

HAT2020R

Silicon N Channel Power MOS FET

HITACHI

7th. Edition
Jan. 1996

Application

High speed power switching

Features

- Low on-resistance
- Capable of 4V gate drive
- Low drive current
- High density mounting

Ordering Information

Hitachi Cord	FP-8DA
EIAJ Cord	—
JEDEC Cord	MS-012AA

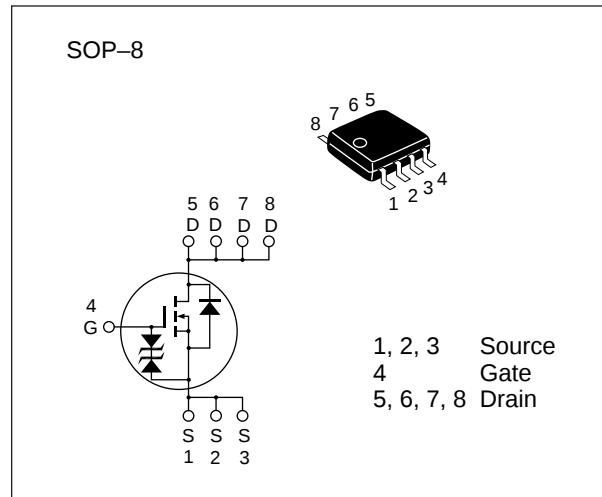


Table 1 Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	30	V
Gate to source voltage	V_{GSS}	± 20	V
Drain current	I_D	8	A
Drain peak current	$I_{D(pulse)}^*$	64	A
Body-drain diode reverse drain current	I_{DR}	8	A
Channel dissipation	P_{ch}^{**}	2.5	W
Channel temperature	T_{ch}	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

* $PW \leq 10 \mu\text{s}$, duty cycle $\leq 1\%$

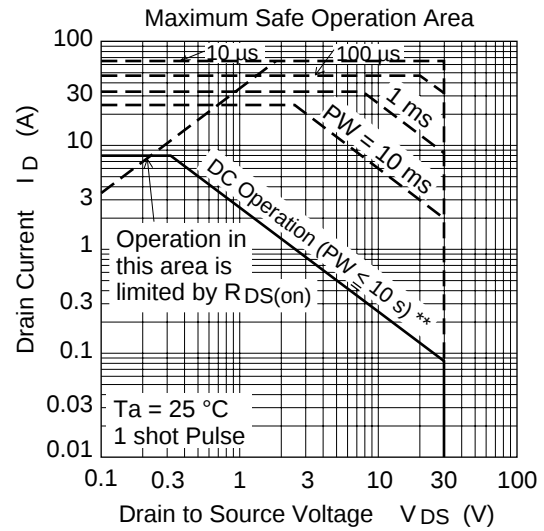
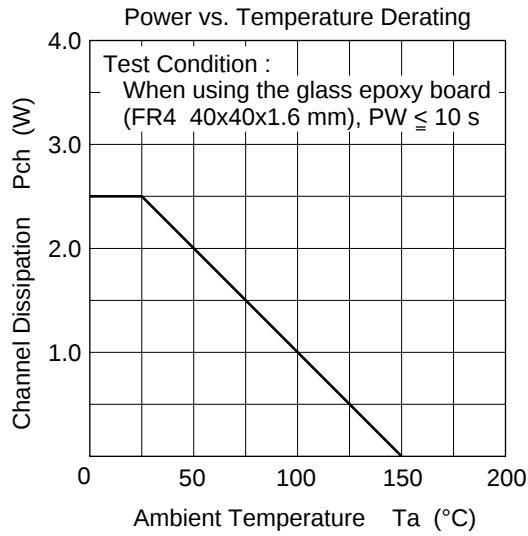
** When using the glass epoxy board (FR4 40 x 40 x 1.6 mm), $PW \leq 10 \text{ s}$

