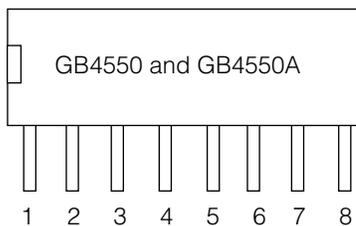


**FEATURES**

- adjustable clamp level from -5.5 V to +5.5 V at  $\pm 10$  V supplies.
- ultra low differential gain (0.02% typ.) and differential phase (0.03° typ.)
- wideband unity gain: **GB4550**  $\pm 0.2$  dB at 25 MHz  
**GB4550A**  $\pm 0.1$  dB at 25 MHz
- both drive 150pF loads at full power, flat to 10 MHz.
- **GB4550A** — tight delay spread of  $\pm 0.15^\circ$  at colorburst.
- convenient 8 pin SIP packaging.
- both can be configured as a gain stage with reduced bandwidth.

**PIN CONNECTIONS**



Pin No.	GB4550	GB4550A	Function
1	+IN	+IN	non-inverting input
2	V <sub>CC</sub>	V <sub>CC</sub>	positive power supply
3	COMP	NC	frequency compensation or NC
4	V <sub>CL</sub>	V <sub>CL</sub>	clamp voltage input
5	C <sub>X</sub>	C <sub>X</sub>	external capacitor
6	V <sub>EE</sub>	V <sub>EE</sub>	negative power supply
7	-IN	-IN	inverting input
8	OUT	OUT	output

**ORDERING INFORMATION**

Part Number	Package Type	Temperature Range
GB4550 - CSA	8 pin SIP	0 to 70°C
GB4550ACSA	8 pin SIP	0 to 70°C

**DESCRIPTION**

The GB4550 and GB4550A are high performance monolithic video buffer/clamps made on Gennum's LSI process. They feature a wideband differential amplifier that can be configured as a gain stage. The output signal voltage is limited to +2V above the clamp level in order to prevent damage to crosspoints connected to the output.

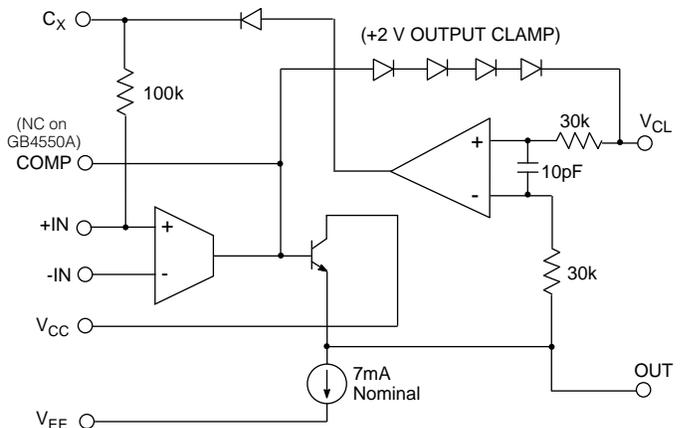
The clamping level can be set for normal sync tip clamping by connecting pin 4 to -0.286 volts. For other applications, the clamping voltage level can be varied from -5.5 to +5.5 volts.

The GB4550A features a tight delay spread of only  $\pm 0.15$  degrees while the GB4550 maintains a  $\pm 1.5$  degree delay spread. Both devices operate from  $\pm 9$  to  $\pm 12$  V power supplies and will directly interface with Gennum's video crosspoint switches.

The 8 pin SIP package is ideally suited for space restricted board layouts.

