

# CXA3815N

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## Description

Audio IC for LCD-TVs

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## Features

- ◆ Operating voltage  $V_{CC} = 3.0$  to  $3.6V$
- ◆ Differential input
- ◆ Output decoupling capacitor less
- ◆ Gain switching function (6dB/12dB)
- ◆ Mute function

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## Structure

BiCMOS monolithic IC

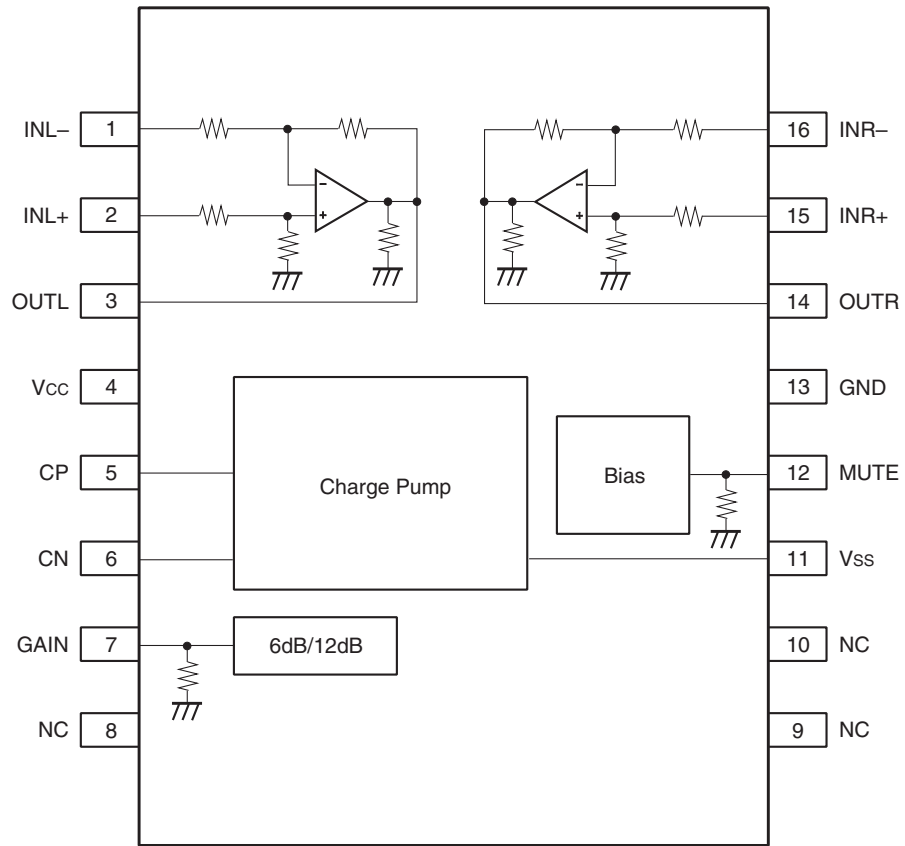
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## Package

SSOP-16P-L01

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Block Diagram



Pin Description

Pin No.	Symbol	I/O	Pin voltage [V]		Equivalent circuit	Description
			DC	AC		
1	INL-	I	0	—		HP AMP_L input (-)
16	INR-	I	0	—		HP AMP_R input (-)
2	INL+	I	0	—		HP AMP_L input (+)
15	INR+	I	0	—		HP AMP_R input (+)
3	OUTL	O	0	—		HP AMP_L output
14	OUTR	O	0	—		HP AMP_R output

Pin No.	Symbol	I/O	Pin voltage [V]		Equivalent circuit	Description
			DC	AC		
5	CP	I/O	—	3.3		CP capacitance connection
6	CN	I/O	—	-3.3		CP capacitance connection
11	Vss	I/O	-3.26	—		Vss
7	GAIN	I	0	—		Gain switching
12	MUTE	I	0	—		Mute switching
4	Vcc	I/O	—	—		Vcc
13	GND	I/O	—	—		GND

## Electrical Characteristics

Unless otherwise specified

( $V_{CC} = 3.3V$ ,  $T_a = 25^{\circ}C$ ,  $f_{signal} = 1kHz$ , differential input, Measurement band width = 20Hz to 20kHz)

### Power

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Supply voltage	$V_{CC}$		3.0	3.3	3.6	V
Maximum rating	$V_{max}$		—	—	4.5	V
Operating temperature	$T_a$		-25	—	+85	$^{\circ}C$

