

HX33078-S/HX33078-P Dual Operational Amplifier

Overview

HX33078-S/HX33078-P is a high-performance dual channel operational amplifier suitable for high-quality audio and data signals. It supports a wide voltage range, with characteristics such as low noise, high gain bandwidth, high conversion rate, low harmonic distortion, and large output voltage swing, ensuring signal purity and processing accuracy.

Characteristic

Dual power supply operating range: $\pm 5.0\text{ V}$ to $\pm 18\text{ V}$ Low input

bias voltage: 0.15 mV

Large output voltage swing: $+14.1\text{ V} / -14.6\text{ V}$

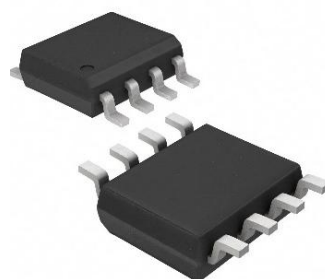
High Slew Rate: $7.0\text{ V}/\mu\text{s}$

Low voltage noise: $4.5\text{ nV}/\sqrt{\text{Hz}}$

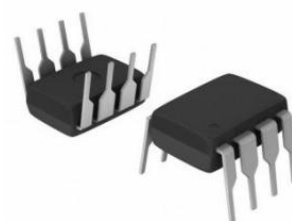
THD: 0.002%

High gain bandwidth product: 16 MHz

High open-loop AC gain: $800@20\text{ kHz}$

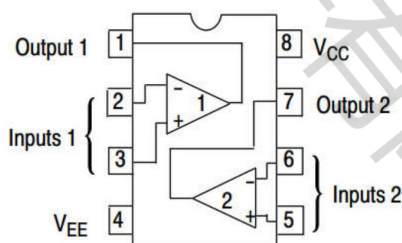


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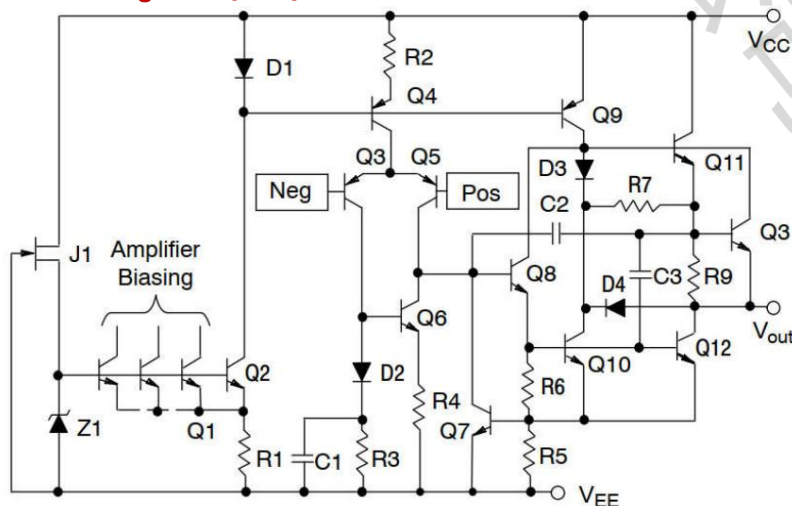


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Pin Diagram



Internal Block Diagram (1/2)



**Limit parameter: Unless otherwise specified, under the condition of
TA=25 °C**

Parameter	Symbol	Range	UNIT
Supply voltage (VCCtoVEE)	VS	+36	V
Input differential voltage range	VIDR	(Note 2)	V
Input Voltage	VIR	(Note 2)	V
Output short circuit duration (Note3)	tSC	Indefinite	sec
Maximum power consumption	PD	(Note 3)	mW
Maximum junction temperature	TJ	+150	°C
Working temperature range	TOPR	-40 ~ +85	°C
Storage Temperature Range	TSTG	-60 ~ +150	°C

1.The absolute maximum rated value indicates the threshold beyond which equipment may suffer permanent damage. It represents only the stress limit and does not imply normal operational capability.

2.Neither pole nor both of the input voltage can exceed the amplitude of VCC or VEE.

