



M62429

Serial Control Dual Electronic Volume

Product Specification

Specification Revision History:

Version	Date	Description
2012-01-B1	2012-01	New
2019-04-B2	2019-04	Replace the new template
2022-01-B3	2022-01	Modify Ordering Information
2024-11-C1	2024-11	Update the template; modify ordering information; modify soldering temperature; update package information



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1、General Description

The M62429 is a dual channel electronic volume controlled with 2-wire serial data. The built-in reference circuit can compose of an electronic volume with less external parts.

Features:

- Built-in reference circuit
- Control with serial data
- Volume 0 to -83dB (1dB/step)
- Independent control is allowed in each channel
- Low noise and low distortion

$V_{no}=5\mu V_{rms}$ (ATT= $-\infty$)

THD=0.01% TYP ($V_O=0.5V_{rms}$)

Ordering Information:

Tube packing specifications:

Part number	Packaging form	Marking code	Tube quantity	Boxed tube quantity	Boxed quantity	Notes
M62429	DIP8	M62429	50 PCS/tube	40 tube/box	2000 PCS/box	Dimensions of plastic enclosure: 9.2mm×6.4mm Pin spacing:2.54mm
M62429	SOP8	M62429	100 PCS/tube	100 tube/box	10000 PCS/box	Dimensions of plastic enclosure: 4.9mm×3.9mm Pin spacing:1.27mm

Reel packing specifications:

Part number	Packaging form	Marking code	Reel quantity	Boxed reel quantity	Notes
M62429	SOP8	M62429	4000 PCS/reel	8000 PCS/box	Dimensions of plastic enclosure: 4.9mm×3.9mm Pin spacing:1.27mm

Note: If the physical information is inconsistent with the ordering information, please refer to the actual product.



