HITACHI

HAT2002F

Silicon N Channel Power MOS FET

Application

Power switching
Synchronously Rectifier

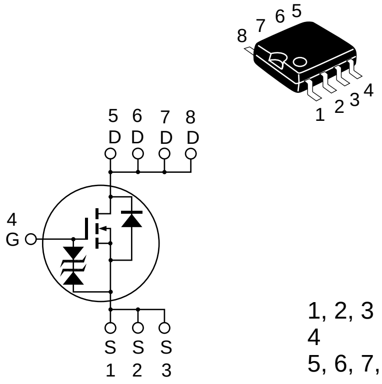
Features

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

Ordering Information

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

SOP–8



1, 2, 3	Source
4	Gate
5, 6, 7, 8	Drain

Table 1 Absolute Maximum Ratings (Ta = 25°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	5	A
Drain peak current	$I_{D(pulse)}{}^*$	20	A
Body–drain diode reverse drain current	I_{DR}	5	A
Channel dissipation	Pch**	1	W
Channel temperature	Tch	150	°C
Storage temperature	Tstg	–55 to +150	°C

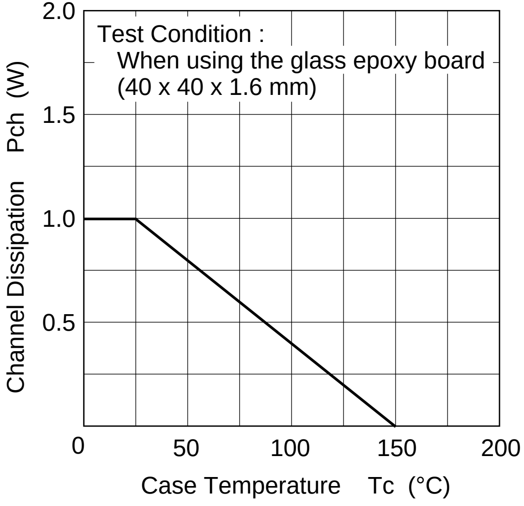
* PW ≤ 10 µs, duty cycle ≤ 1 %
** When using the glass epoxy board (40 x 40 x 1.6 mm)

Table 2 Electrical Characteristics (Ta = 25°C)

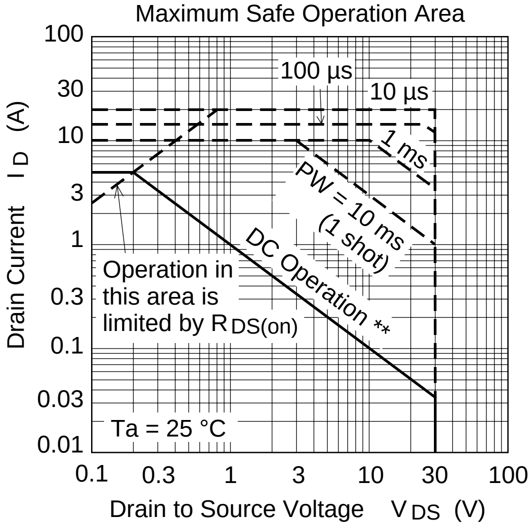
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	30	—	—	V	I_D = 10 mA, V_{GS} = 0
Gate to source breakdown voltage	$V_{(BR)GSS}$	±20	—	—	V	I_G = ±100 µA, V_{DS} = 0
Gate to source leak current	I_{GSS}	—	—	±10	µA	V_{GS} = ±16 V, V_{DS} = 0
Zero gate voltage drain current	I_{DSS}	—	—	10	µA	V_{DS} = 30 V, V_{GS} = 0
Gate to source cutoff voltage	$V_{GS(off)}$	1.0	—	2.5	V	V_{DS} = 10 V, I_D = 1 mA
Static drain to source on state resistance	$R_{DS(on)}$	—	0.03	0.04	Ω	I_D = 3 A V_{GS} = 10V *
		—	0.05	0.06	Ω	I_D = 3 A V_{GS} = 4 V *
Forward transfer admittance	$\|y_{fs}\|$	4.0	8.0	—	S	I_D = 3 A V_{DS} = 10 V *
Input capacitance	Ciss	—	860	—	pF	V_{DS} = 10 V
Output capacitance	Coss	—	560	—	pF	V_{GS} = 0
Reverse transfer capacitance	Crss	—	150	—	pF	f = 1 MHz
Turn–on delay time	$t_{d(on)}$	—	30	—	ns	V_{GS} = 4 V, I_D = 3 A
Rise time	t_r	—	190	—	ns	V_{DD} = 10 V
Turn–off delay time	$t_{d(off)}$	—	75	—	ns	
Fall time	t_f	—	90	—	ns	
Body–drain diode forward voltage	V_{DF}	—	0.8	—	V	I_F = 5 A, V_{GS} = 0
Body–drain diode reverse recovery time	t_{rr}	—	45	—	ns	I_F = 5A, V_{GS} = 0 diF / dt = 20 A / µs

