

**Description**

The S324 consists of four independent high gain Internally frequency compensated operational amplifiers designed to operate from a single power supply over a wide range of voltage.

**Features**

- Input common mode voltage range includes ground
- Internally frequency compensated for unity gain
- Large DC voltage gain : 100dB
- Wide bandwidth for unity gain : 1 MHz
- Very low power consumption
- Wide supply voltage range : Single : 3V ~ 36V, Dual :  $\pm 1.5 \sim \pm 18V$

**Applications**

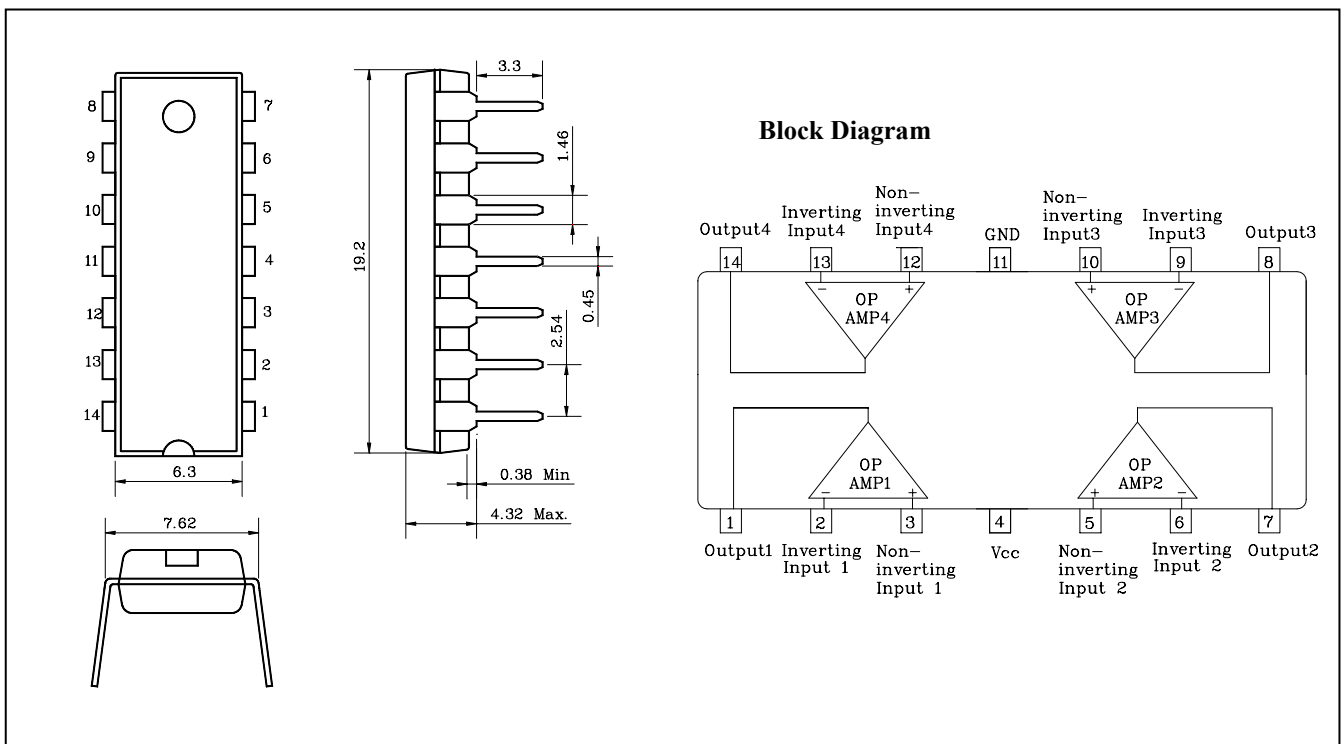
- Transducer amplifier
- DC gain blocks
- Conventional operational amplifiers

**Ordering Information**

Type NO.	Marking	Package Code
S324P	S324P	DIP-14

**Outline Dimensions**

unit : mm



## Absolute maximum ratings

Characteristic	Symbol	Ratings	Unit
Supply voltage	$V_{CC}$	36 or $\pm 18$	V
Differential input voltage	$V_{IND}$	36	V
Input voltage	$V_{IN}$	-0.3 ~ +36	V
Power Dissipation	$P_D$	570	mW
Operating temperature	$T_{opr}$	-40 ~ +85	°C
Storage temperature	$T_{stg}$	-55 ~ 150	°C

## Electrical Characteristics

(Unless otherwise specified.  $V_{CC} = 5V$ ,  $V_{EE} = GND$  and  $-40\text{ °C} \leq T_a \leq +85\text{ °C}$ )

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit	
Input offset voltage	$V_{IOS}$	$V_{CC} = 5\sim 30V$ $R_g = 0\Omega$	-	2	7	mV	
Input offset current	$I_{IOS}$	-	-	5	30	nA	
Input bias current	$I_{IB}$	-	-	45	150	nA	
Input common mode voltage range	$V_{ICR}$	$V_{CC} = 30V$	0	-	$V_{CC}$ -1.5	V	
Supply current	$I_{CC}$	$R_L = \infty$ , All Channel	-	0.7	1.2	mA	
Large signal voltage gain	$G_V$	$V_{CC} = 15V$ $R_L \geq 2\text{ K}\Omega$	86	100	-	dB	
Output voltage swing	$V_{OH}$	$V_{CC} = 30V$	$R_L = 2\text{ K}\Omega$	26	-	-	V
			$R_L = 10\text{ K}\Omega$	27	28	-	
	$V_{OL}$	$V_{CC} = 5V$ , $R_L \leq 10\text{ K}\Omega$	-	5	20	mV	
Common mode rejection ratio	CMRR	( $T_a = 25\text{ °C}$ )	65	85	-	dB	
Power supply rejection ratio	PSRR	( $T_a = 25\text{ °C}$ )	65	100	-	dB	
Output source current	$I_{O+}$	$V_{CC} = 15V$ $V_{IN+} = 1V$ , $V_{IN-} = 0V$	20	40	-	mA	
Output sink current	$I_{O-}$	$V_{CC} = 15V$ $V_{IN+} = 0V$ , $V_{IN-} = 1V$	10	20	-	mA	
		$V_{OUT} = 200mV$ , $V_{IN+} = 0V$ , $V_{IN-} = 1V$ , $V_{CC} = 15V$	12	45	-	$\mu A$	

