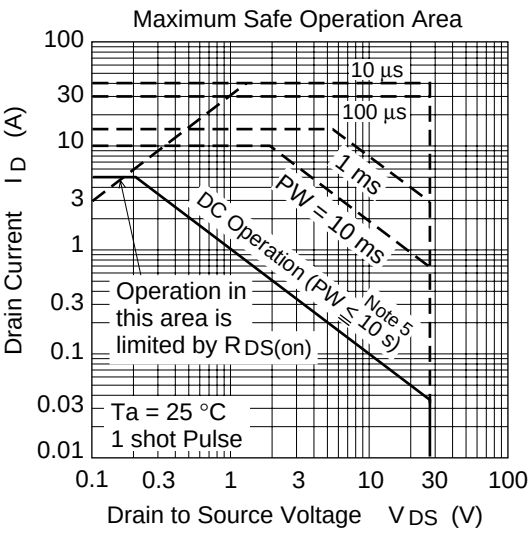
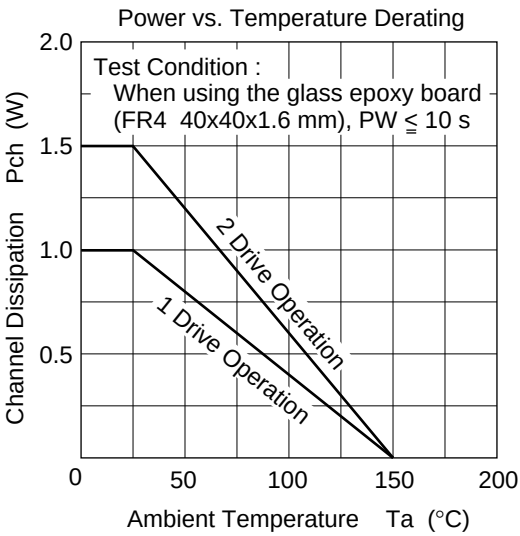
Note: 1. PW ≤ 10μs, duty cycle ≤ 1 %
2. 1 Drive operation ; When using the glass epoxy board (FR4 40 x 40 x 1.6 mm), PW≤ 10s
3. 2 Drive operation ; When using the glass epoxy board (FR4 40 x 40 x 1.6 mm), PW≤ 10s