### Amplifier Block

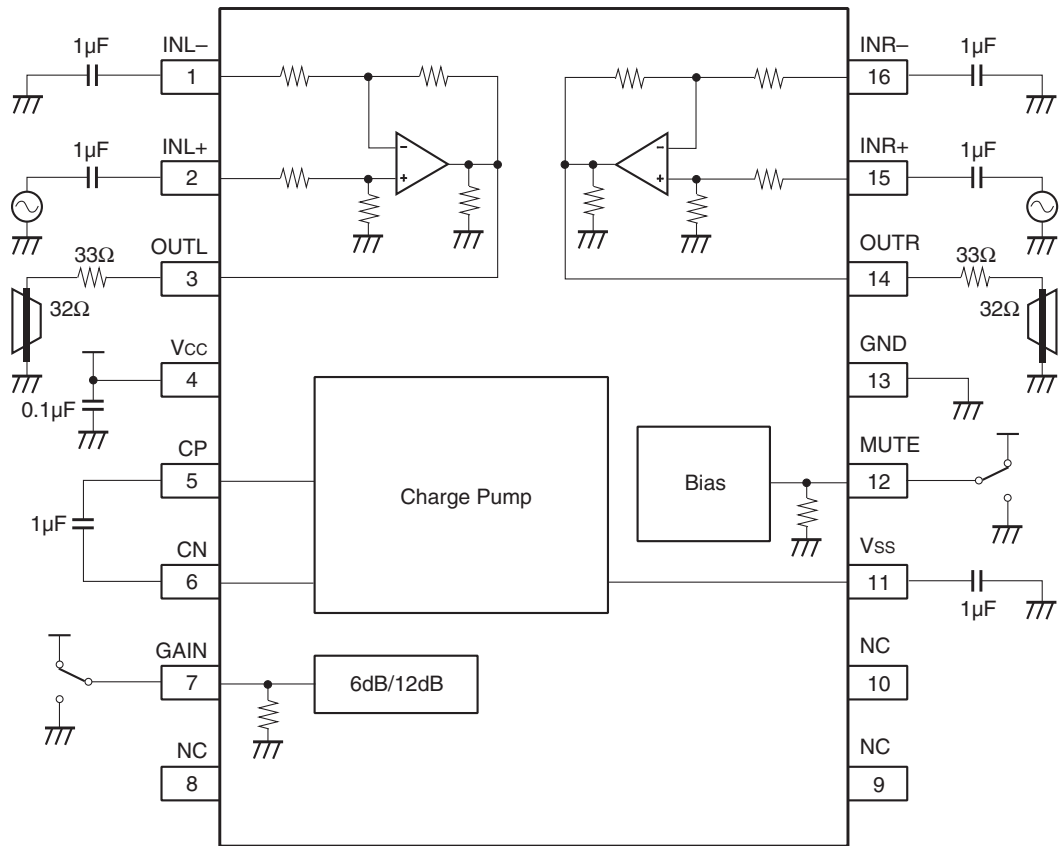
Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Input impedance	$R_{in}$		96	120	144	$k\Omega$
Gain1	$G_{v1}$	GAIN Low, 0.1Vrms input	5.5	6	6.5	dB
Gain2	$G_{v2}$	GAIN High, 0.1Vrms input	11.5	12	12.5	dB
Total harmonic distortion 1	THD1	$R_L = 33 + 32\Omega$ GAIN Low, 0.1Vrms input	—	0.01	0.1	%
Total harmonic distortion 2	THD2	$R_L = 33 + 32\Omega$ , $P_o = 15mW$ GAIN Low	—	—	0.5	%
Total harmonic distortion 3	THD3	$R_L = 470 + 10k\Omega$ , $V_o = 2.0Vrms$ GAIN Low	—	—	1	%
Output noise level	$V_{no}$	No signal input, measured at $32\Omega$ ends	—	-100	-95	dBv
Channel separation	CS	$R_L = 33 + 32\Omega$ , $P_o = 15mW$ 1kHz BPF, GAIN Low	70	80	—	dB
DC offset	$V_{os}$	No signal input, GAIN Low	-5	—	5	mV
Mute level	$V_{mute}$	$R_L = 33 + 32\Omega$ , $P_o = 15mW$ GAIN Low, MUTE ON	—	-70	-60	dB