2、Block Diagram And Pin Description

2.1、Block Diagram

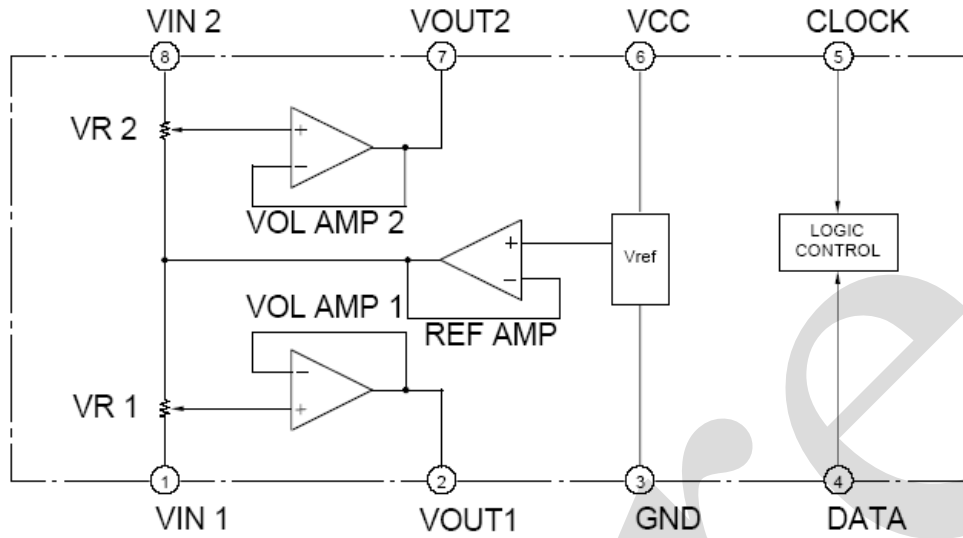


Figure1. Block Diagram

2.2、System configuration

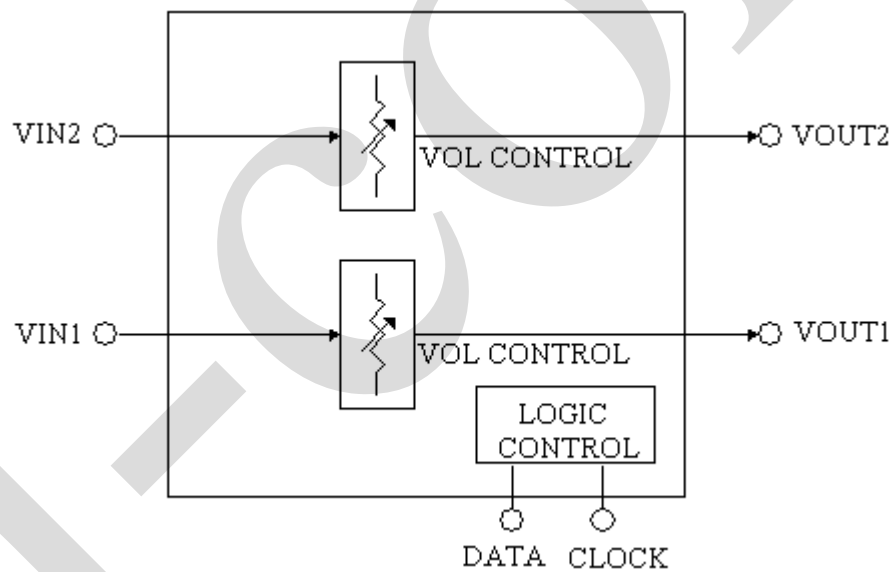


Figure2. System configuration



2.3、Pin Configurations

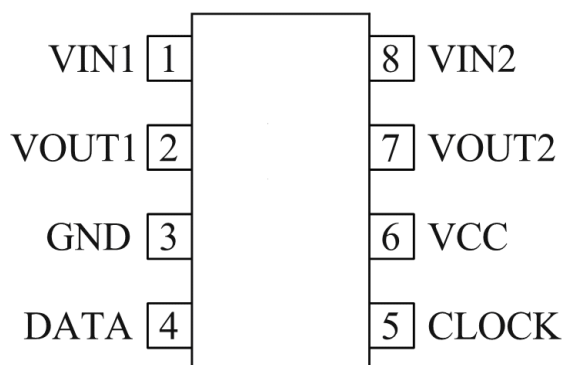


Figure3. Pin Configurations

2.4、Pin Description

Pin No.	Symbol	Function
1	VIN1	1-ch input pin
2	VOUT1	1-ch output pin
3	GND	Ground pin
4	DATA	Control data input pin. Inputs data in synchronization with clock.
5	CLOCK	Clock input pin for transferring serial data.
6	VCC	Power supply pin. Stabilize the pin with decoupling capacitor.
7	VOUT2	2-ch output pin
8	VIN2	2-ch input pin

3、Electrical Parameter

3.1、Absolute Maximum Ratings

(Tamb=25℃)

Parameter	Symbol	Conditions	Value	Unit
Supply voltage	VCC	-	6.5	V
Power dissipation	P _D	-	625(P), 440(FP)	mW
Operating temperature	T _{OPR}	-	-20~+75	℃
Storage temperature	T _{STG}	-	-55~+125	℃
Soldering Temperature	T _L	10s	DIP	250
			SOP	260



3.2、Electrical Characteristics

(unless otherwise noted, VCC=5V,Tamb=25℃)

Parameter	Symbol	Test condition	Min.	Typ.	Max.	Unit
Operating voltage	VCC	-	4	5	6	V
Circuit current	ICC	-	-	4	8	mA
Maximum attenuation	ATT	ATT= -∞	-	-90	-80	dB
Attenuation error	ATT	ATT=0	-2.0	0	2.0	dB
Maximum input voltage	V _{IM}	THD=1%, ATT=-6dB	1.5	1.7	-	V _{rms}
Maximum output voltage	V _{OM}	THD=1%	0.8	1.3	-	V _{rms}
Output noise voltage	V _{NO1}	ATT=0,R _g =0,JIS-A	-	4	10	μV _{rms}
	V _{NO2}	ATT= -∞,R _g =0,JIS-A	-	5	-	μV _{rms}
Total harmonic distortion	THD	f=1KHz,V _O =0.5V _{rms} , ATT=0	-	0.01	0.05	%
Channel separation	C _S	f=1KHz,JIS-A	-	-80	-70	dB

3.2.1、DC Characteristics of Digital Block

Parameter	Symbol	Test condition		Min.	Typ.	Max.	Unit
"L" level input voltage	V _{IL}	Data, clock pin		0	-	0.2VCC	V
"H" level input voltage	V _{IH}			0.8VCC	-	VCC	V
"L" level input current	I _{IL}	V _I =0	Data, clock pin	-10	-	10	μA
"H" level input current	I _{IH}	V _I =5V		-	-	10	μA

