

HAT2088R

Silicon N Channel MOSFET
High Speed Power Switching

HITACHI

ADE-208-1234 (Z)

1st. Edition

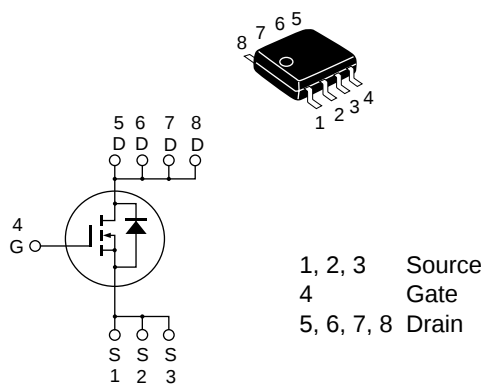
Mar. 2001

Features

- Low on-resistance
- Low leakage current
- High density mounting

Outline

SOP-8



Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V _{DSS}	200	V
Gate to source voltage	V _{GSS}	±30	V
Drain current	I _D	2	A
Drain peak current	I _{D (pulse)} ^{Note1}	16	A
Body-drain diode reverse drain current	I _{DR}	2	A
Channel dissipation	Pch ^{Note 2}	2.5	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	−55 to +150	°C

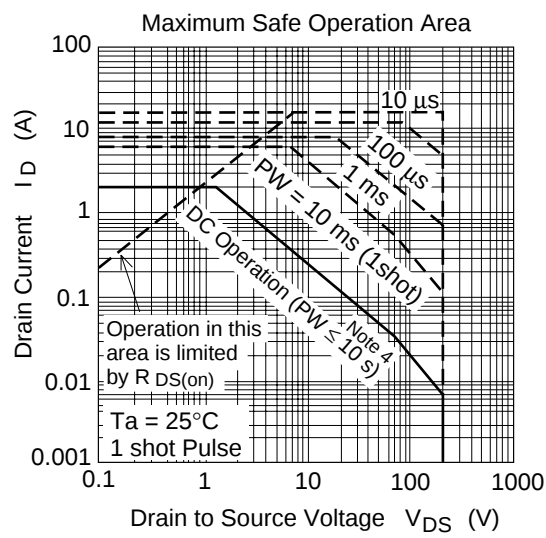
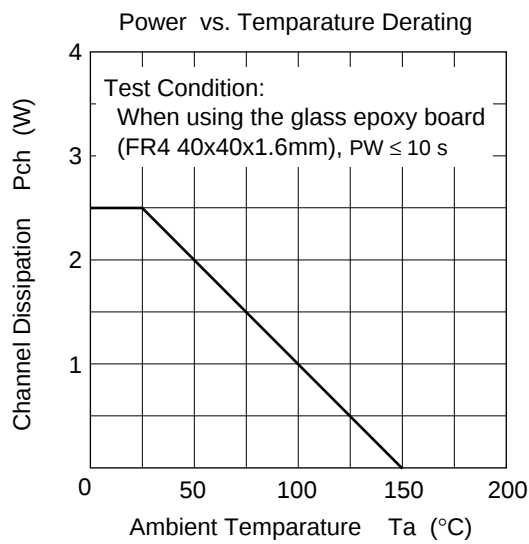
Notes: 1. $PW \leq 10 \mu s$ and duty cycle $\leq 1\%$
2. When using the glass epoxy board (FR4 40 × 40 ×1.6 mm), $PW \leq 10 s$

Electrical Characteristics (Ta = 25°C)

