

HAT2004F

Silicon N Channel Power MOS FET

Application

Power switching

Features

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

Ordering Information

Hitachi Code	FP-8D
EIAJ Code	SC-527-8A
JEDEC Code	—

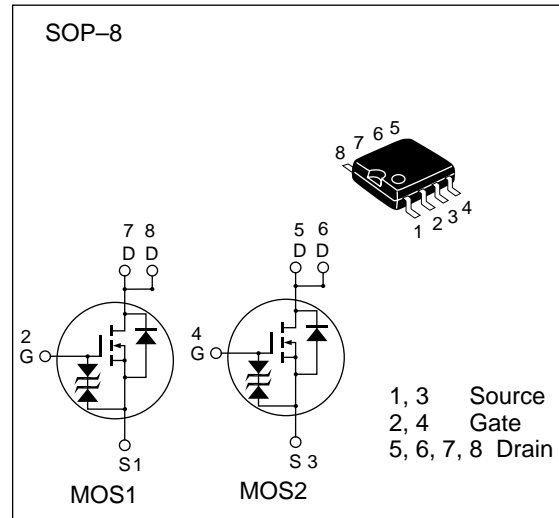


Table 1 Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

Item	Symbol	Ratings	Unit
Drain to source voltage	V_{DSS}	15	V
Gate to source voltage	V_{GSS}	± 10	V
Drain current	I_D	3.5	A
Drain peak current	$I_{D(\text{pulse})}^*$	14	A
Channel dissipation	P_{ch}^{***}	1.5	W
Channel dissipation	P_{ch}^{**}	1	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 $\leq 1\%$

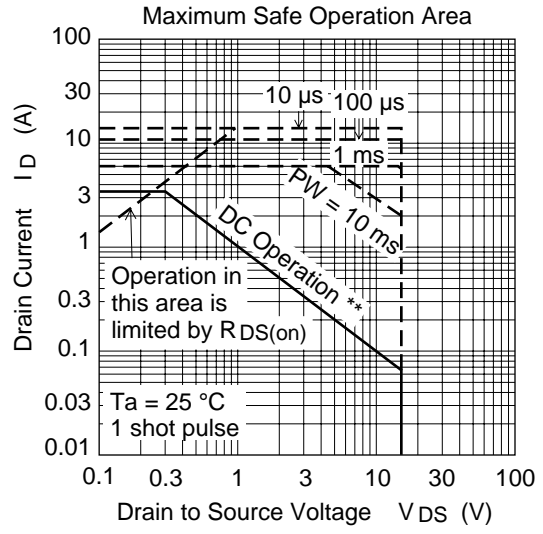
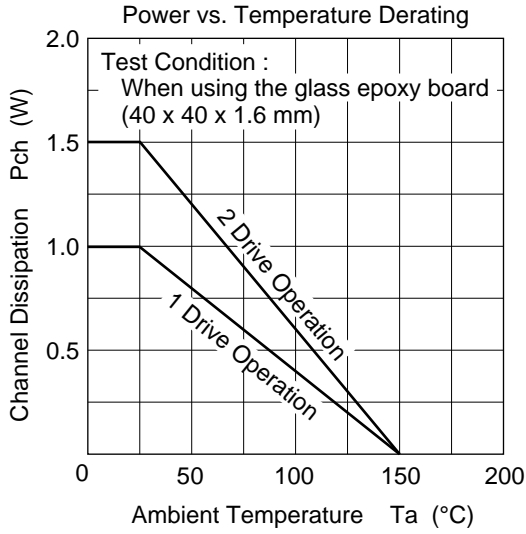
** 1 Drive operation When using the glass epoxy board (40 x 40 x 1.6 mm)

*** 2 Drive operation When using the glass epoxy board (40 x 40 x 1.6 mm)

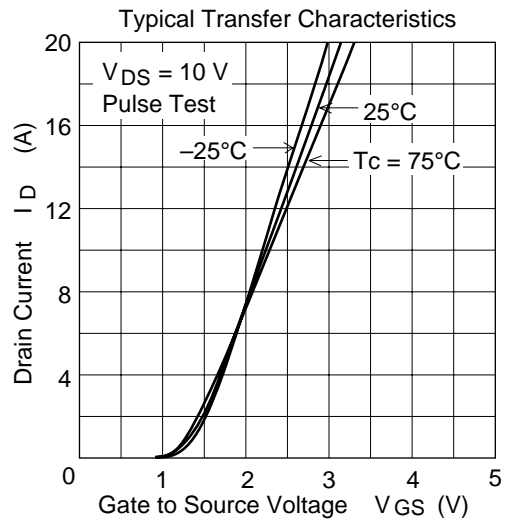
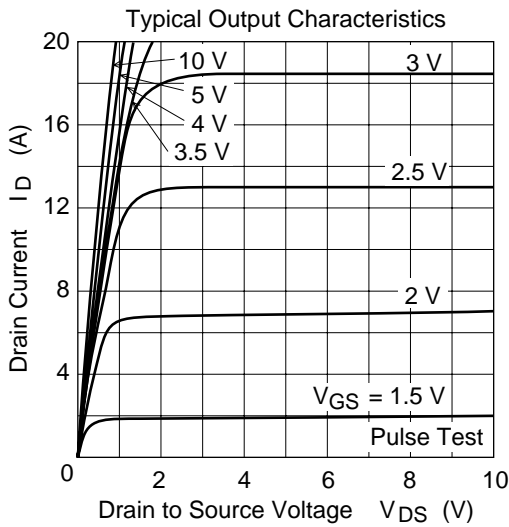
Table 2 Electrical Characteristics (Ta = 25°C)