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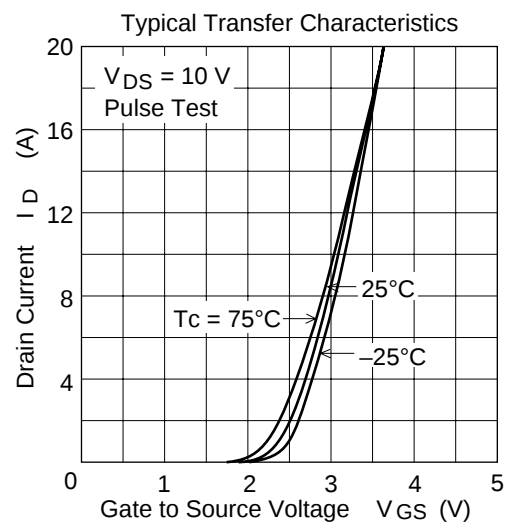
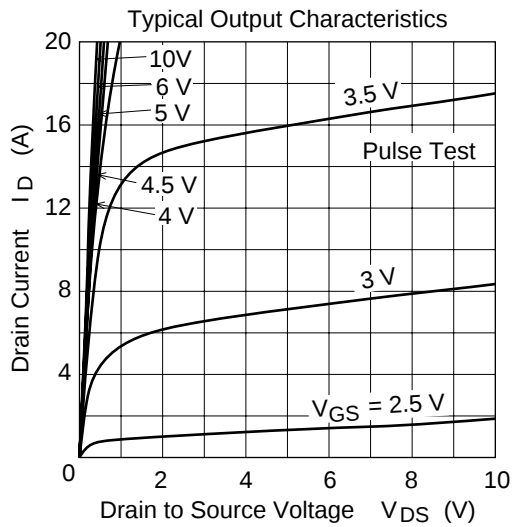
Table 2 Electrical Characteristics (Ta = 25°C)

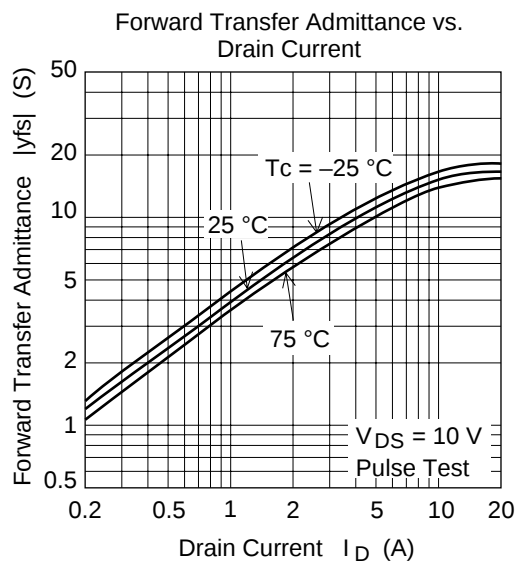
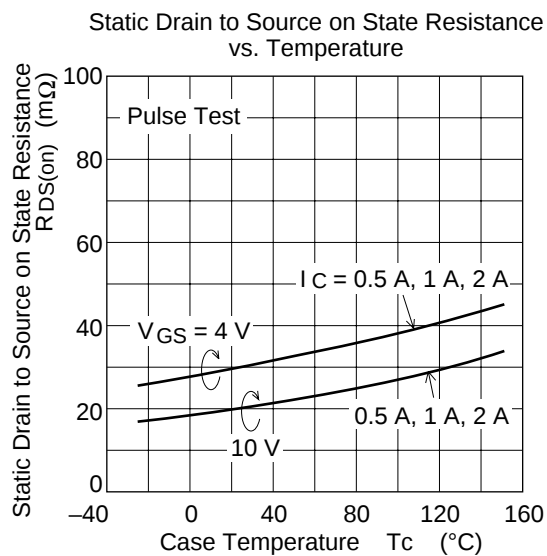
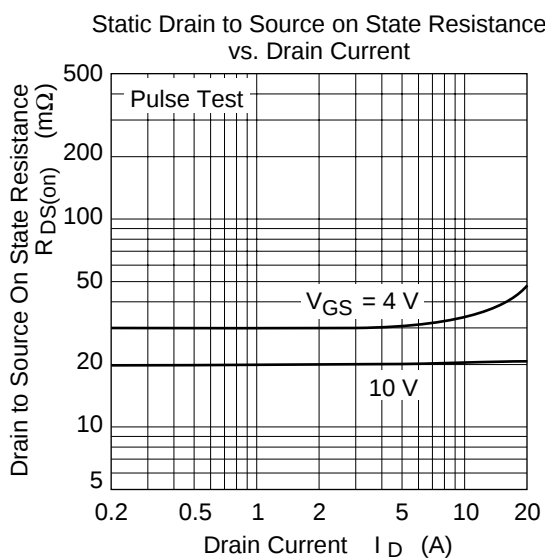
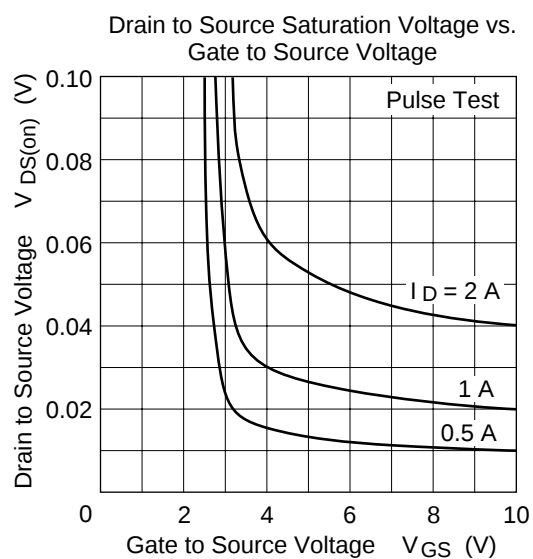
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	30	—	—	V	$I_D = 10 \text{ mA}$, $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	± 20	—	—	V	$I_G = \pm 100 \text{ }\mu\text{A}$, $V_{DS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 16 \text{ V}$, $V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	10	μA	$V_{DS} = 30 \text{ V}$, $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	1.0	—	2.0	V	$V_{DS} = 10 \text{ V}$, $I_D = 1 \text{ mA}$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.020	0.028	Ω	$I_D = 4 \text{ A}$ $V_{GS} = 10 \text{ V}^*$
		—	0.030	0.050	Ω	$I_D = 4 \text{ A}$ $V_{GS} = 4 \text{ V}^*$
Forward transfer admittance	$ y_{fs} $	7	11	—	S	$I_D = 4 \text{ A}$ $V_{DS} = 10 \text{ V}^*$
Input capacitance	C_{iss}	—	780	—	pF	$V_{DS} = 10 \text{ V}$
Output capacitance	C_{oss}	—	560	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	C_{rss}	—	240	—	pF	$f = 1 \text{ MHz}$
Turn-on delay time	$t_{d(on)}$	—	35	—	ns	$V_{GS} = 4 \text{ V}$, $I_D = 4 \text{ A}$
Rise time	t_r	—	240	—	ns	$V_{DD} = 10 \text{ V}$
Turn-off delay time	$t_{d(off)}$	—	50	—	ns	
Fall time	t_f	—	100	—	ns	
Body-drain diode forward voltage	V_{DF}	—	0.8	—	V	$I_F = 8 \text{ A}$, $V_{GS} = 0$
Body-drain diode reverse recovery time	t_{rr}	—	55	—	ns	$I_F = 8 \text{ A}$, $V_{GS} = 0$ $diF / dt = 20 \text{ A} / \mu\text{s}$

