SONY

CXA1279BS

TV Sound Processor

Description

The CXA1279BS is a bipolar IC for TV sound control with functions such as tone control, volume and balance.

Features

- 2 type of inputs
- Bass, Treble, Balance and Volume control operative in either 0 to V_{CC} or 0 to 5 V.

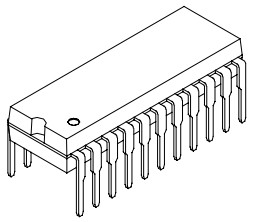
Applications

TV

Structure

Bipolar silicon monolithic IC

22 pin SDIP (Plastic)



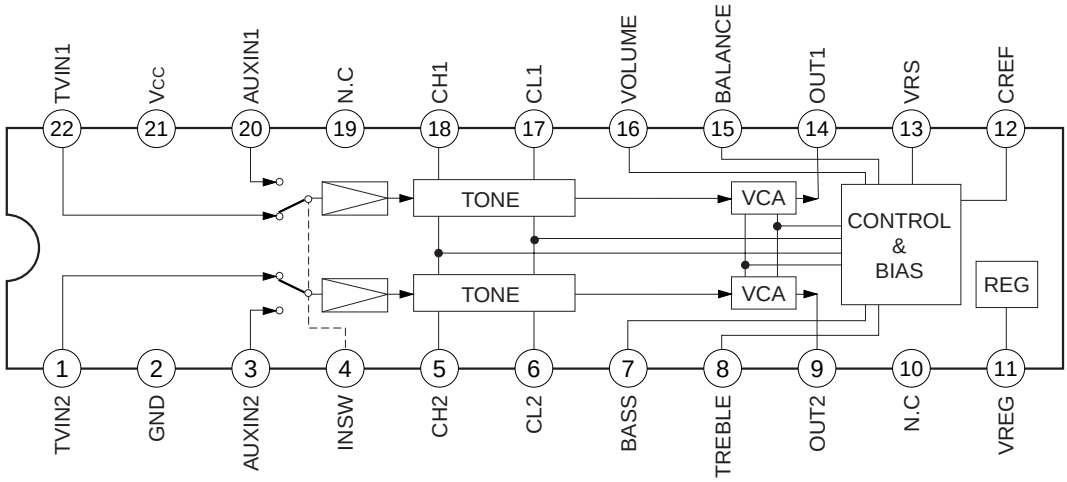
Absolute Maximum Ratings (Ta=25 °C)

• Supply voltage	V_{CC}	14	V
• Operating temperature	Topr	–20 to +75	°C
• Storage temperature	Tstg	–65 to +150	°C
• Allowable power dissipation	P_D	900	mW

Operating Condition

Supply voltage	V_{CC}	8.5 to 12.5	V

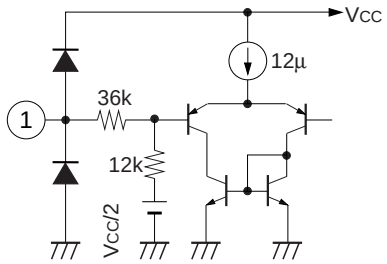
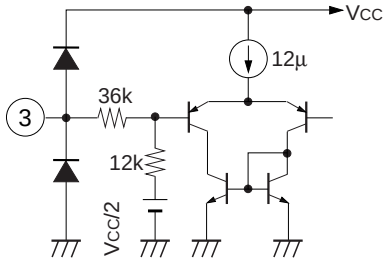
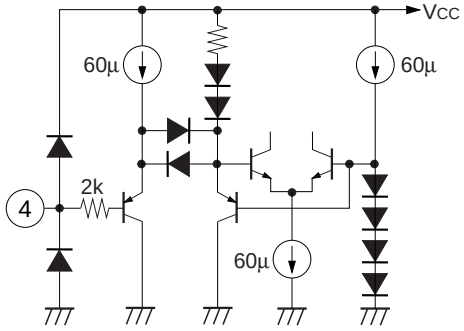
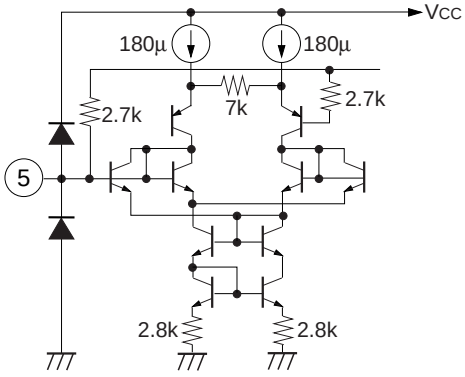
Block Diagram and Pin Configuration

