

Electronic volume control

Description

The CXA1846M/N is an electrical volume control IC for use in car radios/stereos and radio-cassette recorders featuring serial data control.

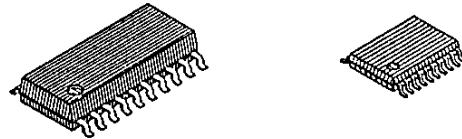
Features

- Volume adjustment (0dB to -87dB, $-\infty$ dB)
- Balance
- Serial data control (DATA, CLK, CE)
- Single 8V power supply
- Zero-cross detection circuit

Structure

Bipolar silicon monolithic IC

CXA1846M 20 pin SOP (Plastic) CXA1846N 20 pin VSOP (Plastic)



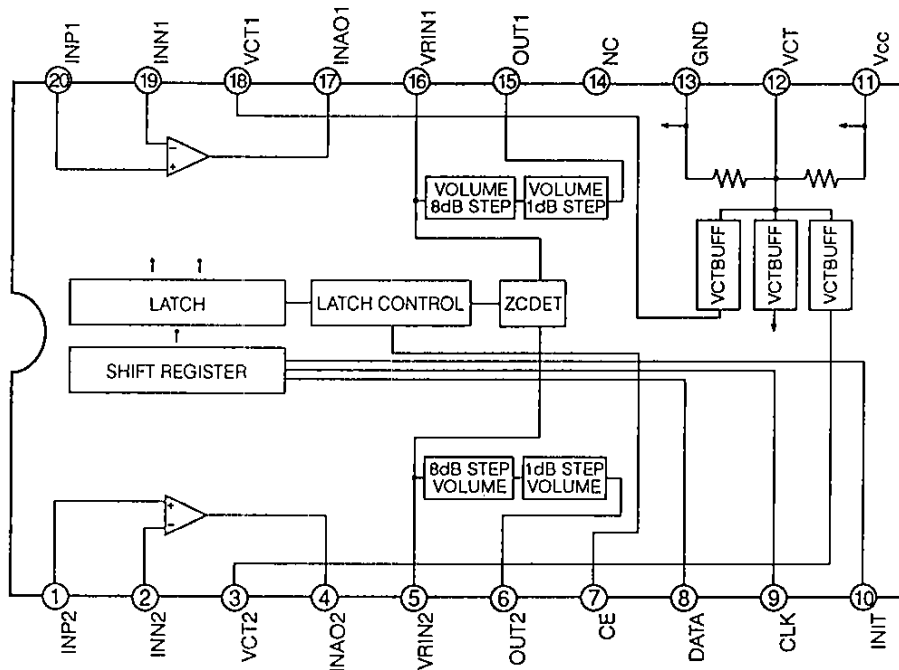
Absolute Maximum Ratings (Ta=25°C)

• Supply voltage	V _{cc}	13	V
• Operating temperature	T _{opr}	-40 to +85	°C
• Storage temperature	T _{stg}	-65 to +150	°C
• Allowable power dissipation			
	P _d	SOP 500 (75°C)	mW
		VSOP 220 (75°C)	mW

Recommended Supply Voltage Range

• Supply voltage	V _{cc}	6 to 12	V
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Block Diagram and Pin Configuration



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Pin Description

Pin No.	Symbol	I/O resistance voltage	Equivalent circuit	Description
1 20	INP2 INP1	50kΩ VCT		Input operational amplifier positive phase input
2 19	INN2 INN1	— VCT		Input operational amplifier reversed phase input
3 18	VCT2 VCT1	— VCT		VCT buffer output
4 17	INAO2 INAO1	— VCT		Input operational amplifier
5 16	VRIN2 VRIN1	8.2kΩ VCT		Volume input

Pin No.	Symbol	I/O resistance voltage	Equivalent circuit	Description
6 15	OUT2 OUT1	— VCT		Volume output
7	CE	∞ —		Latch enable
8	DATA	∞ —		Serial data input
9	CLK	∞ —		Serial clock
10	INIT	— —		System reset
11	Vcc	—		+power supply
12	VCT	— VCT		Mid-point potential
13	GND	— —		GND

Electrical Characteristics

(Unless otherwise specified $V_{cc}=8V$, $T_a=25^{\circ}C$)

