
HAT2027R

Silicon N Channel Power MOS FET
High Speed Power Switching

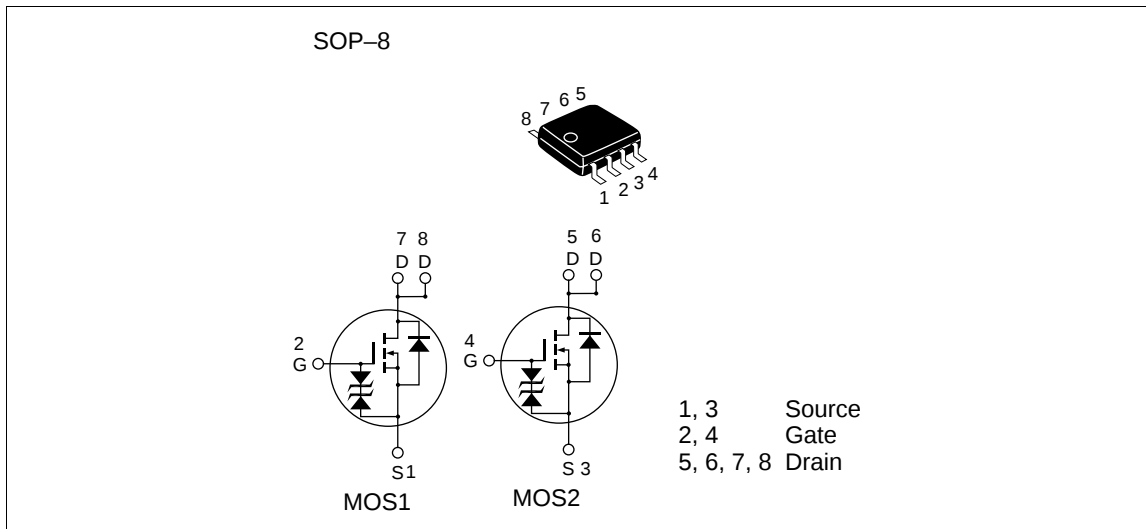
HITACHI

ADE-208-458 B (Z)
3rd. Edition
December. 1996

Features

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

Outline



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Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	VDSS	20	V
Gate to source voltage	VGSS	±12	V
Drain current	ID	7	A
Drain peak current	ID(pulse)Note1	56	A
Body-drain diode reverse drain current	IDR	7	A
Channel dissipation	Pch Note2	2	W
Channel dissipation	Pch Note3	3	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	–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)

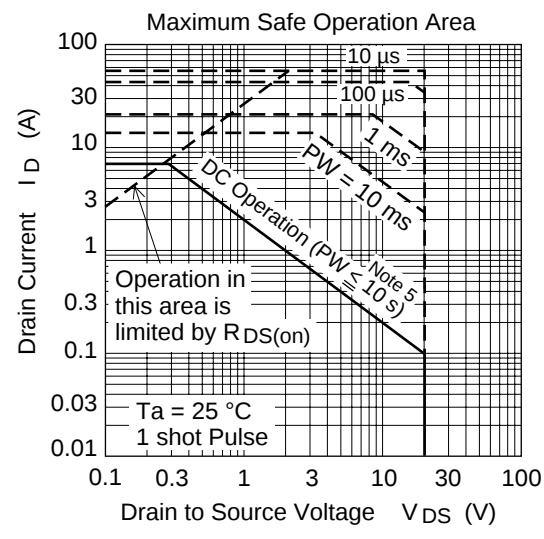
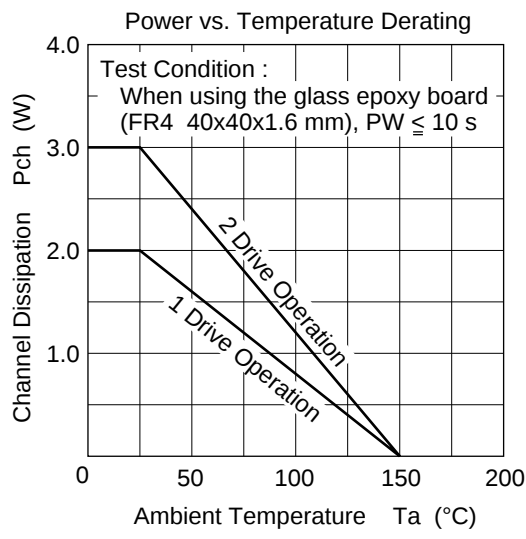
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	V(BR)DSS	20	—	—	V	ID = 10mA, VGS = 0
Gate to source breakdown voltage	V(BR)GSS	±12	—	—	V	IG = ±100μA, VDS = 0
Gate to source leak current	IGSS	—	—	±10	μA	VGS = ±10V, VDS = 0
Zero gate voltage drain current	IDSS	—	—	10	μA	VDS = 20 V, VGS = 0
Gate to source cutoff voltage	VGS(off)	0.5	—	1.5	V	VDS = 10V, ID = 1mA
Static drain to source on state resistance	RDS(on)	—	0.03	0.038	Ω	ID = 4A, VGS = 4V Note4
	RDS(on)	—	0.038	0.053	Ω	ID = 4A, VGS = 2.5V Note4
Forward transfer admittance	yfs	9	14	—	S	ID = 4A, VDS = 10V Note4
Input capacitance	Ciss	—	720	—	pF	VDS = 10V
Output capacitance	Coss	—	450	—	pF	VGS = 0
Reverse transfer capacitance	Crss	—	185	—	pF	f = 1MHz
Turn-on delay time	td(on)	—	28	—	ns	VGS = 4V, ID = 4A
Rise time	tr	—	145	—	ns	VDD $\hat{A}$ 10V
Turn-off delay time	td(off)	—	100	—	ns	
Fall time	tf	—	125	—	ns	
Body–drain diode forward voltage	VDF	—	0.9	1.4	V	IF = 7A, VGS = 0 Note4

