



AiP5532 Dual Channel Low Noise Operational Amplifier

Product Specification

Specification Revision History:

Version	Date	Description
2023-07-A1	2023-07	New
2023-10-A2	2023-10	Augmented waveform
2024-06-A3	2024-06	Modify the content
2025-08-A4	2025-08	Modify the power supply voltage in the general description



Contents

1、General Description.....	1
2、Block Diagram And Pin Description	2
2.1、Block Diagram	2
2.2、Pin Configurations.....	2
2.3、Pin Description.....	2
3、Electrical Parameter	3
3.1、Absolute Maximum Ratings.....	3
3.2、Recommended Operating Conditions.....	3
3.3、Electrical Characteristics.....	3
3.3.1、DC Characteristics.....	3
3.3.2、Communication Parameters.....	4
4、Testing Curves	4
5、Testing Circuit	6
6、Typical Application Circuit And Application Note.....	7
7、Package Information	8
7.1. DIP8	8
7.2. SOP8	9
8、Statements And Notes	10
8.1、The name and content of Hazardous substances or Elements in the product	10
8.2、Notes	10



1、General Description

AiP5532 is a dual-channel high-performance and low-noise operational amplifier circuit, which has the characteristics of low noise, high gain, high slew rate and high output drive. It can be powered by single power supply or dual power supply, and is widely used in instrumentation, industrial control and audio amplification systems.

Features:

- Operating range of power supply voltage
Single power supply: 5V to 36V
Dual power supply: $\pm 2.5\text{V}$ to $\pm 18\text{V}$
- Unit gain bandwidth: 7MHz (typical)
- Slew rate: 6V/us (typical)
- Input offset voltage: 0.5mV (typical)
- Input offset current: 10nA (typical)
- Packaging form: DIP8/SOP8

Ordering Information:

Tube packing specifications:

Part number	Packaging form	Marking code	Tube quantity	Boxed tube quantity	Boxed quantity	Notes
AiP5532DA8.TB	DIP8	AiP5532	50 PCS/tube	40 tube/box	2000 PCS/box	Dimensions of plastic enclosure: 9.2mm×6.4mm Pin spacing: 2.54mm
AiP5532SA8.TB	SOP8	AiP5532	100 PCS/tube	100 tube/box	10000 PCS/box	Dimensions of plastic enclosure: 4.9mm×3.9mm Pin spacing: 1.27mm

Reel packing specifications:

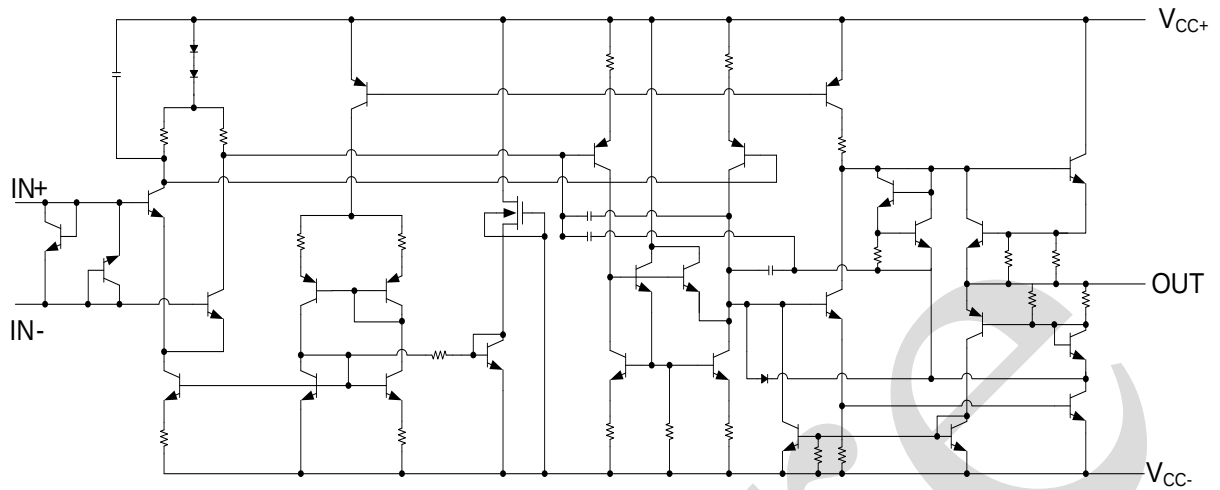
Part number	Packaging form	Marking code	Reel quantity	Boxed reel quantity	Notes
AiP5532SA8.TR	SOP8	AiP5532	4000 PCS/reel	8000 PCS/box	Dimensions of plastic enclosure: 4.9mm×3.9mm Pin spacing: 1.27mm