**APPLICATIONS**

- Input buffering and clamping to crosspoint switches
- Inter - system video signal clamping



All resistors in ohms, all capacitors in microfarads unless otherwise stated

**SIMPLIFIED CIRCUIT DIAGRAM**

## ABSOLUTE MAXIMUM RATINGS

PARAMETER	VALUE
Supply Voltage $V_S$	$\pm 13.5$ V
Operating Temperature Range	$0^\circ\text{C} \leq T_A \leq 70^\circ\text{C}$
Storage Temperature Range	$-65^\circ\text{C} \leq T_S \leq 150^\circ\text{C}$
Lead Temperature (Soldering, 10 Sec)	$260^\circ\text{C}$
Differential Video Input Voltage	$\pm 5$ V
Clamp Input Voltage	$V_{EE} + 2.5\text{ V} \leq V_{CL} \leq V_{CC} - 2.5\text{ V}$

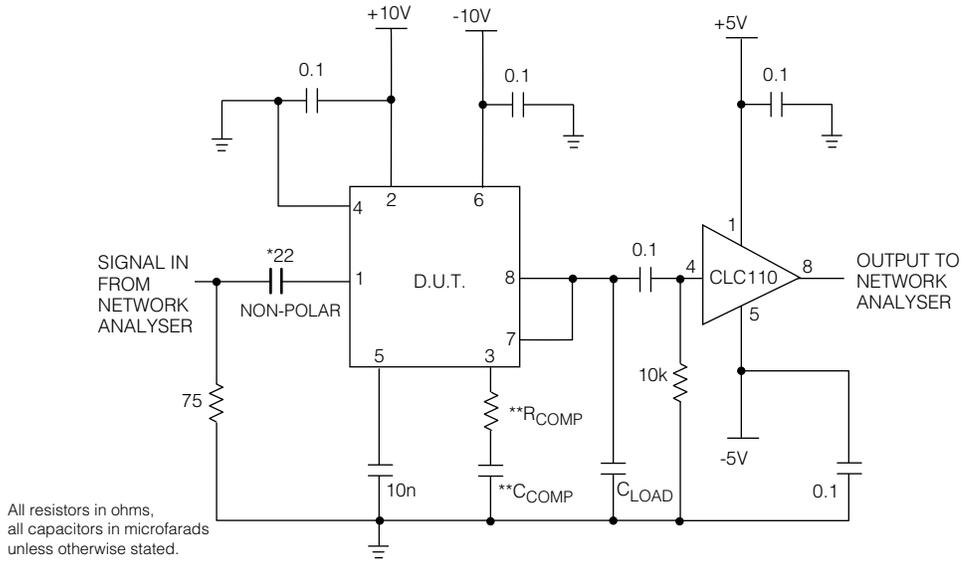
**CAUTION**  
ELECTROSTATIC  
SENSITIVE DEVICES  
DO NOT OPEN PACKAGES OR HANDLE  
EXCEPT AT A STATIC-FREE WORKSTATION



## ELECTRICAL CHARACTERISTICS $V_S = \pm 10$ V, $T_A = 0 - 70^\circ\text{C}$ , $R_L = 10\text{k}\Omega$ , $C_L = 150$ pF, $C_{COMP} = 0$ pF unless otherwise shown.

	PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
POWER SUPPLIES	Supply Voltage	$V_S$	Operating Range	$\pm 9$	$\pm 10$	$\pm 12$	V
	+ Supply Current	I+		-	9	13.8	mA
	- Supply Current	I-		-	9	13.8	mA
SIGNAL PATH	Maximum Input Voltage Above $V_{CL}$	$V_{IN\ MAX}$		1.8	2.0	2.25	V
	Insertion Loss	I.L.	$f = 100\text{kHz}$	-	-	0.03	dB
<b>GB4550</b> SIGNAL PATH	Full Power Bandwidth	FPBW	-3.0dB, $V_{IN} = 1\text{V p-p}$	15	18	-	MHz
	Small Signal Bandwidth	SSBW	$\pm 0.2\text{dB}$ , $V_{IN} = 100\text{mV p-p}$	20	25	-	MHz
	Frequency Response		at 10MHz, $V_{IN} = 1\text{V p-p}$	-	0.05	-	dB
	Signal Path Delay	$\theta_D$	at 3.58MHz	-	-8	-	deg
	Delay Tolerance		at 3.58MHz	-	$\pm 1.5$	-	deg
<b>GB4550A</b> SIGNAL PATH	Full Power Bandwidth	FPBW	-3.0dB, $V_{IN} = 1\text{V p-p}$	17	20	-	MHz
	Small Signal Bandwidth	SSBW	$\pm 0.1\text{dB}$ , $V_{IN} = 100\text{mV p-p}$ , $C_L = 100\text{pF}$	25	30	-	MHz
	Frequency Response		at 10MHz, $V_{IN} = 1\text{V p-p}$	-	0.1	-	dB
	Signal Path Delay	$\theta_D$	at 3.58 MHz	-	-7.5	-	deg
	Delay Tolerance		at 3.58MHz	-	$\pm 0.15$	-	deg
SIGNAL PATH	Differential Gain	dg	at 3.58MHz	-	0.02	0.05	%
	Differential Phase	dp	at 3.58MHz	-	0.03	0.05	deg
	Input Resistance	$R_{IN}$		80	100	-	k $\Omega$
	Input Capacitance	$C_{IN}$		-	2.0	-	pF
	Output Resistance	$R_{OUT}$	$A_V = +1, f = 0$ to 10MHz $A_V = +1, f = 100\text{MHz}$	- -	8.6 53	- -	$\Omega$ $\Omega$
CLAMP	Clamp Voltage Range	$V_{CL}$		-5.5	-	+5.5	V
	Clamp Accuracy		$V_{IN} = 1\text{V p-p}$	-	7	28	mV



