Operational Amplifiers

NH0020/NH0020C medium current operational amplifier

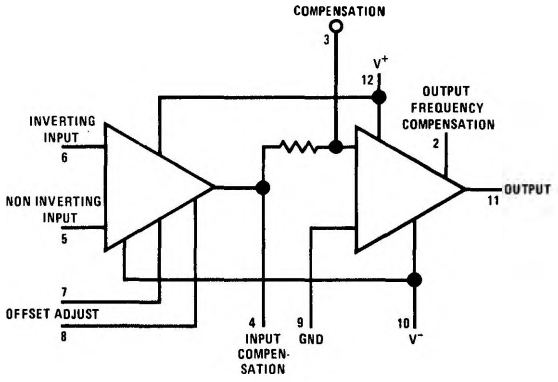
general description

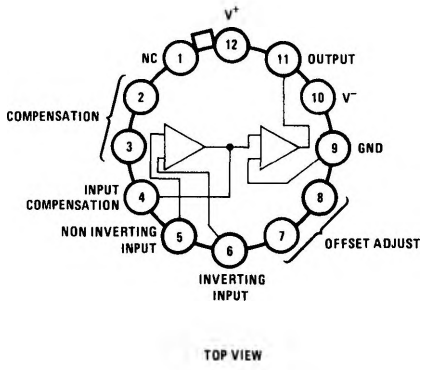
The NH0020/NH0020C is a general purpose operational amplifier designed to source and sink 50 mA output currents. In addition to its high output capability, the NH0020/NH0020C exhibits excellent open loop gain, typically in excess of 100 dB. The parameters of the NH0020 are guaranteed over the temperature range of −55°C to +125°C and ±5V $\leq V_S \leq$ ±22V, while those of the NH0020C are guaranteed over the temperature range of 0°C to 85°C and $\leq$ ±5V $\leq V_S \leq$ ±18V. 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 NH0020 and 30 nA for the NH0020C.
- Offset voltage is adjustable to zero with a single potentiometer.
- ±14V, 50 mA output capability.

Output current capability, excellent input characteristics, and large open loop gain make the NH0020/NH0020C suitable for application in a wide variety of applications from precision dc power supplies to precision medium power comparator.

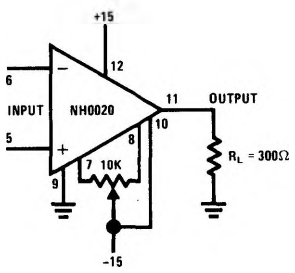
schematic and connection diagrams



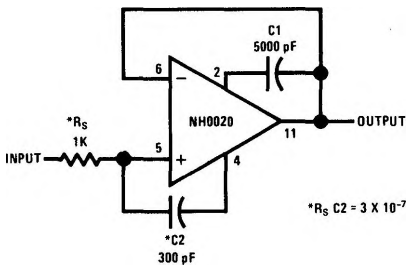


typical applications

Offset Adjustment



Unity Gain Frequency Compensation



absolute maximum ratings

Supply Voltage	NH0020	±22V
	NH0020C	±18V
Power Dissipation		1.5W
Differential Input Voltage		±30V
Input Voltage (Note 1)		±15V
Output Short Circuit Duration		Continuous
Operating Temperature Range	NH0020	−55°C to +125°C
	NH0020C	0°C to 85°C
Storage Temperature		−65°C to +150°C
Lead Temperature (Soldering, 10 sec)		300°C

electrical characteristics

PARAMETER	CONDITIONS	NH0020				NH0020C				UNITS
		TEMP °C	MIN	TYP	MAX	TEMP °C	MIN	TYP	MAX	
Input Offset Voltage	$R_S \leq 10k$	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	4.5	25		3.6	5.0	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
	$V_S = \pm 15V, R_L = 300\Omega, V_O = \pm 10V$	−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	$R_S \leq 10k$	−55 to +125	90	96		0 to 85	90	96		dB
Power Supply Rejection Ratio	$R_S \leq 10k$	−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 NH0020, $\pm 5V \leq V_S \leq \pm 18V$ for the NH0020C, pin 9 grounded, and a 5000 pF capacitor between pins 2 and 3, unless otherwise specified.