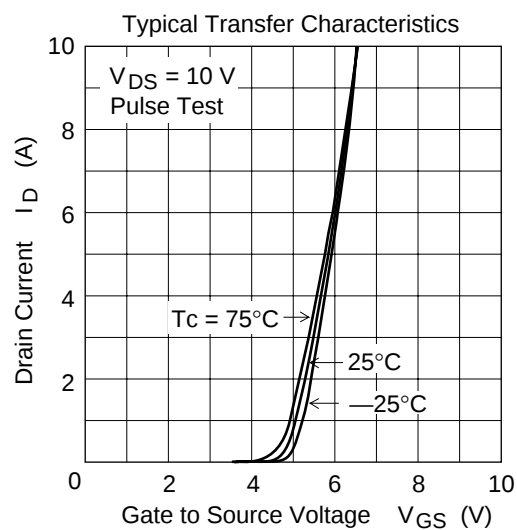
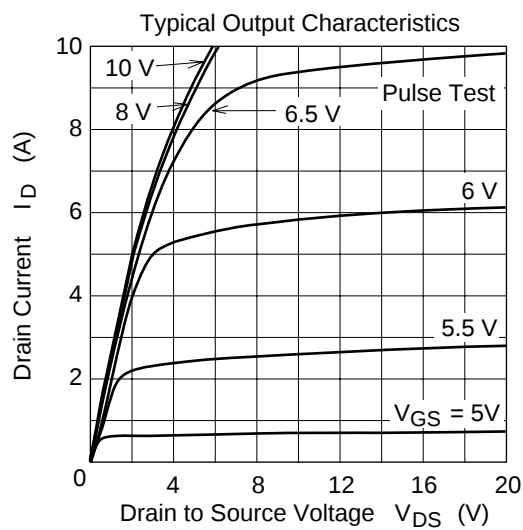
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	200	—	—	V	$I_D = 10 \text{ mA}$, $V_{GS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 0.1	μA	$V_{GS} = \pm 30\text{V}$, $V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	1	μA	$V_{DS} = 200\text{V}$, $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	3.0	—	4.5	V	$V_{DS} = 10\text{V}$, $I_D = 1 \text{ mA}$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.35	0.44	Ω	$I_D = 1\text{A}$, $V_{GS} = 10\text{V}$ ^{Note 3}
Forward transfer admittance	$ y_{fs} $	1.5	2.5	—	S	$I_D = 1\text{A}$, $V_{DS} = 10\text{V}$ ^{Note 3}
Input capacitance	C_{iss}	—	450	—	pF	$V_{DS} = 25\text{V}$, $V_{GS} = 0$
Output capacitance	C_{oss}	—	65	—	pF	$f = 1 \text{ MHz}$
Reverse transfer capacitance	C_{rss}	—	13	—	pF	
Total gate charge	Q_g	—	13	—	nC	$V_{DD} = 160 \text{ V}$
Gate to source charge	Q_{gs}	—	2	—	nC	$V_{GS} = 10 \text{ V}$
Gate to drain charge	Q_{gd}	—	6	—	nC	$I_D = 2 \text{ A}$
Turn-on delay time	$t_{d(on)}$	—	19	—	ns	$V_{GS} = 10\text{V}$, $I_D = 1\text{A}$
Rise time	t_r	—	8.5	—	ns	$V_{DD} \cong 100\text{V}$
Turn-off delay time	$t_{d(off)}$	—	48	—	ns	$R_L = 100\Omega$
Fall time	t_f	—	11	—	ns	$R_g = 10\Omega$
Body-drain diode forward voltage	V_{DF}	—	0.8	1.2	V	$I_F = 2\text{A}$, $V_{GS} = 0$ ^{Note 3}
Body-drain diode reverse recovery time	t_{rr}	—	65	—	ns	$I_F = 2\text{A}$, $V_{GS} = 0$ $di_F/dt = 100\text{A}/\mu\text{s}$

Note: 3. Pulse test

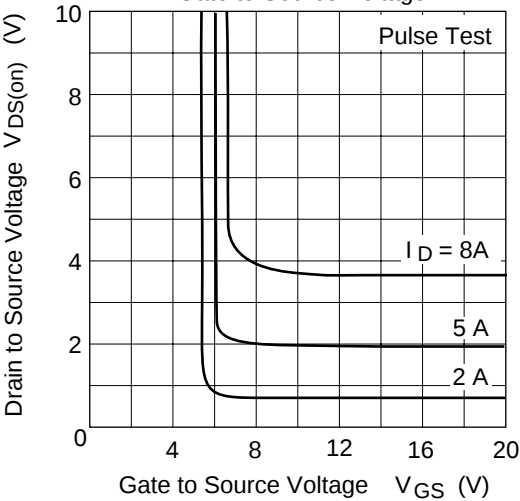
Main Characteristics



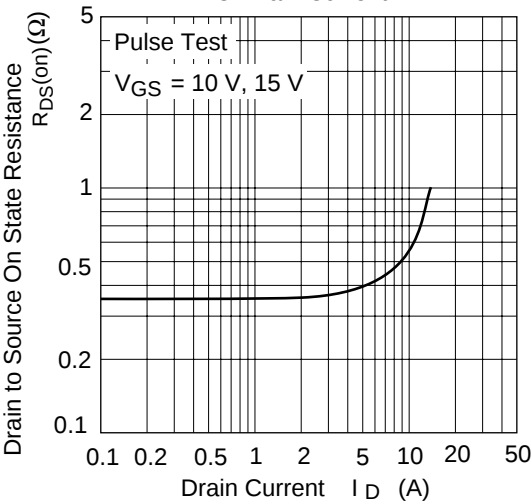
Notes 4:
When using the glass epoxy board
(FR4 40x40x1.6mm)



