# National Semiconductor

# LH0002/LH0002C Current Amplifier

### **General Description**

The LH0002/LH0002C is a general purpose current amplifier.

## Features

- High input impedance
- Low output impedance
- High power efficiency
- Low harmonic distortion
- DC to 30 MHz bandwidth
- Output voltage swing that approaches supply voltage
- 400 mA pulsed output current
- Slew rate is typically 200 V/µs
- Operation from ±5V to ±20V

These features make it ideal to integrate with an operational amplifier inside a closed loop configuration to increase current output. The symmetrical output portion of the cir-

# **Schematic and Connection Diagrams**



OUTPUT

Order Number LH0002H or LH0002CH See NS Package Number H08D cuit also provides a low output impedance for both the positive and negative slopes of output pulses.

The LH0002 is available in an 8-lead low-profile TO-5 header and a 20-pin leadless chip carrier; the LH0002C is also available in an 8-lead TO-5, and a 10-pin molded dual-in-line package.

The LH0002 is specified for operation over the  $-55^{\circ}$ C to  $+125^{\circ}$ C military temperature range. The LH0002C is specified for operation over the 0°C to  $+85^{\circ}$ C temperature range.

# Applications

Line driver

400 kΩ

6Ω

- 30 MHz buffer
- High speed D/A conversion
- Instrumentation buffer
- Precision current source



Order Number LH0002CN See NS Package Number N10A

#### Leadless Chip Carrier



TL/H/5560-3

## **Absolute Maximum Ratings**

If Military/Aerospace specified devices are required, please contact the National Semiconductor Sales Office/Distributors for availability and specifications. (Note 2)

Supply Voltage		±22V
Power Dissipation Ambient	t	600 mW
Input Voltage	(Equal to P	ower Supply Voltage)
Storage Temperature Rang	ge i	-65°C to +150°C
Operating Temperature Ra	ange	
LH0002		-55°C to +125°C
LH0002C		0°C to +85°C

Steady State Output Current	± 100 mA
Pulsed Output Current (50 ms On/1 sec.	Off) ±400 mA
Lead Temperature Soldering (10 second	s)
Metal Can	300°C
Plastic	260°C
ESD rating to be determined.	

## Electrical Characteristics (Note 1)

Parameter	Conditions	Min	Тур	Max	Units
Voltage Gain	$R_{S} = 10 \text{ k}\Omega, R_{L} = 1.0 \text{ k}\Omega, V_{IN} = \pm 10V$	0.95	0.97		
AC Current Gain	V <sub>IN</sub> = 1.0 Vrms, f = 1.0 kHz		40		A/mA
Input Impedance	$R_{S} = 200 \text{ k}\Omega, V_{IN} = \pm 1.0 \text{ V}, R_{L} = 1.0 \text{ k}\Omega$	180	400		kΩ
Output Impedance	$V_{IN} = \pm 1.0V, R_L = 50\Omega, R_S = 10 \text{ k}\Omega$		6.0	10	Ω
Output Voltage Swing	$R_{L} = 1.0 \text{ k}\Omega, V_{IN} = \pm 12V$	±10	±11		v
Output Voltage Swing	$V_{S} = \pm 15V, V_{IN} = \pm 12V, R_{S} = 50\Omega, R_{L} = 100\Omega, T_{A} = 25^{\circ}C$	± 10		-	v
DC Output Offset Voltage	$R_S = 300\Omega$ , $R_L = 1.0 k\Omega$		±10	± 30	mV
DC Input Offset Current	$R_{S} = 10 k\Omega, R_{L} = 1.0 k\Omega$		±6.0	±10	μΑ
Harmonic Distortion	$V_{IN} = 5.0$ Vrms, f = 1.0 kHz		0.1		%
Rise Time	$R_L = 50\Omega, \Delta V_{IN} = 100 \text{ mV}$		7.0	12	ns
Positive Supply Current	$R_S = 10 k\Omega, R_L = 1.0 k\Omega$		+6.0	+ 10	mA
Negative Supply Current	$R_S = 10 k\Omega, R_L = 1.0 k\Omega$		-6.0	-10	mA

Note 1: Specification applies for  $T_A = 25^{\circ}C$  with + 12V on Pins 1 and 2; -12V on Pins 6 and 7 for the metal can package and + 12V on Pins 1 and 2; -12V on Pins 4 and 5 for the dual-in-line package unless otherwise specified. The parameter guarantees for LH0002C apply over the temperature range of 0°C to + 85°C, while parameters for the LH0002 are guaranteed over the temperature range - 55°C to + 125°C unless otherwise specified.

Note 2: Refer to RETS0002X for LH0002 military specifications.

# **Typical Applications**



Line Driver



