

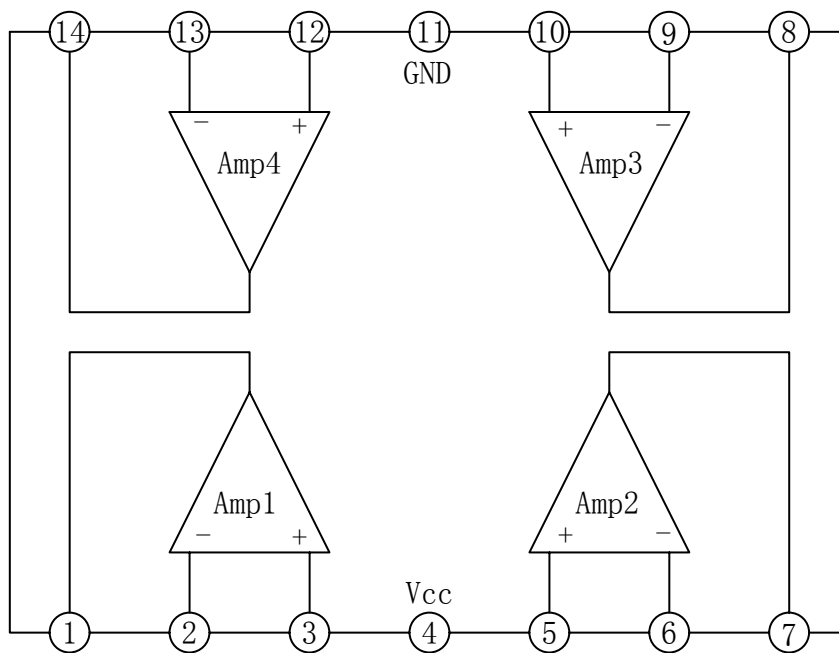
## FOUR OPERATIONAL AMPLIFIER-YD324

### DESCRIPTION AND FEATURES

These devices consist of four independent high-gain, phase –compensated operational amplifiers. A suitable recorder and Audio System for tone control. Can also used for telecom and instrument.

- \*Built-in phase-compensated circuit
- \*Operating supply voltage range :  $V_{CC}=3.0\sim 30.0V$  or  $V_{CC}=\pm 1.5\sim \pm 15V$
- \*Input voltage can low to 0V
- \*Output voltage range :  $0V\sim V_{CC}-1.5V$
- \*Supply current :  $I_{CC}=0.6mA (R_L=\infty)$
- \*DIP14 and SOP14

### BLOCK DIAGRAM



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**PIN DESCRIPTION**

PIN NO.	CONTENT	SYMBOL	PIN NO.	CONTENT	SYMBOL
1	Output of CH1	OUT <sub>1</sub>	8	Output of CH3	OUT <sub>3</sub>
2	Inverting Input of CH1	1N-(1)	9	Inverting Input of CH3	1N-(3)
3	Non-inverting Input of CH1	1N+(1)	10	Non-inverting Input of CH3	1N+(3)
4	Supply Voltage	V <sub>CC</sub>	11	Ground	GND
5	Non-inverting Input of CH2	1N+(2)	12	Non-inverting Input of CH4	1N+(4)
6	Inverting Input of CH2	1N-(2)	13	Inverting Input of CH4	1N-(4)
7	Output of CH2	OUT <sub>2</sub>	14	Output of CH4	OUT <sub>4</sub>

**ABSOLUTE MAXIMUM RATINGS**

PARAMETER	SYMBOL	VALUE		UNIT
		MIN	MAX	
Supply Voltage	V <sub>CC</sub>		32	V
Differential Input Voltage	V <sub>ID</sub>		32	V
Input Voltage	V <sub>I</sub>	-0.3	32	V
Total Dissipation(DIP14)	P <sub>D1</sub>		720	mW
Total Dissipation(SOP14)	P <sub>D2</sub>		300	mW
Operating Temperature Range	Topr	-30	85	°C
Storage Temperature Range	Tstg	-55	125	°C

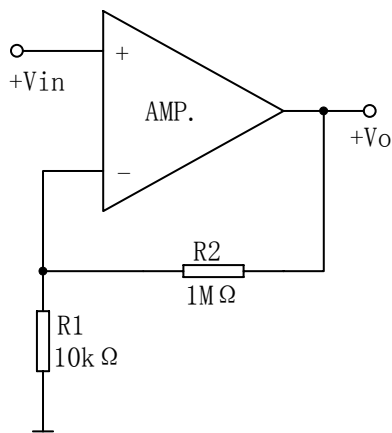
**ELECTRICAL CHARACTERISTICS** (T<sub>amb</sub>=25°C, V<sub>CC</sub>=9V, Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Input Offset Voltage	V <sub>IO</sub>			±2	±7	mv
Input Offset Current	I <sub>IO</sub>			±5	±50	nA
Input Bias Current	I <sub>IB</sub>			45	250	
Common-mode Input Voltage Range	V <sub>ICM</sub>		0		V <sub>CC</sub> -1.5	V
Common-mode Rejection Ratio	K <sub>CmR</sub>		65	80		dB
Open Loop Voltage Gain	A <sub>VO</sub>	V <sub>CC</sub> =15V, R <sub>L</sub> ≥ 2k Ω	88	100		
Output Voltage Range	V <sub>O</sub>		0		V <sub>CC</sub> -1.5	V

