



AiP358LV

Dual Rail-to-Rail Operational Amplifier

Product Specification

Specification Revision History:

Version	Date	Description
2021-05-A1	2021-05	New
2022-01-A2	2022-01	Modify ordering information
2023-02-B1	2023-02	Update the template
2024-04-B2	2024-04	Modify the content
2024-12-B3	2024-12	Modify the content



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1、General Description

AiP358LV is an input/output rail-to rail operational amplifier with a wide common-mode input voltage range and output voltage range, mainly applied in sensing amplifiers, DC gain modules, audio amplifiers, industrial control, etc.

Features:

- Operating voltage range: 2.5V~5.5V
- Offset voltage <4mV
- Offset voltage temperature drift: 2uV/°C
- Gain bandwidth: 1MHz
- Output capability: 100mA
- Rail-to rail input and output
- Swing rate: 0.7V/us
- Supply current: 80uA (each channel)
- Operating temperature range: -40°C~+85°C
- Packing form: SOP8/MSOP8/TSSOP8



Ordering Information:

Tube packing specifications:

Part number	Packaging form	Marking code	Tube quantity	Boxed tube quantity	Boxed quantity	Notes
AiP358LVSA8.TB	SOP8	AiP358LV	100 PCS/tube	100 tube/box	10000 PCS/box	Dimensions of plastic enclosure: 4.9mm×3.9mm Pin spacing: 1.27mm
AiP358LVMA8.TB	MSOP8	AiP358LV	100 PCS/tube	100 tube/box	10000 PCS/box	Dimensions of plastic enclosure: 3.0mm×3.0mm Pin spacing: 0.65mm
AiP358LVTB8.TB	TSSOP8	358LV	100 PCS/tube	200 tube/box	20000 PCS/box	Dimensions of plastic enclosure: 3.0mm×4.4mm Pin spacing: 0.65mm

Reel packing specifications:

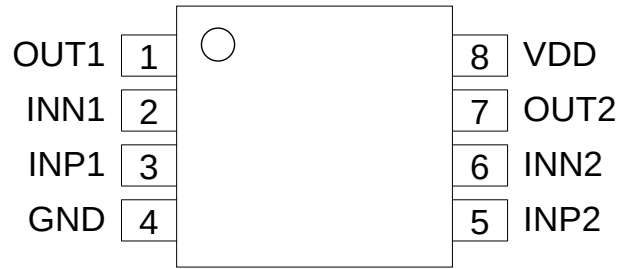
Part number	Packaging form	Marking code	Reel quantity	Boxed reel quantity	Notes
AiP358LVSA8.TR	SOP8	AiP358LV	4000PCS/reel	8000PCS/box	Dimensions of plastic enclosure: 4.9mm×3.9mm Pin spacing: 1.27mm
AiP358LVMA8.TR	MSOP8	AiP358LV	5000PCS/reel	10000PCS/box	Dimensions of plastic enclosure: 3.0mm×3.0mm Pin spacing: 0.65mm
AiP358LVTB8.TR	TSSOP8	358LV	5000PCS/reel	10000PCS/box	Dimensions of plastic enclosure: 3.0mm×4.4mm Pin spacing: 0.65mm

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



2、Pin Description

2.1、Pin Configurations



2.2、Pin Description

Pin	Symbol	Description
1, 7	OUT1、OUT2	Operational amplifier output terminal
2, 6	INN1、INN2	Operational amplifier negative input
3, 5	INP1、INP2	Operational amplifier positive input
4	GND	Ground
8	VDD	Power Supply

3、Electrical Parameter

3.1、Absolute Maximum Ratings

(T_{amb}=25℃, unless otherwise specified)

