T-79-07-10

BURR-BROWN®

OPA633SH/883B

REVISION NONE
FEBRUARY, 1989

High Speed BUFFER AMPLIFIER

FEATURES

- WIDE BANDWIDTH: 275MHz
- HIGH SLEW RATE: 2500V/µs
- HIGH OUTPUT CURRENT: 100mA
- LOW OFFSET VOLTAGE: 1.5mV
- REPLACES HA-5033
- IMPROVED PERFORMANCE/PRICE: LH0033, LTC1010, HOS200

APPLICATIONS

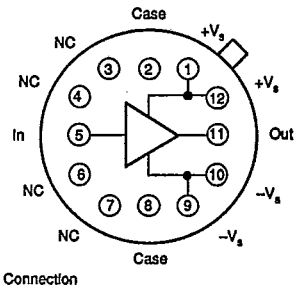
- OP AMP CURRENT BOOSTER
- VIDEO BUFFER
- LINE DRIVER
- A/D CONVERTER INPUT BUFFER

DESCRIPTION

The OPA633SH/883B is a monolithic unity-gain buffer amplifier featuring very wide bandwidth and high slew rate. A dielectric isolation process incorporating both NPN and PNP high frequency transistors achieves performance unattainable with conventional integrated circuit technology. Laser trimming provides low input offset voltage.

High output current capability allows the OPA633SH/883B to drive 50Ω and 75Ω lines, making it ideal for RF, IF and video applications. Low phase shift allows it to be used inside amplifier feedback loops thus bringing high current output and ability to drive capacitive loads to many circuit applications.

CONNECTION DIAGRAM



NC = No Connection

ABSOLUTE MAXIMUM RATINGS

Power Supply, $\pm V_s$	±20V
Input Voltage V_{IN}	$+V_s + 2$ to $-V_s - 2$
Output Current (peak)	±200mA
Internal Power Dissipation (25°C)	1.75W
Junction Temperature	200°C
Storage Temperature Range	–65°C to +150°C
Lead Temperature (soldering, 60s)	300°C

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PDS-915

SPECIFICATIONS

T-97-07-10

ELECTRICAL

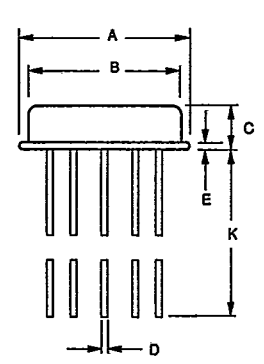
At +25°C, V_S = ±12V, R_S = 50Ω, R_L = 100Ω, C_L = 10pF unless otherwise noted.

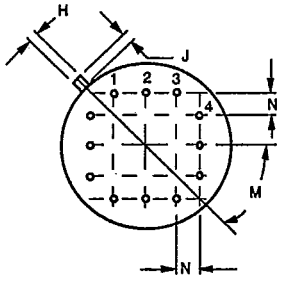
PARAMETER	CONDITIONS	OPA633SH/883B MIN	TYP	MAX	UNITS
FREQUENCY RESPONSE					
Small Signal Bandwidth			275		MHz
Full Power Bandwidth	V_O = 1Vrms, R_L = 1kΩ		65		MHz
Slew Rate	V_O = 10V, V_S = ±15V, R_L = 1kΩ	2500		V/µs	
Rise Time, 10% to 90%	V_O = 500mV		2.5		ns
Propagation Delay			1		ns
Overshoot			10		%
Settling Time, 0.1%			50		ns
Differential Phase Error[1]			0.1		Degrees
Differential Gain Error[1]			0.1		%
Total Harmonic Distortion	V_O = 1Vrms, R_L = 1kΩ, f = 100kHz	0.005		%	
	V_O = 1Vrms, R_L = 100kΩ, f = 100kHz	0.02		%	
OUTPUT CHARACTERISTICS					
Voltage	$T_A = T_{MIN}$ to T_{MAX}		±10		V
	R_L = 1kΩ, V_S = ±15V		±13		V
Current			±100		mA
Resistance			5		Ω
TRANSFER CHARACTERISTICS					
Gain			0.95		V/V
	R_L = 1kΩ		0.99		V/V
	$T_A = T_{MIN}$ to T_{MAX}		0.95		V/V
INPUT					
Offset Voltage	T_A = +25°C		±1.5		mV
	$T_A = T_{MIN}$ to T_{MAX}		±5		mV
vs Temperature			±33		µV/°C
vs Supply	$T_A = T_{MIN}$ to T_{MAX}		72		dB
Bias Current	T_A = +25°C		±15		µA
	$T_A = T_{MIN}$ to T_{MAX}		±20		µA
Noise Voltage	10Hz to 1 MHz		20		µVp-p
Resistance			1.5		MΩ
Capacitance			1.8		pF
POWER SUPPLY					
Rated Supply Voltage	Specified performance		±12		V
Operating Supply Voltage	Derated performance				V
Current, Quiescent	I_O = 0		21		mA
	I_O = 0, $T_A = T_{MIN}$ to T_{MAX}	21		mA	
TEMPERATURE RANGE					
Specification, Ambient		–55		+125	°C
Operating, Ambient		–55		+125	°C
θ Junction, Ambient[2]			99		°C/W
θ Junction, Case[2]			31		°C/W

NOTES: (1) Differential phase error in video transmission systems is the change in phase of a color subcarrier resulting from a change in picture signal from blanked to white. Differential gain error is the change in amplitude at the color subcarrier frequency resulting from a change in picture signal from blanked to white. (2) Recommended heat sinks for the TO-8 package are: Thermalloy 2204A with θ_{SA} = 27°C/W and IERC Up TO-8 48CB, θ_{SA} = 10°C/W.

MECHANICAL

H Package—Metal TO-8





DIM	INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX
A	.593	.603	15.06	15.32
B	.547	.553	13.89	14.05
C	.130	.150	3.30	3.81
D	.016	.019	0.41	0.48
E	.010	.040	0.25	1.02
H	.026	.036	0.66	0.91
J	.026	.036	0.66	0.91
K	.500	.562	12.70	14.27
M	45° BASIC		45° BASIC	
N	.100 BASIC		2.54 BASIC	

NOTE: Leads in true position within 0.01" (0.25mm) R at MMC at seating plane. Pin numbers shown for reference only. Numbers may not be marked on package.