Item	Symbol	Measurement Condition	Min.	Typ.	Max.	Unit	
Circuit current	I _{cc}	No signal	5	8	12	mA	
Total harmonic distortion	THD	1kHz, 5dBm	—	0.003	0.01	%	
Output noise voltage	V _n	Input shorted	—	5	7	μV _{rms}	
Maximum output voltage	V _{om}	1kHz	8	—	—	dBm	
Separation	CS	1kHz	85	90	—	dB	
Maximum attenuation	ATT _m		85	90	—	dB	
Input voltage	High	V _{sh}	Data, INIT	3	—	6	V
	Low	V _{sl}	CLK, CE	0	—	1.5	V
Input voltage range	V _{in}		1	—	V _{cc} -1	V	
Maximum output current	I _{max}	Input buffer amplifier output current	—	—	1	mA	

RESET

The IC is reset by reducing the voltage at the INIT pin to 1V or less when CLK is high. Reset can not be performed when CLK is low. The table below shows the status when the IC has been reset.

MODE	Setting
VRC1	-∞
VRF1	-7dB
VRC2	-∞
VRF2	-7dB

Data Allocation

Fast bit	D1	NOP	MSB
	D2	VRC1	
	D3		
	D4		
	D5		
	D6	VRF1	
	D7		
	D8		
	D9	NOP	
	D10	VRC2	
	D11		
	D12		
	D13		
	D14	VRF2	
	D15		
	D16		
		LSB	

