

Product Specification

XBLW UA741

General-purpose Operational Amplifiers











Description

The UA741 is a general-purpose operational amplifiers.

The amplifiers offer many features which make their application nearly foolproof: overload protection on the input and output, no latch-up when the common-mode range is exceeded, as well as freedom from oscillations.

Features

- Overload Protection on the Input and Output
- No Latch-Up When the Common-Mode Range is Exceeded

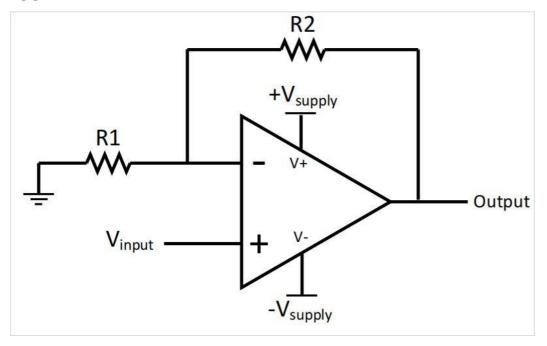
Apply

- Comparators
- Multivibrators
- DC Amplifiers
- Summing Amplifiers
- > Integrator or Differentiators
- Active Filters

Ordering Information

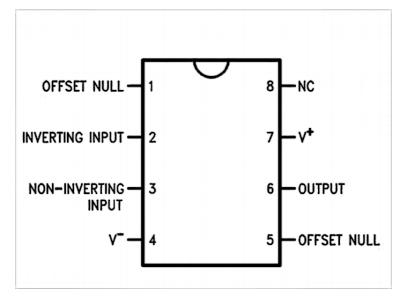
Product Model	Package Type	Marking	Packing	Packing Qty
UA741CP	DIP-8	UA741CP	Tube	2000Pcs/Box
UA741CDTR	SOP-8	UA741C	Tape	2500Pcs/Reel

Typical Applications





Pin Configuration and Functions



Pin		I/O Description	
Name	No.		
INVERTING INPUT	2	I	Inverting signal input
NC	8	N/A	No Connect, should be left floating
NONINVERTING INPUT	3	I	Noninverting signal input
OFFSET NULL	1,5	I	Offset null pin used to eliminate the offset voltage and balance the input
OFFSET NULL			voltages.
OUTPUT	6	0	Amplified signal output
V+	7	I	Positive supply voltage
V-	4	I	Negative supply voltage

Absolute Maximum rating

over operating free-air temperature range (unless otherwise noted) $^{(1)(2)(3)}$

		Min	Max	Unit
Supply voltage			±22	V
Power dissipation			500	mW
Differential input voltage			±30	V
Input voltage			±15	V
Output short circuit duration		Continuous		
Operating temperature		0	70	$^{\circ}$ C
Junction temperature			150	$^{\circ}$ C
Soldering information	DIP package (10 seconds)		260	$^{\circ}\mathbb{C}$
Storage temperature, Tstg		-65	150	$^{\circ}\mathbb{C}$

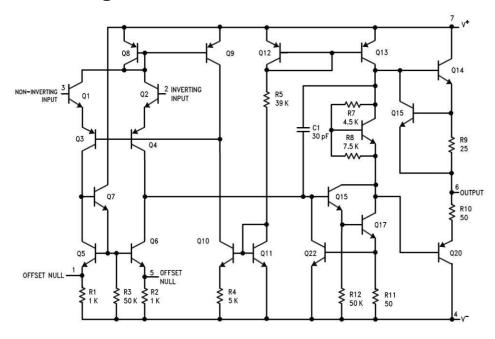


Electrical characteristics

Unless otherwise specified, these specifications apply for VS = $\pm 15 \text{ V}$