* Pulse Test

Power vs. Temperature Derating

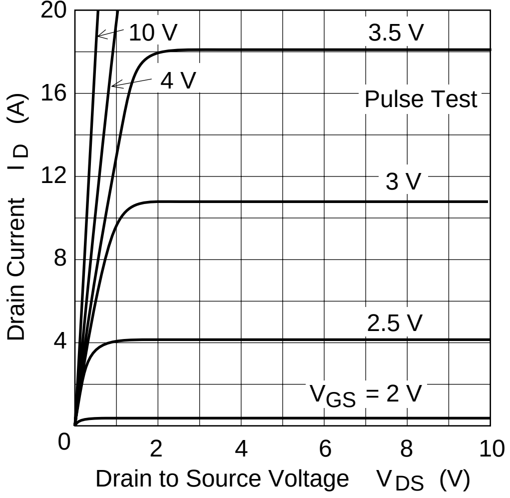


Maximum Safe Operation Area

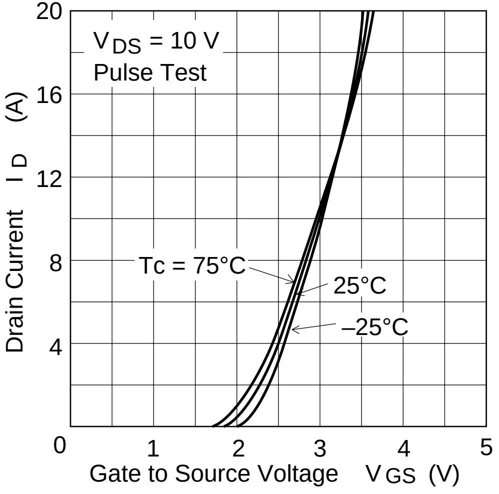


** When using the glass epoxy board
(40 x 40 x 1.6 mm)

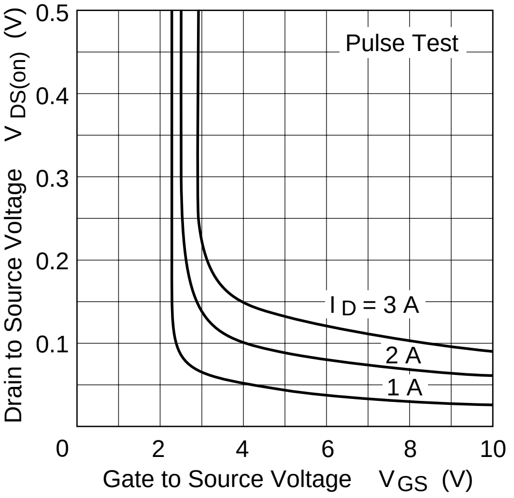
Typical Output Characteristics



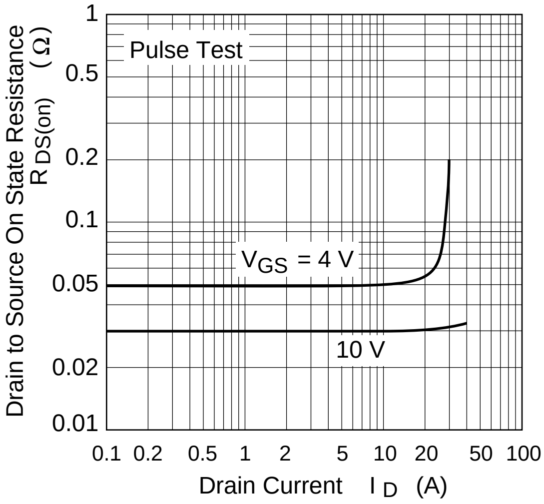
Typical Transfer Characteristics