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Supply Voltage Rejection Ratio	$K_{SVR}$		65	100		dB
Output Current	$I_{OS}$		20	40		mA
Output Current Of Sink	$I_{OSINK}$		10	20		
Supply Current	$I_{CCQ}$			0.6	2	
Supply Current	$I_{CCQ}$	$V_{CC}=30V$		1.5	3	
Channel Separation	$C_S$	$f=1k\sim 20kHz$		120		dB

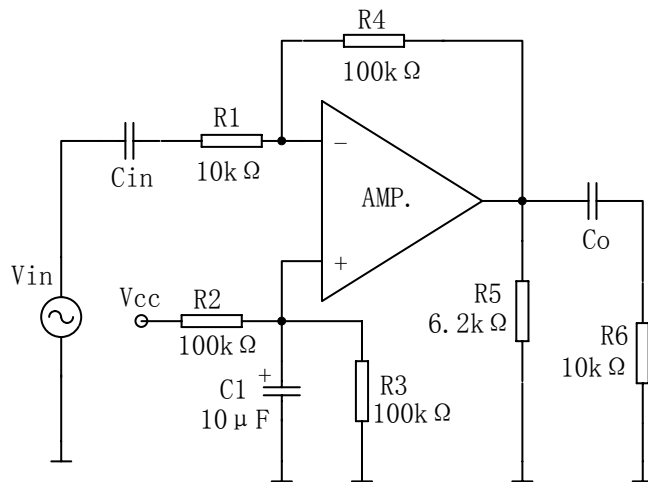
### APPLICATION CIRCUIT

#### DC AMPLIFICATION



$$A_v = 1 + R_2/R_1$$

#### AC AMPLIFICATION

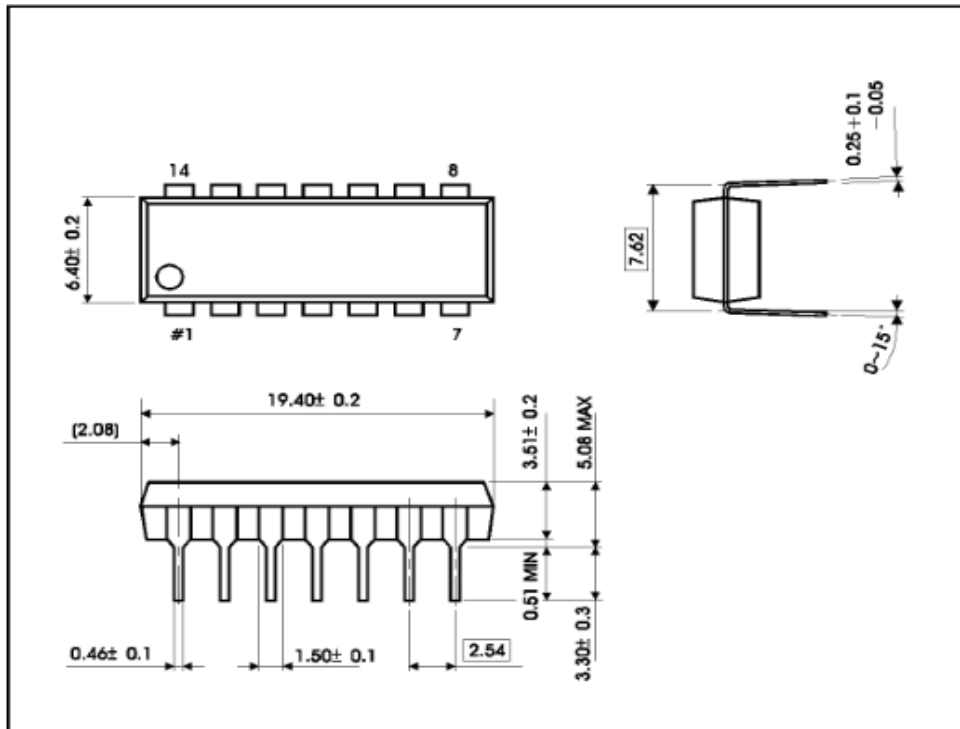


$$A_v = R_4/R_1$$

OUTLINE DRAWING

**DIP-14**

unit:mm



**SOP-14**

unit:mm