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

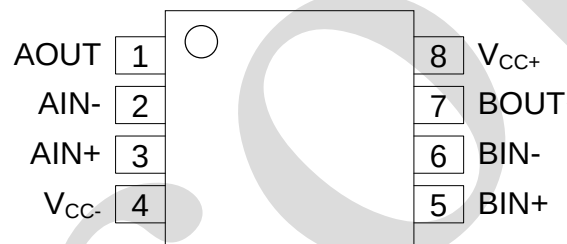


2、Block Diagram And Pin Description

2.1、Block Diagram



2.2、Pin Configurations



2.3、Pin Description

Pin No.	Pin Name	Description
1	AOUT	Amplifier a output terminal
2	AIN-	Inverting input of amplifier a
3	AIN+	Non-inverting input of amplifier a
4	VCC-	Negative power supply
5	BIN+	Non-inverting input of amplifier b
6	BIN-	Inverting input of amplifier b
7	BOUT	Amplifier b output terminal
8	VCC+	Positive power supply



3、Electrical Parameter

3.1、Absolute Maximum Ratings

Unless otherwise specified, $T_{amb}=25^{\circ}\text{C}$

Parameter	Symbol	Conditions		Value	Unit
Power supply voltage	V_{CC+}	-		+20	V
	V_{CC-}	-		-20	
Input voltage	V_{IN}	-		± 20	V
Thermal resistance	θ_{JA}	DIP8		110	$^{\circ}\text{C/W}$
		SOP8		160	
Operating junction temperature range	T_J	-		150	$^{\circ}\text{C}$
Storage temperature	T_{stg}	-		-65 to 150	$^{\circ}\text{C}$
Soldering temperature	T_L	10s	DIP	250	$^{\circ}\text{C}$
			SOP	260	$^{\circ}\text{C}$

3.2、Recommended Operating Conditions

Unless otherwise specified, $T_{amb}=25^{\circ}\text{C}$

Parameter	Symbol	Min.	Typ.	Max.	Unit
Power supply voltage	V_{CC+}	5	-	18	V
	V_{CC-}	-5	-	-18	V
Ambient temperature	T_{amb}	-40	-	85	$^{\circ}\text{C}$

3.3、Electrical Characteristics

3.3.1、DC Characteristics

(unless otherwise specified, $T_{amb}=25^{\circ}\text{C}$, $V_{CC}=15\text{V}$)

Parameter	Symbol	Test Conditions		Min.	Typ.	Max.	Unit
Input offset voltage	V_{IO}	$V_o=0\text{ V}$	$T_{amb}=25^{\circ}\text{C}$	-	0.5	4	mV
			Total temperature	-	-	5	
Input offset current	I_{IO}	$T_{amb}=25^{\circ}\text{C}$		-	10	150	nA
		Total temperature		-	-	200	
Input bias current	I_{IB}	$T_{amb}=25^{\circ}\text{C}$		-	250	800	nA
		Total temperature		-	-	1000	
Common mode input voltage range	V_{CM}	-		± 12	± 13	-	V
Output maximum swing	V_{OM}	$R_L \geq 600\Omega$, $V_{CC} = \pm 15\text{V}$		24	26	-	V
Output short-circuit current	I_{OS}	-		10	38	60	mA
Quiescent current	I_{CC}	$V_o=0\text{V}$, no load		-	5	10	mA

