

Product Overview

TLV271: Operational Amplifier, 3MHz, Low power, CMOS Op-Amp

For complete documentation, see the data sheet.

The TLV271 operational amplifier provides rail to rail output operation. The output can swing within 320 mV to the positive rail and 50 mV to the negative rail. This rail to rail operation enables the user to make optimal use of the entire supply voltage range while taking advantage of 3 MHz bandwidth. The TLV271 can operate on supply voltage as low as 2.7 V over the temperature range of minus 40 to plus 105 degrees C. The high bandwidth provides a slew rate of 2.4 V per us while only consuming 550uA of quiescent current. Likewise the TLV271 can run on a supply voltage as high as 16 V making it ideal for a broad range of battery operated applications. Since this is a CMOS device it has high input impedance and low bias currents making it ideal for interfacing to a wide variety of signal sensors. In addition it comes in a small TSOP5 package with two pinout styles allowing for use in high density PCBs.

Product Family:

• TLV271
• TLV272
• TLV274

Channel
1
2
4

Packages
SOT23-5
SOIC-8, Micro-8
TSSOP-14, SOIC-14

Features

- Rail To Rail Output
- Wide Bandwidth: 3 MHz
- Wide Power Supply Range: 2.7 V to 16 V
- Low Supply Current: 550 μ A
- Low Input Bias Current: 1 pA
- Wide Temperature Range: -40°C to +105°C

Benefits

- Optimize SNR
- Enhanced loop gain
- Versatile
- Reduced power consumption
- Tolerates high-impedance sensors
- Very robust

Applications

- Wideband Amplification
- Signal Conditioning
- Current Sensing

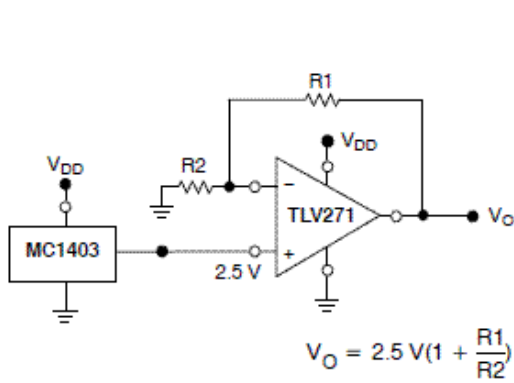
End Products

- Power Supplies
- Notebook and Desktop Computers
- Portable Instruments

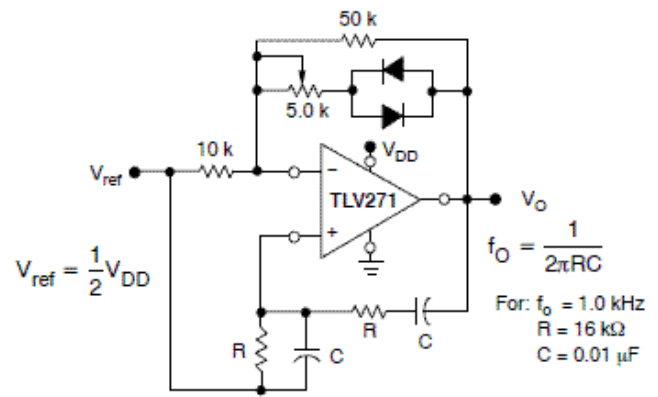
Part Electrical Specifications

| Product | Pricing (\$/Unit) | Compliance | Status | Rail to Rail | Channels | V _S Min (V) | V _S Max (V) | I _a Typ (mA) | V _{OS} Max (mV) | GB W Typ (MHz) | SR Typ (V/ μ s) | I _O Typ (mA) | ΔV_{O} s/ ΔT (μ V/C) | e _N (nV/ \sqrt Hz) | I _{bias} Typ (pA) | CM RR Typ (dB) | Architecture | Temperature Range (°C) | Package Type |
|--------------|-------------------|--|--------|--------------|----------|------------------------|------------------------|-------------------------|--------------------------|----------------|---------------------|-------------------------|---|---------------------------------|----------------------------|----------------|--------------|------------------------|---------------------|
| TLV271SN1T1G | 0.3237 | Pb-free Halide free non AEC-Q and PPAP | Active | Output | 1 | 2.7 | 16 | 0.38 | 5 | 3.5 | 2.6 | 13 | 2 | 30 | 45 | 140 | CMOS | -40 to 105 | TSO P-5 / SOT -23-5 |
| TLV271SN2T1G | 0.3237 | Pb-free Halide free non AEC-Q and PPAP | Active | Output | 1 | 2.7 | 16 | 0.38 | 5 | 3.5 | 2.6 | 13 | 2 | 30 | 45 | 140 | CMOS | -40 to 105 | TSO P-5 / SOT -23-5 |

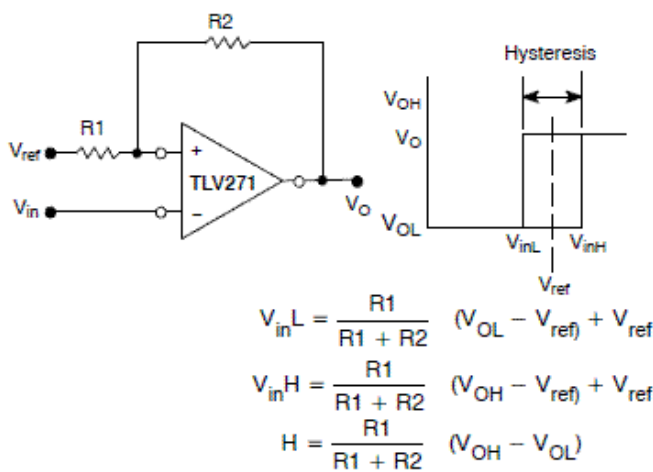
Application Diagram



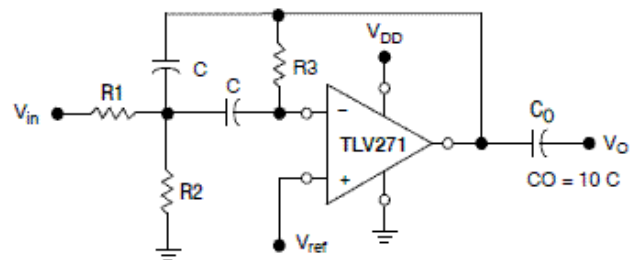
Voltage Reference



Wien Bridge Oscillator



Comparator with Hysteresis



Given: f_o = center frequency
 $A(f_o)$ = gain at center frequency

Choose value f_o, C_Q
 Then: $R_3 = \frac{C_Q}{\pi f_o C}$

$$R_1 = \frac{R_3}{2 A(f_o)}$$

$$R_2 = \frac{R_1 R_3}{4Q^2 R_1 - R_3}$$

For less than 10% error from operational amplifier,
 $((Q_o f_o)/BW) < 0.1$ where f_o and BW are expressed in Hz.
 If source impedance varies, filter may be preceded with
 voltage follower buffer to stabilize filter parameters.

Multiple Feedback Bandpass Filter

For more information please contact your local sales support at www.onsemi.com.

Created on: 10/23/2021