Parame	eter	Test Conditions			Тур	Max	Unit
Input offset voltage		RS≤10KΩ	TA=25°C		2	6	mV
			TAMIN≤TA≤TAMAX			7.5	mV
Input o	offset voltage	Ta=25℃,Vs=±20V			±15		mV
adjustn	ment range						
Input offset current		T _A =25℃			20	200	nA
		TAMINSTASTAMAX				300	
Input b	oias current	T _A =25℃			80	500	nA
		Tamin≤Ta≤Tamax				0.8	μA
Input r	esistance	Ta=25℃,Vs=±20V		0.3	2		ΜΩ
Input v	oltage range	T _A =25℃		±12	±13		V
Large s	signal voltage	Vs=±15V,VO=±10V, RL≥2KΩ	Ta=25℃	20	200		V/mV
gain		,	Tamin≤Ta≤Tamax	15			1
Output voltage swing		Vs=±15V	R∟≥10KΩ	±12	±14		V
			R∟≥2KΩ	±10	±13		
Output current	: short circuit t	Ta=25℃			25		mA
	ommon-mode Rs≤10KΩ ,Vcм= ±12V,Tamin≤Ta≤Tamax		70	90		dB	
Supply voltage rejection ratio		Vs=±20V to Vs=±5V,Rs≤10Ω, Tamin≤Ta≤tamax		77	96		dB
Trans	Rise time	Ta=25℃,unity gain			0.3		μs
ient	Overshoot				5%		
respo							
nse							1
Slew rate		T _A =25℃,unity gain			0.5		V/ µs
Supply current		Ta=25℃			1.7	2.8	mA
Power consumption		Vs=±15V,Ta=25℃			50	85	mW

Functional Block Diagram





Feature Description

Overload Protection

The UA741 features overload protection circuitry on the input and output. This prevents possible circuit damage to the device.

Latch-up Prevention

The UA741 is designed so that there is no latch-up occurrence when the common-mode range is exceeded. This allows the device to function properly without having to power cycle the device.

Typical Application

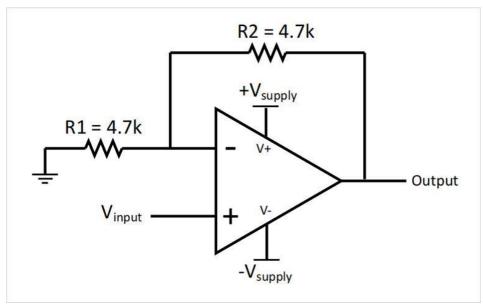


Figure 1. UA741 Noninverting Amplifier Circuit

Design Requirements

As shown in Figure 1, the signal is applied to the noninverting input of the UA741. The gain of the system is determined by the feedback resistor and input resistor connected to the inverting input. The gain can be calculated by Equation 1:

Gain = 1 + (R2/R1)

(1) The gain is set to 2 for this application. R1 and R2 are 4.7-k resistors with 5% tolerance.

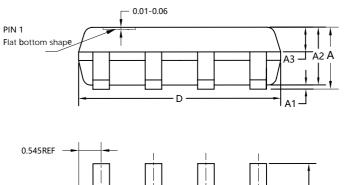
Detailed Design Procedure

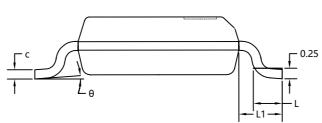
The UA741 can be operated in either single supply or dual supply. This application is configured for dual supply with the supply rails at ± 15 V. The input signal is connected to a function generator. A 1-Vpp, 10-kHz sine wave was used as the signal input. 5% tolerance resistors were used, but if the application requires an accurate gain response, use 1% tolerance resistors.