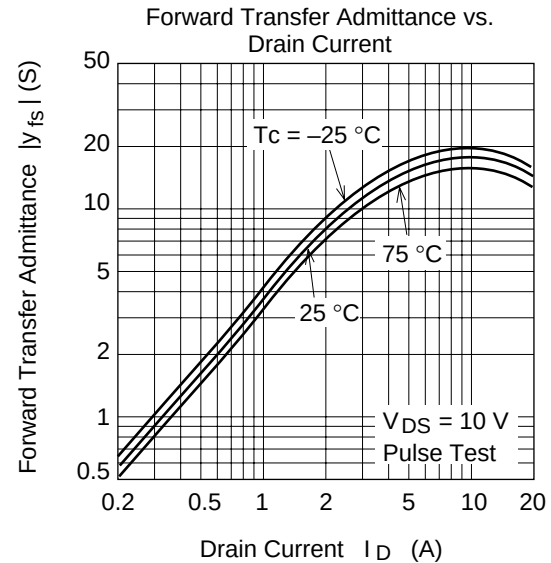
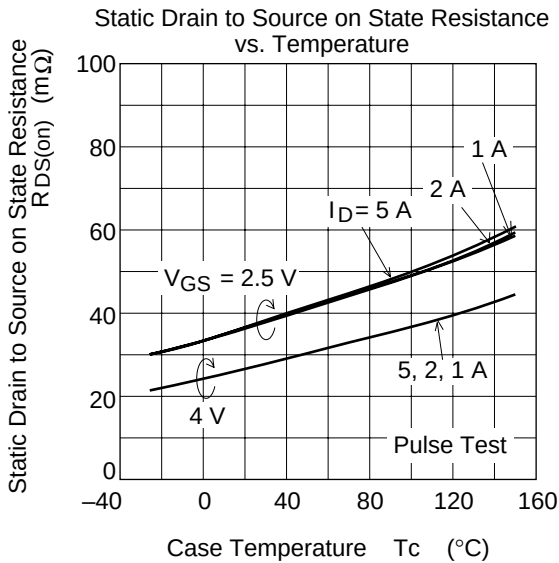
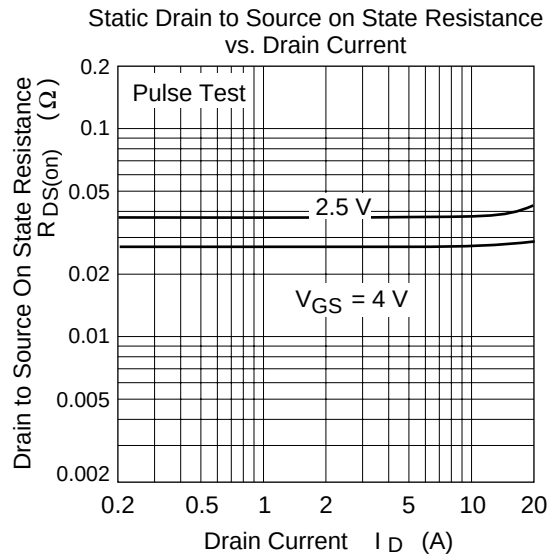
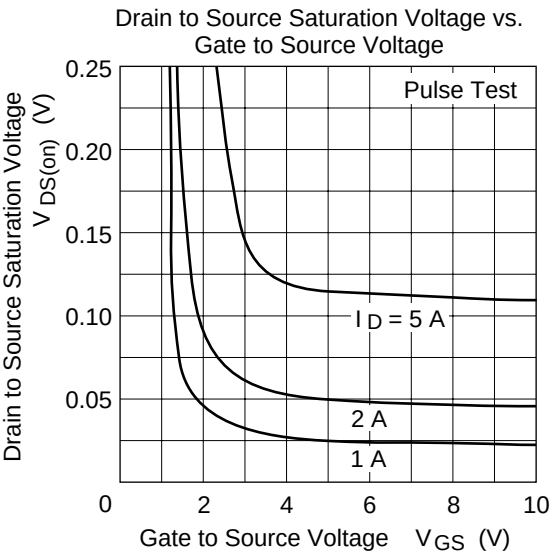
Electrical Characteristics (Ta = 25°C)

