钍地半导体
Tudi Semiconductor

Product Specification

TUDI-BA15218

Operational Amplifiers: Low Noise

网址 www.sztdbdt.com

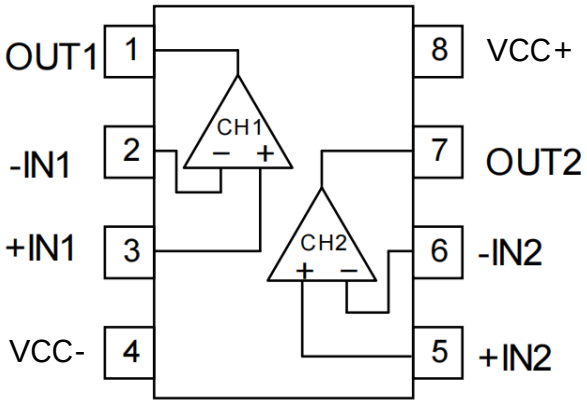
用芯智造·卓越品质

semiconductor device manufacturer

- Design
- research and development
- production
- and sales

Features

- Internal frequency compensation
- Single supply voltage range: 3V～30V
- Short-circuit protection
- Dual supply voltage range:15V
- Low power consumption: 500uA typical @ VCC=5V
- Package type: DIP8, SOP8



Pin Diagram

Description

BA15218 is a dual low-power differential op-amp that can be powered by a single or dual power supply. It has a high-loop gain, internal compensation, a high common-mode range, and good temperature stability, as well as short-circuit protection. Widely used in audio amplification circuits and op-amp circuits.

Applications

- Amplifier for sensor signals
- Audio amplifier
- DC gain
- Other application areas

Pin description

pin number	Pin definition	function declaration
I	OUT1	Channel 1 output
2	IN1-	Channel 1 Inverting input
3	IN1+	Channel 1 Non-inverting input
4	VCC-	Negative supply
S	IN2+	Channel 2 Non-inverting input
6	IN2-	Channel 2verting input
7	OUT2	Channel 2 output
8	VCC+	Positive supply

Absolute Rating

Project	symbol	Limit value(1)	Unit
Single power supply voltage	VCC	36	V
Dual power supply voltage	Vs(VCc+,VC-)	±18	V
Differential input voltage²	VIDR	±15	V
Common-mode input volt-age	VIcR	-0.3～36V	V
Output short time	tsc	Continuation	
Dissipated power	Pp	400	mW
Working temperature	TA	- 40°C to 85°C	℃
Storage temperature	Ts	-65-150	℃
Welding temperature	Tw	260,10s	℃

Note: (1) The limit value is the maximum value that cannot be exceeded under any conditions. If this limit value is reached, it may cause physical damage such as product deterioration; and at the limit value, the chip cannot be guaranteed to work properly.
(2) The voltage difference between the input terminals IN+ and IN-.

DC electrical characteristics

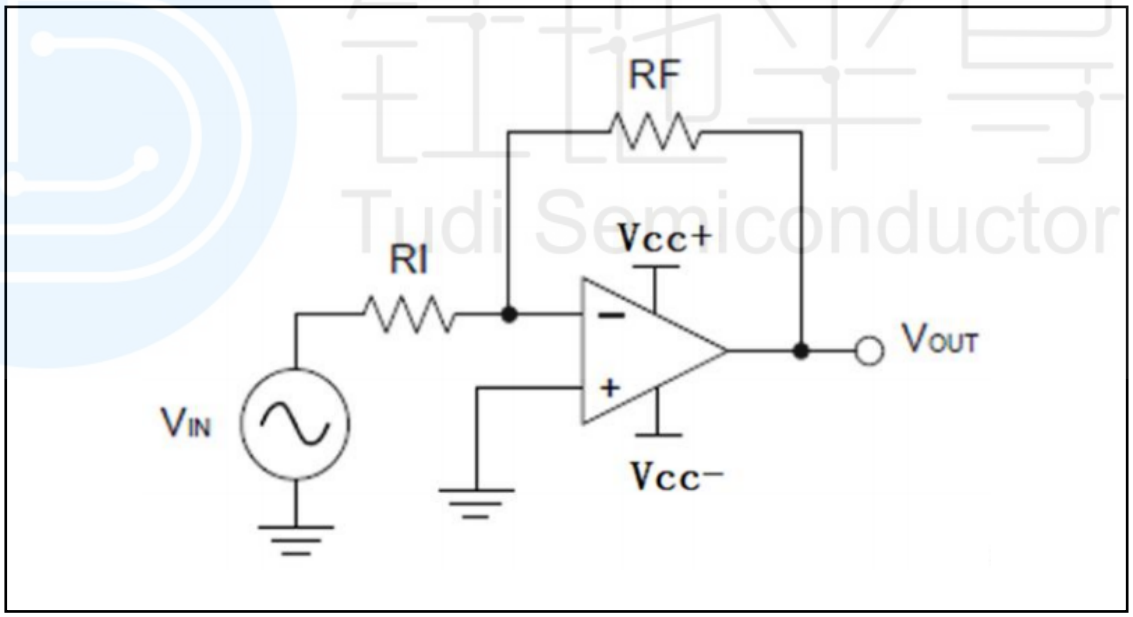
(TA=25℃, VCC+ + =5V, VCC+ - =GND unless otherwise specified)

