



AiP074

Quad JFET Operational Amplifier

Product Specification

Specification Revision History:

Version	Date	Description
2019-09-A1	2019-09	New
2024-12-B1	2024-12	Update the template



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1、General Description

The AiP074 is a low-noise JEFT input quad-channel operational amplifier, primarily utilized in systems requiring low-noise audio amplification and related applications.

Features:

- Low input noise: 18 nV/√Hz (Typical value)
- Low distortion: 0.01% (Typical value)
- Low input current and low offset current
- High input impedance: $10^{12}\Omega$ (Typical value)
- High slew rate: 13V/us (Typical value)
- High bandwidth: 3.5MHz (Typical value)
- Substrate connected to ground
- Packaging information: DIP14/SOP14

Ordering Information:

Tube packing specifications:

Part number	Packaging form	Marking code	Tube quantity	Boxed tube quantity	Boxed quantity	Notes
AiP074DA14.TB	DIP14	AiP074	25 PCS/tube	40 tube/box	1000 PCS/box	Dimensions of plastic enclosure: 19.0mm×6.4mm Pin spacing: 2.54mm

Reel packing specifications:

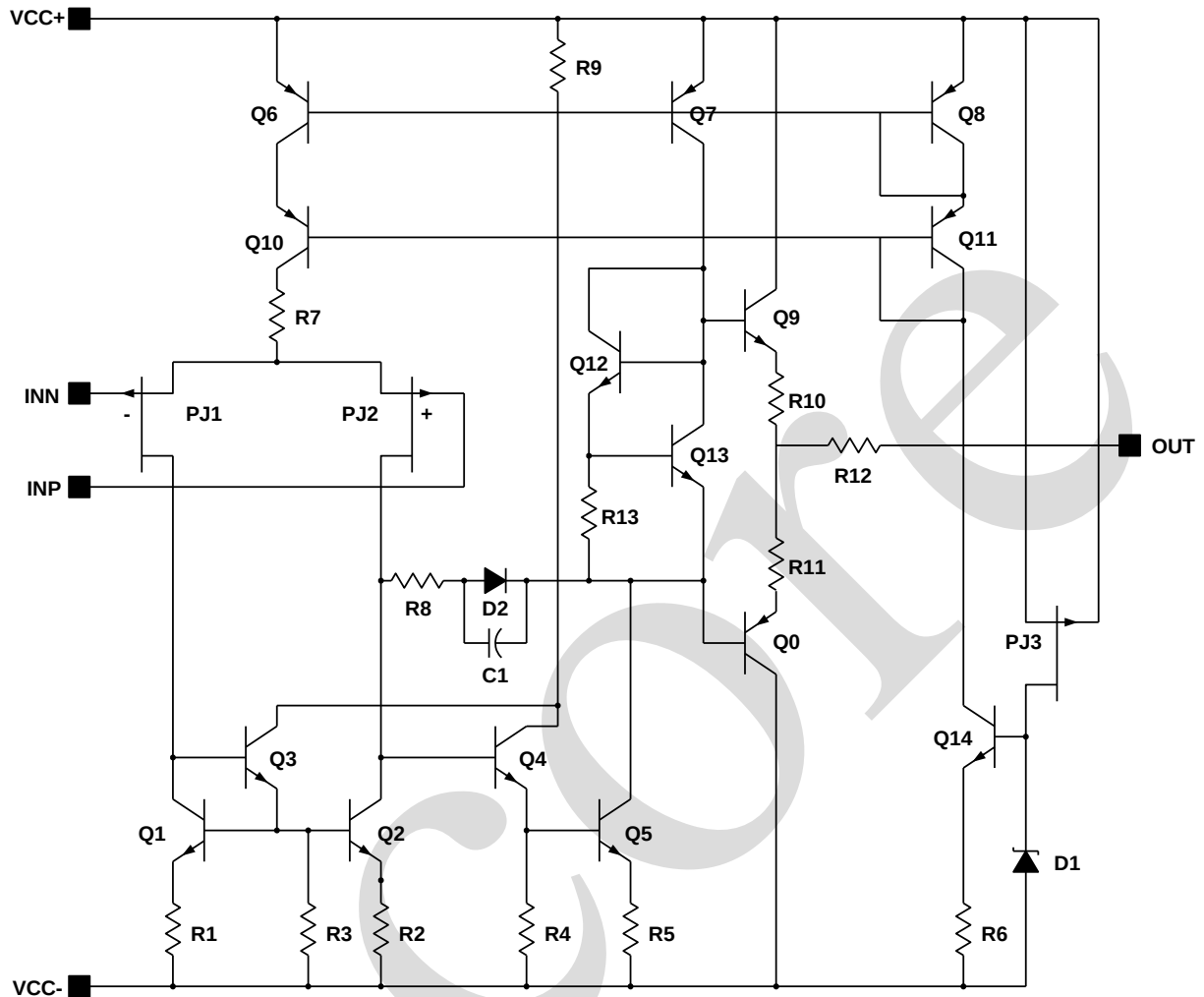
Part number	Packaging form	Marking code	Tube quantity	Boxed tube quantity	Notes
AiP074SA14.TR	SOP14	AiP074	4000PCS/reel	8000PCS/box	Dimensions of plastic enclosure: 8.7mm×3.9mm Pin spacing: 1.27mm