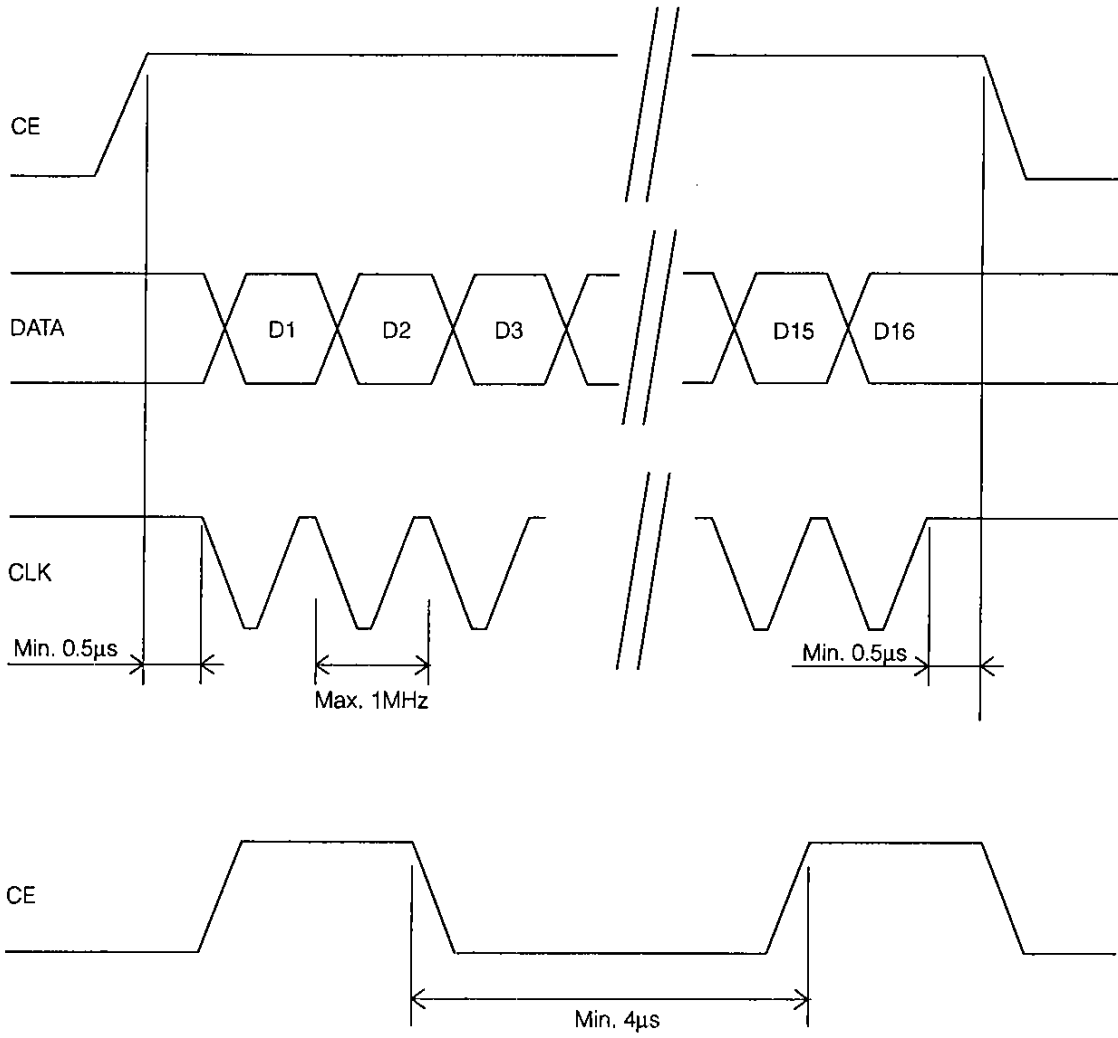
VRC1/VRC2

Setting	D2/D10	D3/D11	D4/D12	D5/D13
0	1	1	1	1
-8	1	1	1	0
-16	1	1	0	1
-24	1	1	0	0
-32	1	0	1	1
-40	1	0	1	0
-48	1	0	0	1
-56	1	0	0	0
-64	0	1	1	1
-72	0	1	1	0
-80	0	1	0	1
-∞	0	1	0	0
-∞	0	0	0	0

