

## L272 • L272A Dual Power Operational Amplifier

### General Description

The L272 and L272A are high-power dual operational amplifier provided as a 8-DIP and 16-SOP package. The operational amplifier is designed for low impedance loads and will deliver output current up to 0.7A. The L272A offers tighter specifications for input bias current, input offset voltage and input offset currents. The L272 and L272A can be used in a wide range of applications including power supply, VCR, monitor, servo amplifier, compact disc, etc.

### Features

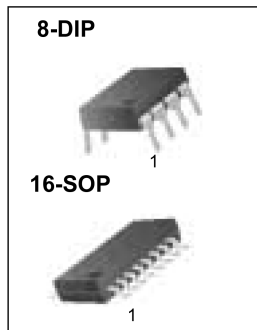
- Output Current up to 0.7A
- Operates at Low Voltage ( $V_{S(MIN)} = 4V$ )
- Low Saturation Voltage ( $I_p = 0.5A, V_O = 1.5V$ )
- Thermal Shutdown ( $TSD = 160^{\circ}C$ ) Ground Compatible Inputs
- Ground Compatible Inputs
- Large Common Mode & Differential Mode Range

### Applications

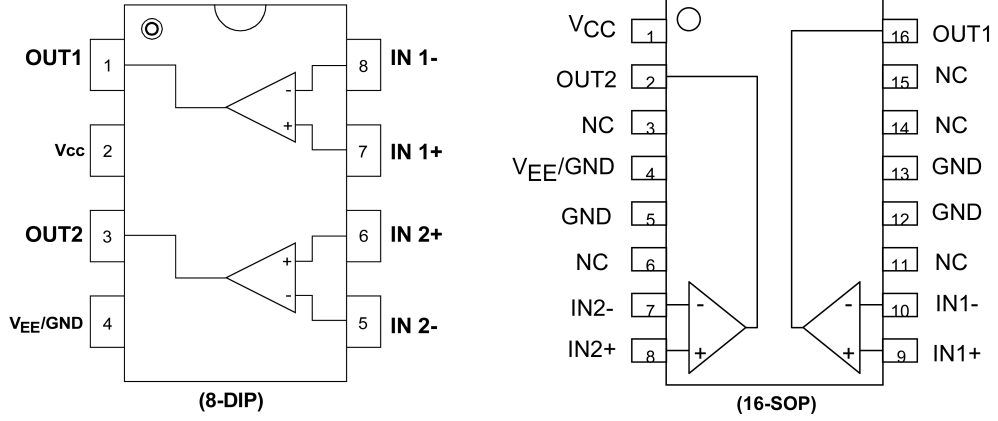
- Servo Amplifier
- Power Supply
- Compact Disc
- VCR
- Monitor

### Ordering Code:

Product Number	Package	Packing	Operating Temperature
L272M	8-DIP	Tube	-25°C to +85°C
L272D2	16-SOP	Tube	
L272D2TF	16-SOP	Tape and Reel	
L272AM	8-DIP	Tube	
L272AD2	16-SOP	Tube	
L272AD2TF	16-SOP	Tape and Reel	



**Internal Block Diagram**



**Pin Definitions**

Pin Number		Pin Name	Pin Function Description
8-DIP	16-SOP		
1	16	OUTPUT1	Amp Output 1
2	1	V <sub>CC</sub>	Positive Supply Voltage
3	2	OUTPUT2	Amp Output 2
4	4/5/12/13	V <sub>EE</sub> /GND	Negative Supply Voltage (GND)
5	7	INPUT-2	Amp Negative Input 2
6	8	INPUT+2	Amp Positive Input 2
7	9	INPUT+1	Amp Positive Input 1
8	10	INPUT-1	Amp Negative Input 1

Absolute Maximum Ratings <sup>(Note 1)</sup>			
Parameter	Symbol	Value	Units
Supply Voltage	$V_{CC}$	40	V
Input Voltage	$V_I$	$V_S$	V
Differential Input Voltage	$V_{I(DIFF)}$	$\pm V_S$	V
DC Output Current	$I_O$	0.7	A
Peak Output Current (Non Repetitive)	$I_P$	1	A
Power Dissipation At: $T_{amb} = 50^\circ\text{C}$	$P_{tot}$	1	W
Operating Temperature Range	$T_{op}$	-25 to 85	$^\circ\text{C}$
Storage and Junction Temperature	$T_{stg}, T_j$	-40 to 150	$^\circ\text{C}$

Thermal Data			
Parameter	Symbol	Value	Unit
Thermal Resistance Junction-Ambient Maximum	$R\theta_{ja}$	100	$^\circ\text{C}/\text{W}$
8-DIP			
16-SOP			

**Note 1:** The "Absolute Maximum Ratings" are those values beyond which the safety of the device cannot be guaranteed. The device should not be operated at these limits. The parametric values defined in the Electrical Characteristics tables are not guaranteed at the absolute maximum ratings.