3.2.2、AC Characteristics of Digital Block

Parameter	Symbol	Test condition	Min.	Typ.	Max.	Unit
Cycle time of clock	t _{cr}	-	4	-	-	μs
Pulse width of clock ("H" level)	t _{WHC}	-	1.6	-	-	μs
Pulse width of clock ("L" level)	t _{WLC}	-	1.6	-	-	μs
Clock rising time	t _r	-	-	-	0.4	μs
Clock falling time	t _f	-	-	-	0.4	μs
Data setup time	t _{SD}	-	0.8	-	-	μs
Data hold time	t _{HD}	-	0.8	-	-	μs



4、Typical Application Circuit And Application Note

4.1、Application Circuit

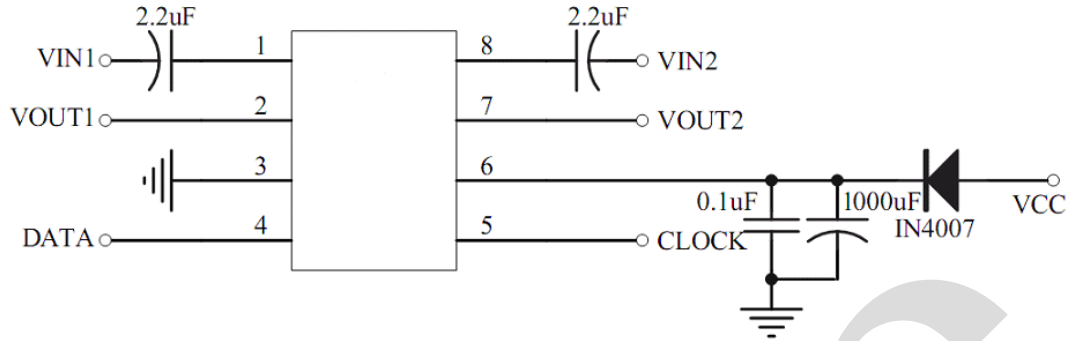


Figure4. Application Circuit

NOTES: TO avoid the influences of post-amplifier, please notice the following rules when making PCB:

- 1) Pin VCC should be decoupled to GND using two capacitors, with one 0.1uF ceramic capacitor, the other 1000uF or 470uF electrolytic capacitor. As the same time the two capacitors should be as close to the circuit when making PCB layer-out.
- 2) The supply voltage should be separated to the power part of post-amplifier, and use its own individual power.
- 3) When $VCC \geq 5V$, power line to pin VCC should connect a diode to separate the supply noise produced by post-amplifier; when $VCC < 5V$, ferrite bead can be used to replace diode so that it reduces voltage drop of pin VCC produced by diode.