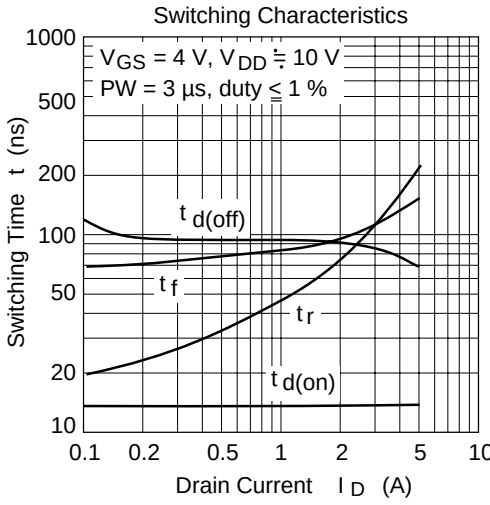
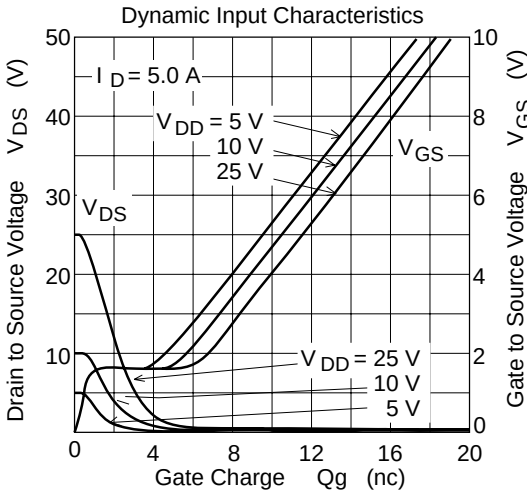
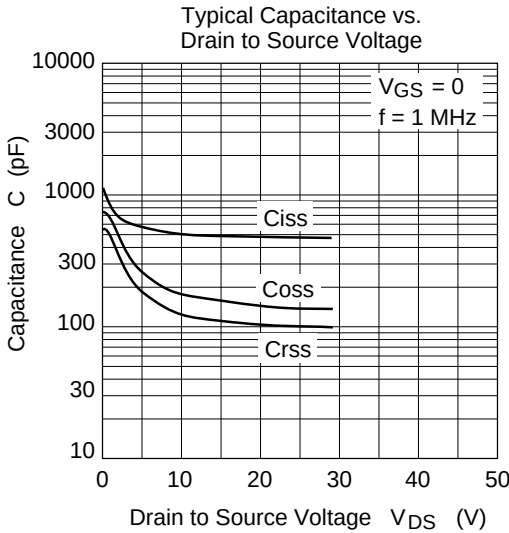
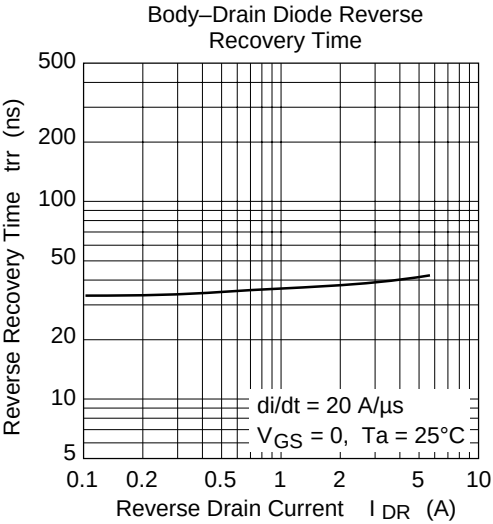
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	V _{(BR)DSS}	28	—	—	V	I _D = 10 mA, V _{GS} = 0
Gate to source leak current	I _{GSS}	—	—	± 0.1	μA	V _{GS} = ± 12 V, V _{DS} = 0
Zero gate voltege drain current	I _{DSS}	—	—	1	μA	V _{DS} = 28 V, V _{GS} = 0
Gate to source cutoff 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)}	—	0.027	0.034	Ω	I _D = 3 A, V _{GS} = 4 V ^{Note4}
	R _{DS(on)}	—	0.037	0.044	Ω	I _D = 3 A, V _{GS} = 2.5 V ^{Note4}
Forward transfer admittance	y _{fs}	7	11	—	S	I _D = 3 A, V _{DS} = 10 V ^{Note4}
Input capacitance	Ciss	—	510	—	pF	V _{DS} = 10 V
Output capacitance	Coss	—	190	—	pF	V _{GS} = 0
Reverse transfer capacitance	Crss	—	140	—	pF	f = 1MHz
Total gate charge	Qg	—	8.5	—	nc	V _{DD} = 10 V
Gate to source charge	Qgs	—	4.5	—	nc	V _{GS} = 4 V
Gate to drain charge	Qgd	—	4	—	nc	I _D = 5 A
Turn-on delay time	t _{d(on)}	—	14	—	ns	V _{GS} = 4 V, I _D = 3 A
Rise time	t _r	—	120	—	ns	V _{DD} ≅ 10 V
Turn-off delay time	t _{d(off)}	—	85	—	ns	
Fall time	t _f	—	120	—	ns	
Body–drain diode forward voltage	V _{DF}	—	0.85	1.1	V	IF = 5.0 A, V _{GS} = 0 ^{Note4}
Body–drain diode reverse recovery time	t _{rr}	—	40	—	ns	IF = 5.0 A, V _{GS} = 0 diF/ dt = 20 A/μs