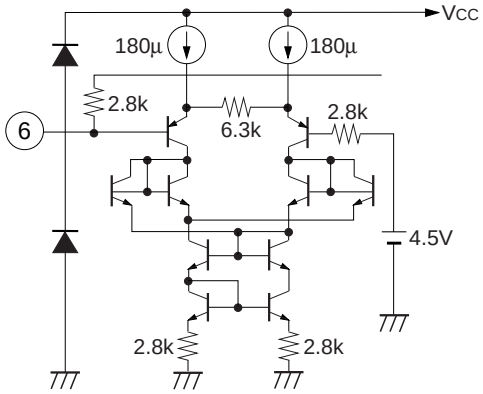
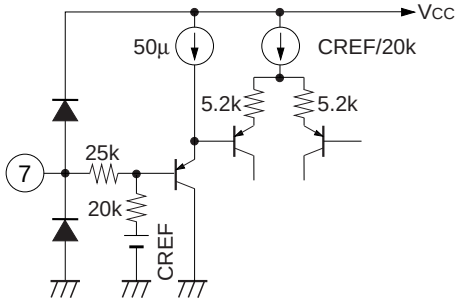
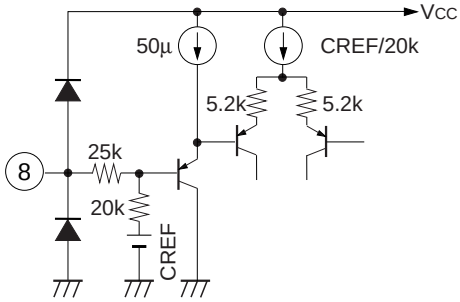
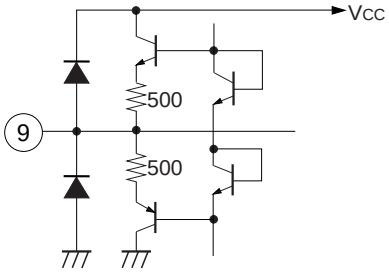
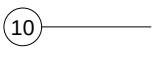


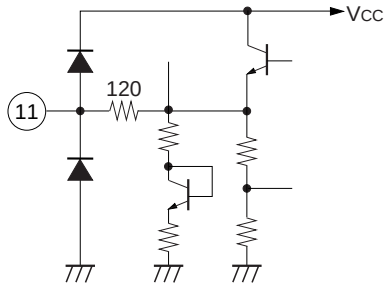
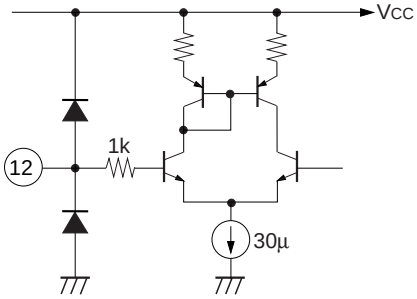
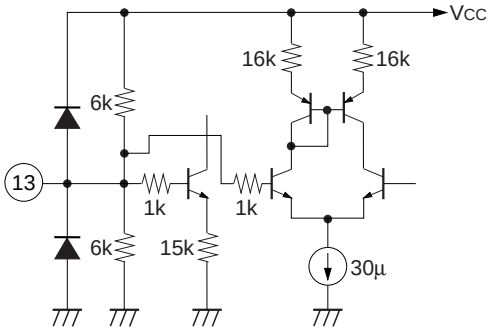
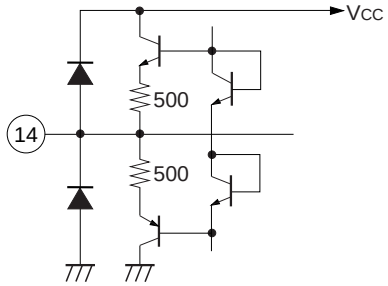
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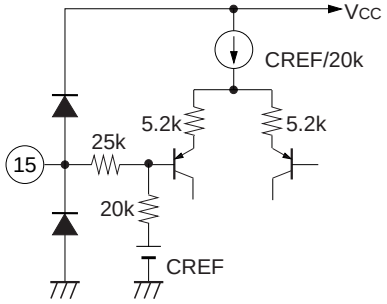
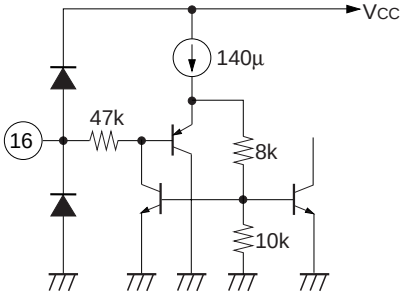
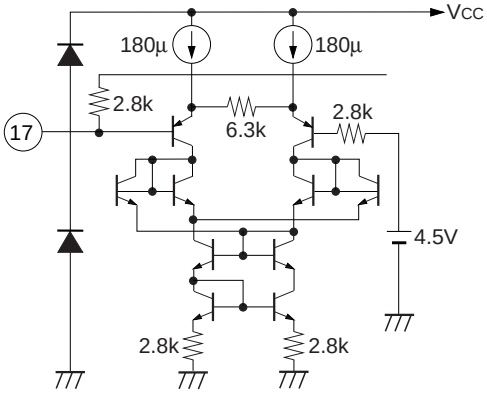
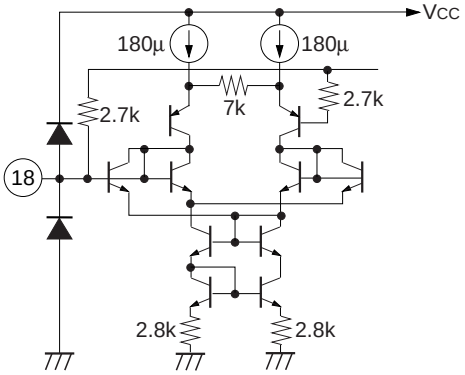
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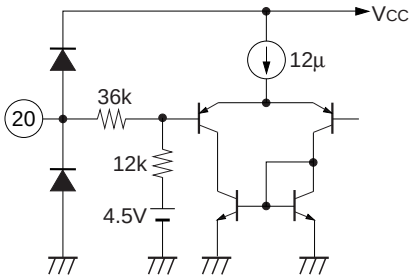
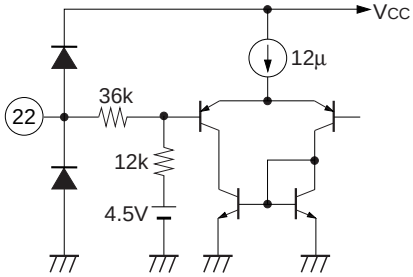
Pin Description (Ta=25 °C V_{CC}=9 V)