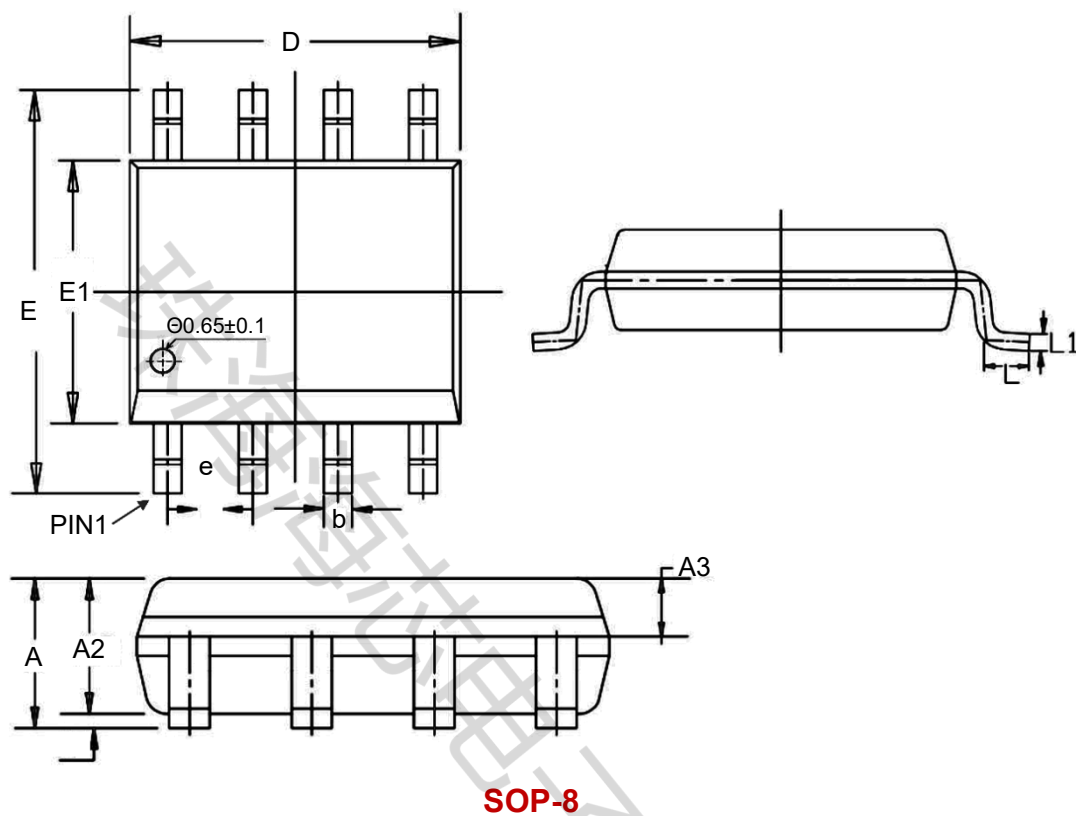
3.Power consumption must be considered to ensure that it does not exceed the maximum junction temperature(TJ).

**Dc parameters :(VCC= +15VVEE=-15V,TA=25°C, unless otherwise
stated)**

Argument	Symbol	Test condition		MIN	TYP	MAX	UNIT
Input offset voltage	VIO	RS=10Ω,VCM=0V, VO=0V			0.15	2.0	mV
Input offset voltage temperature coefficient	ΔVIO/ΔT	Rs =10Ω, VCM =0V, VO =0V, TA= Tlow			2.0		μV/°C
Input bias current	IIB	VCM=0V, VO=0V			300	750	nA
Input offset current	IIO	VCM=0V, VO=0V			25	150	nA
Common-mode input voltage	VICR	ΔVIO=5.0mV, VO =0V		+13	+14 -14	-13	V
Large signal voltage gain	AVOL	VO=±10 V, RL=2.0kΩ		88	110		dB
Output voltage swing	VO+	VID=±1.0V	RL=600Ω		+10.7		V
	VO-		RL=600Ω		-11.9		V
	VO+		RL=2.0kΩ	+13.2	+13.8		V
	VO-		RL=2.0kΩ		-13.7	-13.2	V
	VO+		RL=10kΩ	+13.5	+14.1		V
	VO-		RL=10kΩ		-14.6	-14	V
Common mode rejection ratio	CMRR	Vin=±13V		80	100		dB
Power supply rejection ratio	PSRR	VCC/VEE= +15V/-15V~+5.0V/-5.0V		80	95		dB
Output short-circuit current	ISC	VID=1.0V, Output to Ground	Source	+15	+27		mA
			Sink		-37	-20	mA
Supply current	ID	VO=0V, All Amplifiers			5.7	7.0	mA