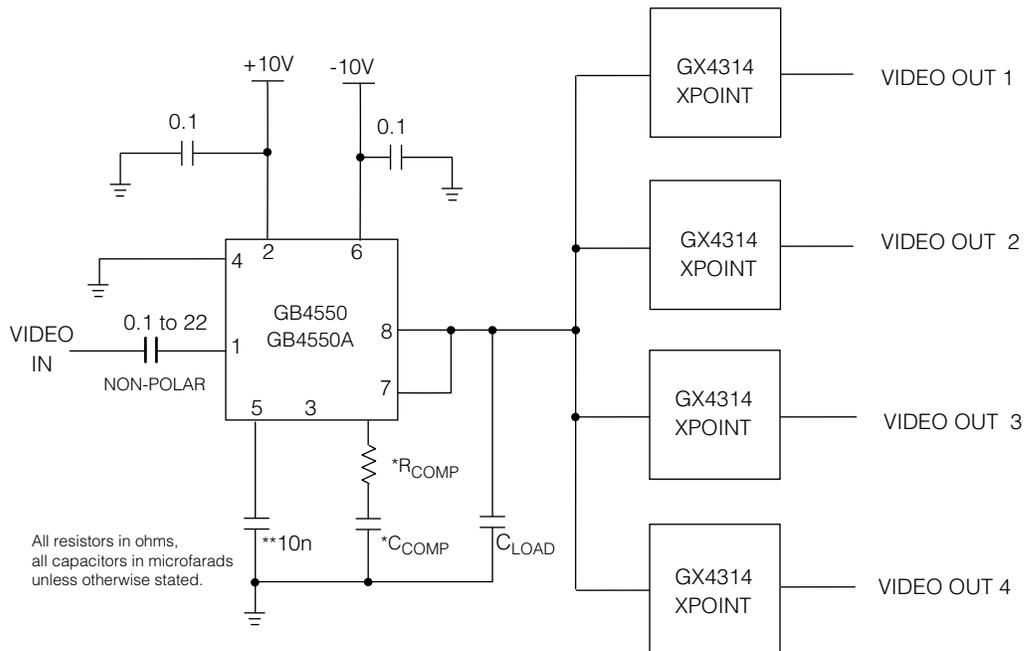


**NOTES:** This circuit can be used for Frequency Response, Delay and Differential Gain and Phase measurements.

\* This input capacitor must be shorted out when performing Differential Gain and Phase tests.

\*\*  $R_{COMP}$  and  $C_{COMP}$  are only used on GB4550.

Fig. 2 Test Circuit



**NOTES:** In most applications  $R_{COMP}$  and  $C_{COMP}$  will not be needed since the bandwidth depends on the bus capacitance.

In general, the maximum occurs when  $C_{LOAD}$  is between 82 pF and 100 pF.

They are used to control the roll-off for higher load conditions.

\* Not used on GB4550A.

\*\* The value of this capacitor should be proportional to the input capacitor used.

The value shown is for a 22  $\mu$ F input capacitor.

Fig. 3 Typical Application Circuit