



UM2122

Preliminary

LINEAR INTEGRATED CIRCUIT

ULTRA LOW NOISE DUAL OPERATIONAL AMPLIFIER

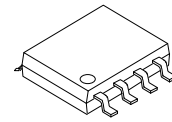
DESCRIPTION

The UTC **UM2122** is an ultra low noise dual operational amplifier built using an advanced bipolar process. It can be operated at a very low supply voltage ($\pm 2V$), while maintaining a low saturation output voltage.

The features of ultra low noise, low operating voltage, and low saturation voltage are suitable for microphone amplifier of digital audio items such as portable MD, DAT, and others.

FEATURES

- * Operating Voltage: $\pm 2.0V \sim \pm 8.0V$
- * Ultra Low Noise Voltage: $1.5nV/\sqrt{Hz}$ (typ.) @ $f=1kHz$.
- * Low Saturation Output Voltage: $0.3V$ (typ.)
- * Bipolar Technology



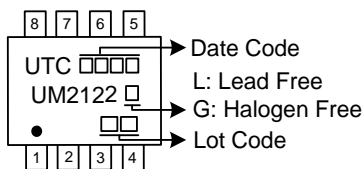
SOP-8

ORDERING INFORMATION

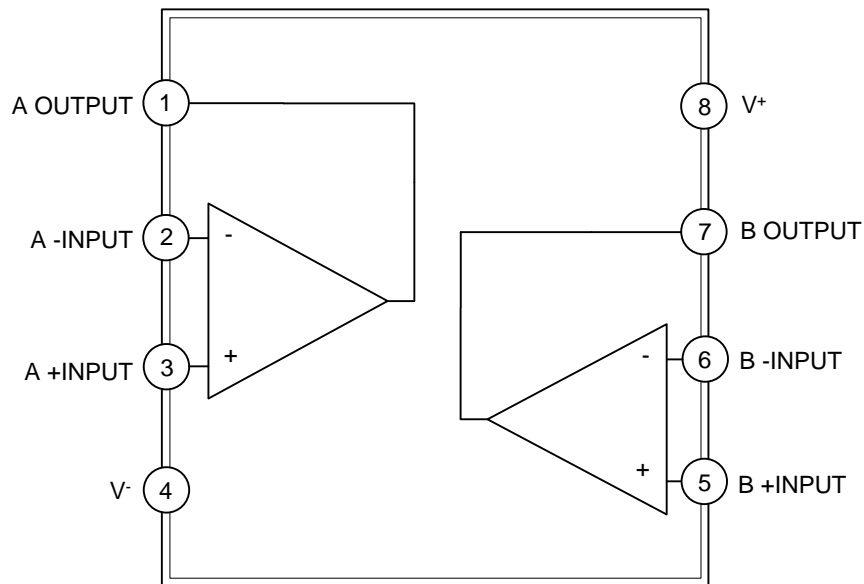
Ordering Number		Package	Packing
Lead Free	Halogen Free		
UM2122L-S08-R	UM2122G-S08-R	SOP-8	Tape Reel

<p>UM2122G-S08-R</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p>	<p>(1) R: Tape Reel</p> <p>(2) S08: SOP-8</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING



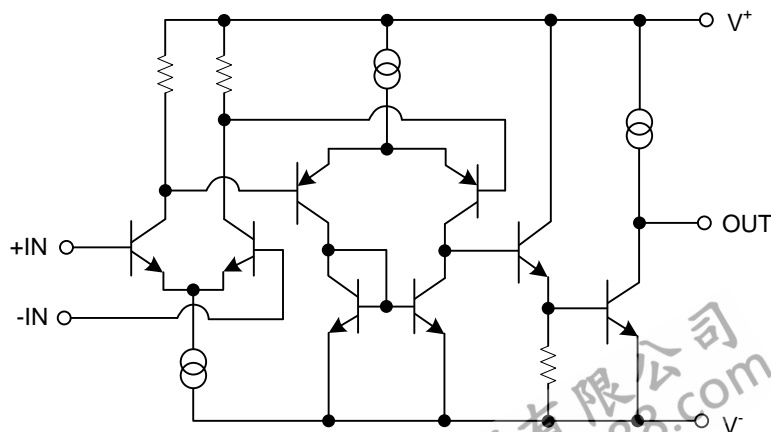
■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	A OUTPUT	Output of A AMP
2	A -INPUT	Invert input of A AMP
3	A +INPUT	Non-invert input of A AMP
4	V ⁻	Negative power supply
5	B +INPUT	Non-invert input of B AMP
6	B -INPUT	Invert input of B AMP
7	B OUTPUT	Output of B AMP
8	V ⁺	Positive power supply