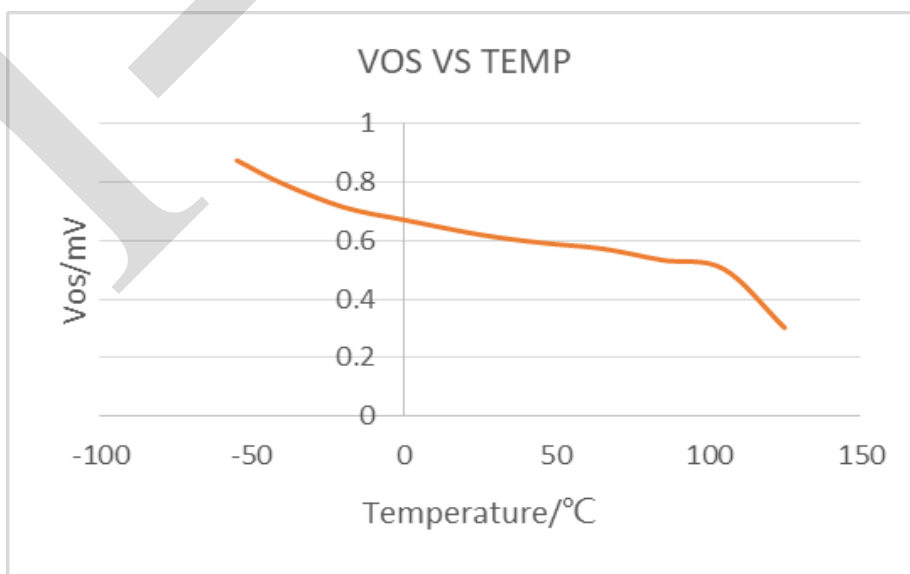
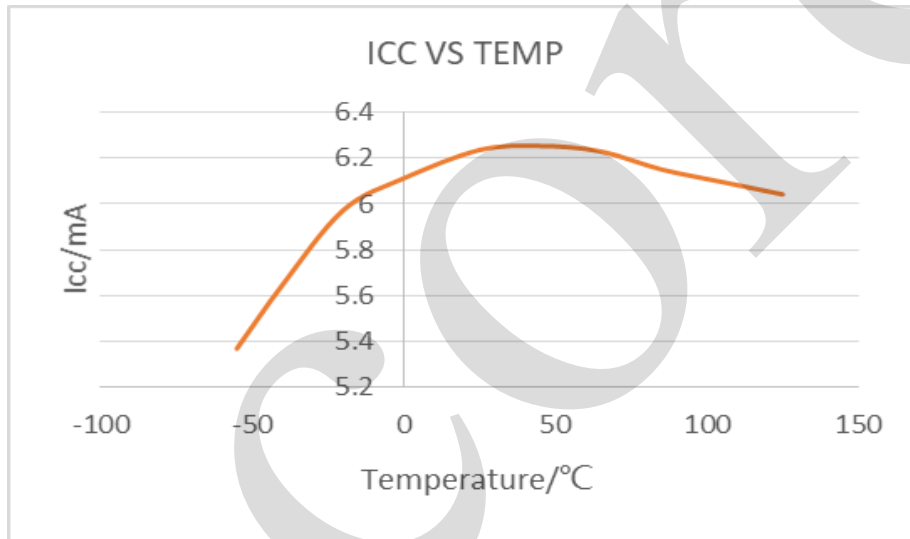