Project	symbol	Test condition		Least value	Representative value	Crest value	Unit
Input reverse voltage	VIo	VCC+=5Vto30V,VIc=VIcR (min),V=1.4V		—	5	—	mV
Input offset current	IIo	VO=1.4 V		—	10	50	nA
Bias current	IBIAS	VO=1.4 V		—	50	250	nA
Common-mode input voltage	VICR	VCC+=5V to 30V		VCC-	—	VCC+ -1.5V	V
Open loop voltage gain	AoL	VCC+=15V,VO=1V to 11V,RL≥2kΩ			100	—	V/mV
Cmrr	CMRR	VCC+=5V to MAX,Vrc=VrcR(min)		—	80	—	dB
Unity gain bandwidth	GBWP			—	1.2	—	MHZ
Power supply voltage suppression ratio Pssa	△VvDD/△VIo	VCC+=5V to MAX,f=20kHz		—	90	—	dB
Crosstalk attenuation suppression ratio CS	Vo1/Vo2	f=1kHz to 20kHz		—	120	—	dB
Output high level voltage	VOH	VCC+=15V,V=1V	Iout =50uA	—	13.6	—	V
			Iout =-1mA	—	13.5	—	V
			Iout =-5mA	—	13.4	—	V
		VCC+=28V	RL=2k		26	—	V

Output low-level voltage	VOL	VCC+=15V,Vn=-1V	Iout =50uA	—	0.1	—	V
			Iout =1mA	—	0.7	—	V
			Iout =5mA	—	1.0	—	V
		VCC+=28V	RL=2k	—	0.85	—	V
Power supply current	Icc	VCC+=5V,VO=1/2VCC+,No load		—	0.5	—	mA
		VCC+=30,VO=1/2VCC+,No load		—	0.8	—	mA
Single power supply operating voltage	VCC+	VCC-=0V(GND)		3	—	30	V
Dual power supply operating voltage	VS	VCC+,VCC-		-15	—	+15	V

Typical Application

1.Branching Program



2.Design requirement

The power supply voltage must be greater than the input voltage range and the output range. For example, the signal source VIN is amplified from ±0.5 V to ±1.8 V. Setting the power supply to ± 5V is sufficient for this application.

3.Design procedure

Calculate the magnification (gain) according to formula (1) =-VO/VIN--- --- (1)

$$A_V = -VO/VIN = -1.8/0.5 = -3.6$$

Once the required gain Av is determined, select a value for the RI or RF resistor. Depending on the operational amplifier's electrical characteristics and power consumption requirements , values within the 1kΩ-100kΩ range can be chosen. In this example, RI=10 kΩ is selected, resulting in RF=36kΩ as determined by Equation 2.

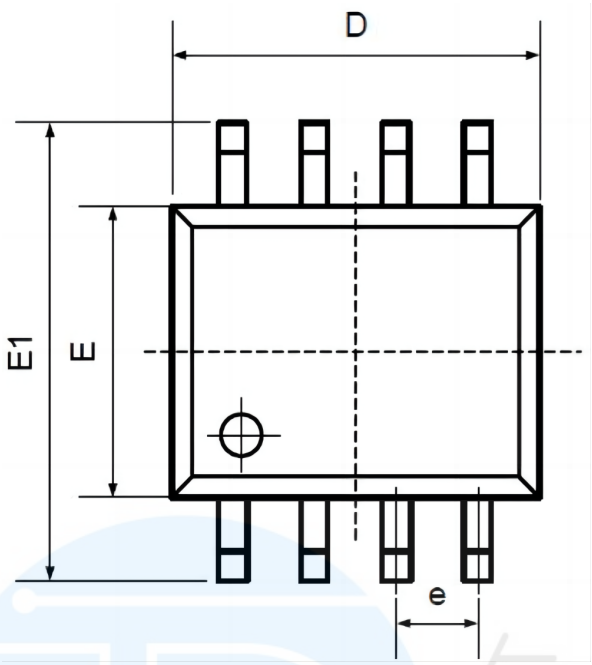
$$A_V = -RF/RI \quad \text{--------(2)}$$

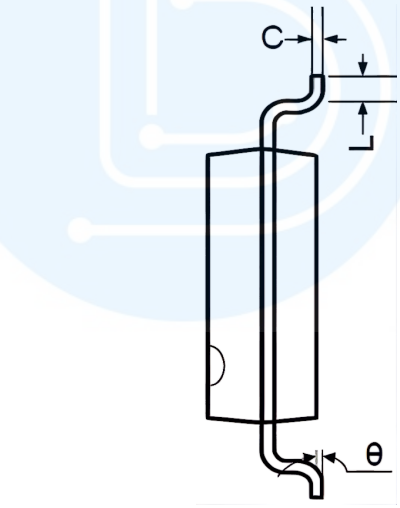
$$RF = -A_V * RI = 3.6 * 10 = 36\ k\Omega$$

