◇Structure Silicon monolithic integrated circuit
◇Classification 8bit3chD/A converter
◇Product BH2220FVM
◇Features •3-wire 12-bit serial interface
•POWER ON RESET circuit

◇Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Power Supply voltage	VCC	-0.3~7.0	V
Terminal voltage	VIN	-0.3~VCC	V
Storage temperature range	TSTG	-55~125	°C
Permissible loss	PD	470	mW

* This value decreases 4.7mW/°C above 25°C.

* When installed on the standard board (Size : 70x70 mm, t =1.6 mm).

◇Operating conditions (Ta=25°C)

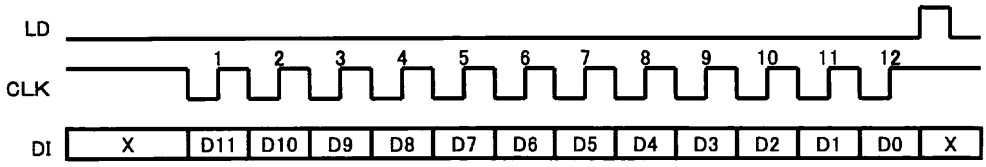
Parameter	Symbol	Limits			Unit
		MIN.	TYP.	MAX.	
VCC power source voltage	VCC	2.7	—	5.5	V
Terminal input voltage range	VIN	0	—	VCC	V
Analog output current	IO	-1.0	—	1.0	mA
Action temperature range	TOPR	-30	—	85	°C
Serial clock frequency	FSCLK	—	1.0	10.0	MHz
Limit load capacity	CL	—	—	0.1	μF

* This product is no antiradiation design.

◇Electric characteristics (VCC=3.0V, RL=OPEN, CL=0pF, Ta=25°C; unless otherwise specified.)

Parameter	Symbol	Limits			Unit	Condition
		MIN.	TYP.	MAX.		
VCC system	ICC	—	0.4	0.8	mA	CLK=1MHz, 80H set
L input voltage	VIL	GND	—	0.2VCC	V	
H input voltage	VIH	0.8VCC	—	VCC	V	
Output zero scale voltage	ZS1	GND	—	0.1	V	00H set, IOH=0.0mA
Output full scale voltage	FS1	VCC-0.1	—	VCC	V	FFH set, IOL=0.0mA
Differential non linearity error	DNL	-1.0	—	1.0	LSB	Input code 02H~FDH
Integral non linearity error	INL	-1.5	—	1.5	LSB	Input code 02H~FDH
VCC power source voltage rise time	trVCC	100	—	—	μS	VCC=0→2.7V
Power on Reset release voltage	VPOR	—	1.9	—	V	
Output setting time	tOUT	—	—	100	μS	

◇Command sending



・Data setting

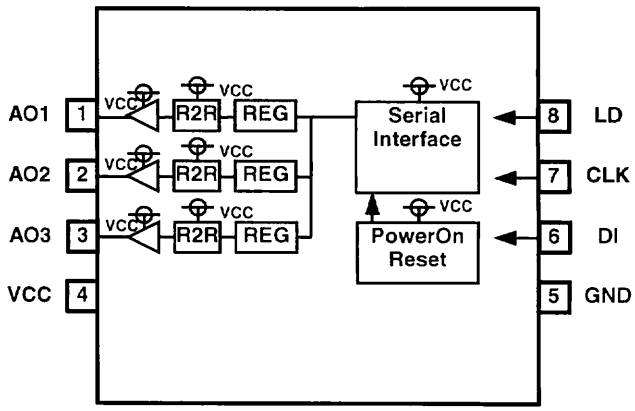
D0	D1	D2	D3	D4	D5	D6	D7	Setting
0	0	0	0	0	0	0	0	GND
1	0	0	0	0	0	0	0	(VCC-GND)/256×1
0	1	0	0	0	0	0	0	(VCC-GND)/256×2
～								～
0	1	1	1	1	1	1	1	(VCC-GND)/256×254
1	1	1	1	1	1	1	1	(VCC-GND)/256×255