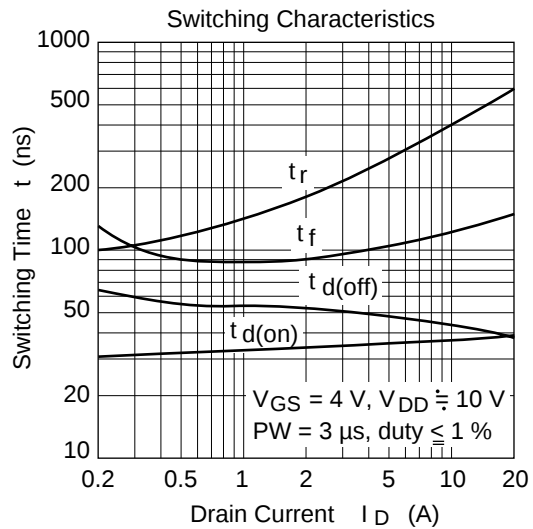
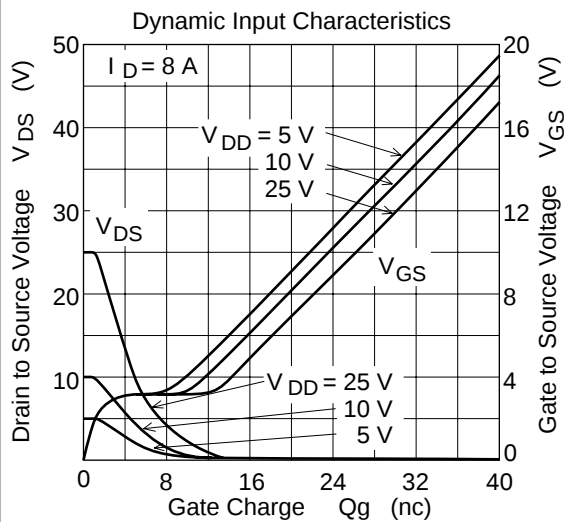
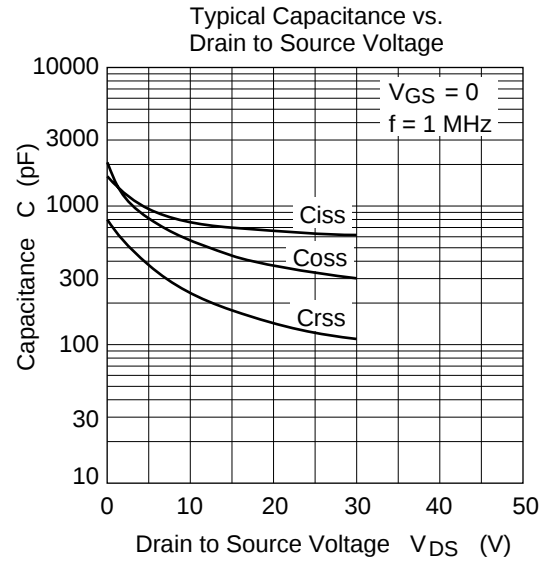
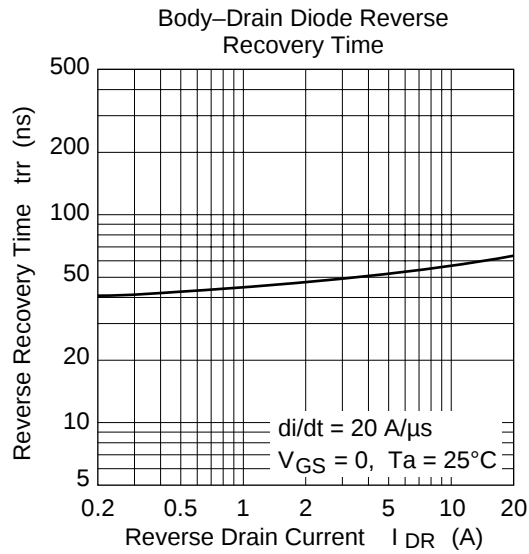
* Pulse Test