Characteristic	Symbol	Conditions	Value	Unit
Power Supply Voltage	VDD	-	6	V
Input Voltage	V _I	-	(GND) -0.3 ~ (VDD) +0.3	V
Differential Input Voltage	V _{DI}	-	±6	V
Storage Temperature	T _{stg}	-	-65~+150	℃
Junction Temperature	T _j	-	150 (max)	℃
Operating Temperature Range	T _{amb}	-	-40~+85	℃
Soldering Temperature	T _L	10s	260	℃



3.2、Electrical Characteristics

($T_{amb}=25^{\circ}\text{C}$, $V_{DD}=5\text{V}$, $-V_S=0\text{V}$, $R_L=2\text{k}\Omega$, $C_L=100\text{pF}$, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Power Supply Voltage	VDD	-	2.5	-	5.5	V
Quiescent Current	I_Q	Single channel	-	80	130	μA
Input Offset Voltage	Vos	$V_{CM}=0\text{V}\sim 3\text{V}$	-	1	4	mV
Input Offset Voltage Temperature Drift	$\Delta V_{os}/\Delta T$	$T_{amb}=-40^{\circ}\text{C}\sim 85^{\circ}\text{C}$	-	2	-	$\mu\text{V}/^{\circ}\text{C}$
Input Bias Current	I_B	-	-	1	-	pA
Input Offset Current	I_{OS}	-	-	1	-	pA
Common-mode Voltage Range	V_{CMR}	-	(V-)-0.1	-	(V+)+0.1	V
Common-mode Rejection Ratio	CMRR	$V_{CM}=0\text{V}\sim 3\text{V}$	65	85	-	dB
Open Loop Voltage Gain	AOL	$R_{LOAD}=10\text{k}\Omega$	85	110	-	dB
Channel Isolation	Xtalk	$f=1\text{kHz}$, $R_L=2\text{k}\Omega$	-	110	-	dB
Output Short Circuit Current	I_{source}/I_{sink}	-	-	90	120	mA
Power Supply Rejection Ratio	PSRR	-	70	75	-	dB
Phase Margin	PM	$C_{LOAD}=60\text{pF}$, $R_{LOAD}=1\text{k}\Omega$	-	60	-	$^{\circ}$
Unity-gain Bandwidth	GBW	-	-	1	-	MHz
Swing Rate	SR	$AOL=1$, $V_O=1.5\text{V}\sim 3.5\text{V}$, $C_{LOAD}=60\text{pF}$, $R_{LOAD}=1\text{k}\Omega$	-	0.7	-	V/ μs
Equivalent Input Noise Voltage	V_N	$f=1\text{kHz}$	-	30	-	nV_{RMS}
Total Harmonic Distortion	THD	$f=1\text{kHz}$, $AOL=1$, $R_L=2\text{k}\Omega$, $V_O=1\text{V}_{p-p}$	-	0.004	-	%