Pin No.	Symbol	Voltage	Equivalent circuit	Description
1	TV-IN2	4.5 V		TV mode input pin.
3	AUX-IN2	4.5 V		AUX mode input pin.
4	INSW	—		Mode select pin.
5	CH2	4.5 V		External pin of HPF capacitor.

Pin No.	Symbol	Voltage	Equivalent circuit	Description
6	CL2	4.5 V		External pin of LPF capacitor.
7	BASS	4.5 V (CREF)		BASS control pin.
8	TREBLE	4.5 V (CREF)		TREBLE control pin.
9	OUT2	4.5 V		Output pin.
10	N.C	—		—

Pin No.	Symbol	Voltage	Equivalent circuit	Description
11	VREG	2.5 V		REGULATOR output pin.
12	CREF	—		Input pin of control reference voltage.
13	VRS	4.5 V		Reference voltage pin. Voltage Vcc/2.
14	OUT1	4.5 V		Output pin.

Pin No.	Symbol	Voltage	Equivalent circuit	Description
15	BALANCE	4.5 V (CREF)		BALANCE control pin.
16	VOLUME	—		VOLUME control pin.
17	CL1	4.5 V		External pin of LPF capacitor.
18	CH1	4.5 V		External pin of HPF capacitor.
19	N.C	—		—

Pin No.	Symbol	Voltage	Equivalent circuit	Description
20	AUX-IN1	4.5 V		AUX mode input pin.
22	TV-IN1	4.5 V		TV mode input pin.