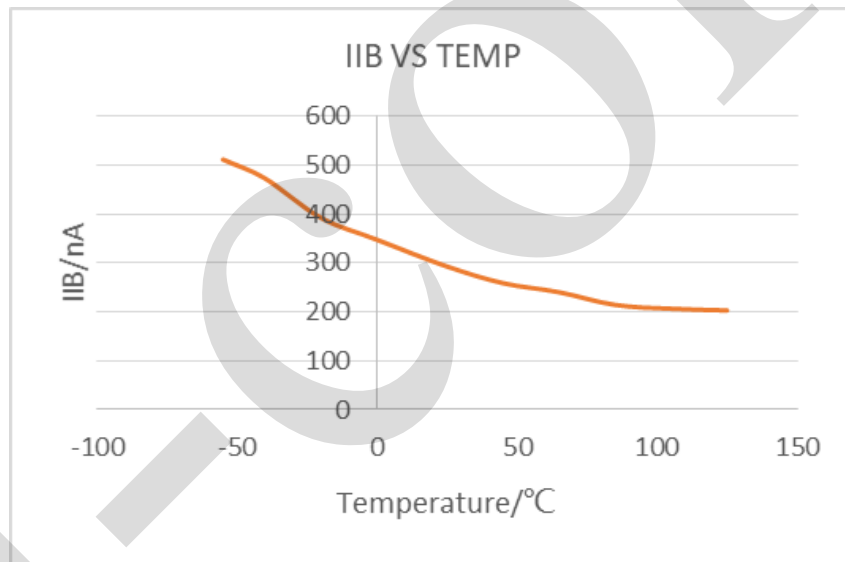
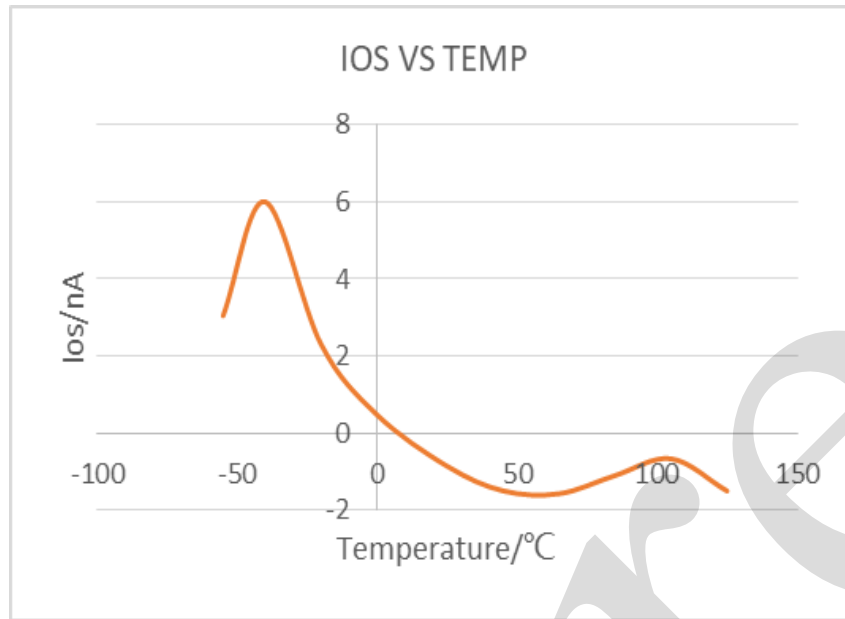
3.3.2、Communication Parameters