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Body–drain diode reverse recovery time	trr	—	60	—	ns	IF = 7A, VGS = 0 diF/ dt =20A/μs

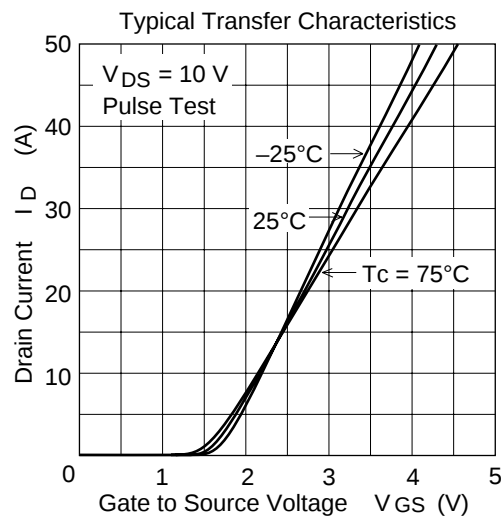
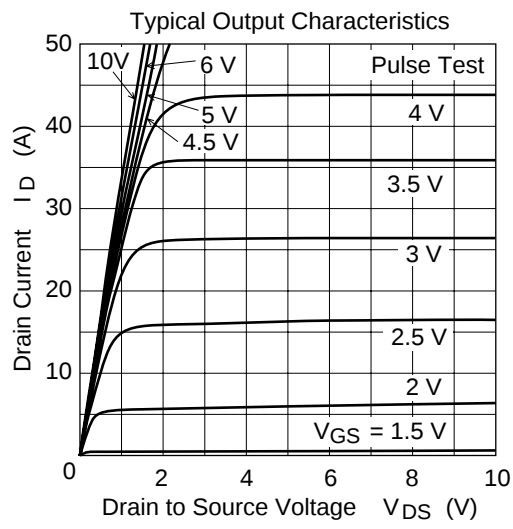
Note: 4. Pulse test