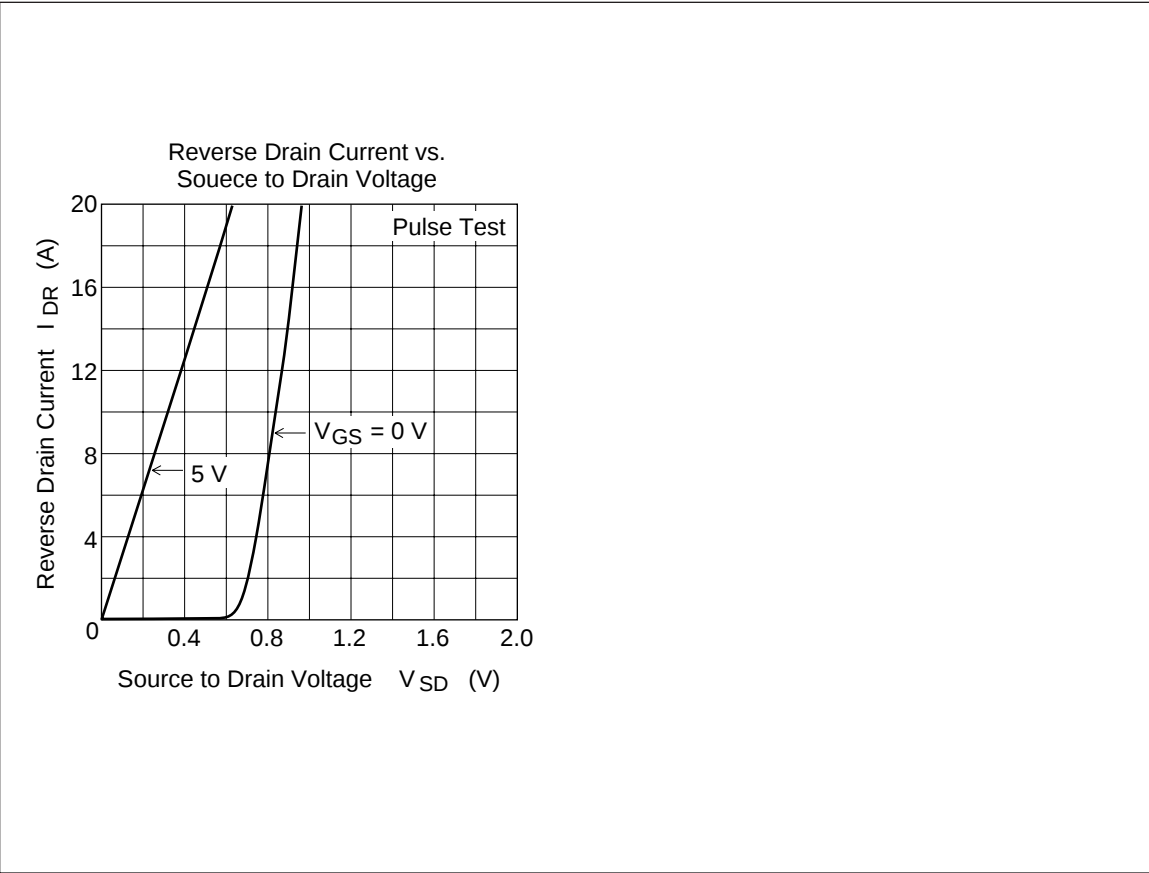
** When using the glass epoxy board
(FR4 40 x 40x 1.6 mm)







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Package Dimensions

Unit : mm