4、Characteristic Curve

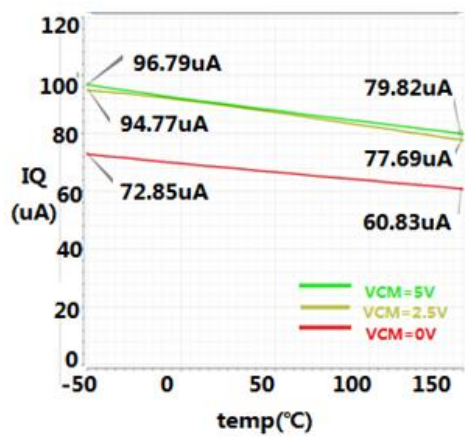


Figure 1 The relationship between quiescent current and temperature

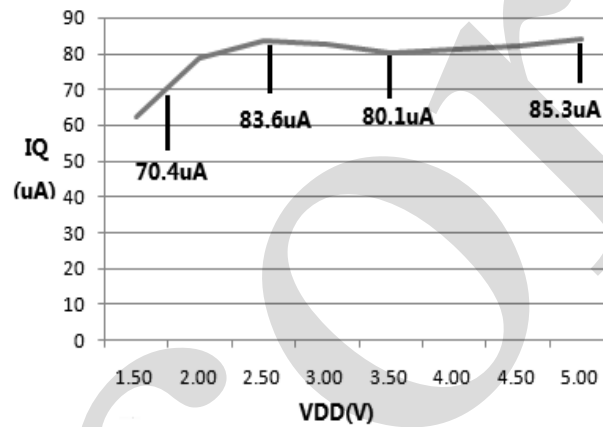


Figure 2 The relationship between quiescent current and voltage

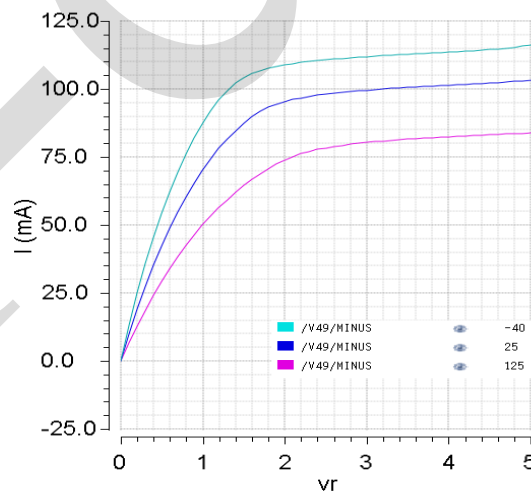


Figure 3 The relationship between I_{SOURCE} and voltage/temperature

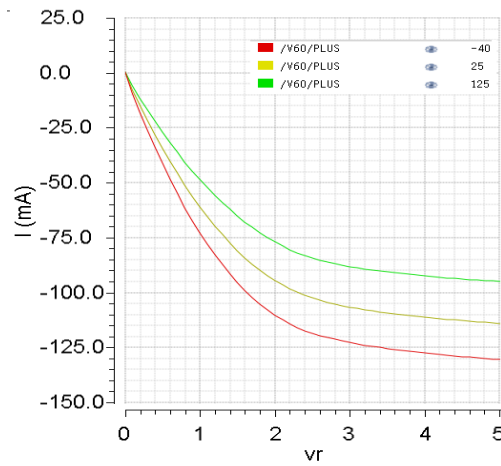


Figure 4 The relationship between I_{SINK} and voltage/temperature

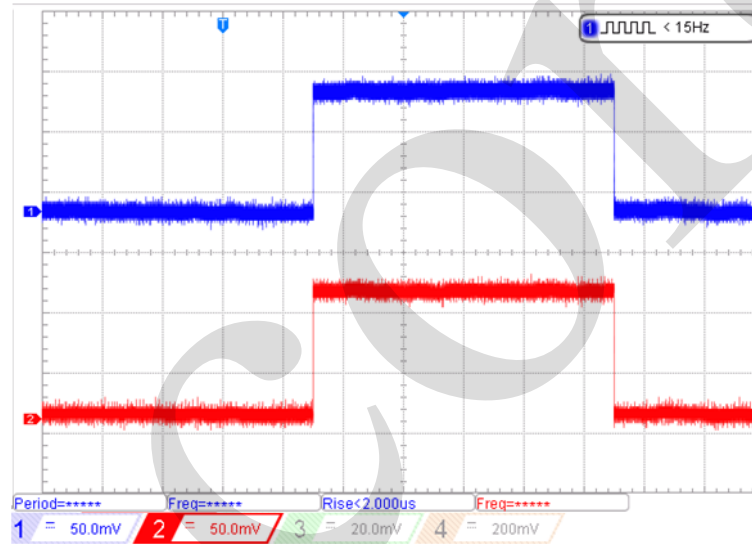
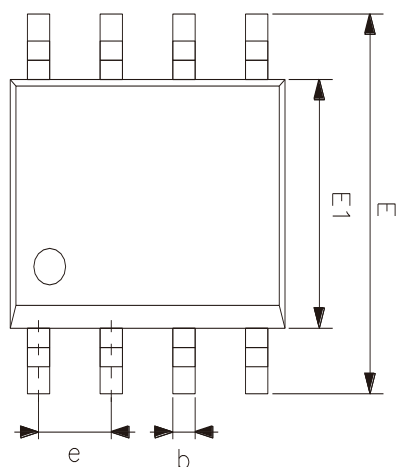
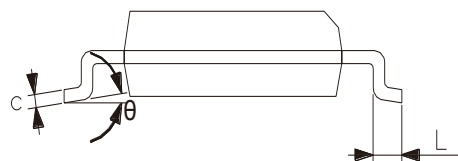
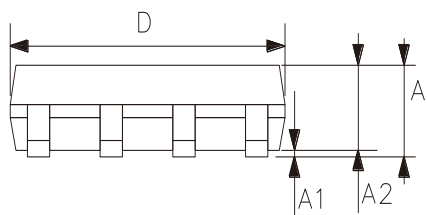