Electrical Characteristics

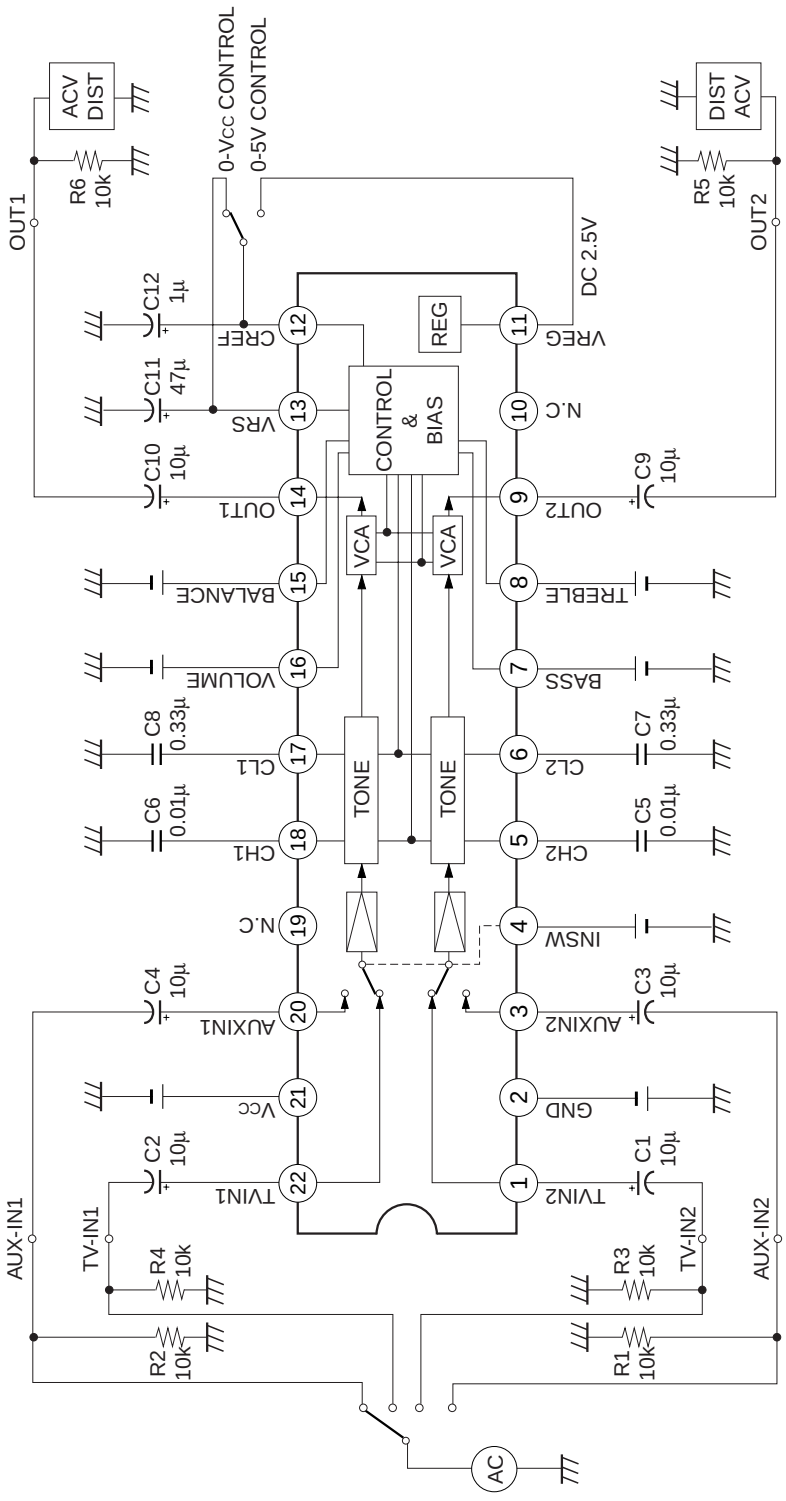
(Ta=25 °C)

No.	Item	Symbol	Bias conditions (V)						CREF	Input	Input signal	Output	Remarks	Min.	Typ.	Max.	Unit
			INSW	BASS	TRE	BAL	VOL	VCC									
1	Current consumption 1	ICC-9	0	4.5	4.5	4.5	9.0	9.0	VRS					12	18	25	mA
2	Current consumption 2	ICC-12	↓	6.0	6.0	6.0	12.0	12.0	↓					17	24	34	mA
3	TV Gain 1, 2	VTVF 1, 2	↓	4.5	4.5	4.5	9.0	9.0	↓	TV-IN 1, 2	1 kHz 1.8 Vrms	OUT 1, 2	Input is taken as reference.	–3.0	–1.0	+1.0	dB
4	AUX Gain 1, 2	VAUXF 1, 2	3.0	↓	↓	↓	↓	↓	↓	AUX-IN 1, 2	↓	↓	↓	–3.0	–1.0	+1.0	dB
5	TV REF level 1, 2	VTVREF 1, 2	0	↓	↓	↓	4.5	↓	↓	TV-IN 1, 2	↓	↓	↓	–17	–15	–11	dB
6	FLAT f response characteristics 100 Hz	VTVFL 1, 2	↓	↓	↓	↓	↓	↓	↓	↓	100 Hz 1.8 Vrms	↓	Output of respective channel 1 kHz is taken as reference.	–1.5	0	+1.5	dB
7	FLAT f response characteristics 10 kHz	VTVFH 1, 2	↓	↓	↓	↓	↓	↓	↓	↓	10 kHz 1.8 Vrms	↓	↓	–1.5	0	+1.5	dB
8	GAIN VOL MIN 1, 2	VVOL MIN	↓	↓	↓	↓	0	↓	↓	↓	1 kHz 1.8 Vrms	↓	Input is taken as reference.	—	—	–70	dB
9	BASS BOOST 100 Hz 1, 2	VBST L	↓	9.0	9.0	↓	4.5	↓	↓	↓	100 Hz 1.8 Vrms	↓	Output of respective channel FLAT 1 kHz is taken as reference.	7.0	10.5	12.0	dB
10	TREBLE BOOST 10 kHz 1, 2	VBST H	↓	↓	↓	↓	↓	↓	↓	↓	10 kHz 1.8 Vrms	↓	↓	7.5	10.5	12.5	dB
11	BASS CUT 100 Hz 1, 2	VCUT L	↓	0	0	↓	↓	↓	↓	↓	100 Hz 1.8 Vrms	↓	↓	–12.0	–10.5	–7.0	dB
12	TREBLE CUT 10 kHz 1, 2	VCUT H	↓	↓	↓	↓	↓	↓	↓	↓	10 kHz 1.8 Vrms	↓	↓	–12.5	–10.5	–7.5	dB