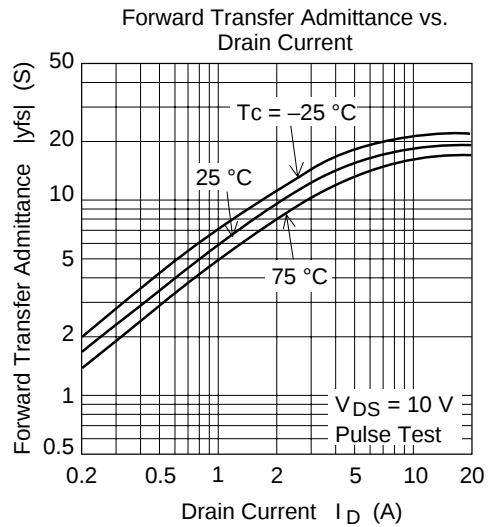
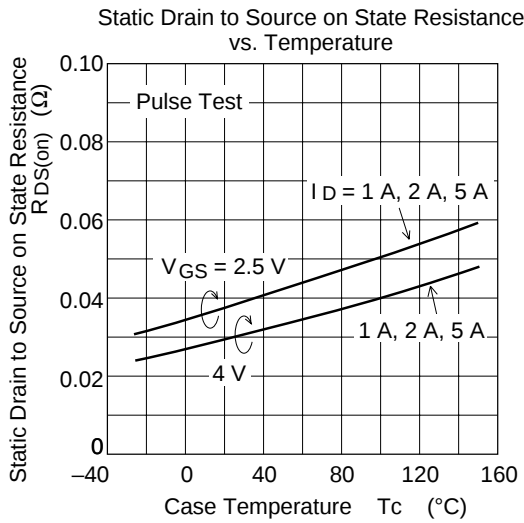
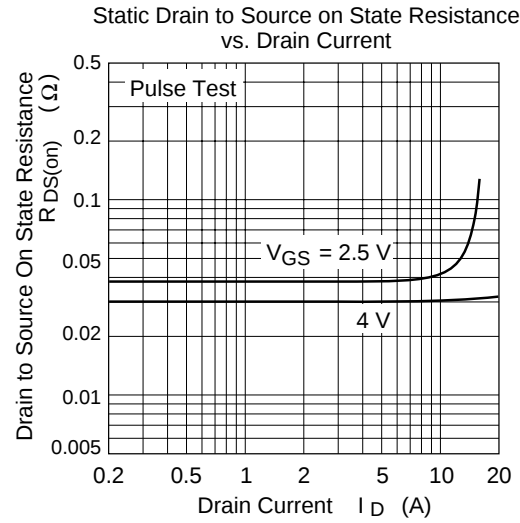
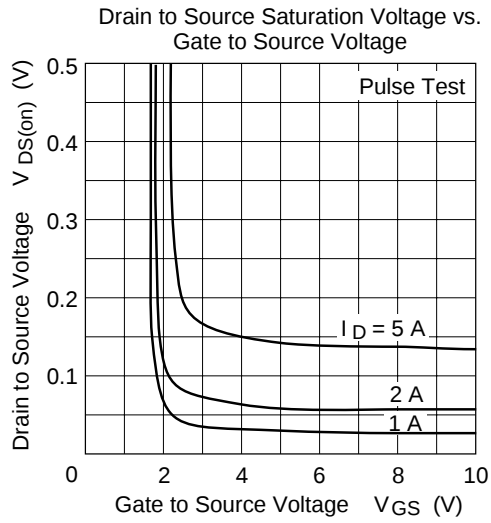
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Main Characteristics

