

## HAT2009F

### Silicon N Channel Power MOS FET

#### Application

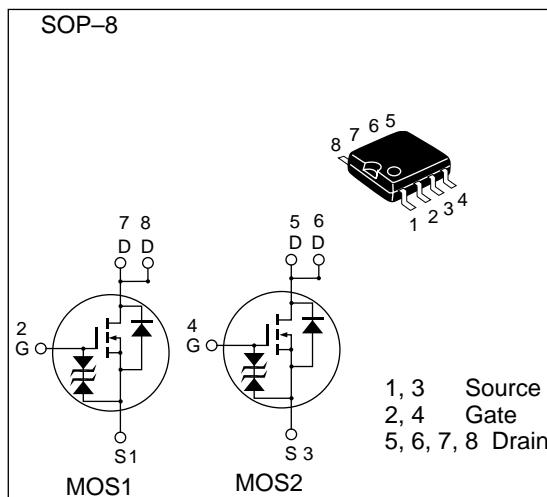
Power switching

#### 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	$V_{DSS}$	30	V
Gate to source voltage	$V_{GSS}$	$\pm 10$	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  $\leq 1\%$

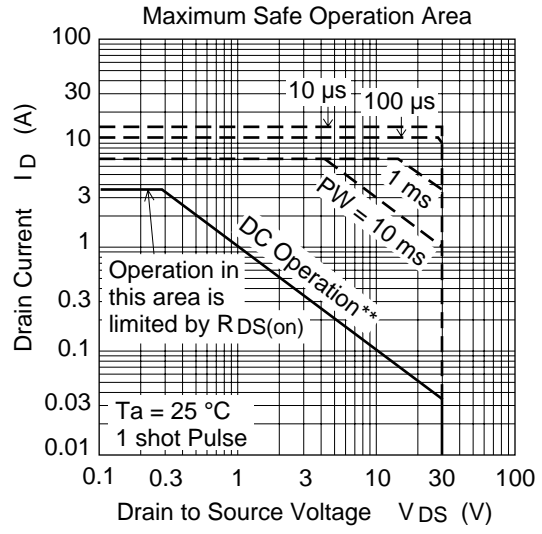
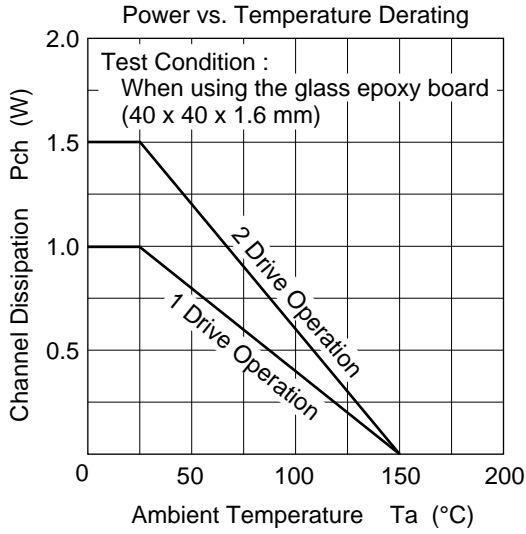
\*\* 1 Drive operation When using the glass epoxy board (40 x 40 x 1.6 mm)

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

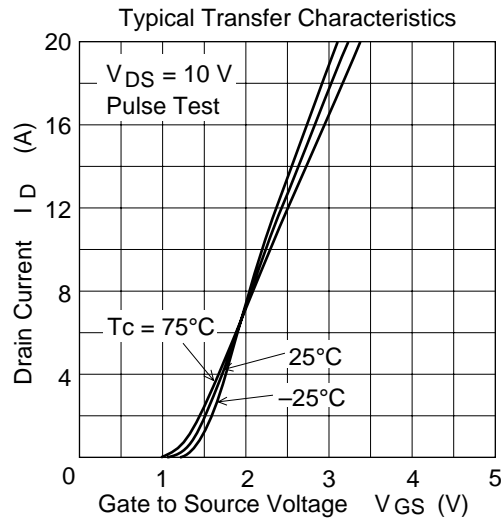
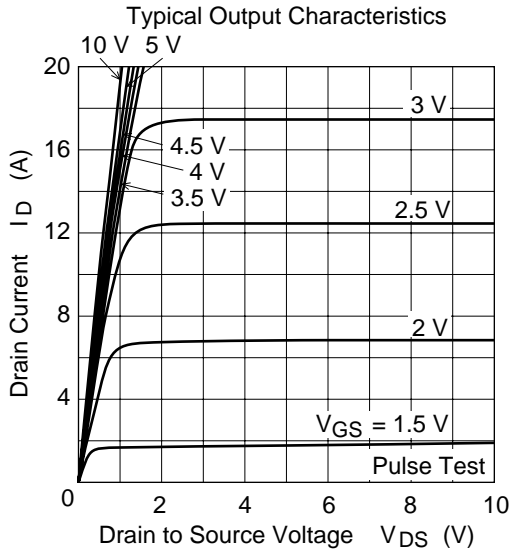
**Table 2 Electrical Characteristics** (Ta = 25°C)

