

LH0003/LH0003C Wide Bandwidth Operational Amplifier

General Description

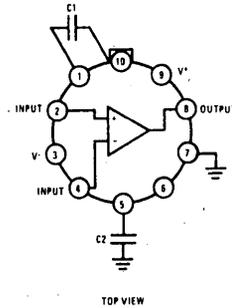
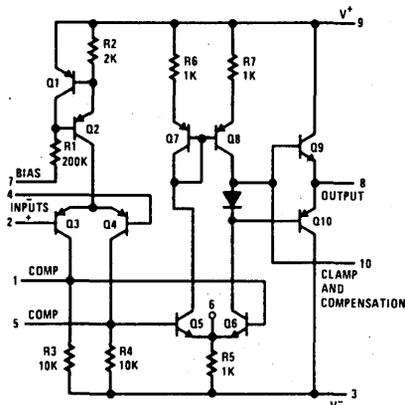
The LH0003/LH0003C is a general purpose operational amplifier which features: slewing rate up to 70 volts/ μ sec, a gain bandwidth of up to 30 MHz, and high output currents. Other features are:

- Very low offset voltage Typically 0.4 mV
- Large output swing $> \pm 10V$ into 100 Ω load

- High CMRR Typically > 90 dB
- Good large signal frequency response 50 kHz to 400 kHz depending on compensation

The LH0003 is specified for operation over the $-55^{\circ}C$ to $+125^{\circ}C$ military temperature range. The LH0003C is specified for operation over the $0^{\circ}C$ to $+85^{\circ}C$ temperature range.

Schematic and Connection Diagrams



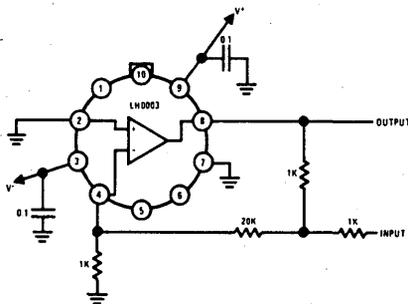
Order Number LH0003H or LH0003CH
See Package H10B

Circuit Gain	C ₁ pF	C ₂ pF	Slew Rate R _L > 200 Ω , V/ μ sec	Full Output Frequency R _L = 200 Ω , V _{OUT} = 10V
≥ 40	0	0	70	400
≥ 10	5	30	30	350
≥ 5	15	30	15	250
≥ 2	50	50	5	100
≥ 1	90	90	2	50

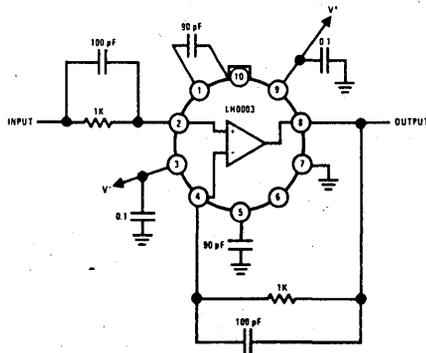
Typical Applications

Typical Compensation

High Slew Rate Unity Gain Inverting Amplifier



Unity Gain Follower



*Previously called NH0003/NH0003C

Absolute Maximum Ratings

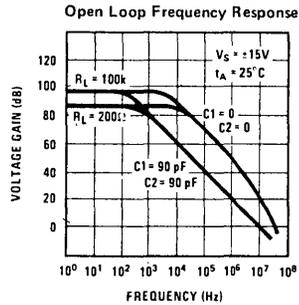
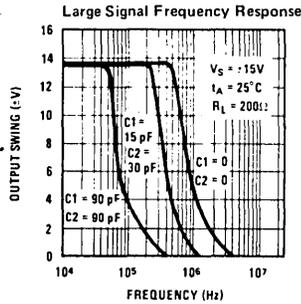
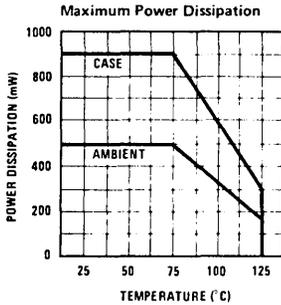
Supply Voltage	±20V
Power Dissipation	See curve
Differential Input Voltage	±7V
Input Voltage	Equal to supply
Load Current	120 mA
Operating Temperature Range	LH0003 -55°C to +125°C
	LH0003C 0°C to +85°C
Storage Temperature Range	-65°C to +150°C
Lead Temperature (Soldering, 10 sec)	300°C

Electrical Characteristics (Notes 1 & 2)

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Input Offset Voltage	$R_S < 100\Omega$		0.4	3.0	mV
Input Offset Current			0.02	0.2	μA
Input Bias Current			0.4	2.0	μA
Supply Current	$V_S = \pm 20V$		1.2	3	mA
Voltage Gain	$R_L = 100k, V_S = \pm 15V, V_{OUT} = \pm 10V$	20	70		V/mV
Voltage Gain	$R_L = 2k, V_S = \pm 15V, V_{OUT} = \pm 10V$	15	40		V/mV
Output Voltage Swing	$V_S = \pm 15, R_L = 100\Omega$	±10	±12		V
Input Resistance			100		k Ω
Average Temperature Coefficient of Offset Voltage	$R_S < 100\Omega$		4		$\mu V/^\circ C$
Average Temperature Coefficient of Bias Current			8		nA/°C
CMRR	$R_S < 100\Omega, V_S = \pm V, V_{IN} = \pm 10V$	70	90		dB
PSRR	$R_S < 100\Omega, V_S = \pm 15V, \Delta V = 5V$ to 20V	70	90		dB
Equivalent Input Noise Voltage	$R_S = 100\Omega, f = 10$ kHz to 100 kHz		1.8		μV_{rms}

- Note 1.** These specifications apply for Pin 7 grounded, for $\pm 5V < V_S < \pm 20V$, with capacitor $C_1 = 90$ pF from Pin 1 to Pin 10 and $C_2 = 90$ pF from Pin 5 to ground, over the specified operating temperature range, unless otherwise specified.
- Note 2.** Typical values are for $t_{AMBIENT} = 25^\circ C$ unless otherwise specified.

Typical Performance



1
LH0003/LH0003C