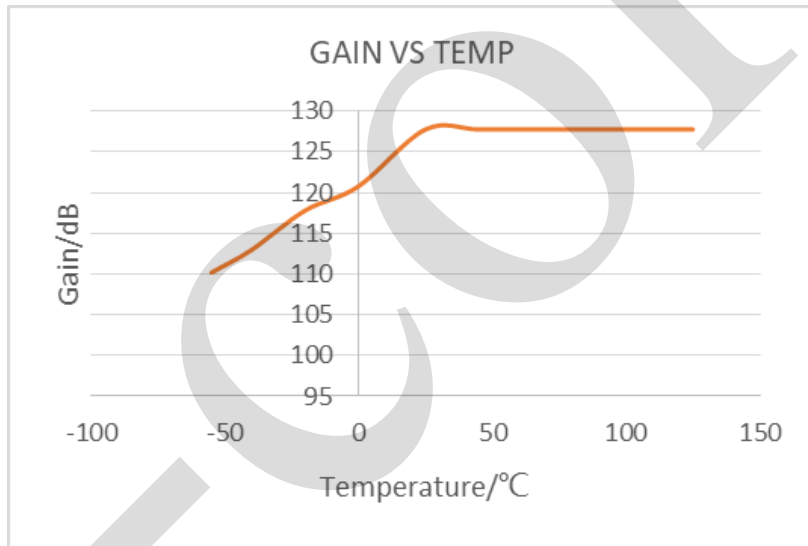
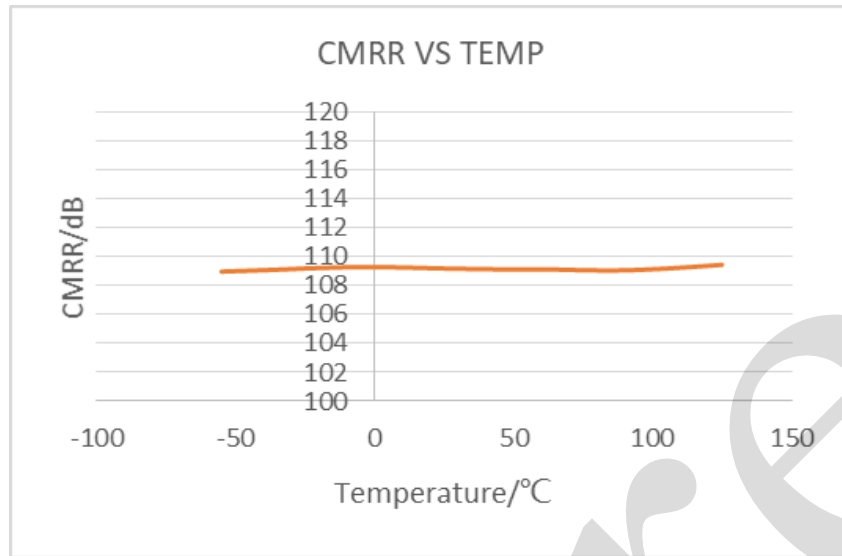
(unless otherwise specified, $T_{amb}=25^{\circ}\text{C}$, $V_{CC}=15\text{V}$)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Large signal voltage gain	A_{VOL}	$RL \geq 600\Omega$, $V_O = \pm 10\text{V}$	84	94	-	dB
		$RL \geq 2\text{k}\Omega$, $V_O = \pm 10\text{V}$	88	100	-	
Small signal voltage	A_{vd}	$f=10\text{kHz}$	-	67	-	dB
Unity gain bandwidth	GBW	$RL=600\Omega$, $CL=100\text{pF}$	-	7	-	MHz
common mode	CMRR	$V_{IC}=V_{ICR\ min}$	70	100	-	dB
Power supply rejection	PSRR	$V_{CC}=\pm 9\text{V}$ to $\pm 15\text{V}$,	80	100	-	dB
Swing rate	SR	-	-	6	-	V/us
Equivalent input noise voltage	e_N	$f=30\text{Hz}$	-	8	-	nV/ $\sqrt{\text{Hz}}$
		$F=1\text{kHz}$	-	5	-	nV/ $\sqrt{\text{Hz}}$