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

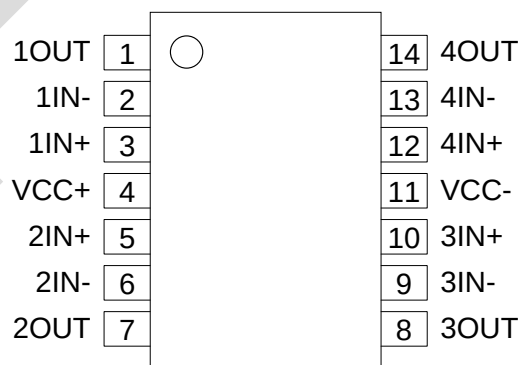


2、Block Diagram And Pin Description

2.1、Block Diagram (per channel)



2.2、Pin Configurations





2.3、Pin Description

Pin No.	Pin Name	Description
1	1OUT	1-channel output
2	1IN-	1-channel negative input
3	1IN+	1-channel positive input
4	VCC+	positive power supply
5	2IN+	2-channel positive input
6	2IN-	2-channel negative input
7	2OUT	2-channel output
8	3OUT	3-channel output
9	3IN-	3-channel negative input
10	3IN+	3-channel positive input
11	VCC-	negative power supply
12	4IN+	4-channel positive input
13	4IN-	4-channel negative input
14	4OUT	4-channel output

3、Electrical Parameter

3.1、Absolute Maximum Ratings

($T_{amb}=25^{\circ}\text{C}$, unless otherwise specified.)

Parameter	Symbol	Conditions		Value	Unit
Supply voltage	VCC	-		-18 to +18	V
Differential input voltage	V _{ID}	-		±30	V
Input voltage	V _I	-		±15	V
Thermal resistance	θ _{JA}	DIP14		88	°C/W
		SOP14		131	
Storage temperature	T _{stg}	-		-65 to 150	°C
Soldering temperature	T _L	10s	DIP14	245	°C
			SOP14	260	