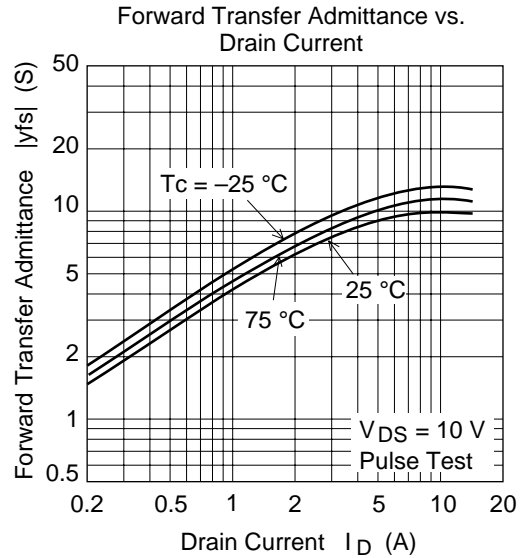
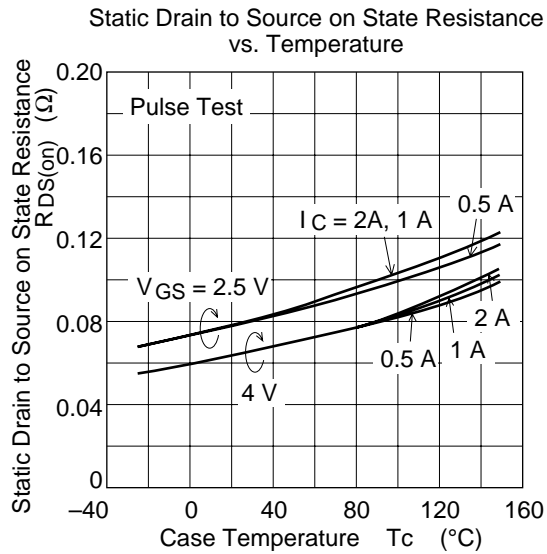
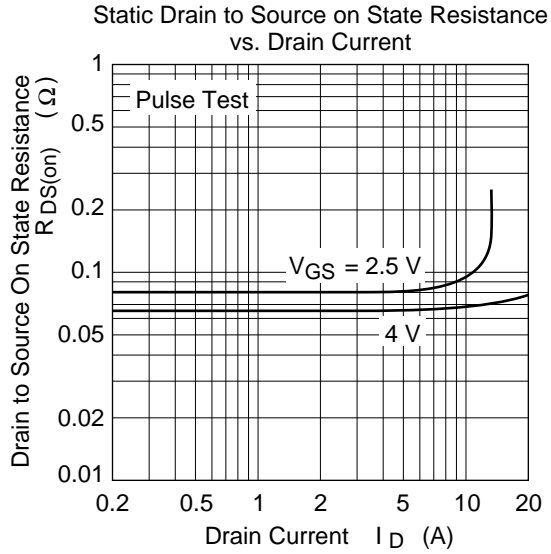
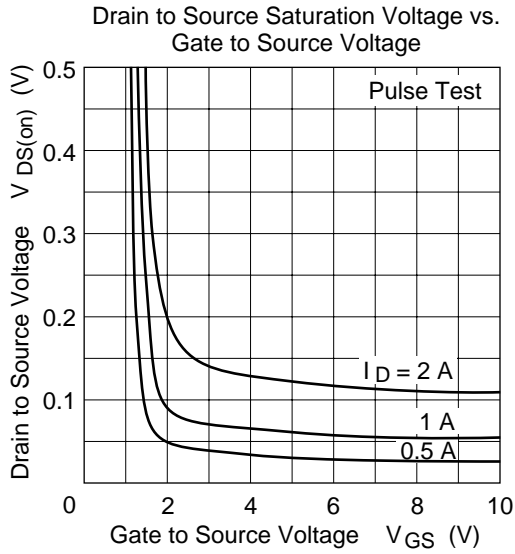
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	30	—	—	V	$I_D = 10 \text{ mA}$ , $V_{GS} = 0$
Gate to source breakdown voltage	$V_{(BR)GSS}$	±10	—	—	V	$I_G = \pm 200 \text{ } \mu\text{A}$ , $V_{DS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	±10	μA	$V_{GS} = \pm 6.5 \text{ V}$ , $V_{DS} = 0$
Zero gate voltage drain current	$I_{DSS}$	—	—	10	μA	$V_{DS} = 30 \text{ V}$ , $V_{GS} = 0$
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	$R_{DS(on)}$	—	0.065	0.08	Ω	$I_D = 2 \text{ A}$ $V_{GS} = 4 \text{ V}^*$
		—	0.08	0.12	Ω	$I_D = 2 \text{ A}$ $V_{GS} = 2.5 \text{ V}^*$
Forward transfer admittance	$ y_{fs} $	4.5	7.0	—	S	$I_D = 2 \text{ A}$ $V_{DS} = 10 \text{ V}^*$
Input capacitance	$C_{iss}$	—	610	—	pF	$V_{DS} = 10 \text{ V}$
Output capacitance	$C_{oss}$	—	330	—	pF	$V_{GS} = 0$
Reverse transfer capacitance	$C_{rss}$	—	105	—	pF	$f = 1 \text{ MHz}$
Turn-on delay time	$t_{d(on)}$	—	17	—	ns	$V_{GS} = 4 \text{ V}$ , $I_D = 2 \text{ A}$
Rise time	$t_r$	—	80	—	ns	$V_{DD} = 10 \text{ V}$
Turn-off delay time	$t_{d(off)}$	—	110	—	ns	
Fall time	$t_f$	—	90	—	ns	
Body-drain diode forward voltage	$V_{DF}$	—	0.9	—	V	$I_F = 3.5 \text{ A}$ , $V_{GS} = 0$
Body-drain diode reverse recovery time	$t_{rr}$	—	50	—	ns	$I_F = 3.5 \text{ A}$ $di_F / dt = 20 \text{ A} / \mu\text{s}$