### Electrical Characteristics (L272)

( $V_{CC} = +12\text{V}$ ,  $V_{EE} = -12\text{V}$ ,  $T_A = 25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Supply Voltage ( $V_{CC} - V_{EE}$ )	$V_S$		4.0		28.0	V
Supply Current	$I_S$	$V_O = V_{CC}/2$ $V_{CC} = 24\text{V}, V_{EE} = 0\text{V}$ $V_{CC} = 12\text{V}, V_{EE} = 0\text{V}$		8.0 7.5	12.0 11.0	mA mA
Input Bias Current	$I_{BIAS}$			0.3	2.5	$\mu\text{A}$
Input Offset Voltage	$V_{IO}$			15.0	60.0	mV
Input Offset Current	$I_{IO}$			50.0	250	nA
Slew Rate	SR	$V_{IN} = 1V_{pp}$ , Unit Gain		1.0		V/ $\mu\text{s}$
Gain-Bandwidth Product	GBW			350		kHz
Input Resistance	$R_I$		500			k $\Omega$
Large Signal	$G_V$	$V_{O(pp)} = \pm 10\text{V}$	65.0	75.0		dB
Input Noise Voltage	$e_N$	$B = 20\text{ kHz}$		10.0		$\mu\text{V}$
Input Noise Current	$I_N$	$B = 20\text{ kHz}$		200		pA
Common Mode Rejection Ratio	CMRR		60.0	75.0		dB
Supply Voltage Rejection Ratio	PSRR	$V_{CC} = +15\text{V}, V_{EE} = -15\text{V}$ $V_{CC} = +5\text{V}, V_{EE} = -5\text{V}$	54.0	62.0		dB
Output Voltage Swing	$V_O$	$V_{CC} = 24\text{V}, V_{EE} = 0\text{V}$ $I_P = 0.1\text{A}$ $I_P = 0.5\text{A}$	21.0 21.0	23.0 22.5		V V
Channel Separation	$C_S$	$f = 1\text{ kHz}; R_L = 10\Omega, G_V = 30\text{ dB}$		60.0		dB
Total Harmonic Distortion	THD	$f = 1\text{ kHz}; G_V = 1\text{ dB}, R_L = \bullet$		0.5		%
Thermal Shutdown Temperature (Note 2)	TSD			160		$^\circ\text{C}$

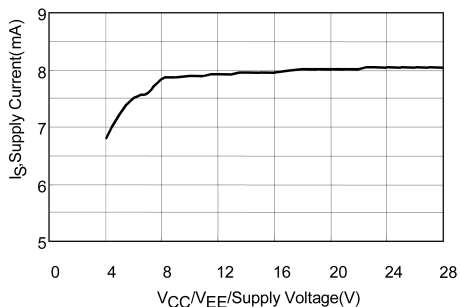
**Note 2:** Guaranteed by design. Not 100% tested in production.

**Electrical Characteristics (L272A)**(V<sub>CC</sub> = +12V, V<sub>EE</sub> = -12V, T<sub>A</sub> = 25°C unless otherwise specified)