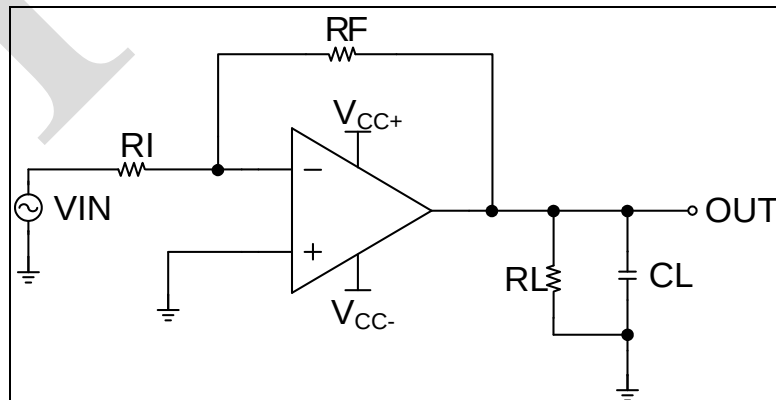
4、Testing Curves





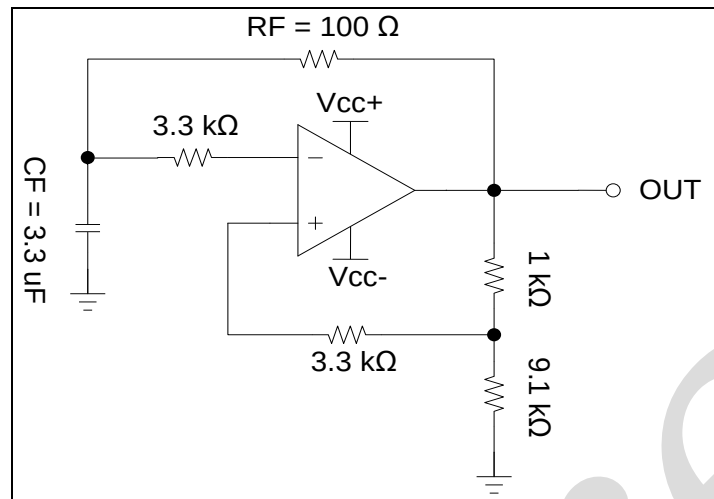


5、Testing Circuit

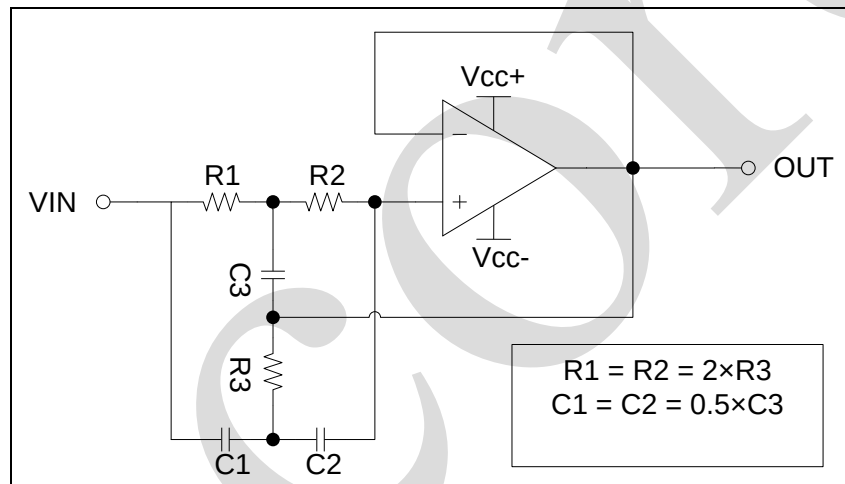




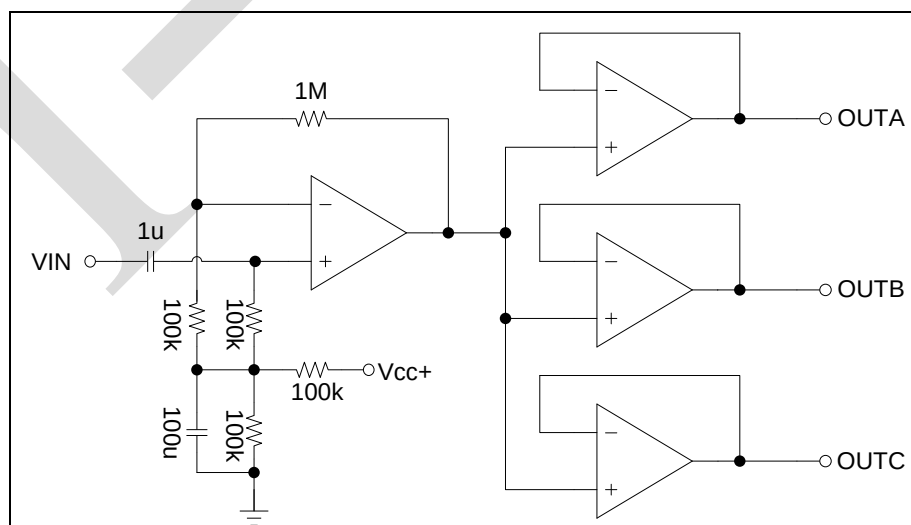
6、Typical Application Circuit And Application Note