4.2、Clock and Data Timing

4.2.1、The relationship of serial data and clock

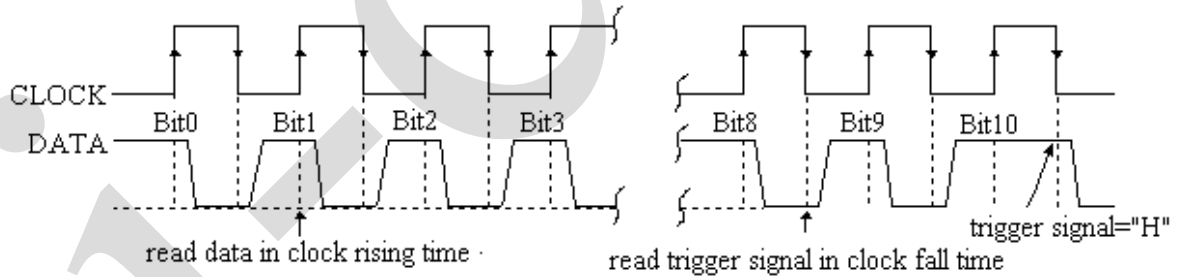


Figure5. Timing Diagram



4.2.2、Clock and data cycles

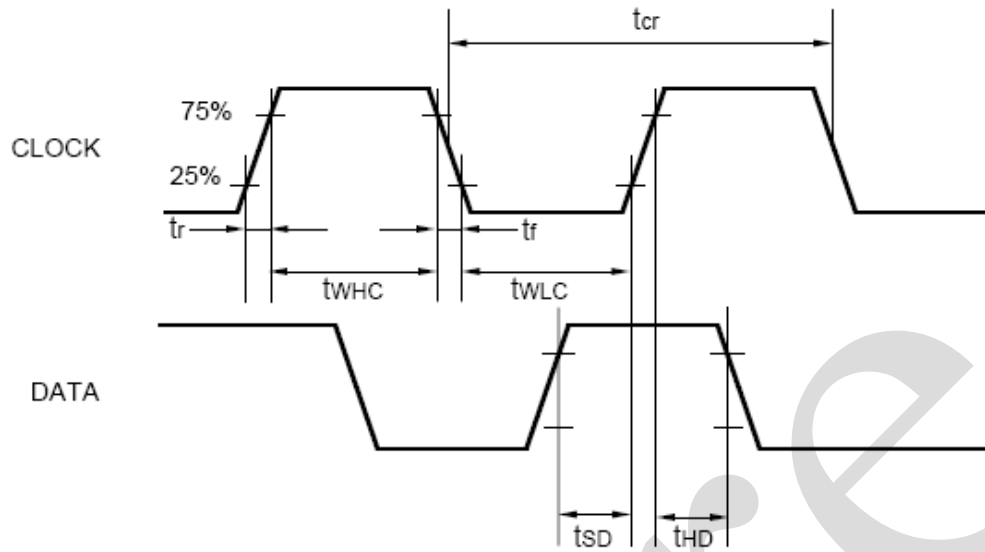
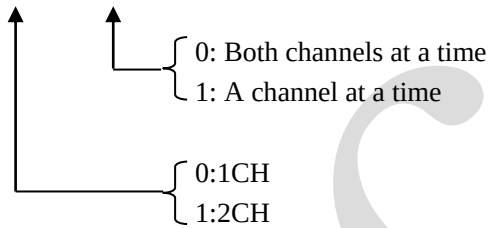


Figure6. Timing Diagram

4.2.3、Data Input Format

D0	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10
0/1	0/1	VOLUME							1	1





4.2.4、Volume Code

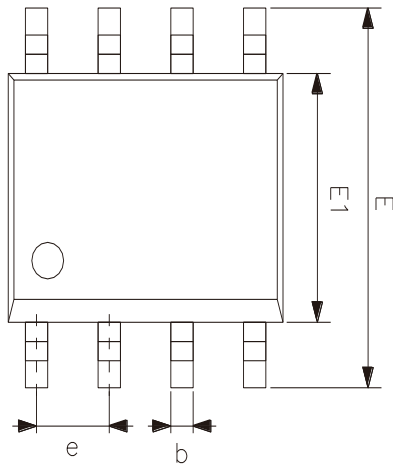
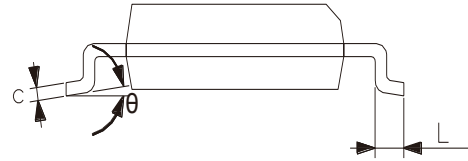
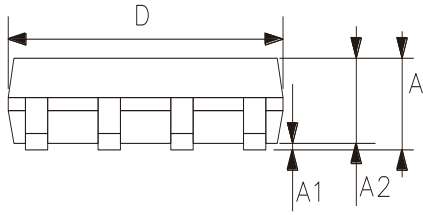
ATT1	D2	D3	D4	D5	D6
0dB	1	0	1	0	1
-4 dB	0	0	1	0	1
-8 dB	1	1	0	0	1
-12 dB	0	1	0	0	1
-16 dB	1	0	0	0	1
-20 dB	0	0	0	0	1
-24 dB	1	1	1	1	0
-28 dB	0	1	1	1	0
-32 dB	1	0	1	1	0
-36 dB	0	0	1	1	0
-40 dB	1	1	0	1	0
-44 dB	0	1	0	1	0
-48 dB	1	0	0	1	0
-52 dB	0	0	0	1	0
-56 dB	1	1	1	0	0
-60 dB	0	1	1	0	0
-64 dB	1	0	1	0	0
-68 dB	0	0	1	0	0
-72 dB	1	1	0	0	0
-76 dB	0	1	0	0	0
-80 dB	1	0	0	0	0
-∞	0	0	0	0	0