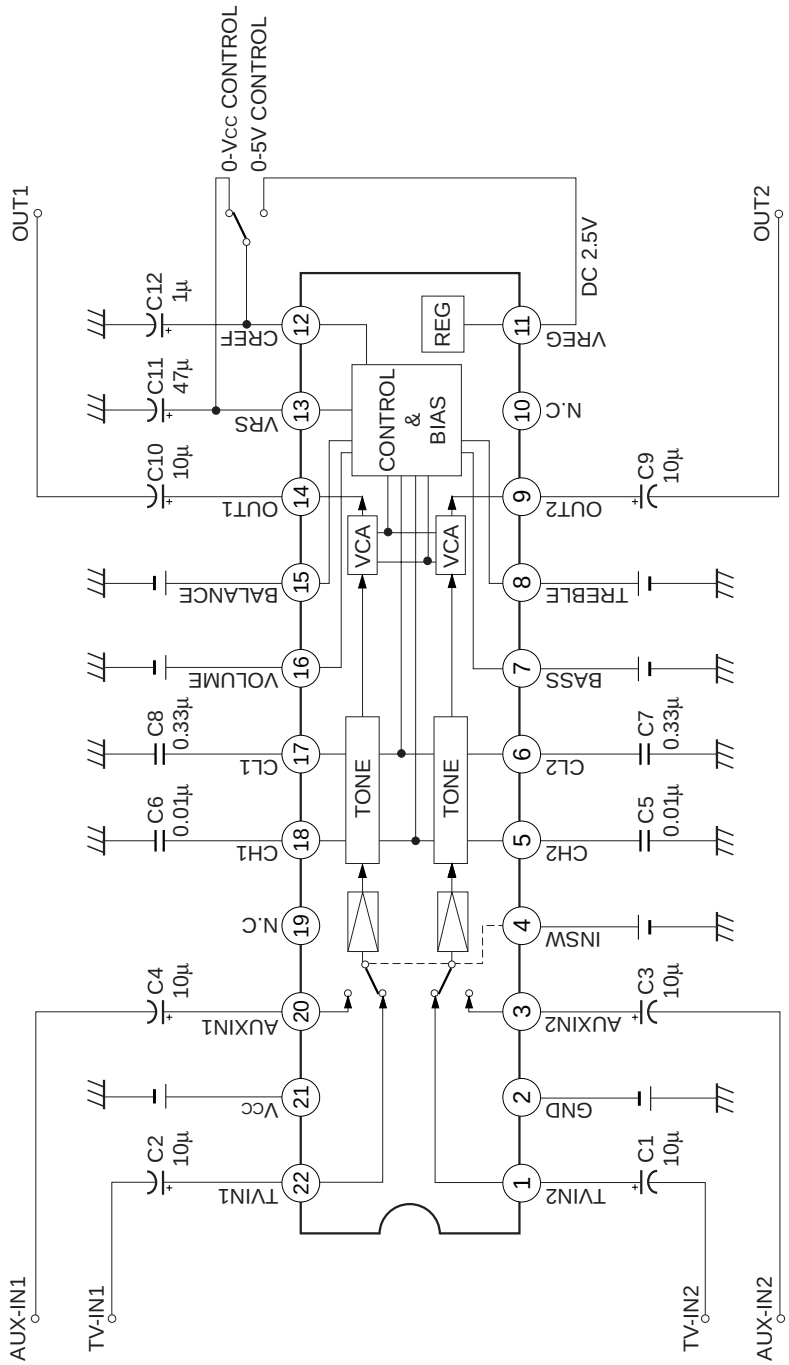
No.	Item	Symbol	Bias conditions (V)						CREF	Input	Input signal	Output	Remarks	Min.	Typ.	Max.	Unit
			INSW	BASS	TRE	BAL	VOL	V_{CC}									
13	BALANCE BOOST 1 kHz 1	V_{BAL} BST 1	0	4.5	4.5	9.0	4.5	9.0	VRS	TV-IN 1	1 kHz 1.8 Vrms	OUT 1	Output of FLAT 1 kHz is taken as reference.	0	1.0	2.0	dB
14	BALANCE CUT 1 kHz 1	V_{BAL} CUT 1	↓	↓	↓	0	↓	↓	↓	↓	↓	↓	↓	—	—	–30	dB
15	BALANCE BOOST 1 kHz 2	V_{BAL} BST 2	↓	↓	↓	↓	↓	↓	↓	TV-IN 2	↓	OUT 2	↓	0	1.0	2.0	dB
16	BALANCE CUT 1 kHz 2	V_{BAL} CUT 2	↓	↓	↓	9.0	9.0	↓	↓	TV-IN 1, 2	↓	↓	↓	—	—	–30	dB
17	DISTORTION-1 1 kHz 1, 2	Vdist F	↓	↓	↓	4.5	↓	↓	↓	↓	1 kHz 420 mVrms	OUT 1, 2	↓	—	—	1.0	%
18	DISTORTION-2 1 kHz 1, 2	Vdist F MAX	↓	↓	↓	↓	↓	↓	↓	↓	1 kHz 1.8 Vrms	↓	↓	—	—	2.0	%
19	Cross-Talk TV → AUX	C_{TLK} TA	3.0	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	—	—	–70	dB
20	Cross-Talk AUX → TV	C_{TLK} AT	0	↓	↓	↓	↓	↓	↓	AUX-IN 1, 2	↓	↓	↓	—	—	–70	dB
21	Cross-Talk TV1 → TV2	C_{TLK} TT1	↓	↓	↓	↓	↓	↓	↓	TV-IN 1	↓	OUT 2	↓	—	—	–70	dB
22	Cross-Talk TV2 → TV1	C_{TLK} TT2	↓	↓	↓	↓	↓	↓	↓	TV-IN 2	↓	OUT 1	↓	—	—	–70	dB
23	Cross-Talk AUX1 → AUX2	C_{TLK} AA1	3.0	↓	↓	↓	↓	↓	↓	AUX-IN 1	↓	OUT 2	↓	—	—	–70	dB
24	Cross-Talk AUX2 → AUX1	C_{TLK} AA2	↓	↓	↓	↓	↓	↓	↓	AUX-IN 2	↓	OUT 1	↓	—	—	–70	dB
25	REGULATOR DC OUTPUT	V_{REG}	0	↓	↓	↓	↓	↓	↓	↓	↓	Pin 11 DC	↓	2.2	2.5	2.8	V_{DC}