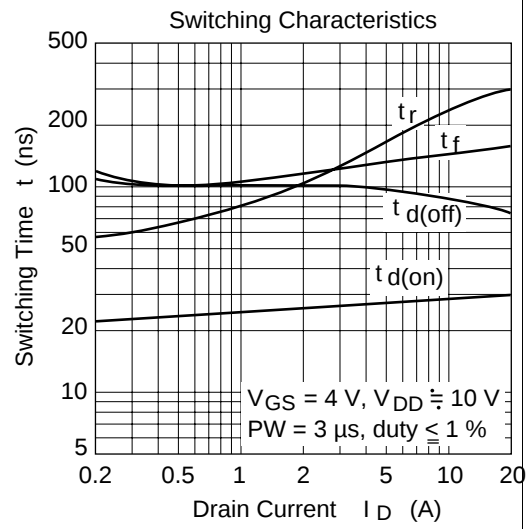
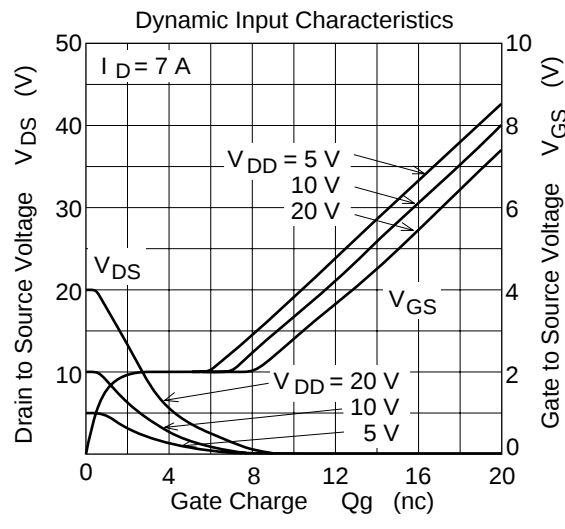
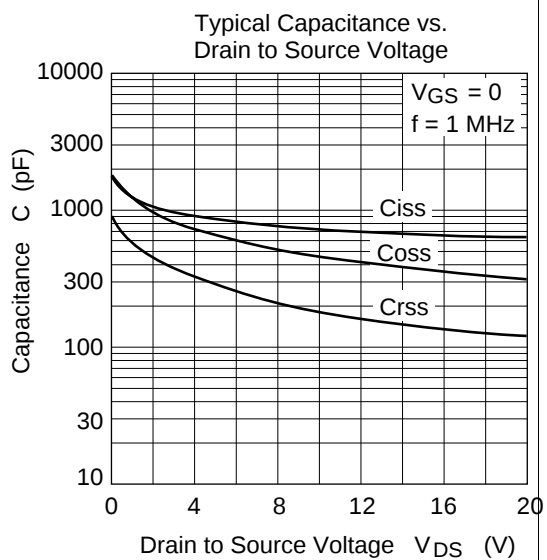
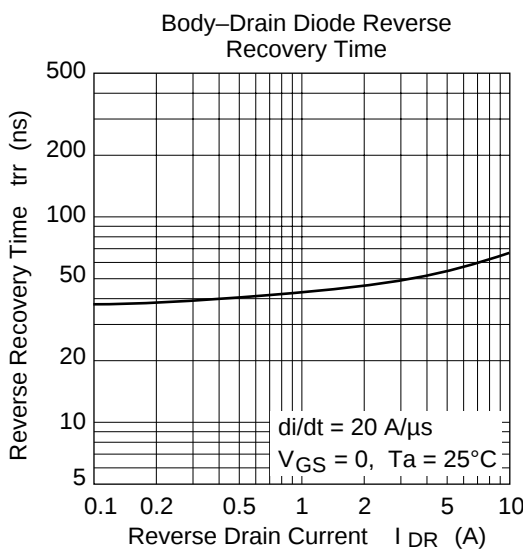


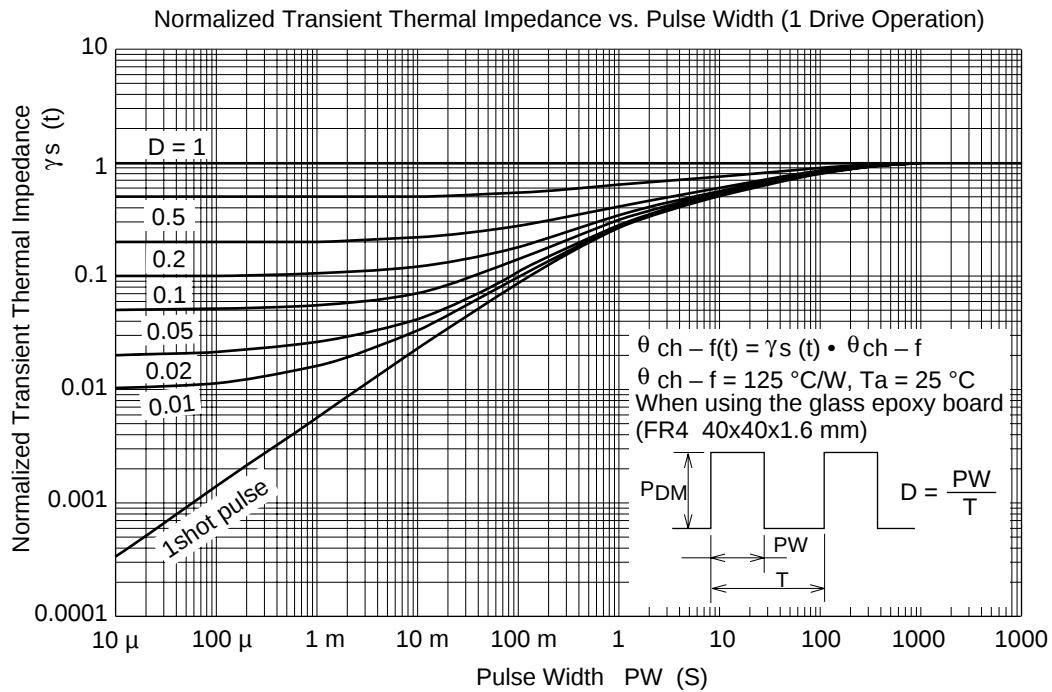
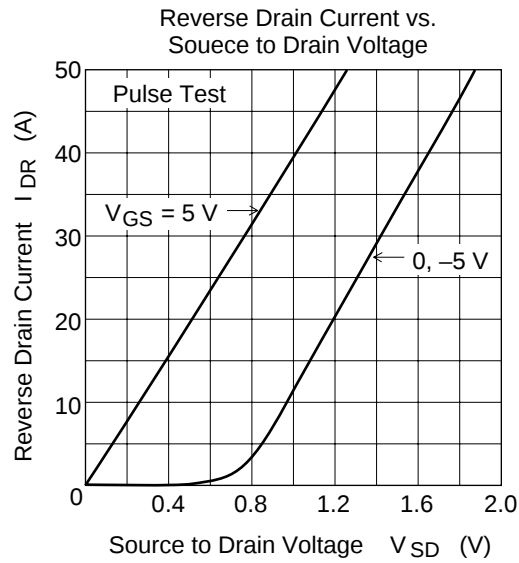
Note 5 :
When using the glass epoxy board
(FR4 40x40x1.6 mm)