Figure 5 Small Signal Response



5、Package Information

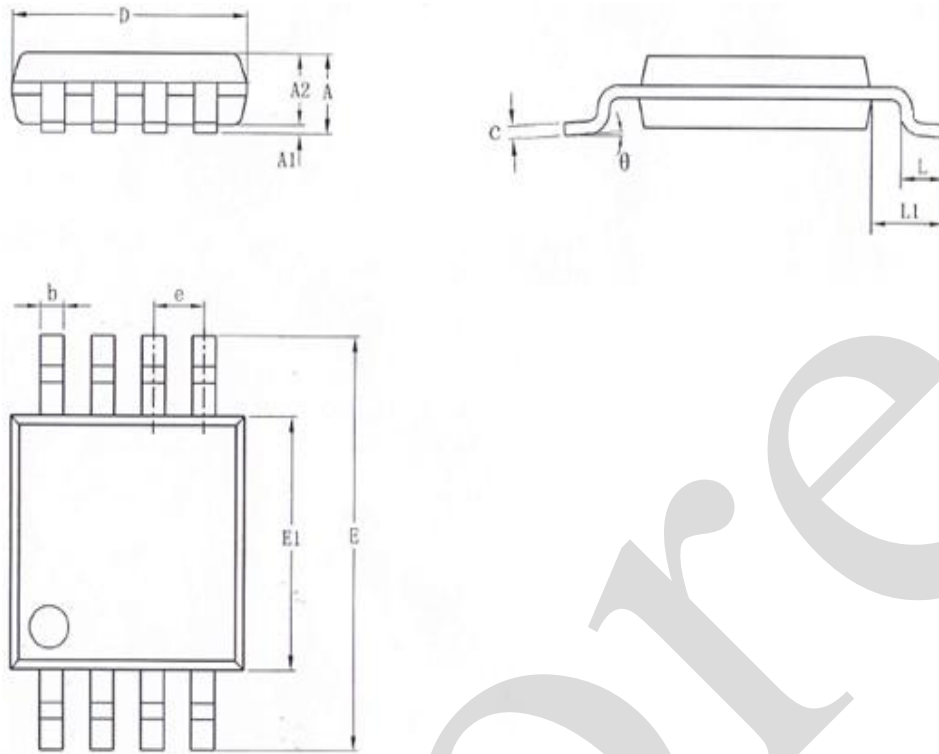
5.1、SOP8



2023/12/A	Dimensions In Millimeters	
Symbol	Min.	Max.
A	1.35	1.80
A1	0.05	0.25
A2	1.25	1.55
D	4.70	5.10
E	5.80	6.30
E1	3.70	4.10
b	0.306	0.51
c	0.19	0.25
e	1.27	
L	0.40	0.89
θ	0°	8°