3.2、Electrical Characteristics

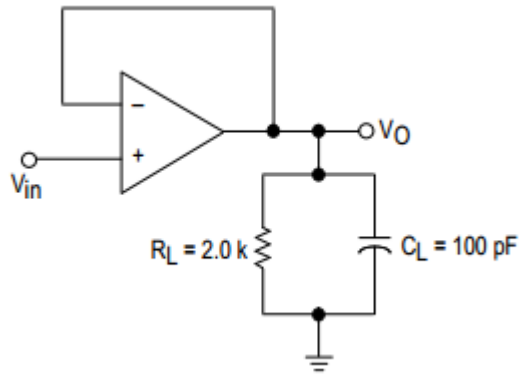
(VCC=±15V, unless otherwise specified.)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Input offset voltage	V_{IO}	$V_O=0, R_S=50\Omega$	-	3	10	mV
		$V_O=0, R_S=50\Omega$	-	-	15	mV
Input offset voltage average temperature coefficient	α_{VIO}	$V_O=0, R_S=50\Omega$	-	10	-	$\mu V/^\circ C$
Input offset current	I_{IO}	$V_O=0$	-	5	100	pA
		$V_O=0$	-	-	10	nA
Input base current	I_{IB}	$V_O=0$	-	30	200	pA
		$V_O=0$	-	-	20	nA
Common-mode input voltage range	V_{ICR}	-	± 11	-12 to 15	-	V
Output voltage swing	V_{OM}	$R_L=10K\Omega$	± 12	± 13.5	-	V
		$R_L \geq 10K\Omega$	± 12	-	-	V
		$R_L \geq 2K\Omega$	± 10	± 12	-	V
Large-signal differential voltage amplification	A_{VD}	$V_O=\pm 10V, R_L \geq 2K\Omega$	25	200	-	V/mV
		$V_O=\pm 10V, R_L \geq 2K\Omega$	15	-	-	
Unit gain bandwidth	BW	-	-	3.5	-	MHz
Input resistance	r_i	-	-	10^{12}	-	Ω
Common-mode rejection ratio	CMRR	$V_{IC}=V_{ICRmin}, V_O=0, R_S=50\Omega$	70	86	-	dB
Output short-circuit current	I_{OS}	-	10	40	60	mA
			10	-	60	
Power supply rejection ratio	K_{SVR}	$V_{CC}=\pm 9V$ to $\pm 15V$ $V_O=0, R_S=50\Omega$	70	86	-	dB
Quiescent current (per channel)	I_{CC}	$V_O=0V$, No load	-	1.4	2.5	mA
			-	-	2.5	
channel isolation	V_{O1}/V_{O2}	$A_{VD}=100$	-	120	-	dB
Slew rate	SR	$V_I=10V, R_L=2K\Omega$ $C_L=100pF$	8	13	-	V/us
Rise time	t_r	$V_I=20mV, R_L=2K\Omega$ $C_L=100pF$	-	0.1	-	μs
Overshoot	K_{OV}		-	10	-	%
Equivalent input noise voltage	V_n	$R_S=100\Omega, f=1KHz$	-	15	-	$nV/\sqrt{Hz}$
Total harmonic distortion	THD	$V_O=2V_{PP}$, $A_{VD}=20dB, R_S \leq 1k\Omega$, $R_L=2k\Omega, f=1kHz$	-	0.01	-	%

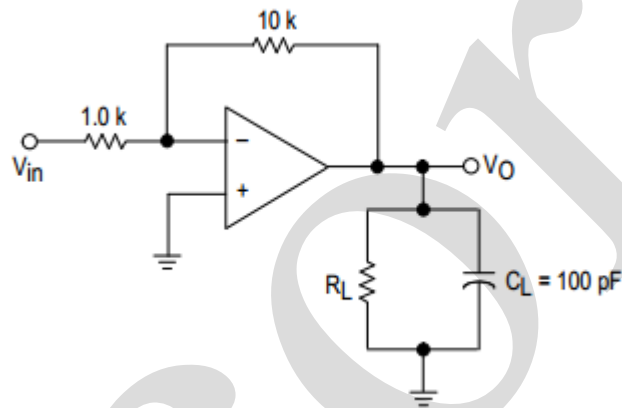


4、Testing Circuit

Unit gain follower:



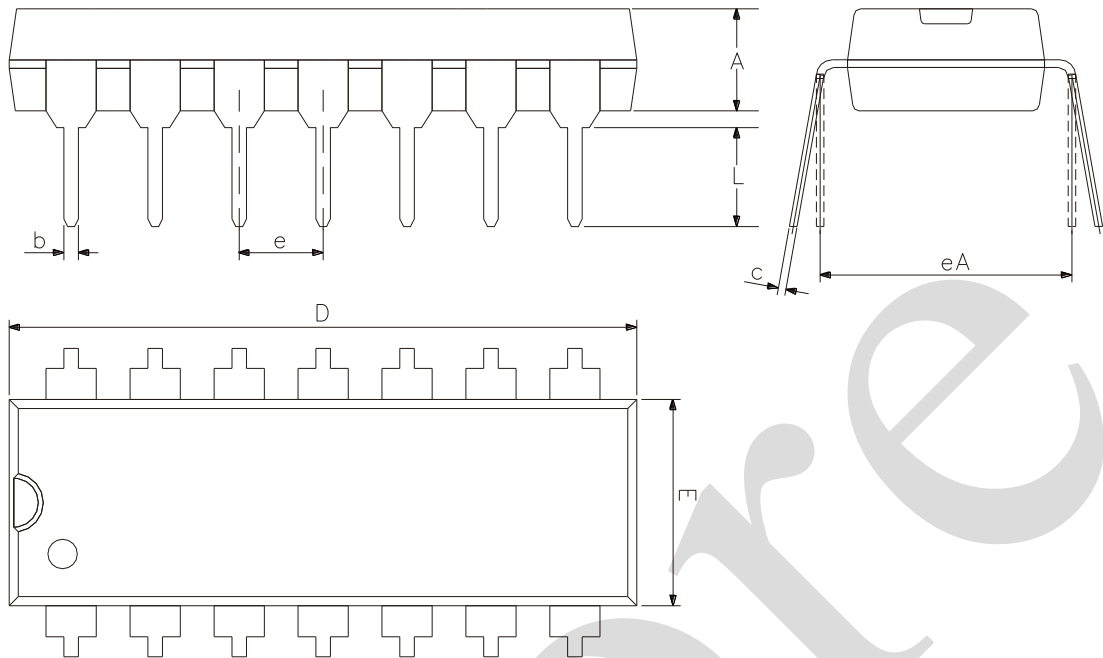
10x gain amplifier:





5、Package Information

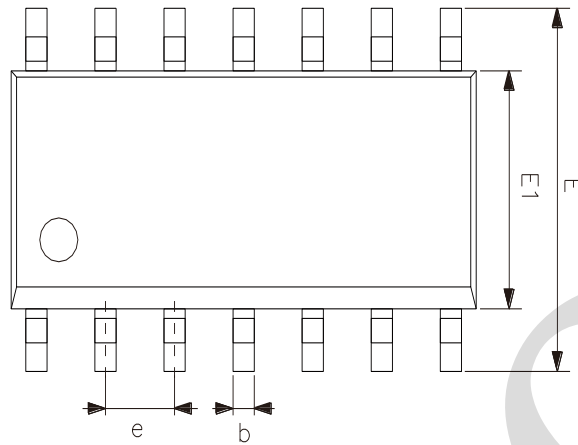
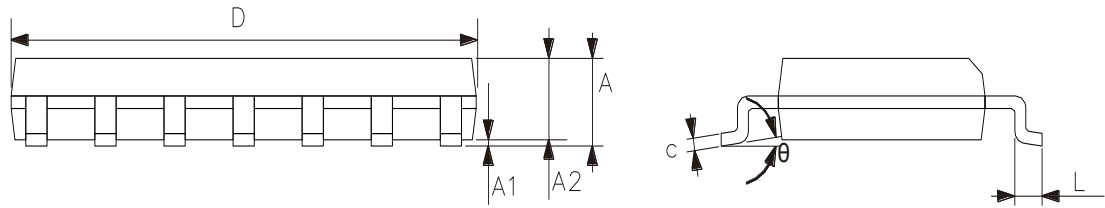
5.1、DIP14



2023/12/A	Dimensions In Millimeters	
Symbol	Min	Max
A	3.05	3.60
b	0.33	0.56
c	0.20	0.36
D	18.80	19.40
E	6.20	6.60
e	2.54	
eA	7.62	10.90
L	2.92	—



5.2、SOP14



2023/12/A	Dimensions In Millimeters	
Symbol	Min.	Max.
A	1.50	1.75
A1	0.05	0.25
A2	1.30	—
b	0.33	0.50
c	0.19	0.25
D	8.43	8.76
E	5.80	6.25
E1	3.75	4.00
e	1.27	
L	0.40	0.89
θ	0°	8°



6、Statements And Notes

6.1、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.									

6.2、Notes

We recommend you to read this chapter carefully before using this product.

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