0.5 Hz square wave oscillator



High q point filter

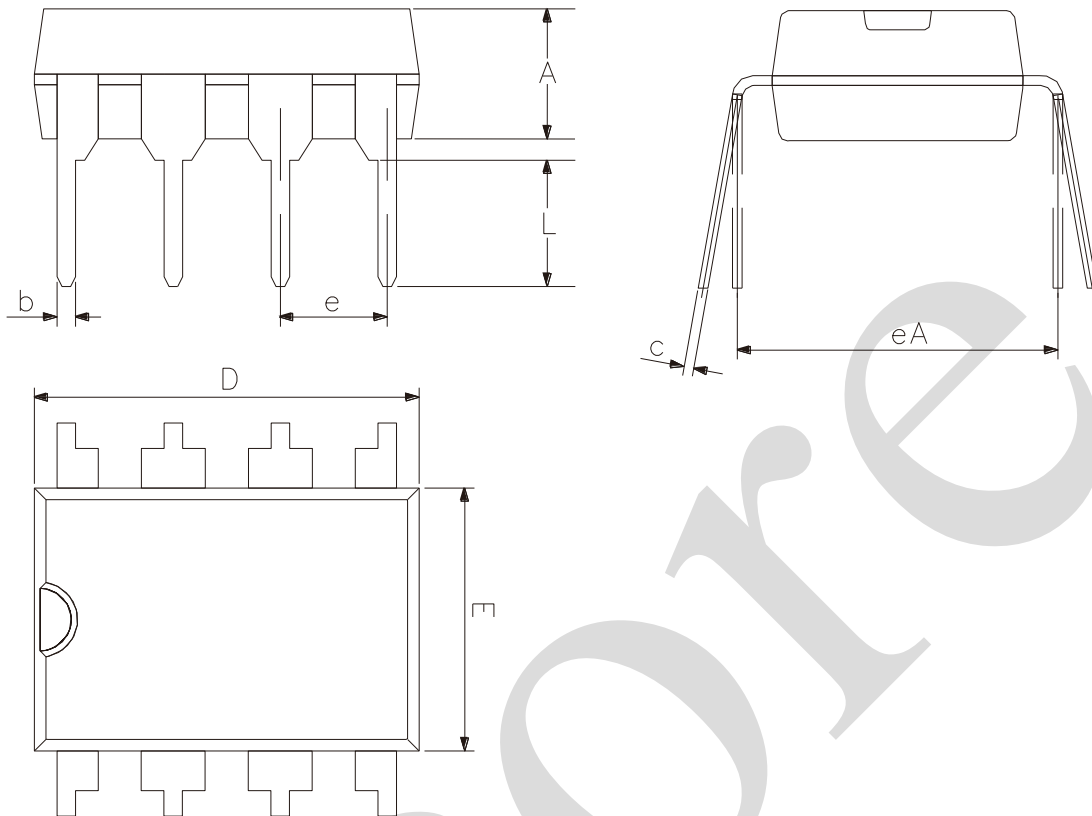


Audio distribution amplifier



7、Package Information

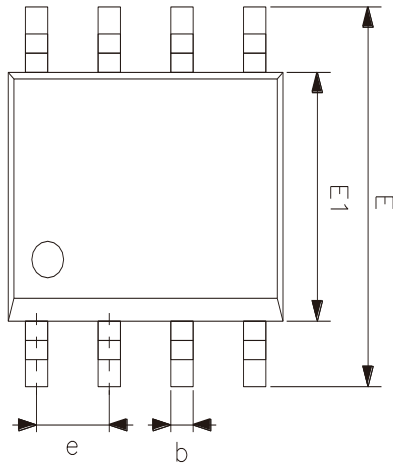
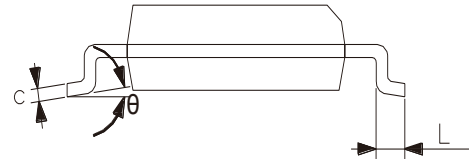
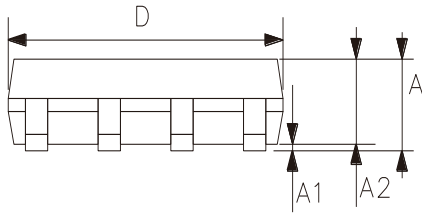
7.1. DIP8



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	—



7.2. 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°



8、Statements And Notes

8.1、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.									

8.2、Notes

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