No.	Item	Symbol	Bias conditions (V)						CREF	Input	Input signal	Output	Remarks	Min.	Typ.	Max.	Unit
			INSW	BASS	TRE	BAL	VOL	V_{CC}									
26	NOISE LEVEL 1, 2	NL	0	4.5	4.5	4.5	9.0	9.0	VRS			OUT 1, 2	30 kHz LPF used.	—	—	–60	dBm
27	DC OFFset 1	$V_{OFFset\ 1}$		4.5 ↓ 0										–1.0	0	1.0	V_{DC}
28	DC OFFset 2	$V_{OFFset\ 2}$		4.5 ↓ 9.0										–1.0	0	1.0	V_{DC}
29	DC OFFset 3	$V_{OFFset\ 3}$		4.5	4.5 ↓ 0									–1.0	0	1.0	V_{DC}
30	DC OFFset 4	$V_{OFFset\ 4}$			4.5 ↓ 9.0									–1.0	0	1.0	V_{DC}

Electrical Characteristics 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 patent and other right due to same.

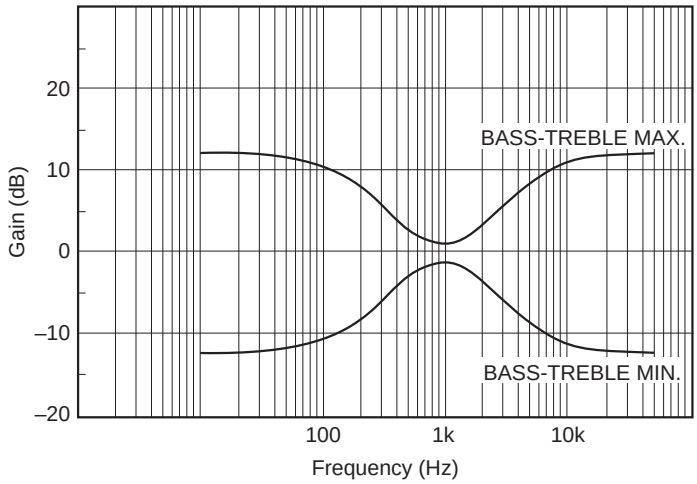
Description of Operation

Signals input to TV-IN and AUX-IN are switched through INSW (Input Switch) and input to Tone Control circuit. In the Tone Control circuit, Tone Control for Bass and Treble is executed at the cut off frequency determined by the respective external capacitor.

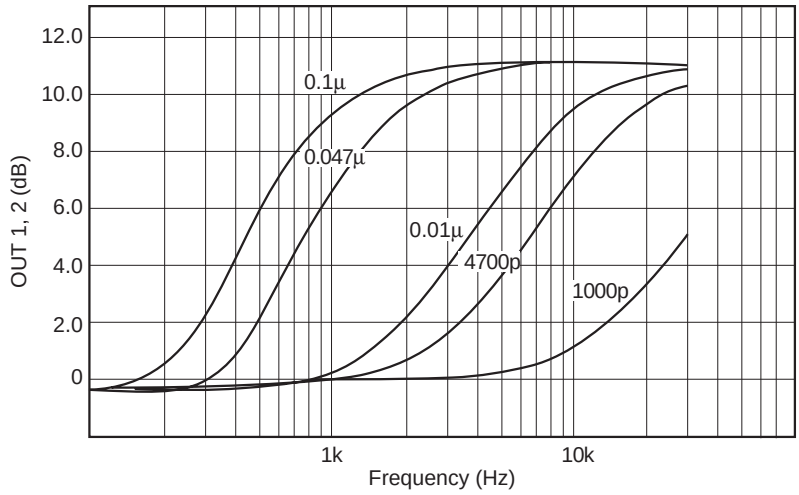
Tone controlled signals are Balance and Volume controlled at the VCA circuit and output through the output buffer.