・Channel setting

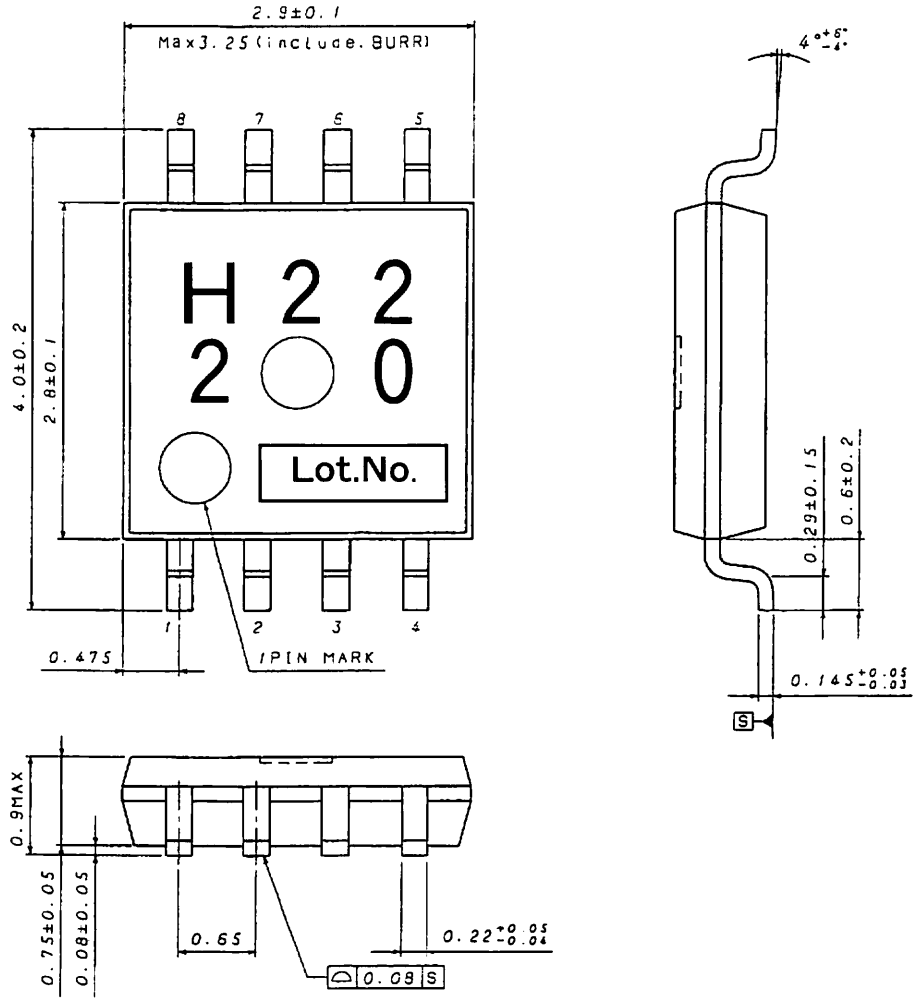
D8	D9	D10	D11	Output setting
0	0	X	X	AO1
1	0	X	X	AO2
0	1	X	X	AO3
1	1	X	X	Don't Care

◇Pin description／Block diagram

No.	Name	Function
1	AO1	Analog output terminal
2	AO2	
3	AO3	
4	VCC	Power source terminal
5	GND	Ground terminal
6	DI	Serial Data input terminal
7	CLK	Serial Clock input terminal
8	LD	Serial Data Load input terminal



◇External dimensions (MSOP8)



Drawing No.EX181-5002

◇Cautions on use

(1) Numbers and data in entries are representative design values and are not guaranteed values of the items.

(2) Although we are confident in recommending the sample application circuits, carefully check their characteristics further when using them. When modifying extemally attached component constants before use, determine them so that they have sufficient margins by taking into account variations in externally attached components and the Rohm LSI, not only for static characteristics but also including transient charcteristics.

(3) Absolute maximum ratings
If applied voltage, operating temperature range, or other absolute maximum ratings are exceeded, the LSI may be damaged. Do not apply voltages or temperatures that exceed the absolute maximum ratings. If you think of a case in which absolute maximum ratings are exceeded, enforce fuses or other physical safety measures and investigate how not to apply the conditions under which absolute maximum ratings are exceeded to the LSI.

(4) GND potential
Make the GND pin voltage such that it is the lowest voltage even when operating below it. Actually confirm that the voltage of each pin does not become a lower voltage than the GND pin, including transient phenomena.

(5) Thermal design
Perform thermal design in which there are adequate margins by taking into account the allowable power dissipationin actual states of use.

(6) Shorts between pins and misinstallation
When mounting the LSI on a board, pay adequate attention to orientation and placement discrepancies of the LSI.
If it is misinstalled and the power is turned on, the LSI may be damaged. It also may be damaged if it is shorted by a foreign substance coming between pins of the LSI or between a pin and a power supply or a pin and a GND.

(7) Operation in strong magnetic fields
Adequately evaluate use in a strong magnetic field, since there is a possibility of malfunction.

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U.S.A / San Diego	TEL : +1(858)625-3630	FAX : +1(858)625-3670
Atlanta	TEL : +1(770)754-5972	FAX : +1(770)754-0691
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Beijing	TEL : +86(10)8525-2483	FAX : +86(10)8525-2489
Taiwan / Taipei	TEL : +866(2)2500-6956	FAX : +866(2)2503-2869
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Philippines / Manila	TEL : +63(2)807-6872	FAX : +63(2)809-1422
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Japan /
(Internal Sales)

Tokyo 2-1-1, Yaesu, Chuo-ku, Tokyo 104-0082
TEL : +81(3)5203-0321 FAX : +81(3)5203-0300

Yokohama 2-4-8, Shin Yokohama, Kohoku-ku, Yokohama, Kanagawa 222-8575
TEL : +81(45)476-2131 FAX : +81(45)476-2128

Nagoya Dainagayo Building 9F 3-28-12, Meieki, Nakamura-ku, Nagoya,Aichi 450-0002
TEL : +81(52)581-8521 FAX : +81(52)561-2173

Kyoto 579-32 Higashi Shiokouji-cho, Karasuma Nishi-iru, Shiokoujidori, Shimogyo-ku, Kyoto 600-8216
TEL : +81(75)311-2121 FAX : +81(75)314-6559

(Contact address for overseas customers in Japan)

Yokohama TEL : +81(45)476-9270 FAX : +81(045)476-9271

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