

6427525 N E C ELECTRONICS INC

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T-79-10

NEC
NEC Electronics Inc.

μ PC324
QUAD LOW-POWER
OPERATIONAL AMPLIFIER

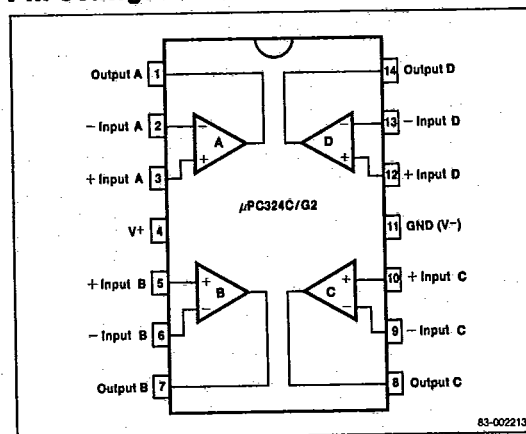
Description

The μ PC324 is a quad operational amplifier designed to operate from either single or split power supplies, with very low current drain. The input common mode voltage of these amplifiers includes ground and they are internally frequency compensated for unity gain stability.

Features

- ☐ Internal frequency compensation
- ☐ Large output voltage swing: 0 V to $V^+ - 1.5$ V DC
- ☐ Input common mode voltage range includes ground
- ☐ Wide power supply range:
Single supply 3 V to 30 V DC
Dual supplies ± 1.5 V to ± 15 V DC
- ☐ LM324 direct replacement

Pin Configuration



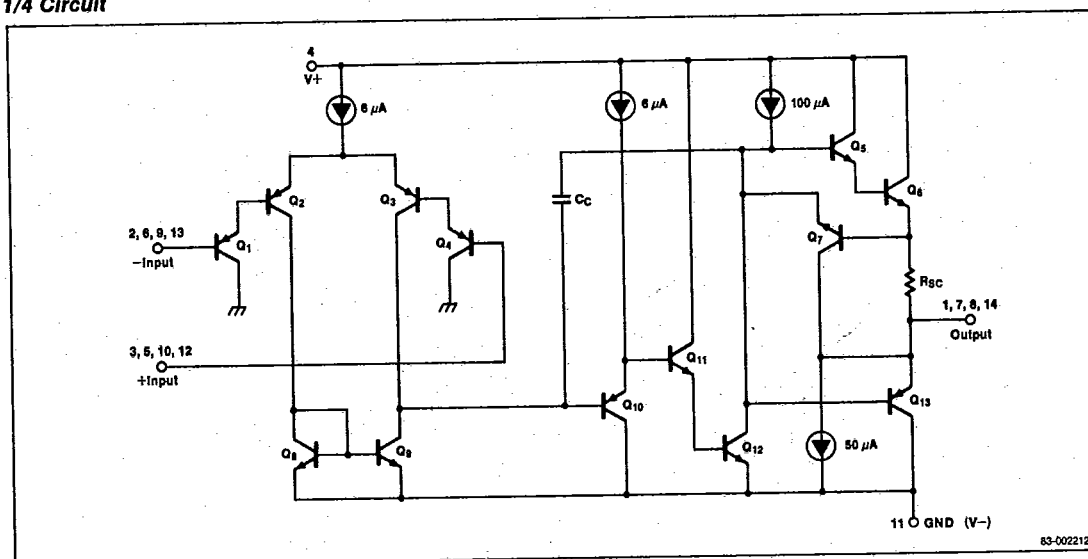
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Ordering Information

Part Number	Package	Operating Temperature Range
μ PC324C	Plastic DIP	0° to +70°C
μ PC324G2	Plastic Miniflat	0° to +70°C

Equivalent Circuit

1/4 Circuit



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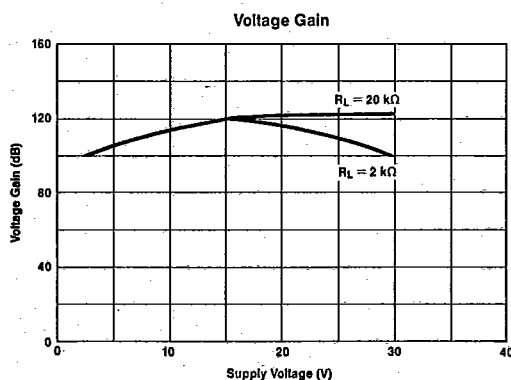
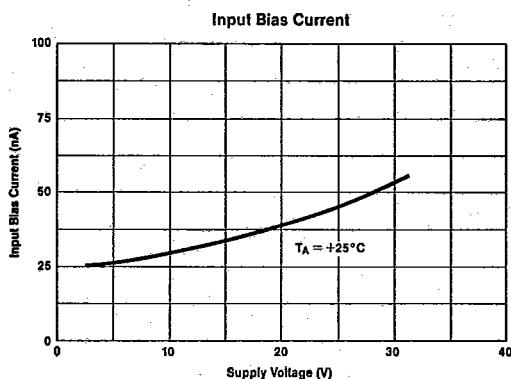
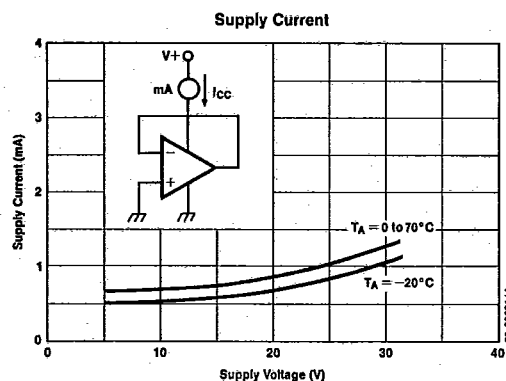
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 μ PC324**NEC****Absolute Maximum Ratings** $T_A = 25^\circ\text{C}$, $V_{\pm} = \pm 5\text{ V}$