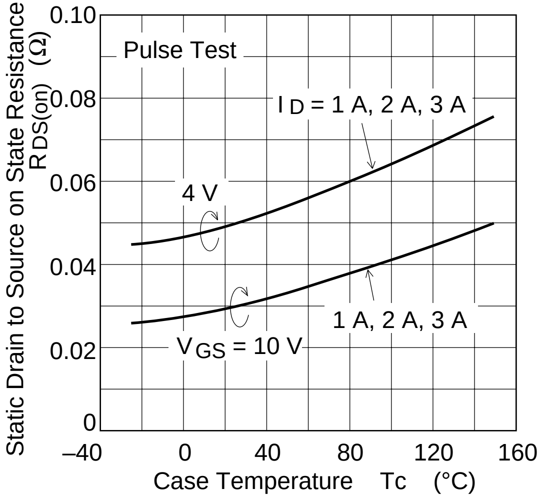
Drain to Source Saturation Voltage vs. Gate to Source Voltage



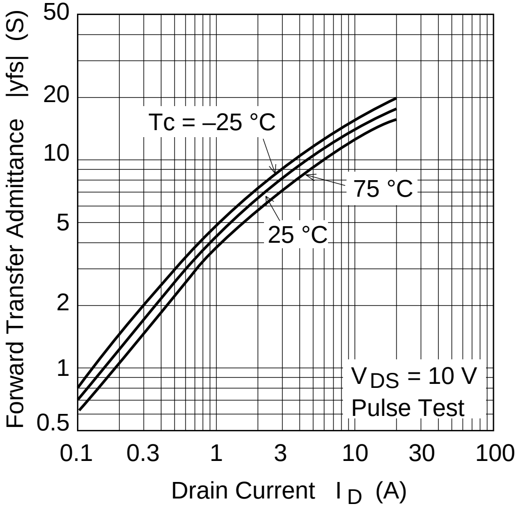
Static Drain to Source on State Resistance vs. Drain Current



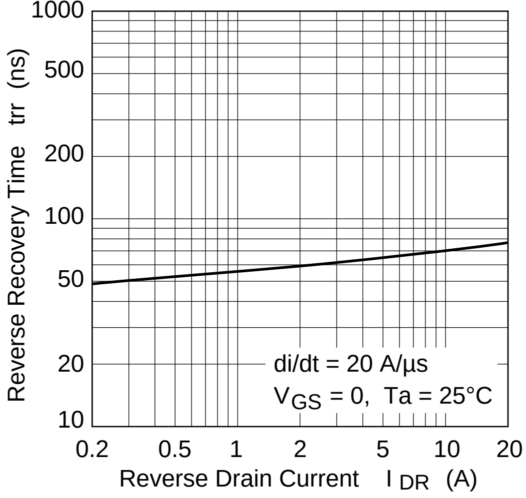
Static Drain to Source on State Resistance vs. Temperature



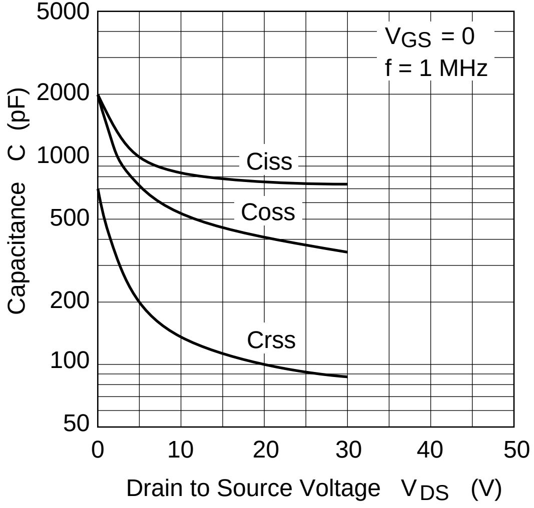
Forward Transfer Admittance vs. Drain Current