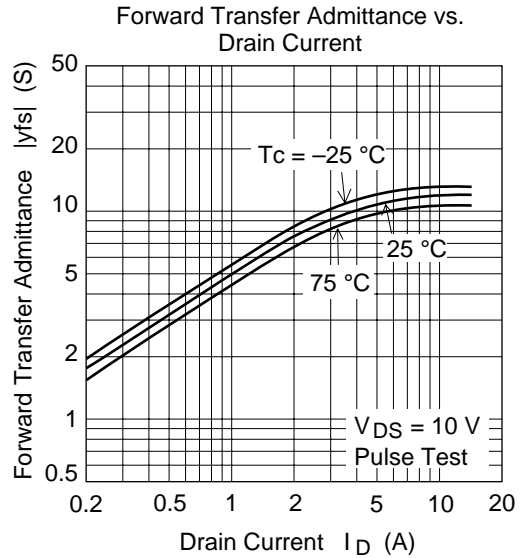
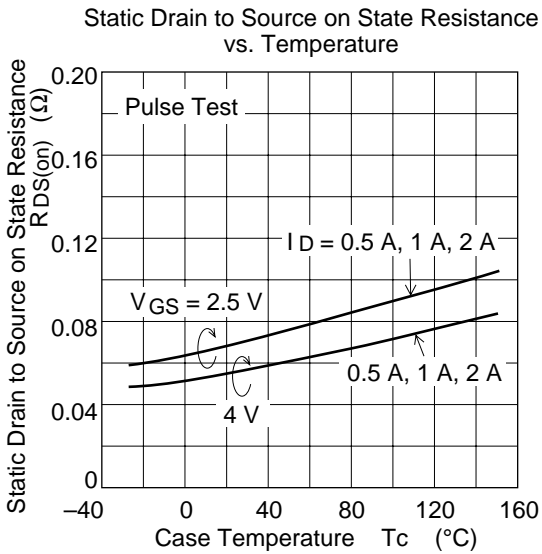
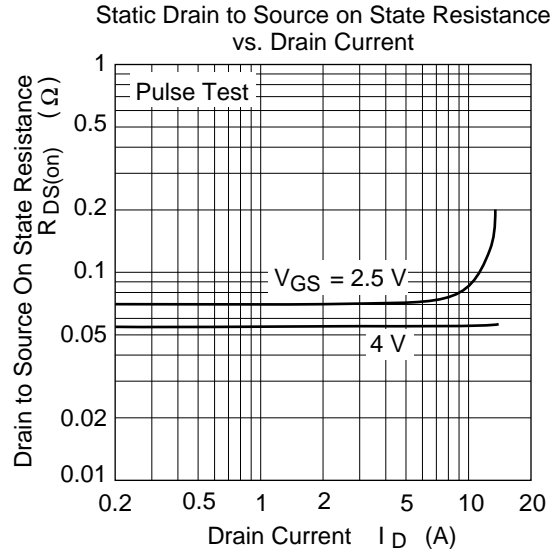
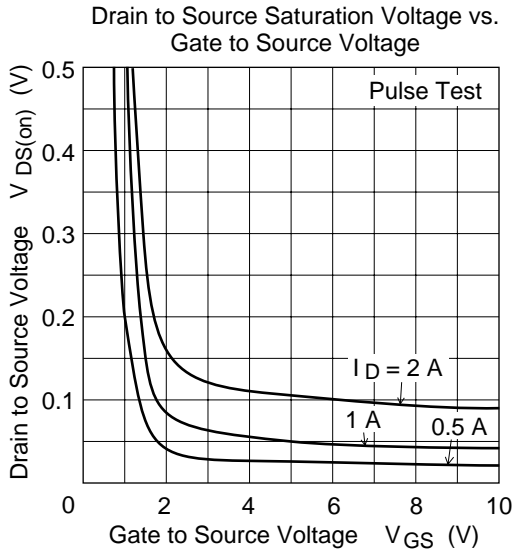
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	15	—	—	V	$I_D = 10 \text{ mA}$, $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	± 10	—	—	V	$I_G = \pm 200 \text{ }\mu\text{A}$, $V_{DS} = 0$
Gate to source leak current	I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 6.5 \text{ V}$, $V_{DS} = 0$
Zero gate voltage drain current	I_{DSS}	—	—	10	μA	$V_{DS} = 15 \text{ V}$, $V_{GS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	0.5	—	1.5	V	$V_{DS} = 10 \text{ V}$, $I_D = 1 \text{ mA}$
Static drain to source on state resistance	$R_{DS(on)}$	—	0.055	0.07	Ω	$I_D = 2 \text{ A}$ $V_{GS} = 4 \text{ V}^*$
		—	0.07	0.09	Ω	$I_D = 2 \text{ A}$ $V_{GS} = 2.5 \text{ V}^*$
Forward transfer admittance	$ y_{fs} $	4.5	7.5	—	S	$I_D = 2 \text{ A}$ $V_{DS} = 10 \text{ V}^*$
Input capacitance	C_{iss}	—	620	—	pF	$V_{DS} = 10 \text{ V}$
Output capacitance	C_{oss}	—	460	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	C_{rss}	—	155	—	pF	$f = 1 \text{ MHz}$
Turn-on delay time	$t_{d(on)}^*$	—	22	—	ns	$V_{GS} = 4 \text{ V}$, $I_D = 2 \text{ A}$
Rise time	t_r	—	90	—	ns	$V_{DD} = 10 \text{ V}$
Turn-off delay time	$t_{d(off)}^*$	—	110	—	ns	
Fall time	t_f	—	115	—	ns	
Body-drain diode forward voltage	V_{DF}	—	0.8	—	V	$I_F = 3.5 \text{ A}$, $V_{GS} = 0$
Body-drain diode reverse recovery time	t_{rr}	—	50	—	ns	$I_F = 3.5 \text{ A}$, $V_{GS} = 0$ $di_F / dt = 20 \text{ A} / \mu\text{s}$