## Electrical Characteristic Curves

Fig. 1  $I_{CC}-V_{CC}$

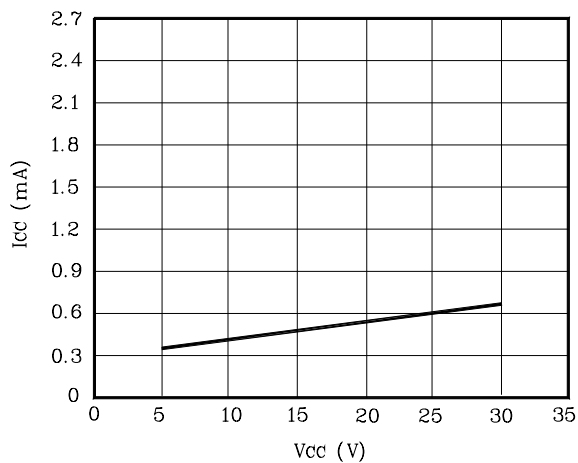


Fig. 2  $I_{IB}-V_{CC}$

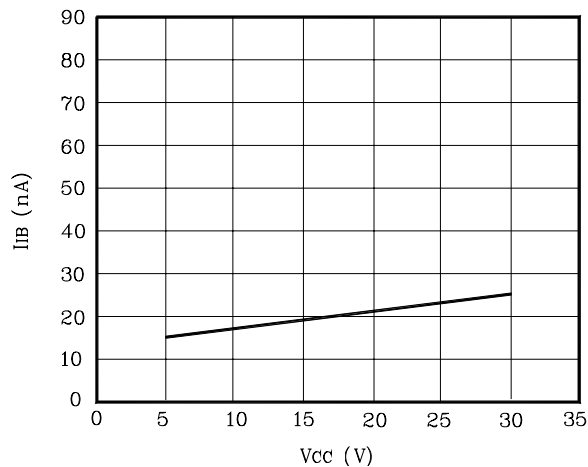


Fig. 3  $V_{IOS}-T_a$

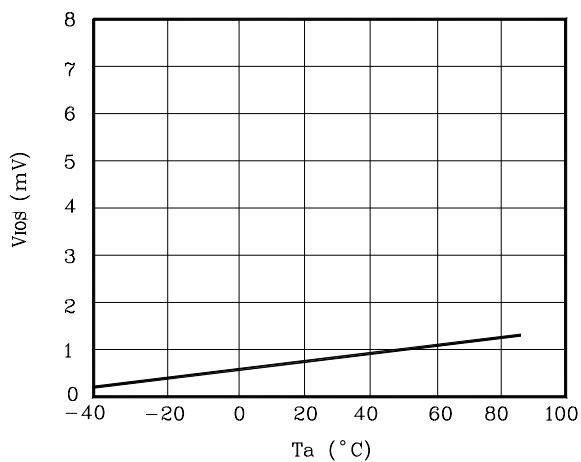


Fig. 4  $I_O-T_a$

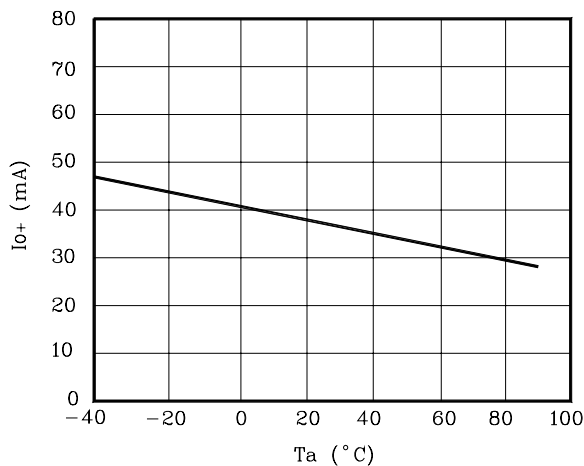


Fig. 5 CMRR-f

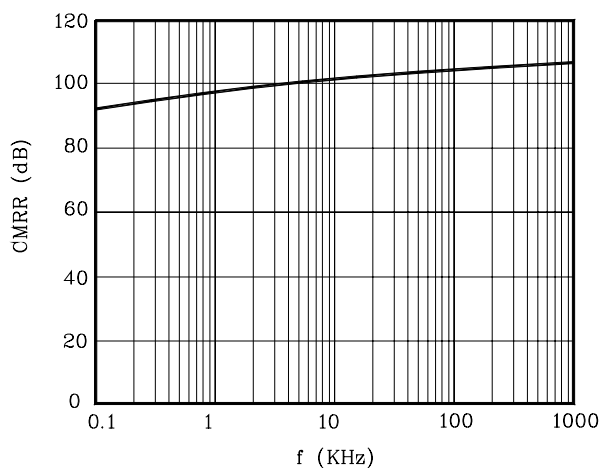


Fig. 6  $V_{OR}-f$

