



Operational Amplifiers

LM202 voltage follower general description

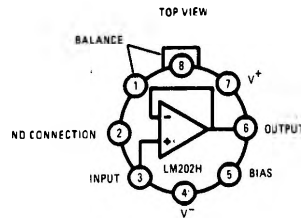
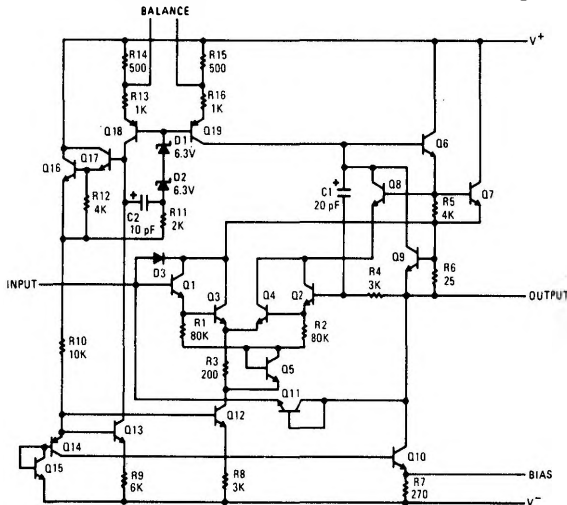
The LM202, a limited temperature range version of the LM102, is a high-gain operational amplifier designed specifically for unity-gain voltage follower applications. Built on a single silicon chip, the device incorporates advanced processing techniques to obtain very low input current and high input impedance. Further, the input transistors are operated at zero collector-base voltage to virtually eliminate high temperature leakage currents. It can therefore be operated in a temperature stabilized component oven to get extremely low input currents and low offset voltage drift. Other outstanding characteristics of the device include:

- Fast slewing: 10V/ μ s
- Low input current: 15 nA (max)

- High input resistance: 10,000 M Ω
- No external frequency compensation required
- Simple offset balancing with optional 1K potentiometer
- Specified for operation from -25°C to 85°C
- Plug-in replacement for both the LM201 and LM709C voltage follower applications.

The LM202, which is designed to operate with supply voltages between $\pm 12\text{V}$ and $\pm 15\text{V}$, also features low input capacitance as well as excellent small signal and large signal frequency response — all of which minimize high frequency gain error. Because of the low wiring capacitances inherent in monolithic construction, this fast operation can be realized without increasing power consumption.

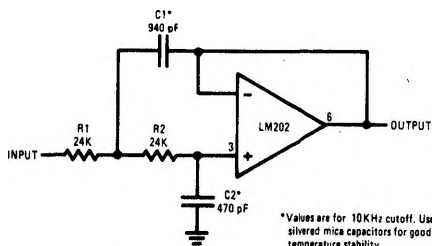
schematic and connection diagrams



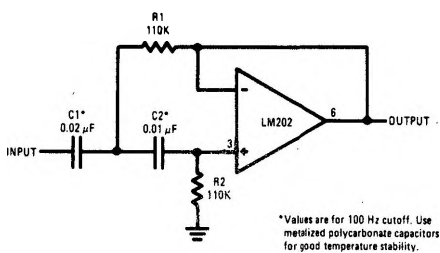
NOTE: Pin 4 connected to case

typical applications

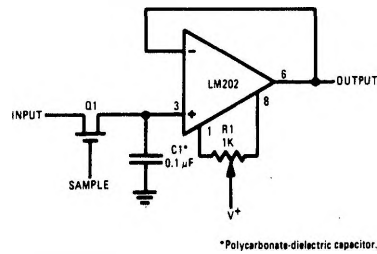
Low Pass Active Filter



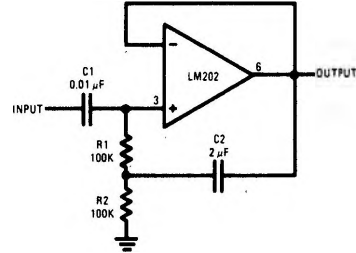
High Pass Active Filter



Sample and Hold With Offset Adjustment



High Input Impedance AC Amplifier



absolute maximum ratings

Supply Voltage	±18V
Power Dissipation (Note 1)	500 mW
Input Voltage (Note 2)	±15V
Output Short Circuit Duration (Note 3)	Indefinite
Operating Temperature Range	-25°C to 85°C
Storage Temperature Range	-65°C to 150°C
Lead Temperature (soldering, 60 sec)	300°C

electrical characteristics (Note 4)

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Offset Voltage			3	10	mV
Average Temperature Coefficient of Offset Voltage			15		μV/°C
Input Current			7	15	nA
Input Resistance		10 ¹⁰	10 ¹²		Ω
Voltage Gain	$R_L \geq 8\text{ K}\Omega$.999	0.9995	1.000	
Output Resistance			0.8	2.5	Ω
Output Voltage Swing	$R_L \geq 8\text{ K}\Omega$	±10			V
Supply Current			3.5	5.5	mA
Positive Supply Rejection		60			
Negative Supply Rejection		70			
Input Capacitance			3.0		pF
Offset Voltage	$-25^\circ\text{C} \leq T_A \leq 85^\circ\text{C}$			15	mV
Input Current	$T_A = 85^\circ\text{C}$		1.5	5.0	nA
	$T_A = -25^\circ\text{C}$		30	50	nA

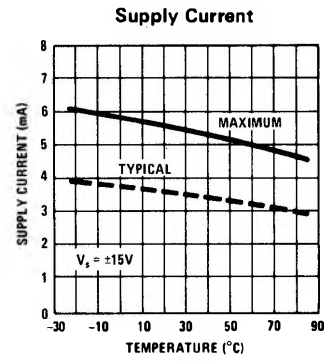
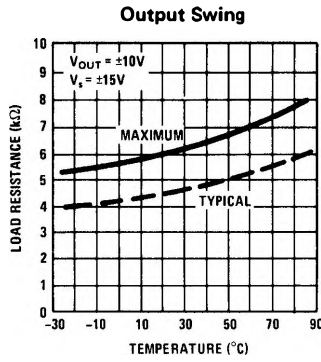
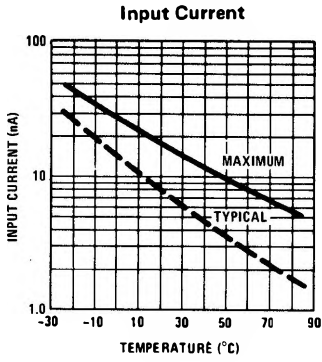
Note 1: For operating at elevated temperatures, the device must be derated based on a 100°C maximum junction temperature and a thermal resistance of 45°C/W junction to case or 150°C/W junction to ambient (see curve).

Note 2: For supply voltages less than ±15V, the absolute maximum input voltage is equal to the supply voltage.

Note 3: Continuous short circuit is allowed for case temperatures to 85°C and ambient temperatures to 55°C. It is necessary to insert a resistor greater than 2 kΩ in series with the input when the amplifier is driven from low impedance sources to prevent damage when the output is shorted.

Note 4: These specifications apply for $T_A = 25^\circ\text{C}$, $V_S = \pm 15\text{V}$ and $C_L \leq 100\text{ pF}$ unless otherwise noted.

guaranteed performance



typical performance