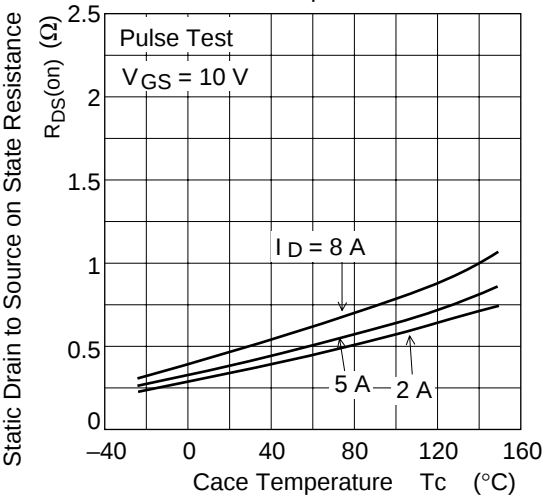
Drain to Source Saturation Voltage vs
Gate to Source Voltage



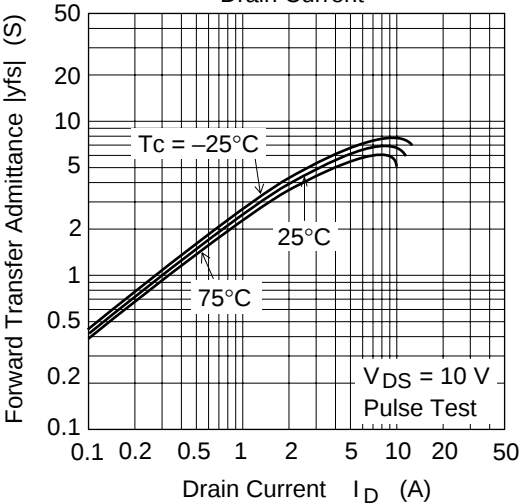
Static Drain to Source on State Resistance
vs. Drain Current

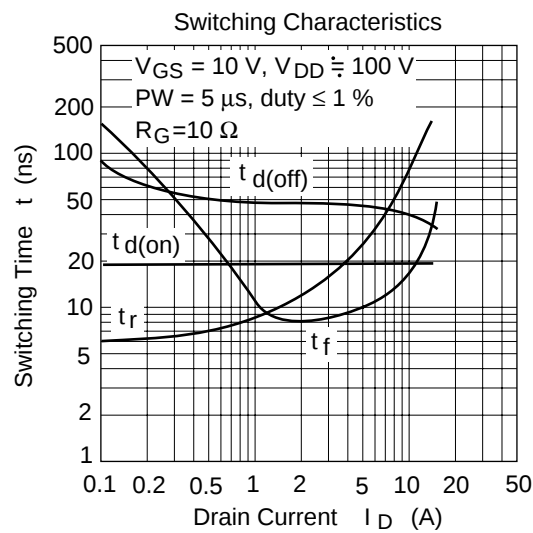
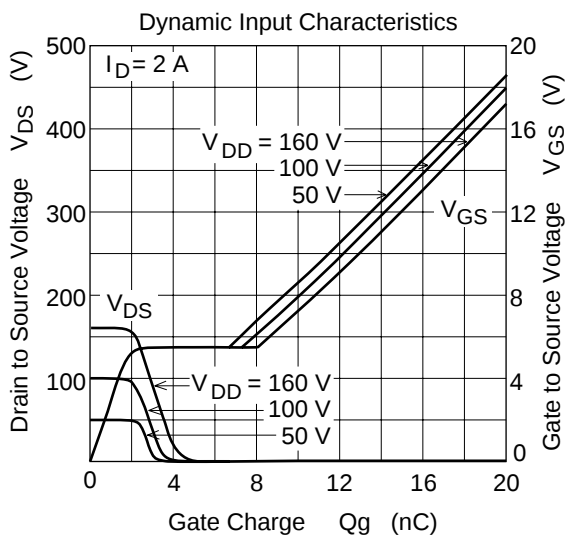
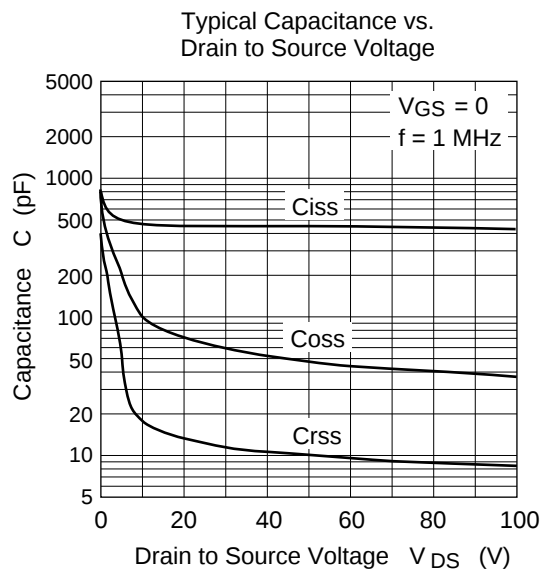
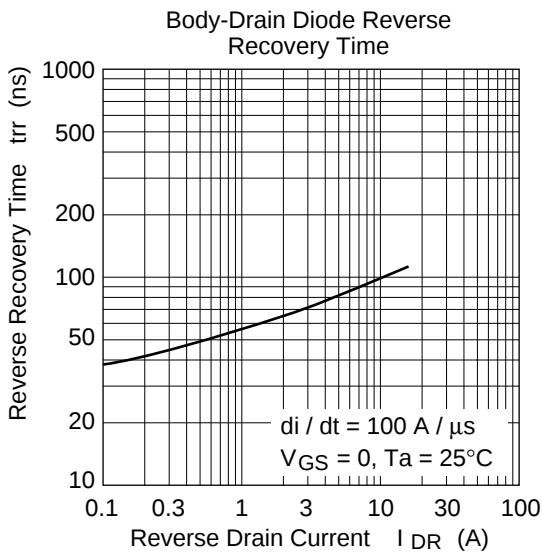