■ BLOCK DIAGRAM



■ **ABSOLUTE MAXIMUM RATING** ($T_A=25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V^+ / V^-	± 10	V
Differential Input Voltage	V_{ID}	± 0.5	V
Input Voltage	V_{IC}	± 10 (Note 2)	V
Power Dissipation	P_D	300	mW
Operating Temperature Range	T_{OPR}	-40 ~ +85	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-40 ~ +150	$^{\circ}\text{C}$

Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

2. When the supply voltage is less than $\pm 10\text{V}$, the absolute maximum input voltage is equal to the supply voltage.

■ **ELECTRICAL CHARACTERISTICS** ($V^+=5\text{V}$ $T_A=25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Operating Voltage	V_{ope}		± 2.0		± 8.0	V
Operating Current	I_{CC}	$V_{IN}=0\text{V}, R_L=\infty\Omega$		7.0	9.5	mA
Input Offset Voltage	V_{IO}	$R_S=500\Omega$		1.0	6.0	mV
Input Offset Current	I_{IO}			0.45	1.50	μA
Input Bias Current	I_B			3.6	8.0	μA
Large Signal Voltage Gain	A_V	$R_L \geq 10\text{k}\Omega$	80	100		dB
Input Common Mode Voltage Range	V_{ICM}		± 0.7	± 1.0		V
Common-Mode Rejection Ratio	CMR		60	74		dB
Supply Voltage Rejection Ratio	SVR		60	80		dB
Maximum Output Voltage	V_{OM}	$R_L \geq 2.5\text{k}\Omega$	± 2.0	± 2.2		V
Slew Rate	SR	$G_V=20\text{dB}, V_{IN}=\pm 0.1\text{V}$		2		$\text{V}/\mu\text{s}$
Gain Bandwidth Product	GB			12		MHz
Equivalent Input Noise Voltage 1	e_{n1}	$R_S=10\Omega, f=1\text{kHz}$		1.5		$\text{nV}/\sqrt{\text{Hz}}$
Equivalent Input Noise Voltage 2	e_{n2}	Figure1		0.56	0.75	μVrms
Channel Separation	CS	$f=1\text{kHz}$		90		dB
Total Harmonic Distortion	THD	$V_O=1\text{Vrms}, f=1\text{kHz}, G_V=20\text{dB}, R_L=2.5\text{k}\Omega$		0.003		%

Note: Between 30 to 50dB voltage gain is recommended.

In case of voltage gain less than 30dB, phase compensation by external circuit is required.

The voltage follower circuit must not be used.

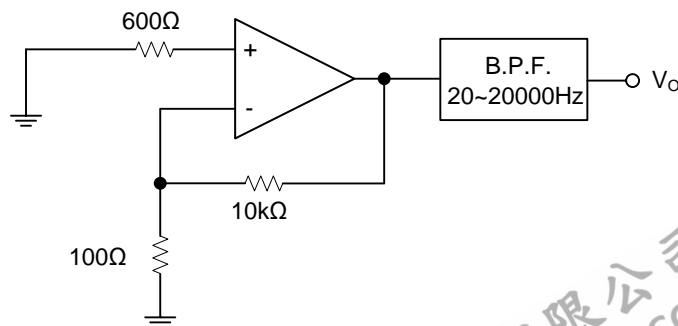


Figure1

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