ATT2	D7	D8
0 dB	1	1
-1 dB	0	1
-2 dB	1	0
-3 dB	0	0



5、Package Information

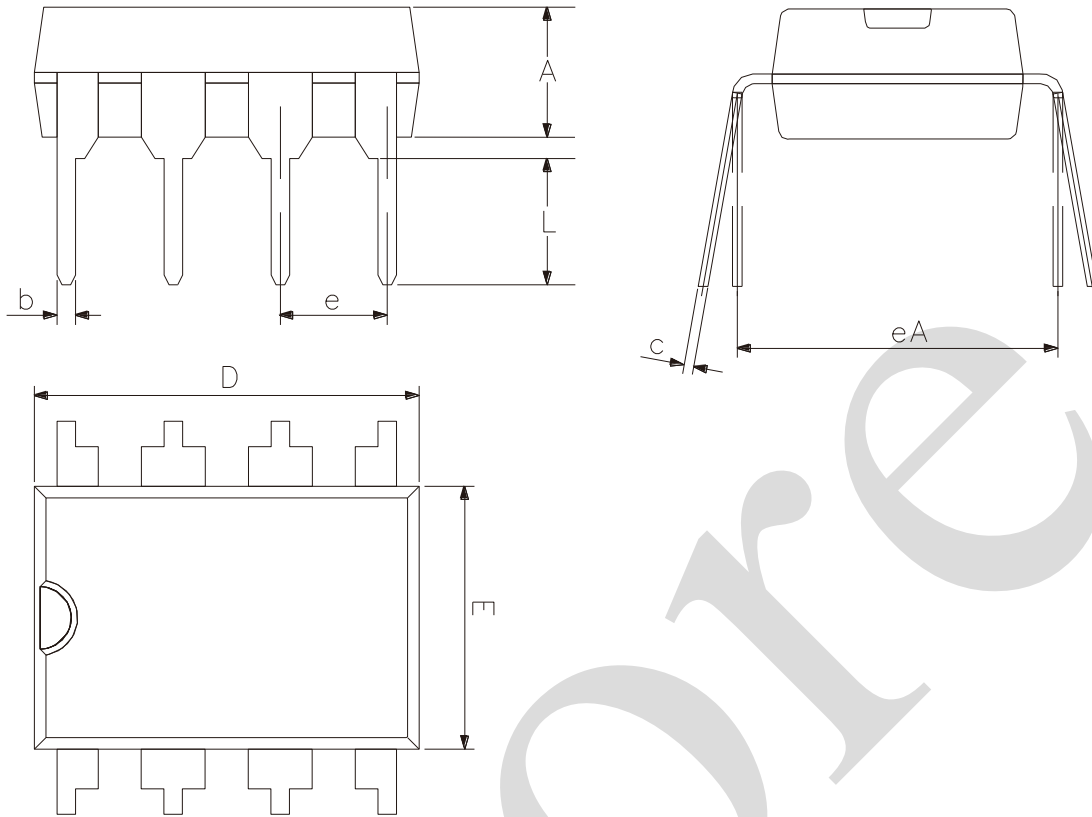
5.1、SOP8



2023/12/A	Dimensions In Millimeters	
Symbol	Min.	Max.
A	1.35	1.80
A1	0.05	0.25
A2	1.25	1.55
D	4.70	5.10
E	5.80	6.30
E1	3.70	4.10
b	0.306	0.51
c	0.19	0.25
e	1.27	
L	0.40	0.89
θ	0°	8°



5.2、DIP8



2023/12/A	Dimensions In Millimeters	
Symbol	Min	Max
A	3.00	3.60
b	0.36	0.56
c	0.20	0.36
D	9.00	9.45
E	6.15	6.60
e	2.54	
eA	7.62	9.30
L	3.00	—



6、Statements And Notes

6.1、The name and content of Hazardous substances or Elements in the product

Part name	Hazardous substances or Elements									
	Lead and lead compounds	Mercury and mercury compounds	Cadmium and cadmium compounds	Hexavalent chromium compounds	Polybrominated biphenyls	Polybrominated biphenyl ethers	Dibutyl phthalate	Butylbenzyl phthalate	Di-2-ethylhexyl phthalate	Diisobutyl phthalate
Lead frame	○	○	○	○	○	○	○	○	○	○
Plastic resin	○	○	○	○	○	○	○	○	○	○
Chip	○	○	○	○	○	○	○	○	○	○
The lead	○	○	○	○	○	○	○	○	○	○
Plastic sheet installed	○	○	○	○	○	○	○	○	○	○
explanation	○: Indicates that the content of hazardous substances or elements in the detection limit of the following the SJ/T11363-2006 standard. ×: Indicates that the content of hazardous substances or elements exceeding the SJ/T11363-2006 Standard limit requirements.									

6.2、Notes

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