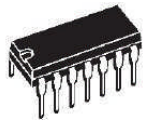
Description

The LM324 consists of four independent, high gain, internally frequency compensated operational amplifiers which were designed specifically to operate from a single power supply over a wide range of voltages. Operation from split power supplies the magnitude of the power supply voltage. Application areas include transducer amplifiers, DC gain blocks and all the conventional op amp circuits.

Features

- Wide range of supply voltages
  Low supply current drain independent of supply voltage
  Low input biasing current
- Low input offset voltage and offset current
- Input common-mode voltage range includes ground
  Differential input voltage range equal to the power supply voltage
  DC voltage gain 100 V/ mV Typ



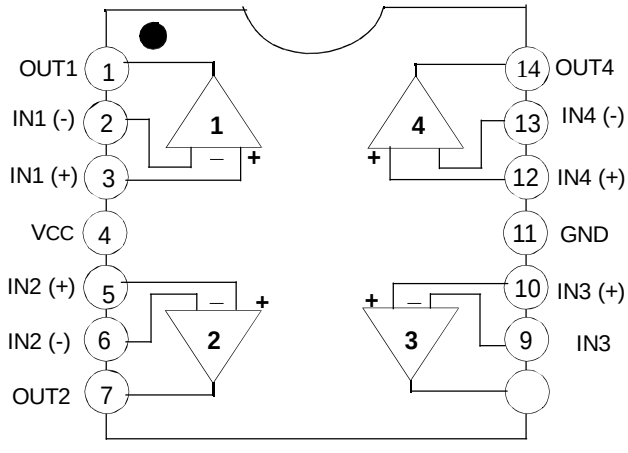
PIP - 14

SOP - 14

Package

Internal Block Digram

PIN CONNECTIONS (top view)



Electrical Characteristics

(Vcc= 5.0V V EE =GND TA= 25^{0}C unless otherwise specified)

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
Input Offset	VIO	Vcc=5V to MAX, Vic=VICR min, Vo=1.4V	25^{0}C		3	7	mV
			Full range			9	
Input Offset Current	IIO	Vo=1.4V	25^{0}C		2	50	nA
Input Bias Current	IBIAS	Vo=1.4V	25^{0}C		-20	-250	nA
Common-mode input voltage range	VI(R)	Vcc=5V to MAX	25^{0}C	0		Vcc-1.5	V
High-level output voltage	VO(H)	Vcc=MAX,RL=2KΩ		26			V
	VO(L)	Vcc=MAX,RL=10KΩ	Full range	27	28		
Low-level output voltage	AVD	RL=10K Ω	Full range		5	20	mV
Large-signal differential voltage amplification		Vcc=15V, Vo=1V to 11V	25^{0}C	25	100		V/mV
		RL=2KΩ	Full range	15			
Common-Mode rejection ratio	CMRR	Vcc=15V to MAX VIC=VICR min	25^{0}C	65	80		dB
KSVR Supply voltage rejection ratio	PSRR	Vcc=5V to MAX f=1kHz to 20kHz	25^{0}C	65	100		dB
Crosstalk attenuation	Vo1/Vo2		25^{0}C		120		dB
	Io	Vcc=15V, VID = 1V, Vo=0	25^{0}C	-20	-30		mA
			Full range	-10			
		Vcc=15V, VID=-1V, Vo=0	25^{0}C	10	20		
			Full range	5			
		VID=-1V, Vo=200mA	25^{0}C	12	30		mA
Short-circuit out put current	Ios	Vcc at 5V, GND at –5V, Vo=0	25^{0}C		+40	+60	mA
Supply current (four amplifiers)	Icc	Vo=2.5V, No load	Full range		0.7	1.2	mA
		Vcc=MAX, Vo= 0.5Vcc, No load			1.1	3	

*All characteristics are measured under open loop conditions with zero common-mode input voltage unless otherwise specified. !MAX"Vcc for testing purposes is 30 V. full range is 0^{0}C to 70 ^{0}C

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Power Supply Voltage	Vcc	- 16 or 32	V
Differential Input Voltage	$V_{I(DIFF)}$	32	V
Input Voltage	V_I	- to 32	V
Output Short Circuit to ND Vcc15V,(one Amp)		Continuous	
Operating Temperature Range	T_{OPR}	0 to 70	^0C
Shorage Temperature Range		- to +	^0C

Typical Applications Circuit

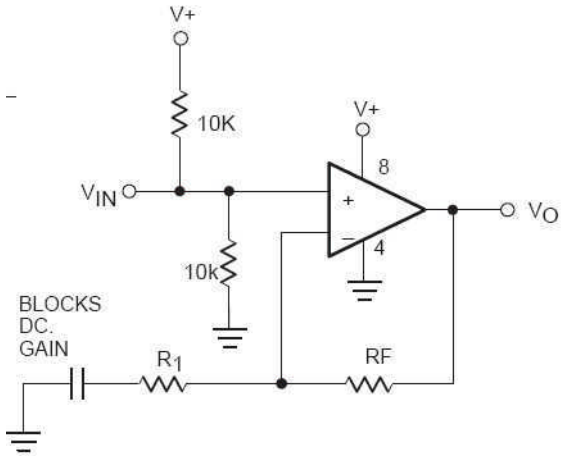


Figure 1. Non-Inverting

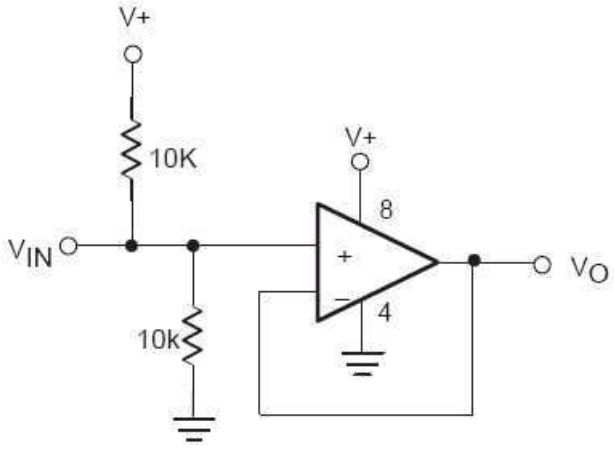


Figure 2. Input Biasing Voltage-

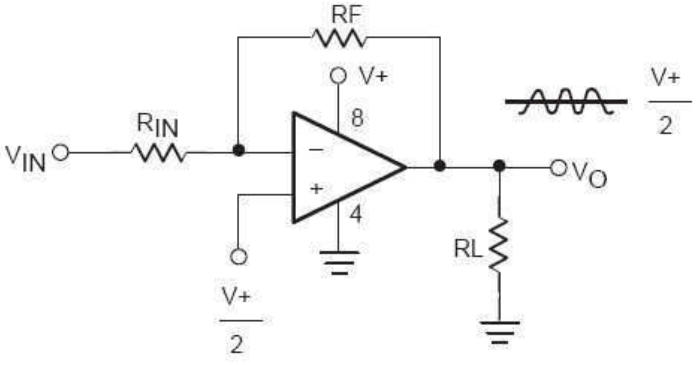


Figure 3. Single Supply Inverting

Ordering Information

ORDERING NUMBE	PACKAGE	MARKING
LM324	SOP-14 / DIP-14	LM324

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