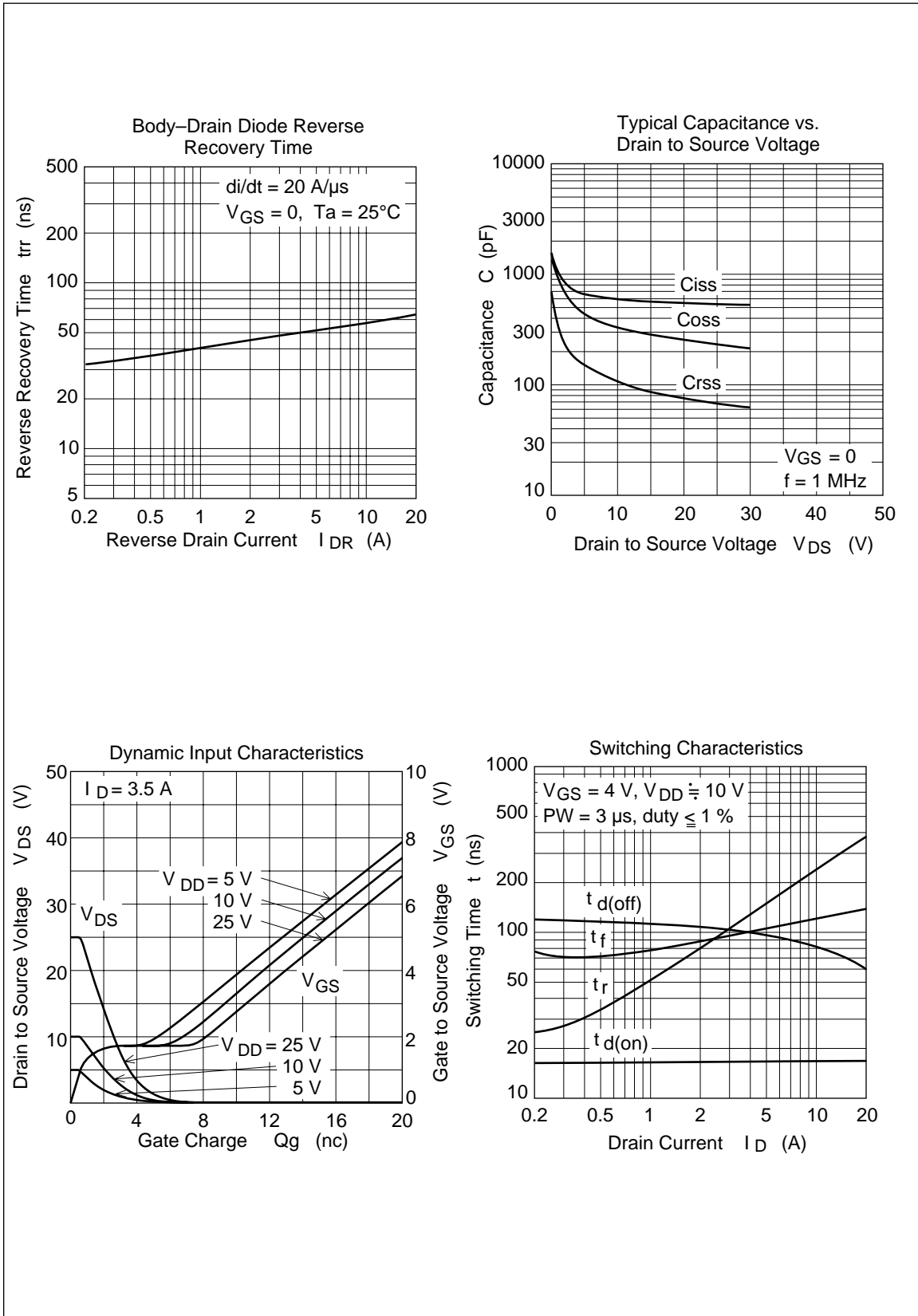
\* Pulse Test

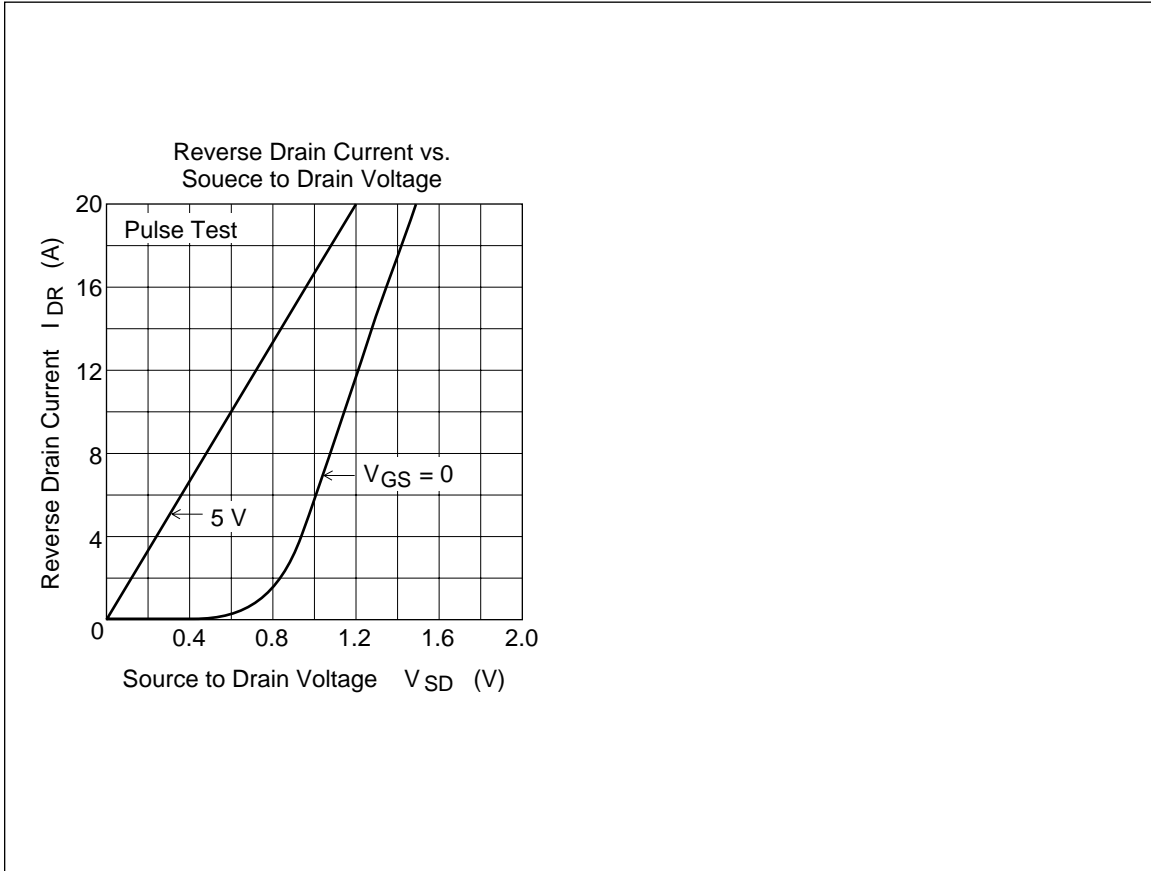


\*\* When using the glass epoxy board  
(40 x 40 x 1.6 mm)









## Package Dimensions

Unit : mm