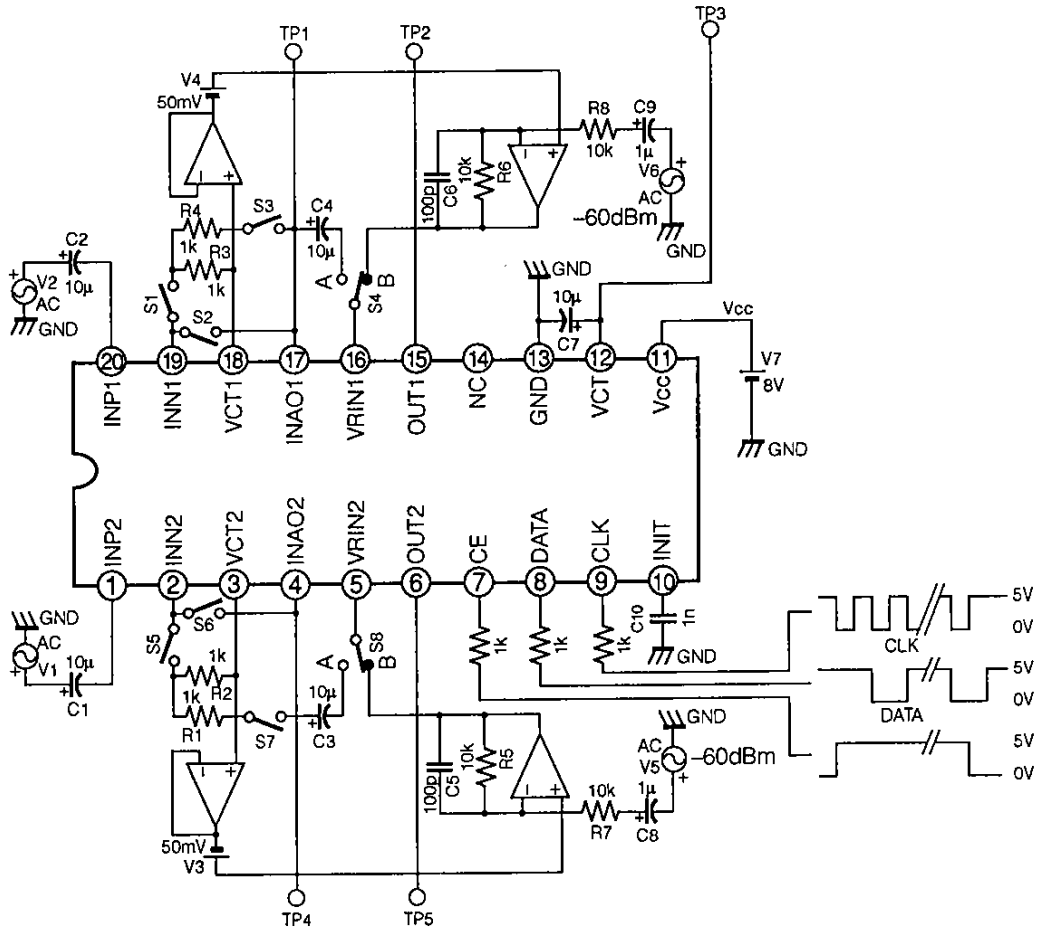
VRF1/VRF2

Setting	D6/D14	D7/D15	D8/D16
0	1	1	1
-1	1	1	0
-2	1	0	1
-3	1	0	0
-4	0	1	1
-5	0	1	0
-6	0	0	1
-7	0	0	0