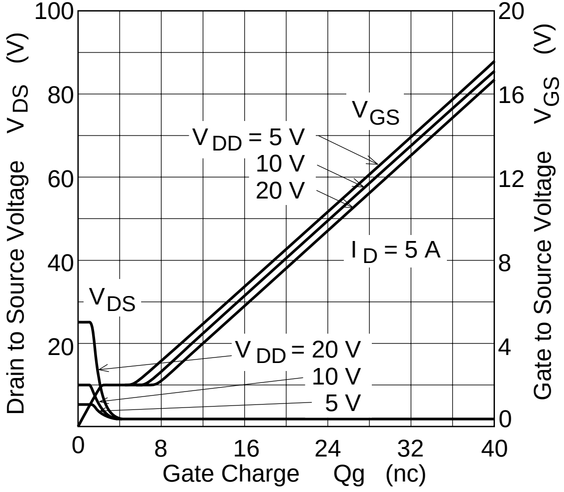
Body–Drain Diode Reverse Recovery Time



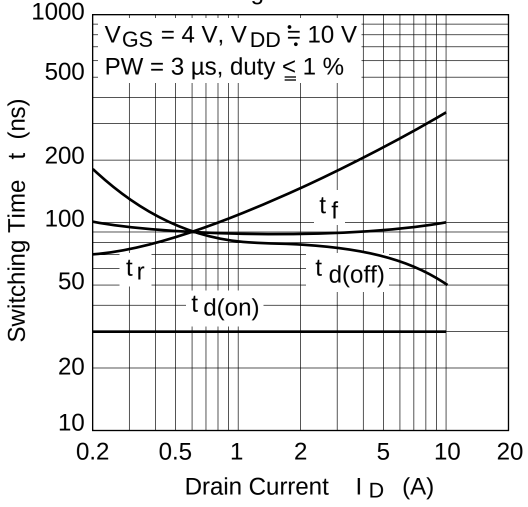
Typical Capacitance vs. Drain to Source Voltage



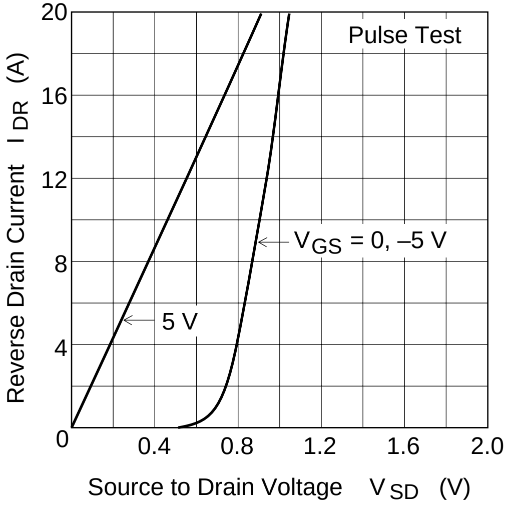
Dynamic Input Characteristics



Switching Characteristics



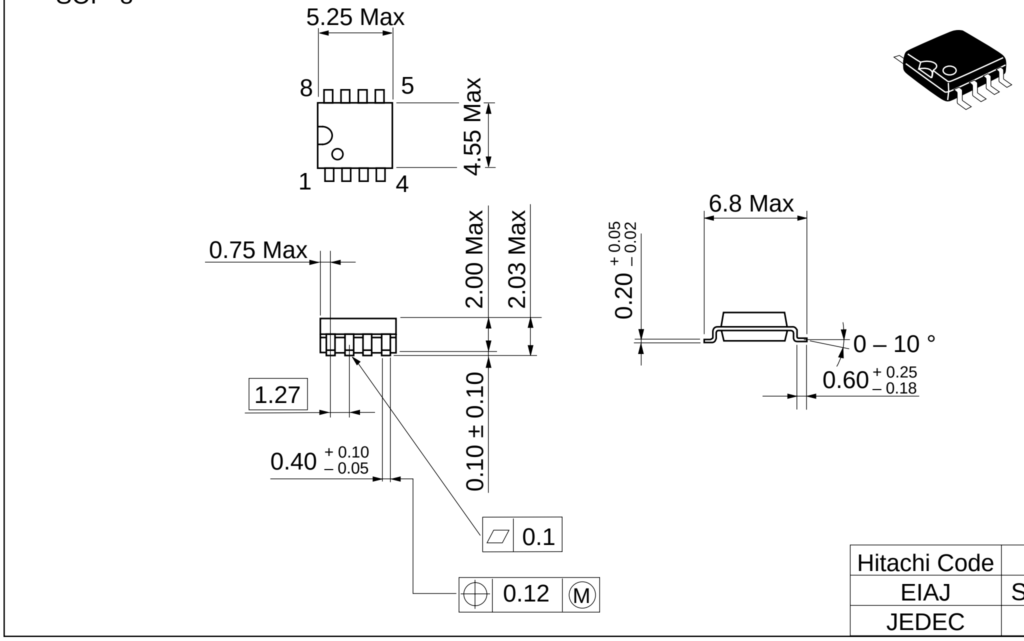
Reverse Drain Current vs.
Souece to Drain Voltage



Package Dimensions

Unit : mm

- SOP–8



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