### Control Block

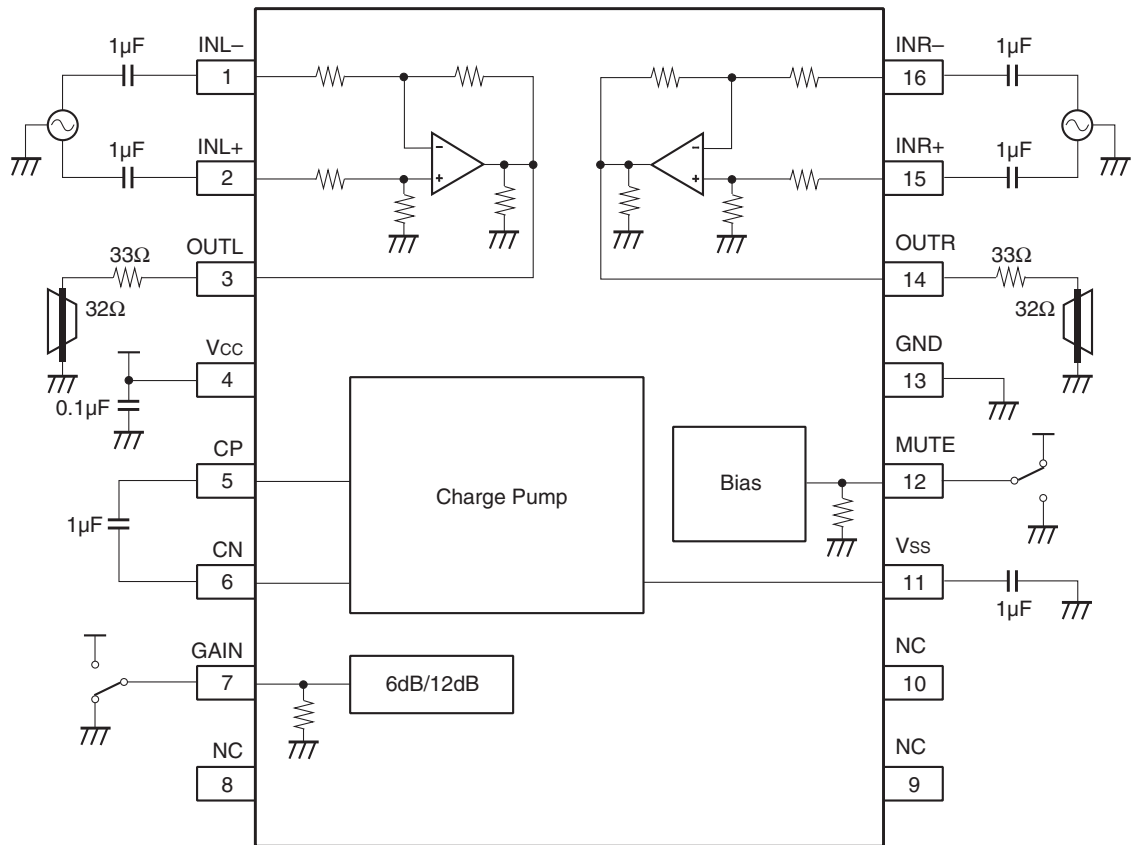
Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Mute H	MuteH	Mute = OFF	$0.7V_{CC}$	—	$V_{CC}$	V
Mute L	MuteL	Mute = ON	0	—	0.8	V
Gain H	GainH	Gain = 12dB	$0.7V_{CC}$	—	$V_{CC}$	V
Gain L	GainL	Gain = 6dB	0	—	0.8	V

Application Circuit

Single Input



Differential Input





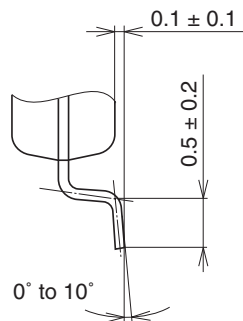
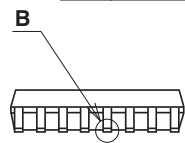
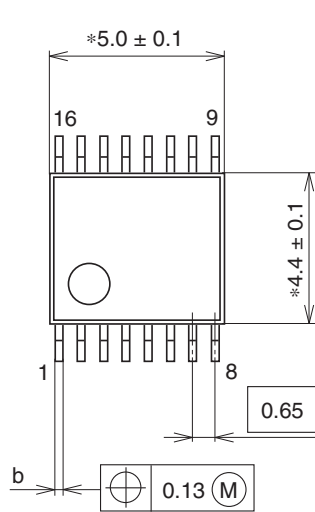
### Notes On Handling

- ◆ The capacitor between CP and CN pin and connected to Vss pin are for generating negative voltage. Place these capacitors with the shortest wiring to the pins.
- ◆ The capacitor connected to Vcc pin is for smoothing noise. Place this capacitor with the shortest wiring to the pin.

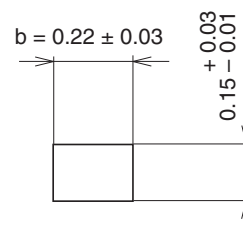
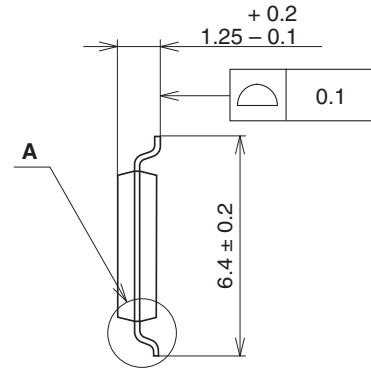
Package Outline

(Unit : mm)

16PIN SSOP (PLASTIC)



DETAIL A



DETAIL B : PALLADIUM

NOTE: Dimension "\*" does not include mold protrusion.

PACKAGE STRUCTURE

SONY CODE	SSOP-16P-L01	PACKAGE MATERIAL	EPOXY RESIN
EIAJ CODE	P-SSOP16-4.4x5.0-0.65	LEAD TREATMENT	PALLADIUM PLATING
JEDEC CODE	_____	LEAD MATERIAL	COPPER ALLOY
		PACKAGE MASS	0.1g