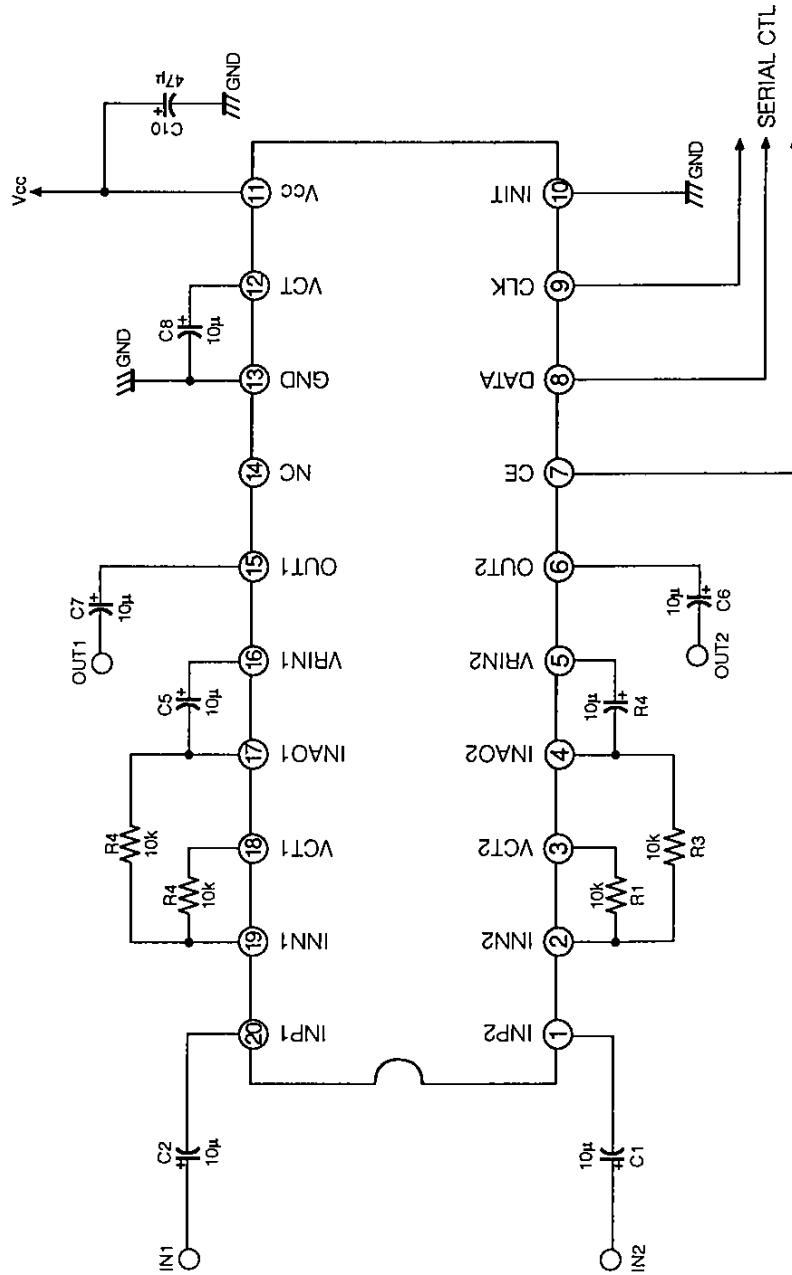
Data Timing



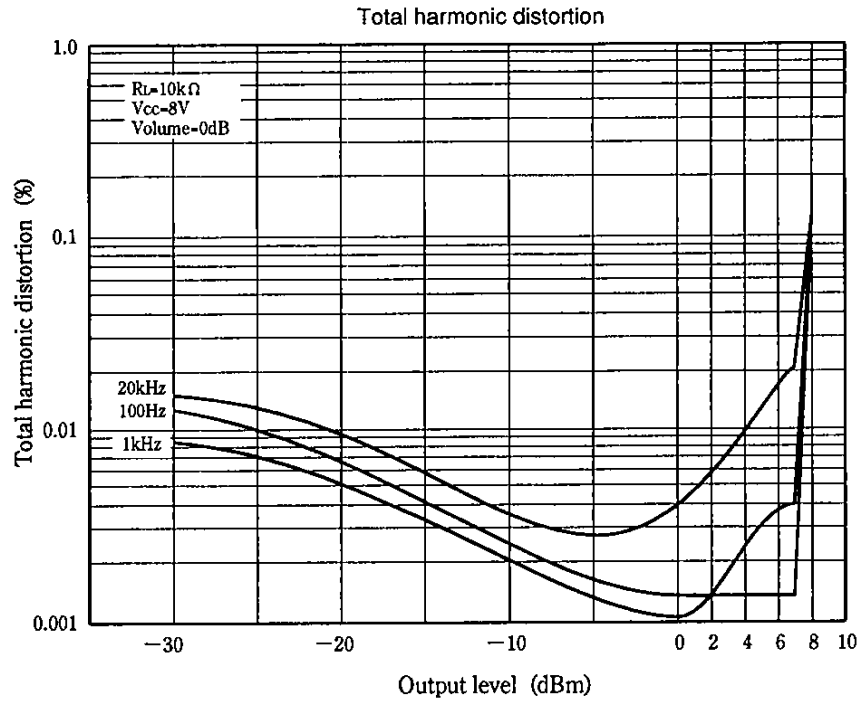
Test Circuit



Application Circuit



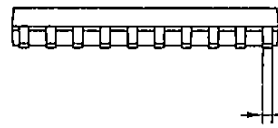
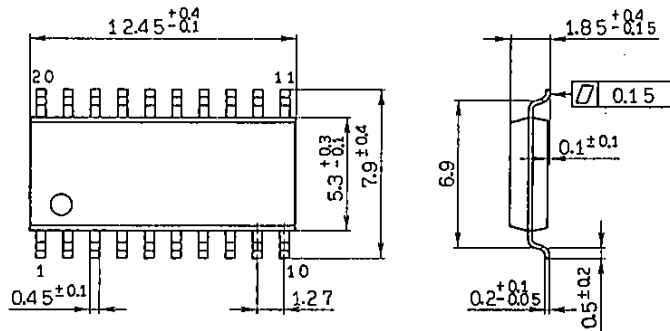
Application circuits shown are typical examples illustrating the operation of the devices. Sony cannot assume responsibility for any problems arising out of the use of these circuits or for any infringement of third party and other right due to same.



Package Outline Unit : mm

CXA1846M

20pin SOP (Plastic) 300mll 0.3g

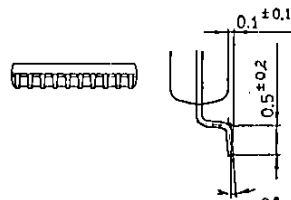
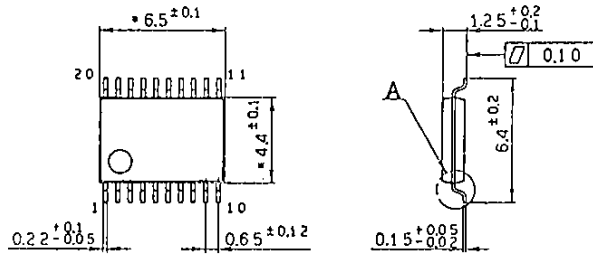


SONY NAME	SOP-20P-L01
EIAJ NAME	*SOP020-P-0300-A
JEDEC CODE	

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CXA1846N

20pin VSOP (Plastic) 225mil



SONY NAME	VSOP-20P-L01
EIAJ NAME	SSOP020-P-0225-similar A
JEDEC CODE	

Note) Dimensions marked with * do not include resin residue.