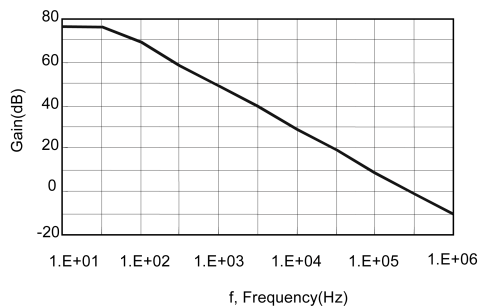
Parameter	Symbol	Conditions	Min	Typ	Max	Units
Supply Voltage (V <sub>CC</sub> - V <sub>EE</sub> )	V <sub>S</sub>		4.0		28.0	V
Supply Current	I <sub>S</sub>	V <sub>O</sub> = V <sub>CC</sub> /2		8.0	12.0	mA
		V <sub>CC</sub> = 24V, V <sub>EE</sub> = 0V		7.5	11.0	mA
		V <sub>CC</sub> = 12V, V <sub>EE</sub> = 0V				
Input Bias Current	I <sub>BIAS</sub>			0.1	1.0	μA
Input Offset Voltage	V <sub>IO</sub>			7.0	30.0	mV
Input Offset Current	I <sub>IO</sub>			20.0	100	nA
Slew Rate	SR	V <sub>IN</sub> = 1V <sub>PP</sub> , Unit Gain		1.0		V/μs
Gain-Bandwidth Product	GBW			350		kHz
Input Resistance	R <sub>I</sub>		500			kΩ
Large Signal	G <sub>V</sub>	V <sub>O(pp)</sub> = ± 10V	65.0	75.0		dB
Input Noise Voltage	e <sub>N</sub>	B = 20 kHz		10.0		μV
Input Noise Current	I <sub>N</sub>	B = 20 kHz		200		pA
Common Mode Rejection Ratio	CMRR		60.0	75.0		dB
Supply Voltage Rejection Ratio	PSRR	V <sub>CC</sub> = +15V, V <sub>EE</sub> = -15V V <sub>CC</sub> = +5V, V <sub>EE</sub> = -5V	54.0	62.0		dB
Output Voltage Swing	V <sub>O</sub>	V <sub>CC</sub> = 24V, V <sub>EE</sub> = 0V I <sub>P</sub> = 0.1A	21.0	23.0		V
		I <sub>P</sub> = 0.5A	21.0	22.5		V
Channel Separation	C <sub>S</sub>	f = 1 kHz; R <sub>L</sub> = 10Ω, G <sub>V</sub> = 30 dB		60.0		dB
Total Harmonic Distortion	THD	f = 1 kHz; G <sub>V</sub> = 1dB, R <sub>L</sub> = •		0.5		%
Thermal Shutdown Temperature (Note 2)	TSD			160		°C

**Note 3:** Guaranteed by design. Not 100% tested in production.

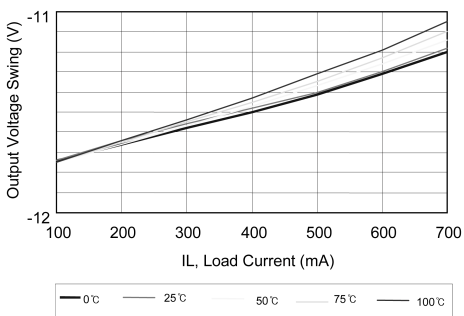
**Typical Performance Characteristics**



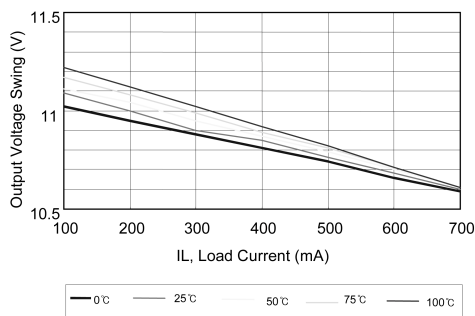
**FIGURE 1. Supply Voltage vs. Supply Current with No Load**