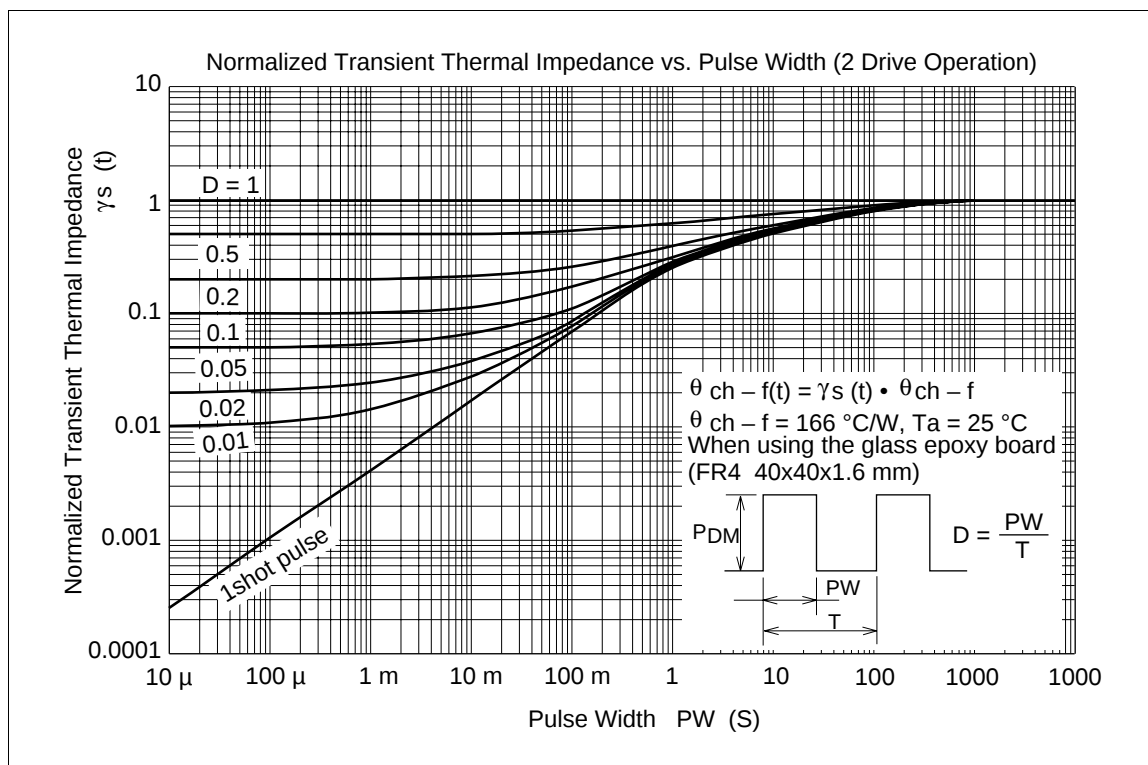


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Package Dimensions

Unit: mm