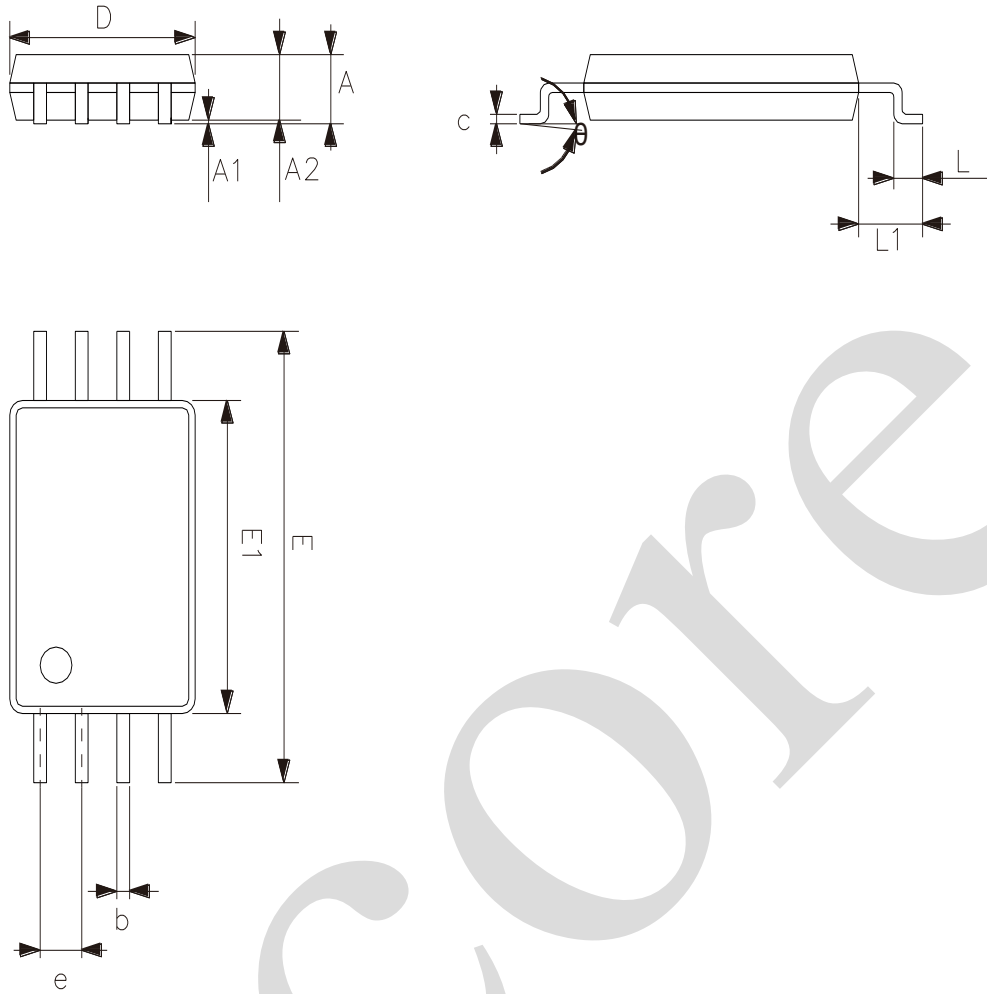
5.2、MSOP8



2023/12/A	Dimensions In Millimeters	
Symbol	Min	Max
A	—	1.10
A1	0.05	0.15
A2	0.75	0.95
b	0.22	0.38
c	0.08	0.23
D	2.90	3.10
E	4.70	5.10
E1	2.90	3.10
e	0.65	
L	0.40	0.80
L1	0.95	
θ	0°	8°



5.3、TSSOP8



2023/12/A Symbol	Dimensions In Millimeters	
	Min	Max
A	—	1.20
A1	0.05	0.15
A2	0.80	1.05
b	0.19	0.30
c	0.09	0.20
D	2.90	3.10
E1	4.30	4.50
E	6.20	6.60
e	0.65	
L	0.45	0.75
L1	1.00	
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

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