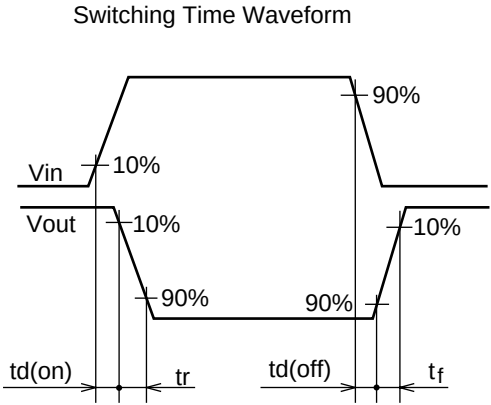
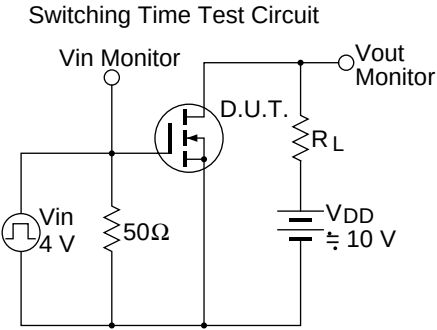
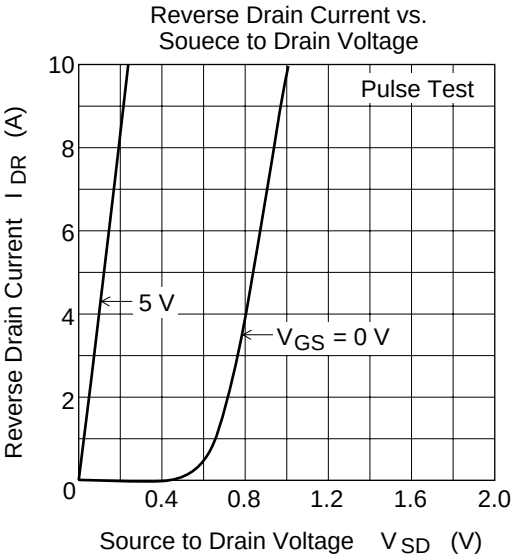
Note: 4. Pulse test