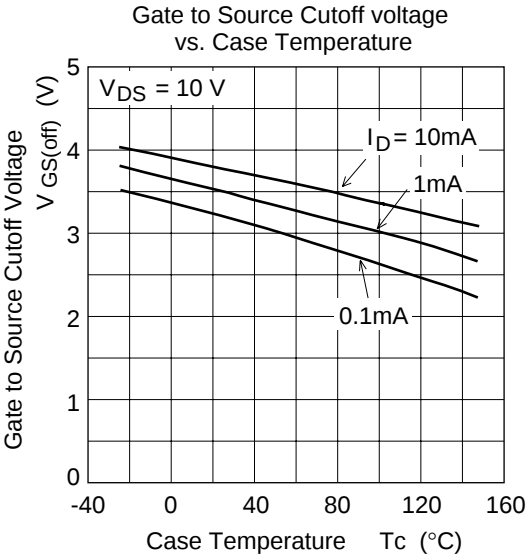
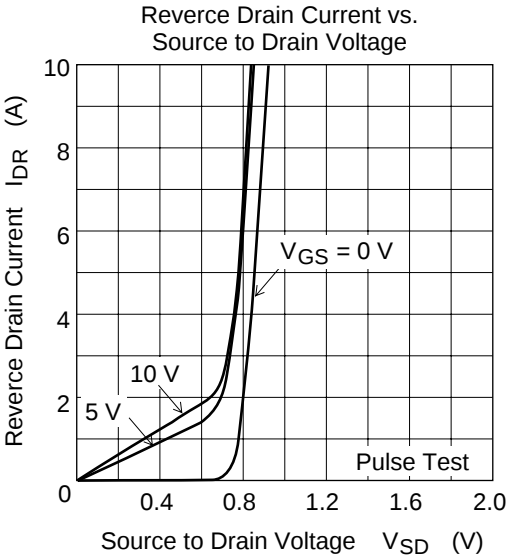
Static Drain to Source on State Resistance
vs. Temperature



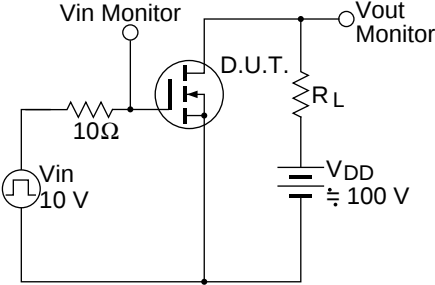
Forward Transfer Admittance vs.
Drain Current



