

- ◇Structure Silicon monolithic integrated circuit
- ◇Classification 8bit6chD/A converter
- ◇Product BH2228FV
- ◇Features •3-wire 12-bit serial interface
 •POWER ON RESET circuit
 •For independent 2 power sources (3V/5V)

◇Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Power source voltage	VDD	-0.3~7.0	V
Terminal voltage	VIN	-0.3~7.0	V
Storage temperature range	TSTG	-55~125	°C
Permissible loss	PD	400	mW

- * This value decreases 4.0mW/°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.	
VDD power source voltage	VDD	2.7	—	5.5	V
VFS voltage to be impressed	VFS	2.7	—	5.5	V
Terminal input voltage range	VIN	0	—	VDD	V
Analog output current	IO	-1.0	—	1.0	mA
Action temperature range	TOPR	-20	—	85	°C
Serial Clock frequency	FCLK	—	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.		
VDD system	IDD	—	0.5	1.5	mA	VDD=5V, CLK=1MHz, 80H setting
VFS system	IFS	—	0.3	0.9	mA	80H setting
L input voltage	VIL	VSS	—	0.6	V	VDD=5V
H input voltage	VIH	2.4	—	VDD	V	VDD=5V
Output zero scale voltage	ZS	VSS	—	0.1	V	00h setting, at no load
Output full scale voltage	FS1	VDD-0.1	—	VDD	V	FFh setting, at no load
	FS2	VFS-0.1	—	VFS	V	FFh setting, at no load
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	trVDD	100	—	—	μS	VDD=0→2.7V
Power on Reset release voltage	VPOR	—	1.9	—	V	
Output setting time	tOUT	—	—	100	μS	

Status of this document

The Japanese version of this document is the formal specification.
 A customer may use this translation version only for a reference to help reading the formal version.
 If there are any differences in translation version of this document, formal version takes priority.

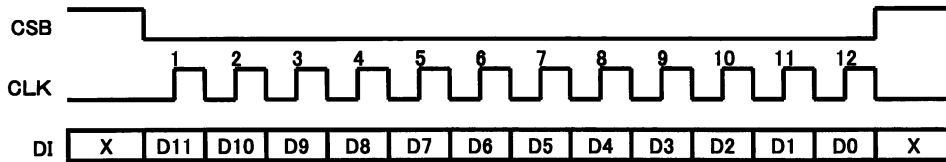
Application example

The application circuit is recommended for use. Make sure to confirm the adequacy of the characteristics.
 When using the circuit with changes to the external circuit constants, make sure to leave an adequate margin for external components including static and transitional characteristics as well as dispersion of the IC.
 Note that ROHM cannot provide adequate confirmation of patents.

The Product described in this specification is designed to be used with ordinary electronic equipment or devices (such as audio -visual equipment, office-automation equipment, communications devices, electrical appliances, and electronic toys).
 Should you intend to use this product with equipment or devices which require an extremely high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear -reactor controllers, fuel controllers and other safety devices), please be sure to consult with our sales representative in advance.

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◇Command sending



•Data setting

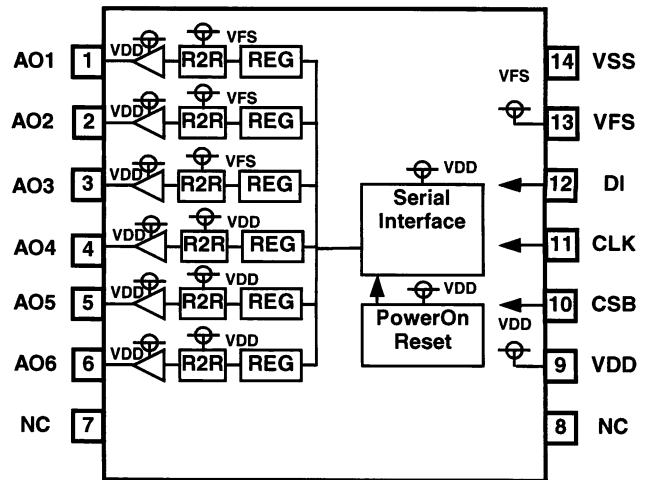
D0	D1	D2	D3	D4	D5	D6	D7	Setting
0	0	0	0	0	0	0	0	GND
1	0	0	0	0	0	0	0	(VDD or VFS-GND)/256 × 1
0	1	0	0	0	0	0	0	(VDD or VFS-GND)/256 × 2
~								~
0	1	1	1	1	1	1	1	(VDD or VFS-GND)/256 × 254
1	1	1	1	1	1	1	1	(VDD or VFS-GND)/256 × 255

•Channel setting

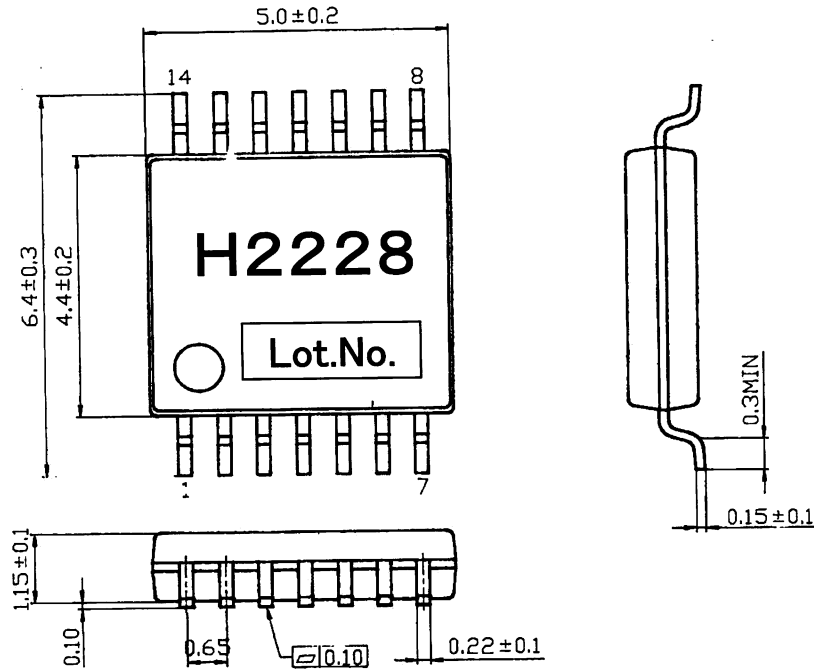
D8	D9	D10	D11	Setting
0	0	0	1	AO1
0	0	1	0	AO2
0	0	1	1	AO3
0	1	0	0	AO4
0	1	0	1	AO5
0	1	1	0	AO6
Except the above				Don't Care

◇Pin description / Block diagram

No.	Name	Function
1	AO1	Analog output terminal
2	AO2	
3	AO3	
4	AO4	
5	AO5	
6	AO6	
7	NC	No connected
8	NC	
9	VDD	Power source terminal(AO4~6 full scale voltage use in common)
10	CSB	Chip select signal input terminal
11	CLK	Serial clock input terminal
12	DI	Serial data input terminal
13	VFS	AO1~3 full scale Voltage setting terminal
14	VSS	Ground terminal



◇External dimensions (SSOPB14)



(UNIT : mm)

Drawing No.: B0841

◇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 externally 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 characteristics.
- (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 dissipation in 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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