Main Characteristics

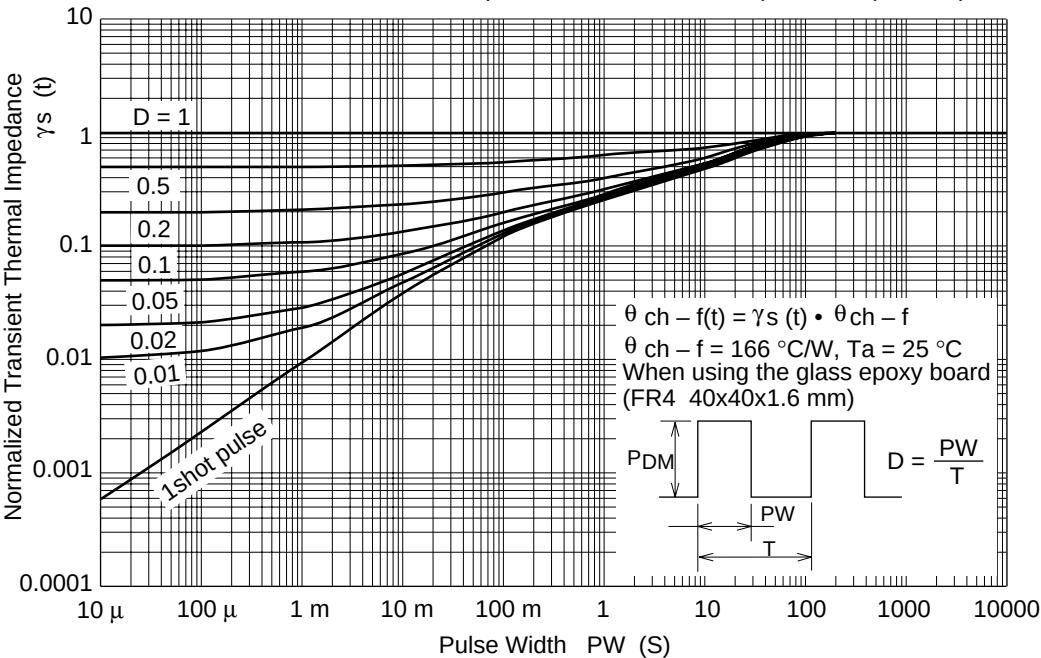




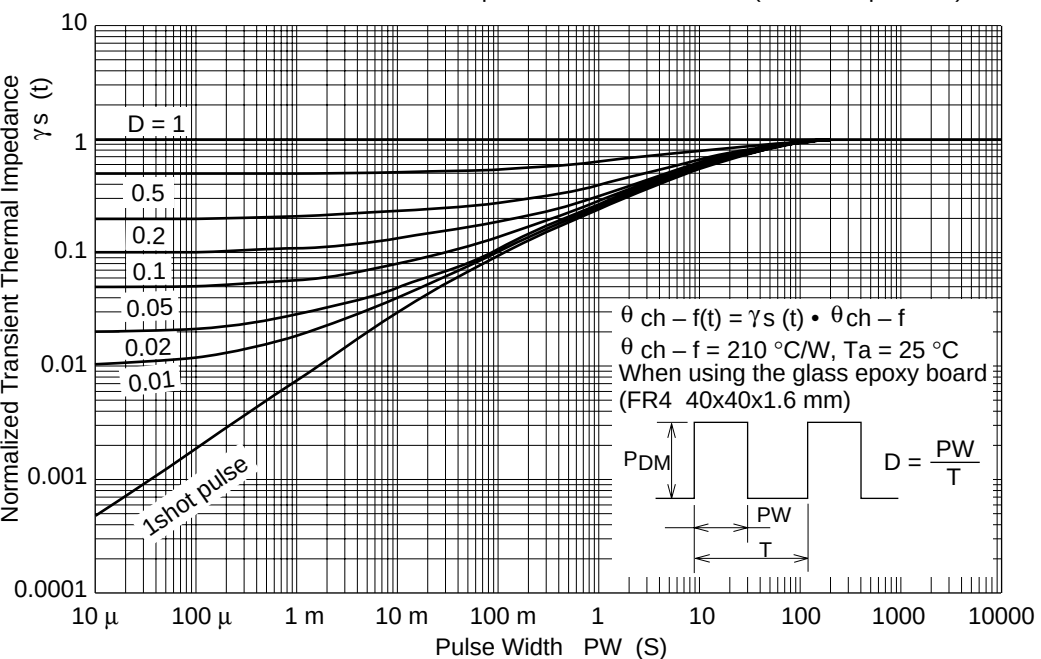




Normalized Transient Thermal Impedance vs. Pulse Width (1 Drive Operation)

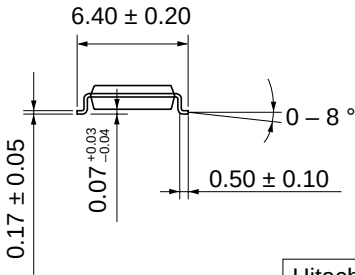
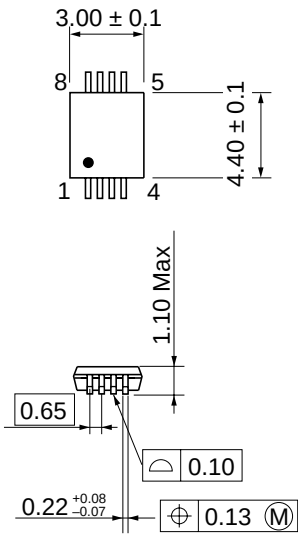


Normalized Transient Thermal Impedance vs. Pulse Width (2 Drive Operation)



Package Dimensions

Unit: mm



Hitachi code	TTP-8D
EIAJ	—
JEDEC	—

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