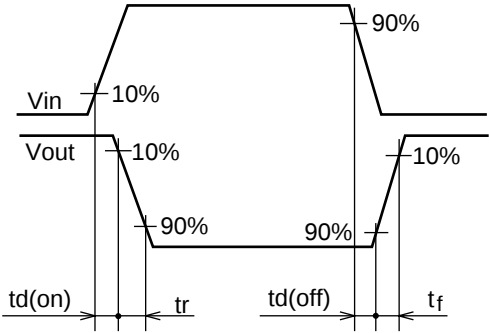




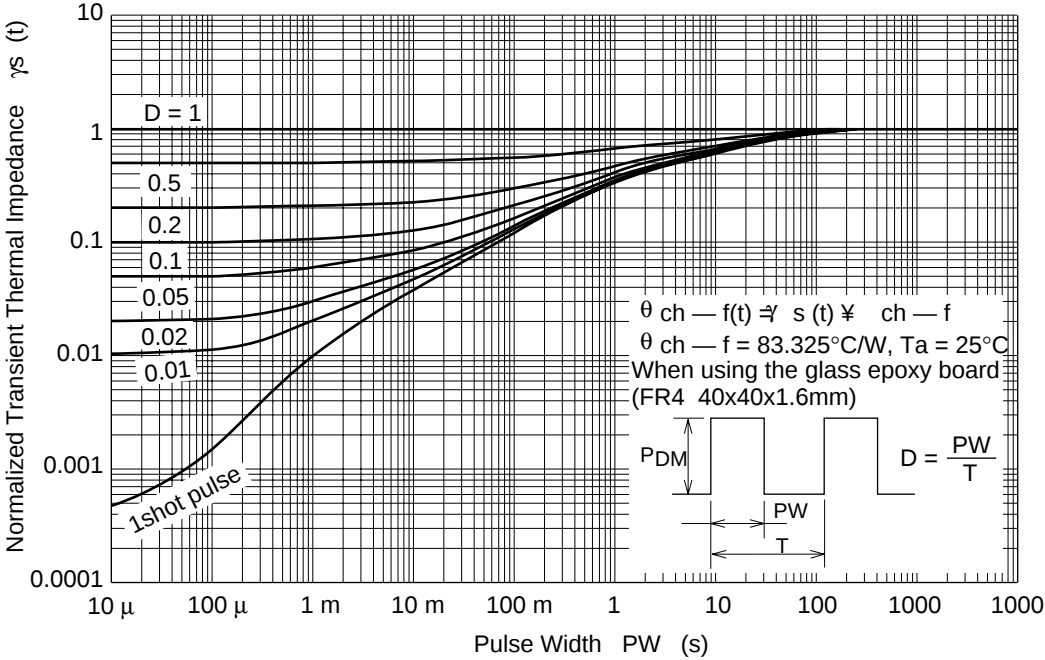
Switching Time Test Circuit



Switching Time Waveform

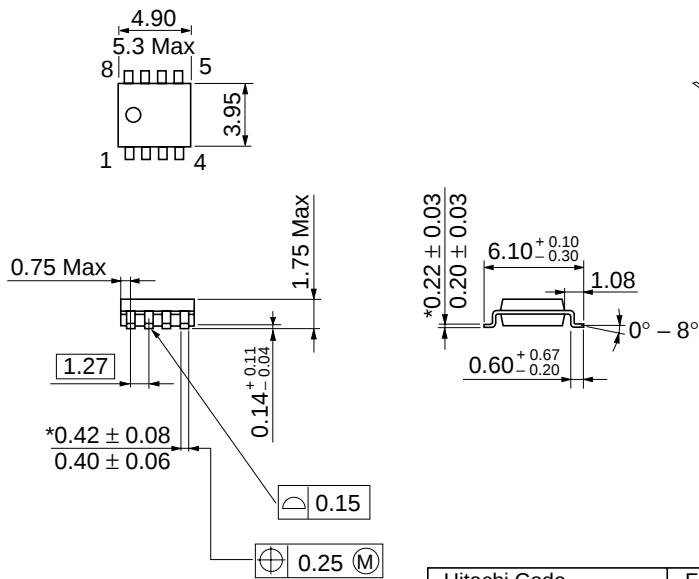


Normalized Transient Thermal Impedance vs. Pulse Width



Package Dimensions

Unit: mm



*Dimension including the plating thickness
Base material dimension

Hitachi Code	FP-8DA
JEDEC	Conforms
EIAJ	—
Mass (reference value)	0.085 g

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