The control of Bass, Treble, Balance and Volume respectively is performed with CREF pin voltage as reference. Accordingly when control is used from 0 to V_{CC}, $V_{CC}/2$ is applied to CREF (connected to VRS pin). To control from 0 to 5 V_{DC}, 2.5 V_{DC} is applied to CREF for usage (connected to VREG pin or half the voltage of 5 V supply microcomputer is applied for offset.).

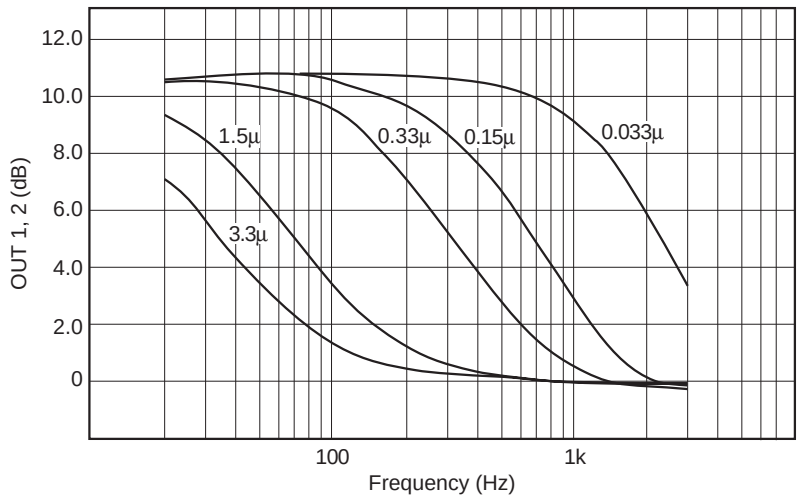
TONE characteristecs



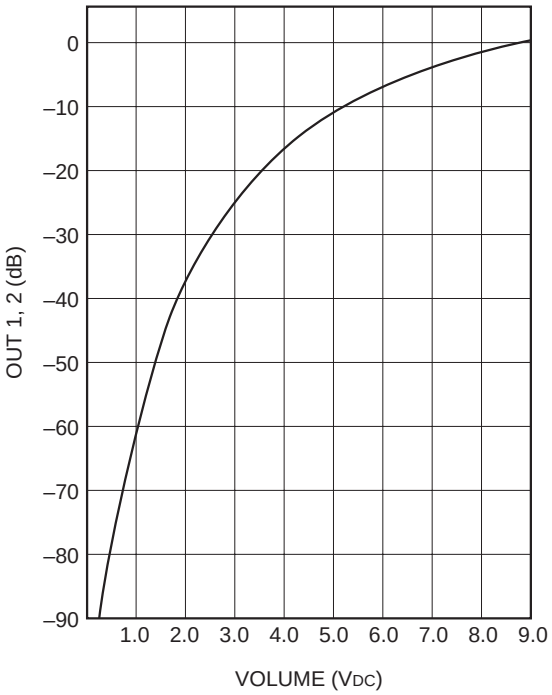
CH. vs. TREBLE-CONTROL (MAX)



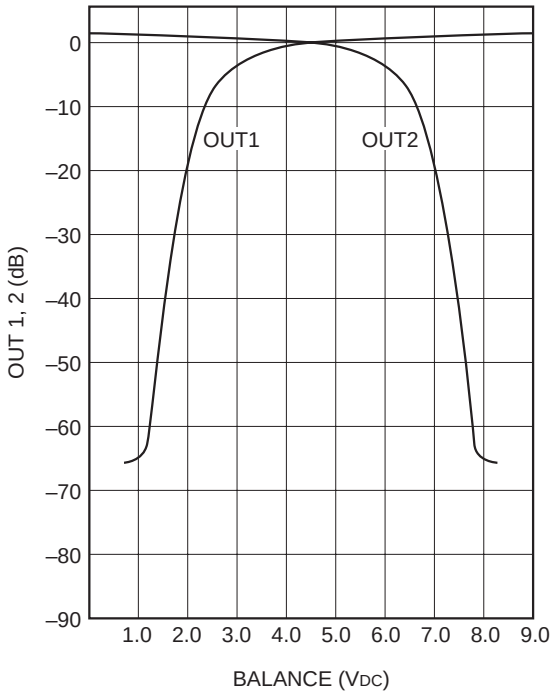
CL. vs. BASS-CONTROL (MAX)



