

LH0020/LH0020C High Gain Operational Amplifier

General Description

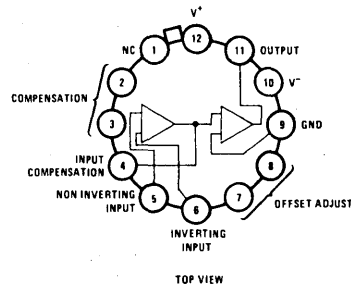
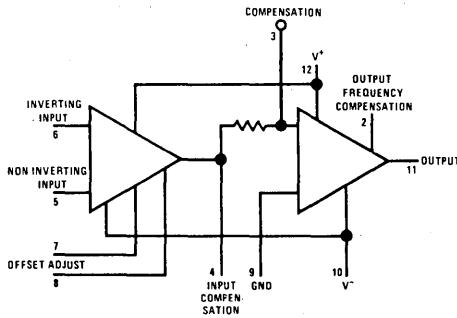
The LH0020/LH0020C is a general purpose operational amplifier designed to source and sink 50 mA output currents. In addition to its high output capability, the LH0020/LH0020C exhibits excellent open loop gain, typically in excess of 100 dB. The parameters of the LH0020 are guaranteed over the temperature range of -55°C to $+125^{\circ}\text{C}$ and $\pm 5\text{V} \leq V_S \leq \pm 22\text{V}$, while those of the LH0020C are guaranteed over the temperature range of 0°C to 85°C and $\leq \pm 5\text{V} \leq V_S \leq \pm 18\text{V}$. Additional features include:

- Low offset voltage typically 1.0 mV at 25°C over the entire common mode voltage range.

- Low offset current typically 10 nA at 25°C for the LH0020 and 30 nA for the LH0020C.
- Offset voltage is adjustable to zero with a single potentiometer.
- $\pm 14\text{V}$, 50 mA output capability.

Output current capability, excellent input characteristics, and large open loop gain make the LH0020/LH0020C suitable for application in a wide variety of applications from precision dc power supplies to precision medium power comparator.

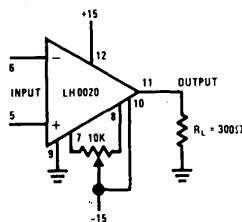
Schematic and Connection Diagrams



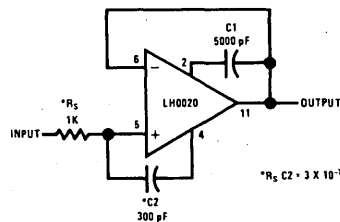
Order Number LH0020G or LH0020CG
See Package H12B

Typical Applications

Offset Adjustment



Unity Gain Frequency Compensation



*Previously called NH0020/NH0020C

Absolute Maximum Ratings

Supply Voltage	±22V
Power Dissipation	1.5W
Differential Input Voltage	±30V
Input Voltage (Note 1)	±15V
Output Short Circuit Duration	Continuous
Operating Temperature Range	LH0020 -55°C to +125°C
	LH0020C 0°C to 85°C
Storage Temperature	-65°C to +150°C
Lead Temperature (Soldering, 10 sec)	300°C

1

LH0020/LH0020C

Electrical Characteristics

PARAMETER	CONDITIONS	LH0020			LH0020C			UNITS		
		TEMP °C	MIN	TYP	MAX	TEMP °C	MIN		TYP	MAX
Input Offset Voltage	$R_S \leq 100\Omega$	25		1.0	2.5	25	1.0	6.0	mV	
		-55 to +125		2.0	4.0	0 to 85	3.0	7.5	mV	
Input Offset Current		25		10	50	25	30	200	nA	
		-55 to +125			100	0 to 85		300	nA	
Input Bias Current		25		60	250	25	200	500	nA	
		-55 to +125			500	0 to 85		800	nA	
Supply Current	$V_S = \pm 15V$	25		3.5	5.0	25	3.6	6.0	mA	
Input Resistance		25	0.6	1.0		25	0.3	1.0	MΩ	
Large Signal Voltage Gain	$V_S = \pm 15V, R_L = 300\Omega, V_O = \pm 10V$	25	100	300		25	50	150	V/mV	
		-55 to +125	50			0 to 85	30			V/mV
Output Voltage Swing	$V_S = \pm 15V, R_L = 300\Omega$	25	14.2	14.5		25	14.0	14.2	V	
		-55 to +125	14.0			0 to 85	13.5			V
Output Short Circuit Current	$V_S = \pm 15V$ $R_L = 0\Omega$	25		100	130	25	25	120	140	mA
Input Voltage Range	$V_S = \pm 15V$	-55 to +125	±12			0 to 85	±12			V
										V
Common Mode Rejection Ratio	$R_S \leq 100\Omega$	-55 to +125	90	96		0 to 85	90	96		dB
Power Supply Rejection Ratio	$R_S \leq 100\Omega$	-55 to +125	90	96		0 to 85	90	96		dB

Note 1: For supply voltages less than ±15V, the absolute maximum input voltage is equal to the supply voltage.

Note 2: These specifications apply for $\pm 5V \leq V_S \leq \pm 22V$ for the LH0020, $\pm 5V \leq V_S \leq \pm 18V$ for the LH0020C, pin 9 grounded, and a 5000 pF capacitor between pins 2 and 3, unless otherwise specified.