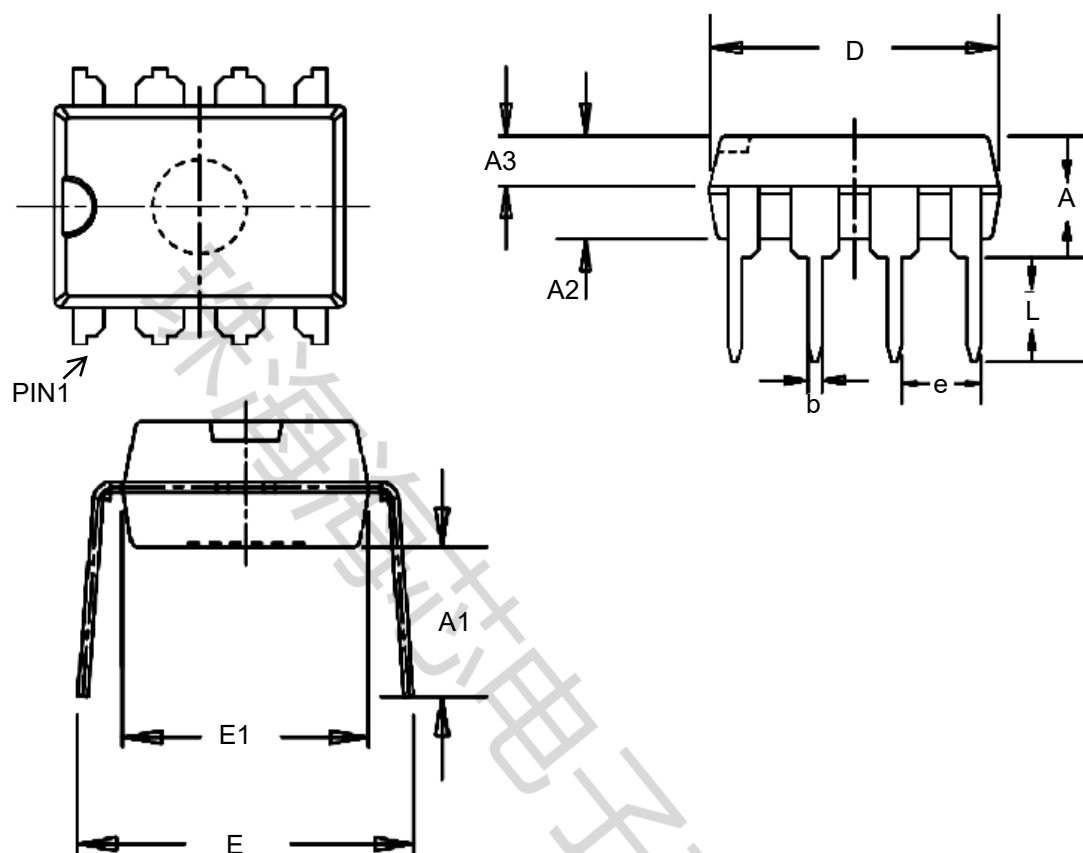
Communication parameters: (VCC= +15VVEE =-15V, TA=25 ° C, unless otherwise specified)						
Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Conversion rate	SR	Vin=-10V~+10 V, RL=2.0kΩ,	3.3	8.5		V/μs
Gain-bandwidth product	GBW	f=100kHz	10	18		MHz
Unity-gain frequency	fU	Open Loop		9		MHz
Gain margin	Am	RL=2.0kΩ	CL=0pF	-11		dB
			CL=100pF	-6		dB
Phase margin	φm	RL=2.0kΩ	CL=0pF	55		Degrees
			CL=100pF	40		Degrees
Channel isolation	CS	f=20Hz~20kHz		-120		dB
Power bandwidth	BWp	VO=27Vpp, RL=2.0kΩ, THD≤1.0%		120		kHz
Distort	THD	RL=2.0kΩ, f=20Hz~20kHz,		0.002		%
Open loop output impedance	ZO	VO=0V, f=9.0MHz		37		Ω
Differential input resistance	RIN	VCM=0V		175		kΩ
Differential input capacitor	CIN	VCM=0V		12		pF
Equivalent Input noise voltage	en	RS=100Ω, f =1.0kHz		4.5		nV/√Hz
Equivalent input noise current	in	f=1.0kHz		0.5		pA/√Hz

DIMENSIONAL DRAWINGS



UNIT:mm

	MIN	NOM	MAX
A	1.450	1.550	1.650
A1	0.100	0.150	0.200
A2	1.300	1.400	1.500
A3	0.600	0.650	0.700
b	0.380		0.510
e	1.240	1.270	1.300
D	4.800	4.900	5.000
E	5.800	6.000	6.200
E1	3.800	3.900	4.000
L	0.450	0.600	0.750
L1		0.25BSC	



DIP-8

UNIT:mm

	MIN	NOM	MAX
A	3.600	3.800	4.000
A1	3.786	3.886	3.986
A2	3.200	3.300	3.400
A3	1.550	1.600	1.650
b	0.440		0.490
e	2.510	2.540	2.570
D	9.150	9.250	9.350
E	7.800	8.500	9.200
E1	6.280	6.380	6.480
L	3.000		

Part Number	Package Type	Package	quantity
HX33078-S	SOP-8	Taping	2500
HX33078-P	DIP-8	Taping	1000