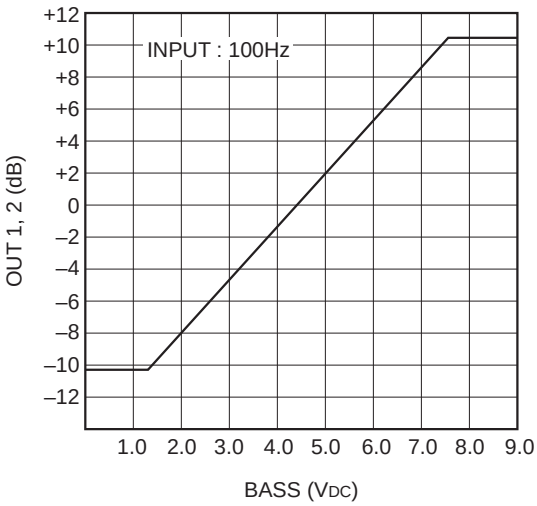
VOLUME CONTROL characteristics



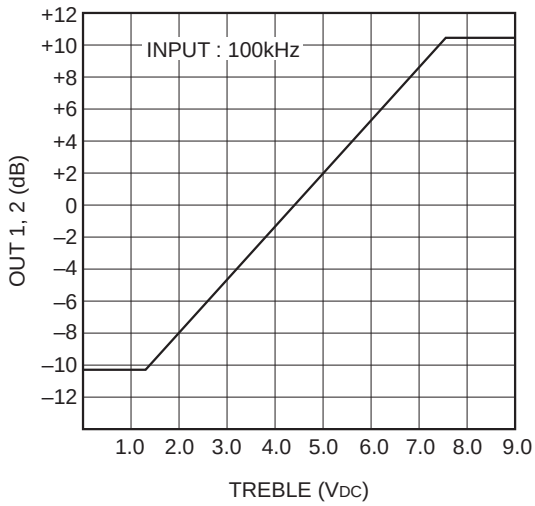
BALANCE CONTROL characteristics



BASS CONTROL characteristics

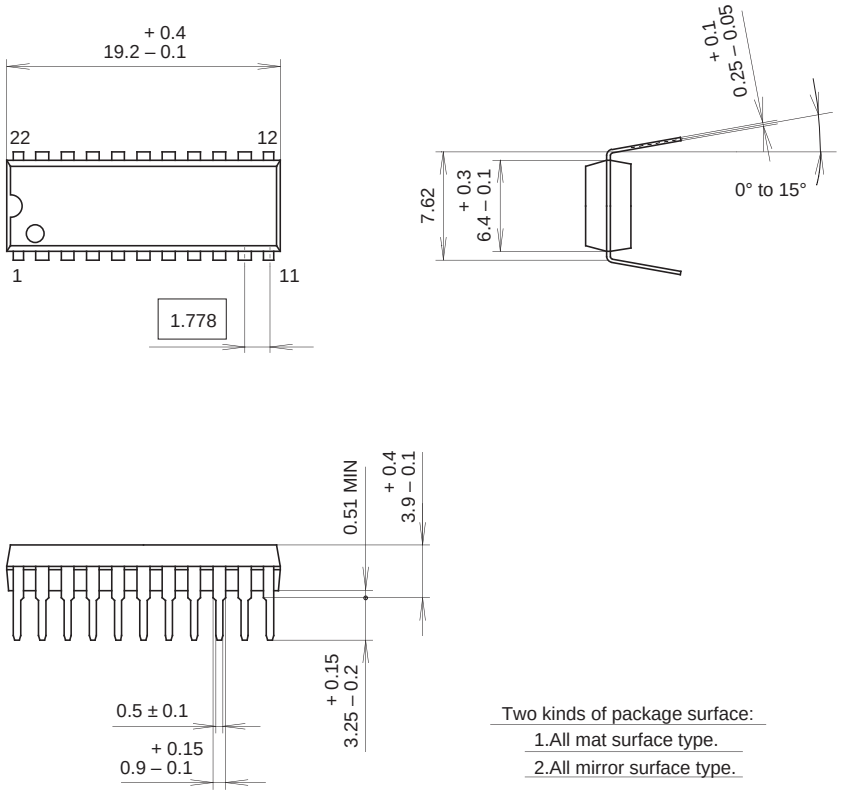


TREBLE CONTROL characteristics



Package Outline Unit : mm

22PIN SDIP (PLASTIC)



Two kinds of package surface:
1.All mat surface type.
2.All mirror surface type.

PACKAGE STRUCTURE

MOLDING COMPOUND	EPOXY RESIN
LEAD TREATMENT	SOLDER PLATING
LEAD MATERIAL	COPPER ALLOY
PACKAGE MASS	0.95g

SONY CODE	SDIP-22P-01
EIAJ CODE	SDIP022-P-0300
JEDEC CODE	————