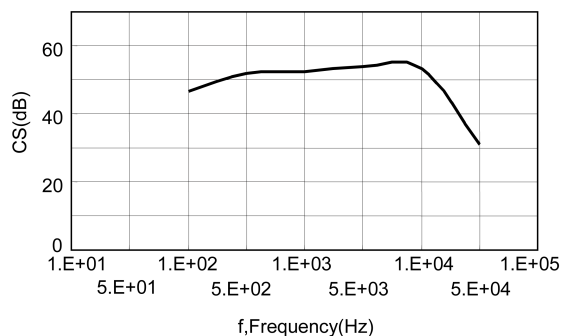
**FIGURE 2. Open Loop Voltage Gain**



**FIGURE 3. Output voltage Swing vs. Load Current**

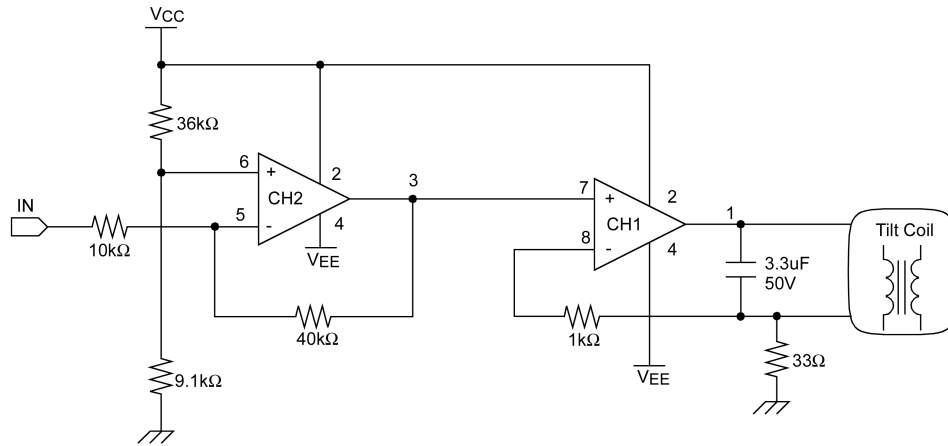


**FIGURE 4. Output Voltage Swing vs. Load Current**



**FIGURE 5. Channel Separation vs. Frequency**

Application



<Tilt Coil Current Circuit in Monitor, 8-DIP Package>

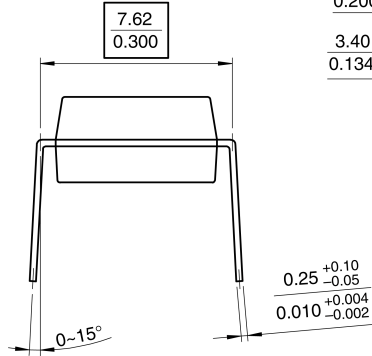
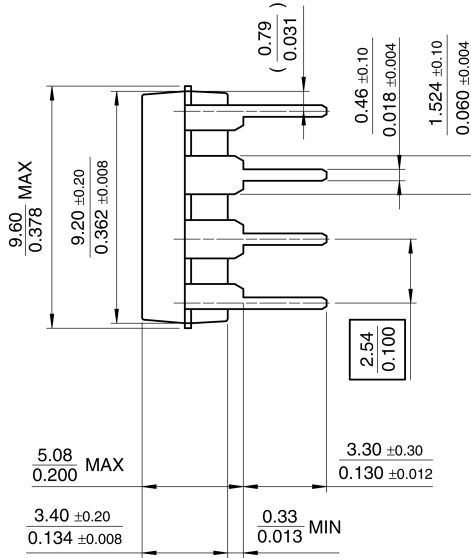
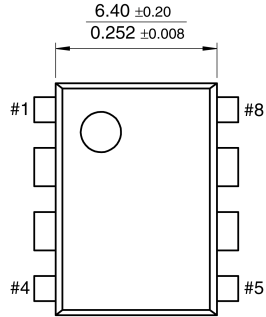
**Physical Dimensions** inches (millimeters) unless otherwise noted

L272 • L272A

Package

Dimensions in millimeters

**8-DIP**

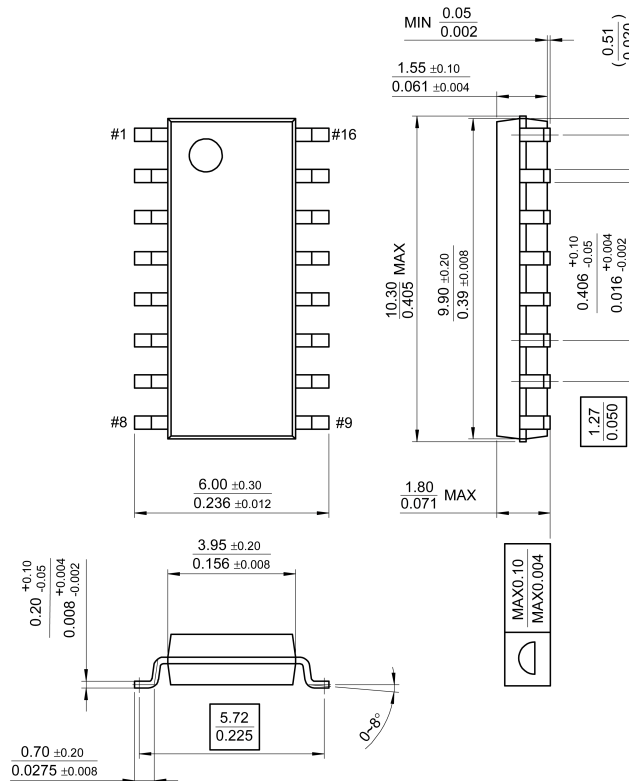


**Physical Dimensions** inches (millimeters) unless otherwise noted (Continued)

Package

Dimensions in millimeters

**16-SOP**



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