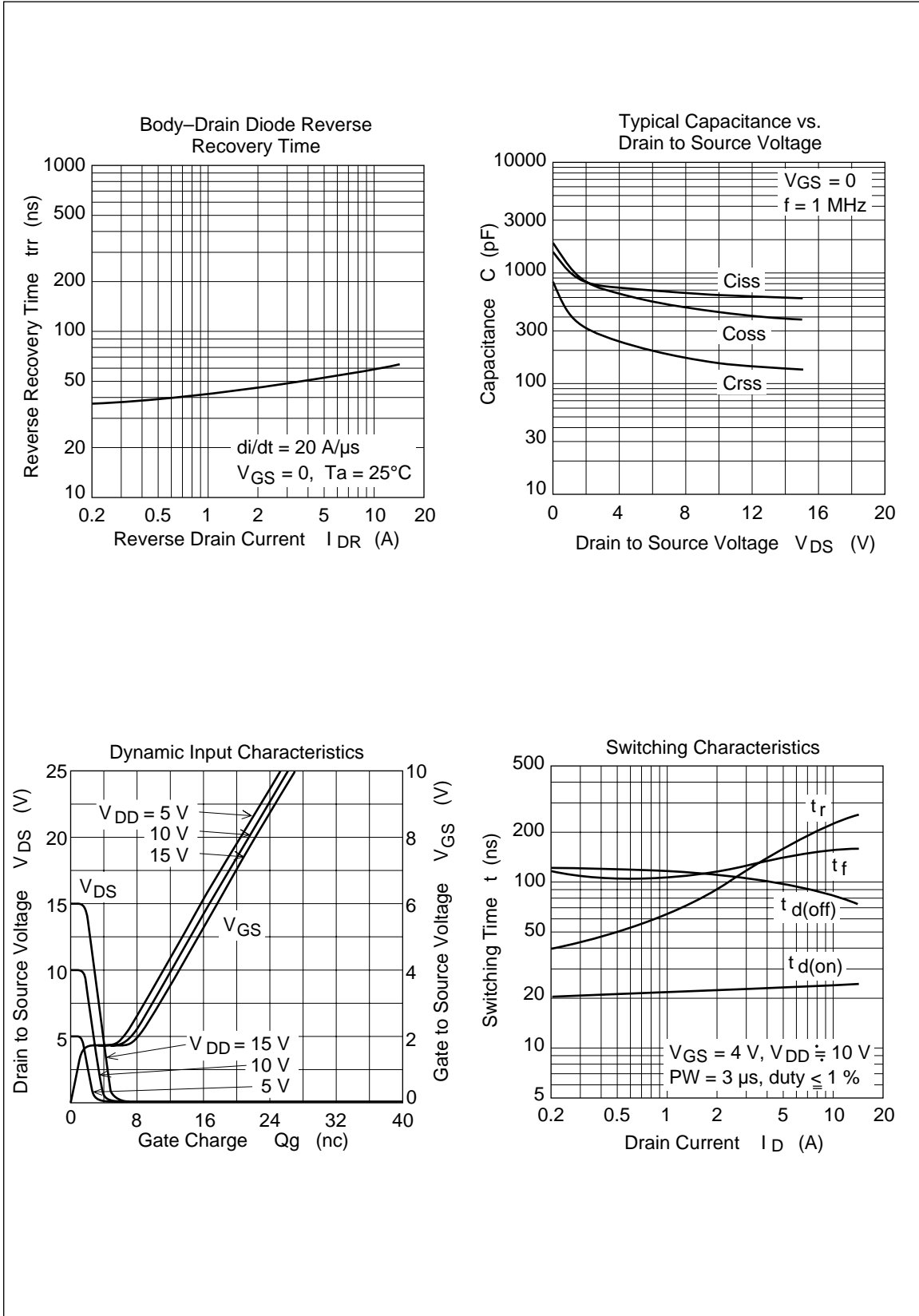
* Pulse Test

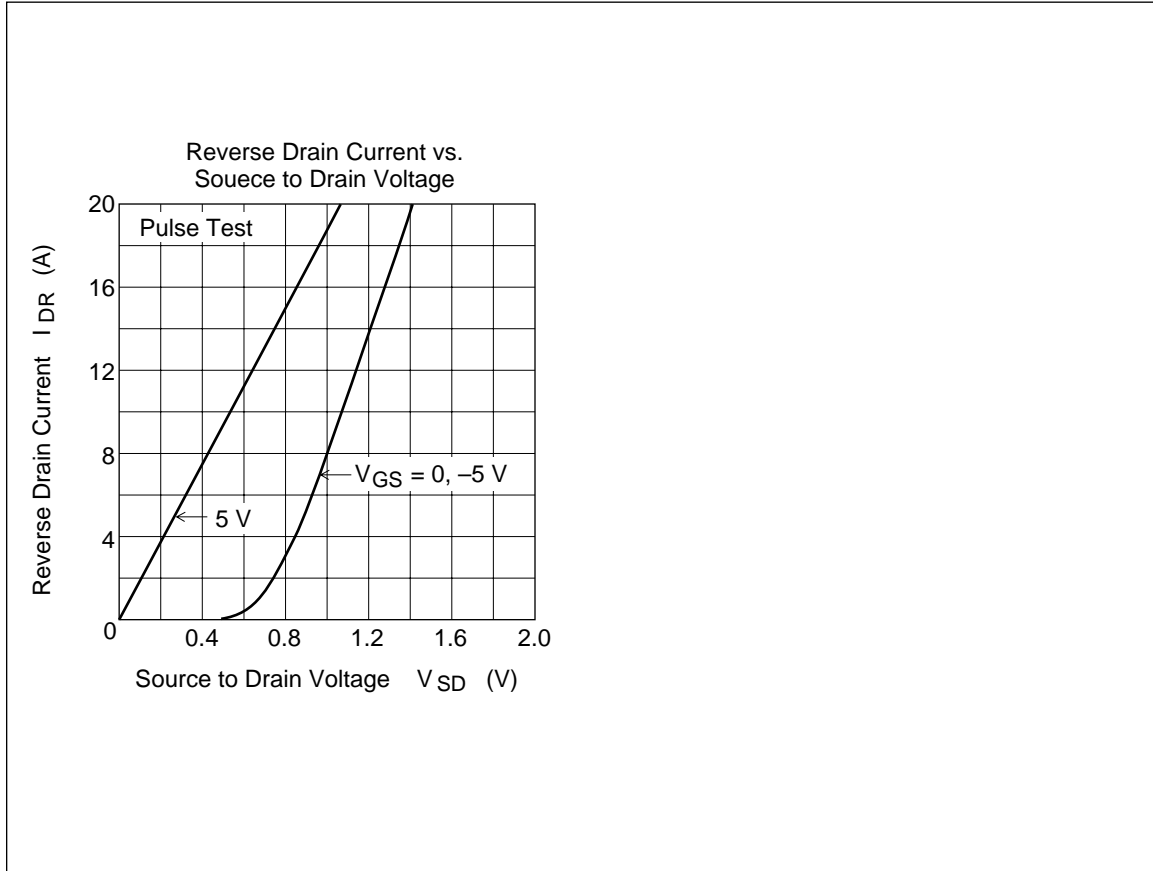


** 1 Drive Operation
When using the glass epoxy board
(40 x 40 x 1.6 mm)









Package Dimensions

Unit : mm