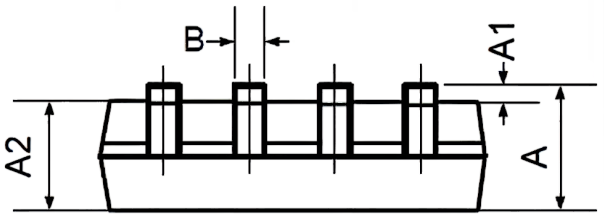
Order information

Order Number	Package	Package Quantity	Marking On The park	Temperature
BA15218F-TUDI	SOP8	Tape,Reel,2500	15218	- 40°C to 85°C
BA15218N-TUDI	DIP8	Tube,50,A box of 2000	BA15218N	

Package SOP8

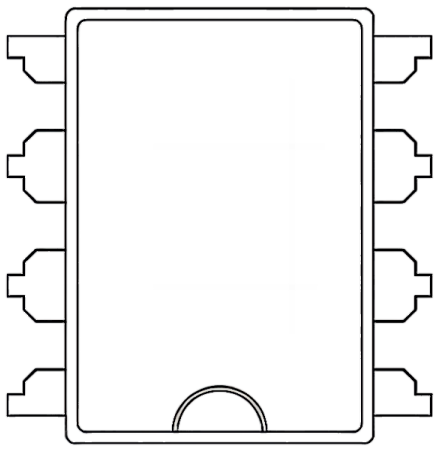


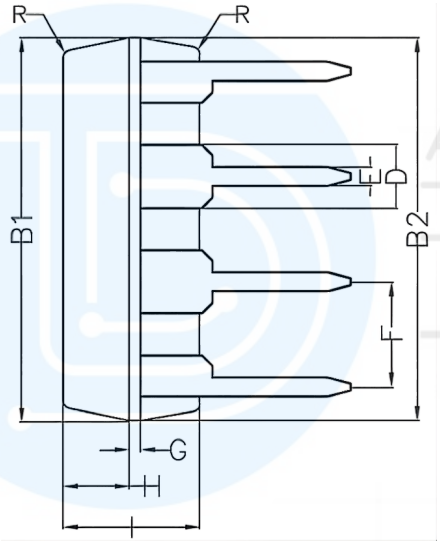


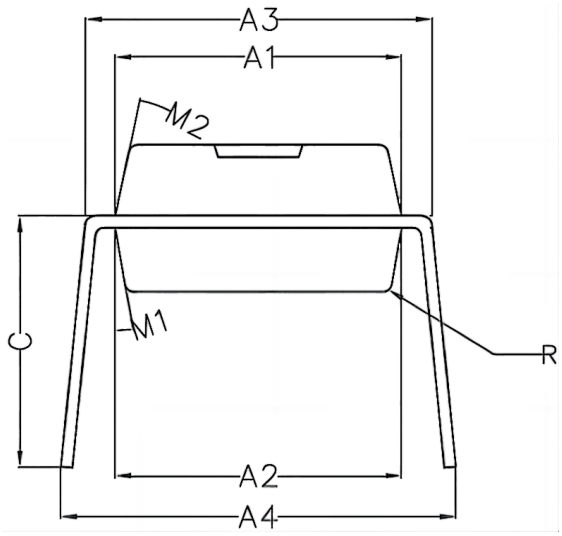


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
B	0.330	0.510	0.013	0.020
C	0.190	0.250	0.007	0.010
D	4.780	5.000	0.188	0.197
E	3.800	4.000	0.150	0.157
E1	5.800	6.300	0.228	0.248
e	1.270TYP		0.050TYP	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

Package DIP8







Symbol	Min	Non	Max
A1	6.28	6.33	6.38
A2	6.33	6.38	6.43
A3	7.52	7.62	7.72
A4	7.80	8.40	9.00
B1	9.15	9.20	9.25
B2	9.20	9.25	9.30
C		5.57	
D		1.52	
E	0.43	0.45	0.47
F		2.54	
G		0.25	
H	1.54	1.59	1.64
工	3.22	3.27	3.32
R		0.20	
M1	9°	10°	11°
M2	11°	12°	13°

Important statement:

●TUDI Semiconductor 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 TUDI Semiconductor 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!

●TUDI Semiconductor products have not been licensed for life support, military, and aerospace applications,and therefore TUDI Semiconductor is not responsible for any consequences arising from the use of this product in these areas.

●If any or all TUDI Semiconductor 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 TUDI Semiconductor 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.

●TUDI Semiconductor documentation is only allowed to be copied without any alteration of the content and with the relevant authorization.TUDI Semiconductor assumes no responsibility or liability for altered documents.

●TUDI Semiconductor is committed to becoming the preferred semiconductor brand for customers, and TUDI Semiconductor will strive to provide customers with better performance and better quallity products.