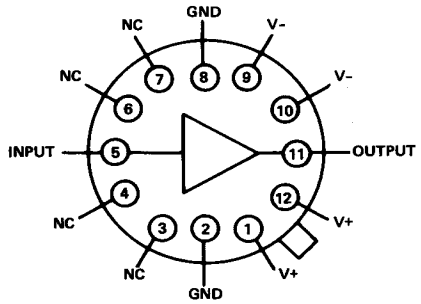
Wide Bandwidth, High-Speed Buffer Amplifiers

HOS-100AH/HOS-100SH

FEATURES
- Wide Bandwidth – dc to 125MHz
- High Slew Rate – 1500V/μs
- Operation Guaranteed -55°C to +125°C (SH)
- High Output Drive – ±10V with 100Ω Load

APPLICATIONS
- Current Boosters
- High Speed A/D Input Buffers
- Nuclear Instrumentation Amplifiers
- Coaxial Cable Drive
- High Speed Line Drivers
- Video Impedance Transformation

HOS-100AH/HOS-100SH
FUNCTIONAL BLOCK DIAGRAM



GENERAL DESCRIPTION

The HOS-100SH and HOS-100AH Bipolar Buffer Amplifiers are high-speed, voltage follower/buffers designed to provide high-current drive at frequencies from dc to over 125MHz, as well as providing ±10mA into 1kΩ loads (±100mA peak) at slew rates of 1500V/μs. Both units also exhibit excellent phase linearity (2°), and low distortion (<0.1%).

For commercial temperature ranges the HOS-100AH is specified for operation over the range of -25°C to +85°C (case). The HOS-100SH is specified for operation over the military range of -55°C to +125°C (case).

The HOS-100SH and HOS-100AH are intended to fulfill a wide range of buffer applications, such as video impedance transformation, high impedance input buffers for A/D converters and comparators, as well as high-speed line drivers and nuclear instrumentation amplifiers. Additionally, both amplifiers will continuously drive 50Ω coaxial cables or serve as yoke drives in high resolution CRT displays.

They are particularly well suited for current booster applications (Figure 3) within an op-amp loop where input impedance and bias current requirements are less stringent than in FET design.

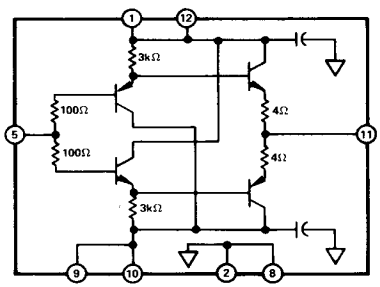


Figure 1. Schematic Diagram HOS-100

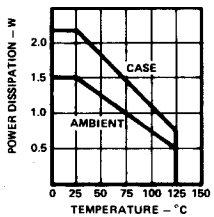


Figure 2. Power Derating

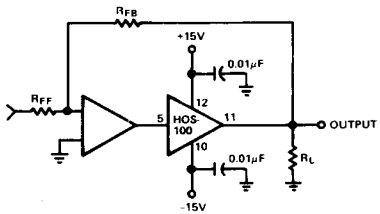


Figure 3. Current Booster

SPECIFICATIONS

PARAMETER	CONDITIONS	HOS-100SH MIN	HOS-100SH TYP	HOS-100SH MAX	HOS-100AH MIN	HOS-100AH TYP	HOS-100AH MAX	UNITS
DC ELECTRICAL CHARACTERISTICS[1,2]								
Input Bias Current	T_C = 25°C		5	20		5	25	µA
				25				µA
Input Impedance	V_{IN} = 1V rms, f = 1kHz R_L = 1k, T_C = 25°C	100	200		100	200		kΩ
Voltage Gain	V_{IN} = 1V rms, f = 1kHz R_L = 1k, T_C = 25°C	0.95	0.97	1.0	0.94	0.96	1.0	V/V
Output Offset Voltage	R_S = 50Ω, T_C = 25°C		5	10		10	25	mV
				25			35	mV
Output Offset Voltage T_C	R_S = 50Ω		25	75		25	75	µV/°C
Output Impedance	V_{IN} = 1V rms, f = 1kHz R_S = 500Ω, R_L = 1k		8	12		8	12	Ω
Output Voltage Swing	R_S = 50Ω, R_L = 1k	±12	±13		±12	±13		V
	V_S = ±5V, R_L = 1k		6			6		V
Supply Current	V_{IN} = 0V, T_C = 25°C							
	V_S = ±15		13	16		15	20	mA
	V_S = ±5		10			10		mA
Power Consumption	V_{IN} = 0V, V_S = ±15V T_C = 25°C		390	480		450	600	mW
AC ELECTRICAL CHARACTERISTICS[3]								
Slew Rate	V_{IN} = ±10V	1000	1500		1000	1400		V/µs
Bandwidth	V_{IN} = 1V rms	100	125		100	125		MHz
Rise Time	ΔV_{IN} = 0.5V		2	5		2	5	ns
Propagation Delay	ΔV_{IN} = 0.5V		1.5			1.5		ns
Phase Nonlinearity	BW = 1 to 20MHz		2			2		Degrees
Harmonic Distortion			<0.1			<0.1		%
MFBF			1.509×10^7 hours					

NOTES
[1] Unless otherwise noted, these specifications apply for +15V applied to Pin 12, and −15V applied to Pin 10.
[2] Unless otherwise noted, specifications apply over a temperature range, −55°C ≤ T_C ≤ +125°C for the HOS-100SH, and −25°C ≤ T_C ≤ +85°C for the HOS-100AH. Typical values shown are for T_C = +25°C.
[3] These specifications all measured with the following conditions: T_C = +25°C, V_S = ±15V, R_S = 50Ω, R_L = 1k.
Specifications subject to change without notice.

ABSOLUTE MAXIMUM RATINGS

Supply Voltage (V+ − V−) 40V
Maximum Power Dissipation 1.5W
Input Voltage . . . . . Equal to Supply Voltage
Maximum Continuous Output Current . . . . . ±100mA
Maximum Peak Output Current . . . . . ±250mA
Operating Temperature Range (Case) . . . . . −55°C to +125°C
Storage Temperature . . . . . −65°C to +150°C
Lead Temperature (Soldering, 10 sec) . . . . . +300°C
Maximum Junction Temperature . . . . . +175°C

ORDERING INFORMATION

Model	Temperature Range	Package Options*
HOS-100AH	−25°C to +85°C	H-12A
HOS-100SH	−55°C to +125°C	H-12A

*See Section 16 for package outline information.