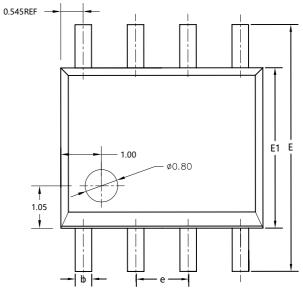


Package Outline Dimensions

SOP-8



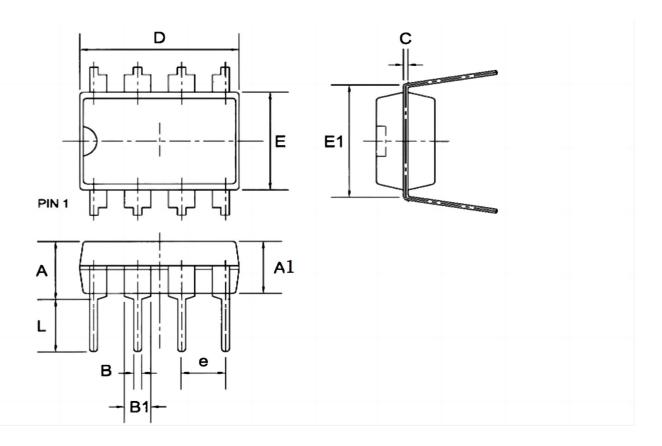




SYMBOL	MILLIMETER				
STWIDGE	MIN NOM		MAX		
А	1.55	1.65	1.75		
A1	0.10	0.15	0.20		
A2	1.35	1.45	1.55		
А3	0.60	0.70	0.80		
b	0.30	0.40	0.50		
С	0.17	0.20	0.25		
D	4.80	4.90	5.00		
E	5.80	6.00	6.20		
E1	3.80	3.90	4.00		
e	1.27BSC				
L	0.50	0.60 0.70			
L1	1.05REF				
θ	0°	4°	8°		



DIP-8



	Dimensions in Millimeters				
Symbol	Min	Nom	Max		
A			4.31		
A1	3.15	3.30	3.65		
В	0.38	0.46	0.51		
B1	1.27	1.55	1.77		
С	0.20	0.25	0.30		
D	8.95	9.40	9.45		
Е	6.15	6.20	6.65		
E1		7.60			
e		2.54			
L	3.00	3.30	3.60		



Statement:

- XBLW reserves the right to modify the product manual without prior notice! Before placing an order, customers need to confirm whether the obtained information is the latest version and verify the completeness of the relevant information.
- Any semi-guide product is subject to failure or malfunction under specified conditions. It is the buyer's responsibility to comply with safety standards when using XBLW products for system design and whole machine manufacturing. And take the appropriate safety measures to avoid the potential in the risk of loss of personal injury or loss of property situation!
- XBLW products are not licensed for life support, military, aerospace and other applications, and XBLW will not be responsible for the consequences of the use of products in these fields.
- If any or all XBLW products (including technical data, services) described or contained in this document are subject to any applicable local export control laws and regulations, they may not be exported without an export license from the relevant authorities in accordance with such laws.
- The specifications of any and all XBLW products described or contained in this document specify the performance, characteristics, and functionality of said products in their standalone state, but do not guarantee the performance, characteristics, and functionality of said products installed in Customer's products or equipment. In order to verify symptoms and conditions that cannot be evaluated in a standalone device, the Customer should ultimately evaluate and test the device installed in the Customer's product device.
- XBLW documentation is only allowed to be copied without any alteration of the content and with the relevant authorization. XBLW assumes no responsibility or liability for altered documents.
- XBLW is committed to becoming the preferred semiconductor brand for customers, and XBLW will strive to provide customers with better performance and better quality products.

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for Operational Amplifiers - Op Amps category:

Click to view products by XBLW manufacturer:

Other Similar products are found below:

430227FB LT1678IS8 058184EB NCV33202DMR2G NJM324E M38510/13101BPA NTE925 AZV358MTR-G1 AP4310AUMTR-AG1
AZV358MMTR-G1 SCY33178DR2G NCV20034DR2G NTE778S NTE871 NTE937 NJU7057RB1-TE2 SCY6358ADR2G
NJM2904CRB1-TE1 UPC4570G2-E1-A UPC4741G2-E1-A UPC4574GR-9LG-E1-A NJM8532RB1-TE1 EL2250CS EL5100IS EL5104IS
EL5127CY EL5127CYZ EL5133IW EL5152IS EL5156IS EL5162IS EL5202IY EL5203IY EL5204IY EL5210CS EL5210CYZ
EL5211IYE EL5220CY EL5223CLZ EL5223CR EL5224ILZ EL5227CLZ EL5227CRZ EL5244CS EL5246CS EL5246CSZ EL5250IY
EL5251IS EL5257IS EL5260IY