Voltage Between V_+ and V_-	32 V
Differential Input Voltage	32 V
Input Voltage	-0.3 to +32 V
Power Dissipation, C Package	570 mW
Power Dissipation, G Package	550 mW
Operating Temperature Range, C or G Package	0 to +70°C
Storage Temperature Range, C or G Package	-55 to +125°C

Electrical Characteristics $T_A = 25^\circ\text{C}$, $V_{\pm} = \pm 5\text{ V}$

Parameter	Symbol	Limit			Test Conditions
		Min.	Typ.	Max.	
Input Offset Voltage	V_{IO}	2	7	mV	$R_S = 0\ \Omega$
Input Bias Current	I_b	45	250	nA	
Input Offset Current	I_{IO}	5	50	nA	
Common Mode Input Voltage Range	V_{ICM}	0		V_+ -1.5	V
Supply Current	I_{CC}	0.8	2	mA	$R_L = \infty$ on all op-amps
Large Signal Voltage Gain	A_{VOL}	88	100	dB	$R_L \geq 2\text{ k}\Omega$
Output Voltage Swing	V_{OH}	0		V_+ -1.5	V $R_L = 2\text{ k}\Omega$
Common Mode Rejection Ratio	CMRR	65	85	dB	
Supply Voltage Rejection Ratio	SVRR	65	10	dB	
Channel Separation	CS	120		dB	$f = 1\text{ kHz to } 20\text{ kHz}$
Output Current (Source)	$I_{OSOURCE}$	20	40	mA	+ Input = 1 V, - Input = 0 V
Output Current (Sink)	I_{OSINK}	10	20	mA	- Input = 1 V, + Input = 0 V
Output Current (Sink)	I_{OSINK}	12	50	mA	- Input = 1 V, + Input = 0 V

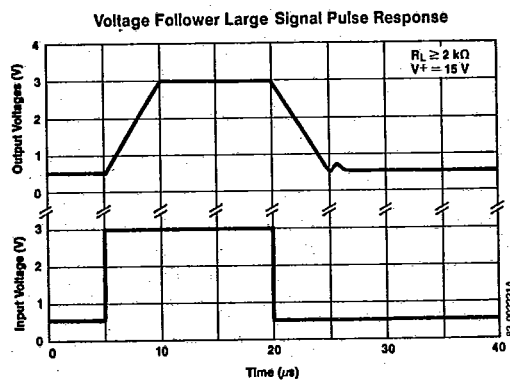
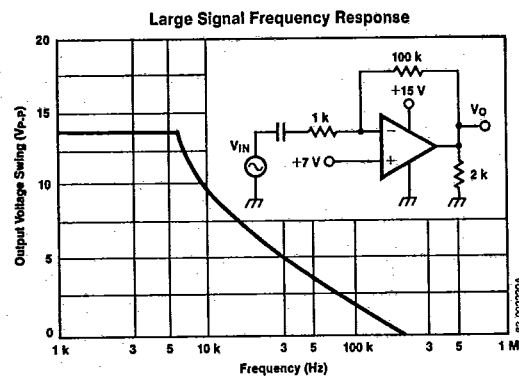
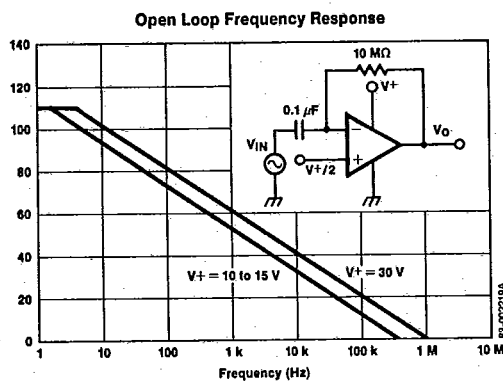
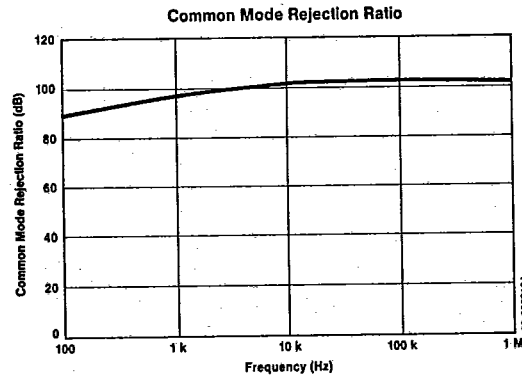
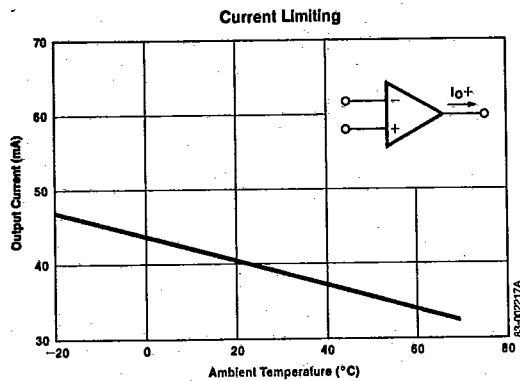
Operating Characteristics $T_A = 25^\circ\text{C}$ 

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NEC **μ PC324****Operating Characteristics (Cont.)** $T_A = 25^\circ\text{C}$ **3**