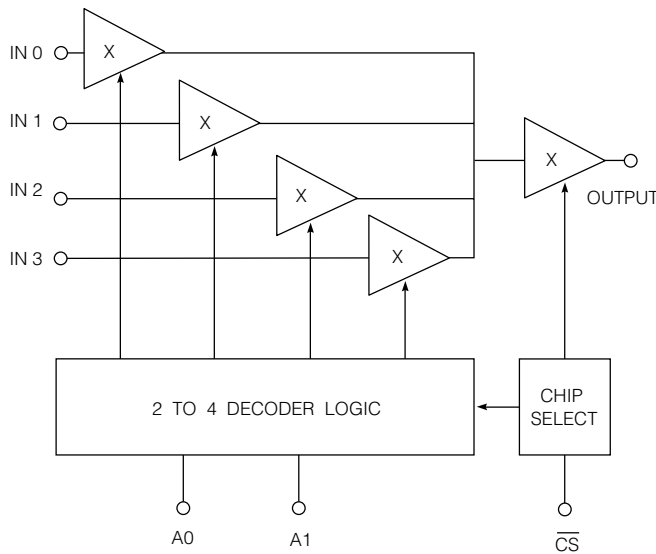


**FEATURES**

- low power; 12 mA ON current at  $\pm 5$  volts
- low differential gain and phase
- wide bandwidth; 100 MHz at -1 dB
- $\pm 4.5$  to  $\pm 11$  volt power supplies
- available in 14 pin PDIP as well as 14 and 16 pin SOIC packaging
- identical functions and pin outs to GX4314 with lower power

**FUNCTIONAL BLOCK DIAGRAM**



**DESCRIPTION**

The GX4314L is a low power, wideband video multiplexer implemented in bipolar technology. This device is characterized by excellent differential gain and phase in the enabled state, very high off-isolation in the disabled state and a fully buffered, unilateral signal path.

Make-before-break switching assures virtually glitch-free switching. The GX4314L features a very high, nearly constant input impedance coupled with high output impedance in the disabled state. This allows multiple devices to be paralleled at the inputs and outputs without additional circuitry.

Logic inputs are TTL and 5 V CMOS compatible, providing address and chip select functions. The operation of the device is described in the Truth Table below.

The GX4314L offers pin for pin compatibility with Gennum's other 4x1 multipliers such as GX414, GX414A and GX434 with greatly improved bandwidth and slew rate. Since the GX4314L is capable of operation at  $\pm 5$  V supplies, system power can be reduced.

Typically, the ON current is only 12 mA while the chip disabled current drops to less than 260  $\mu$ A. This feature allows the use of many devices in high density situations without excessive power dissipation.

**APPLICATIONS**

- Multimedia
- Computer graphics.
- Very high density video switching.
- PCM / data routing.

**TRUTH TABLE**

$\overline{CS}$	A1	A0	Output
0	0	0	Input 0
0	0	1	Input 1
0	1	0	Input 2
0	1	1	Input 3
1	X	X	High - Z

X = don't care

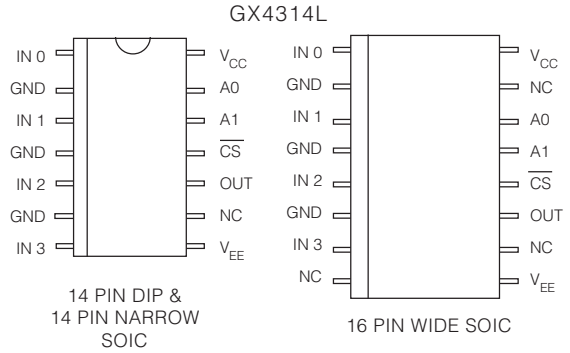
**ORDERING INFORMATION**

Part Number	Package Type	Temperature Range
GX4314LCDB	14 pin PDIP	0°C to 70°C
GX4314LCKB	14 pin SOIC	0°C to 70°C
GX4314LCKC	16 pin SOIC	0°C to 70°C
GX4314LCTC	Tape 16 pin SOIC	0°C to 70°C

## ABSOLUTE MAXIMUM RATINGS

Parameter	Value
Supply Voltage	$\pm 13.5\text{V}$
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)	$260^{\circ}\text{C}$
Analog Input Voltage	$(V_{EE} - 1.4)$ or $-7.5 < V_A < (V_{CC} + 0.3)$ or $(V_{EE} + 15)\text{V}$
Logic Input Voltage	$-0.5\text{V} \leq V_L \leq +5.5\text{V}$

## PIN CONNECTIONS



## ELECTRICAL CHARACTERISTICS $V_S = \pm 8\text{V DC}$ , $0^{\circ}\text{C} \leq T_A \leq 70^{\circ}\text{C}$ , $R_L = 10\text{k}\Omega$ , $C_L = 30\text{pF}$ , unless otherwise shown

	PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
DC SUPPLY	Supply Voltage	$\pm V_S$	Operating Range	$\pm 4.5$	-	$\pm 11$	V
	Supply Current	$I^+$	$\overline{\text{CS}} = 0$	-	12	15	mA
		$I^-$	$\overline{\text{CS}} = 0$	-	12	15	mA
		$I^+$	$\overline{\text{CS}} = 1$	-	270	350	$\mu\text{A}$
		$I^-$	$\overline{\text{CS}} = 1$	-	350	600	$\mu\text{A}$
STATIC	Analog Output Voltage Swing	$V_{\text{OUT}}$	Extremes before clipping occurs	-2.4	-	+3.6	V
	Analog Input Bias Current	$I_{\text{BIAS}}$		-	5	-	$\mu\text{A}$
	Output Offset Voltage	$V_{\text{OS}}$	$T_A = 25^{\circ}\text{C}$	-10	-3	+4	mV
	Output Offset Voltage Drift	$\Delta V_{\text{OS}}$		-	15	60	$\mu\text{V}/^{\circ}\text{C}$
LOGIC	Chip Enable Time	$t_{\text{ON}}$	Enable input to appearance of signal	-	350	500	ns
	Chip Disable Time	$t_{\text{OFF}}$	Enable input to disappearance of signal at output.	0.6	1.0	-	$\mu\text{s}$
	Logic Input Thresholds	$V_{\text{IH}}$	$V_{\text{IH}} = 1$	2.0	-	-	V
		$V_{\text{IL}}$	$V_{\text{IL}} = 0$	-	-	0.8	V
	Logic Input Current	$I_L$		-	-	4	$\mu\text{A}$
DYNAMIC	Insertion Loss	I.L.	1V p-p sine or sq. wave at 100 kHz	0.035	0.047	0.060	dB
	Bandwidth (-3dB)	B.W.	Small signal $C_L = 0\text{pF}$	-	200	-	MHz
	Frequency Response		At -1 dB flattened, $R_S = 27\Omega$	100	-	-	MHz
	Input Resistance	$R_{\text{IN}}$	Chip enabled	1.0	-	-	$\text{M}\Omega$
	Input Capacitance	$C_{\text{IN}}$	Chip enabled	-	1.5	-	pF
	Output Resistance	$R_{\text{OUT}}$	Chip enabled	-	18	-	$\Omega$
	Output Capacitance	$C_{\text{OUT}}$	Chip enabled	-	-	5	pF
	Differential Gain	dg	At 3.58 MHz	-	-	0.03	%
	Differential Phase	dp	At 3.58 MHz	-	-	0.02	deg
	All Hostile Crosstalk	$\text{XTLK}_{\text{AH}}$	30 MHz $R_{\text{IN}} = 10\Omega$	70	-	-	dB
	Chip Disabled Crosstalk	$\text{XTLK}_{\text{CD}}$	At 100 MHz	-	80	-	dB
	Slew Rate	+SR	$V_{\text{IN}} = 1\text{V p-p}$ ( $C_L = 10\text{pF}$ )	600	900	-	$\text{V}/\mu\text{s}$
		-SR	$V_{\text{IN}} = 1\text{V p-p}$ ( $C_L = 10\text{pF}$ )	225	300	-	$\text{V}/\mu\text{s}$
	Gain Spread at 30 MHz	$\Delta A_V$		-	-	$\pm 0.05$	dB
Crosspoint Scatter		$R_S = 75\Omega$ $T_A = 25^{\circ}\text{C}$	-	-	$\pm 0.15$	deg	
		$f = 3.58\text{MHz}$ $0^{\circ}\text{C} < T_A < 70^{\circ}\text{C}$	-	-	$\pm 0.25$	deg	

## TYPICAL PERFORMANCE CURVES FOR GX4314L

( $V_S = \pm 5V$  DC,  $T_A \leq 25^\circ C$ ,  $C_L = 30$  pF, unless otherwise shown.)

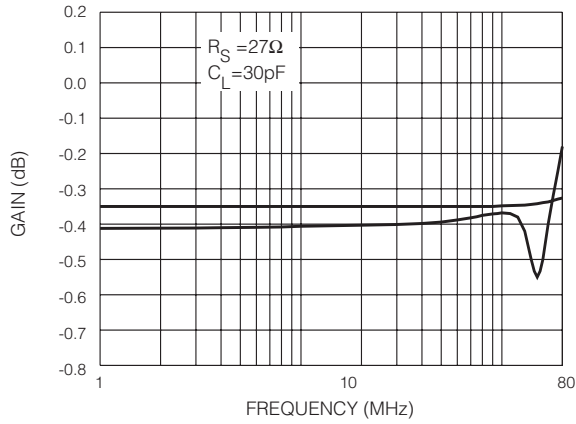


Fig. 1 Flattened Frequency Response

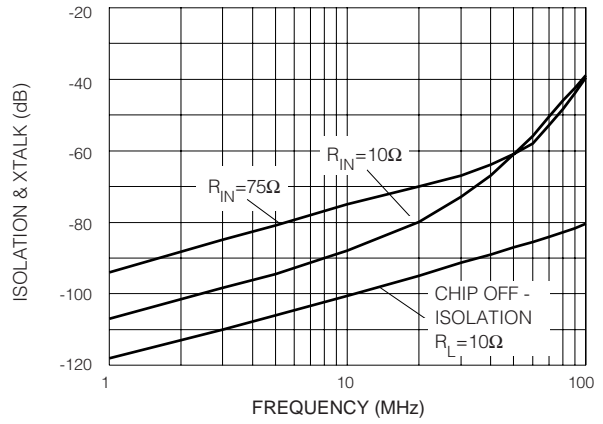


Fig. 2 All Hostile Crosstalk & Isolation

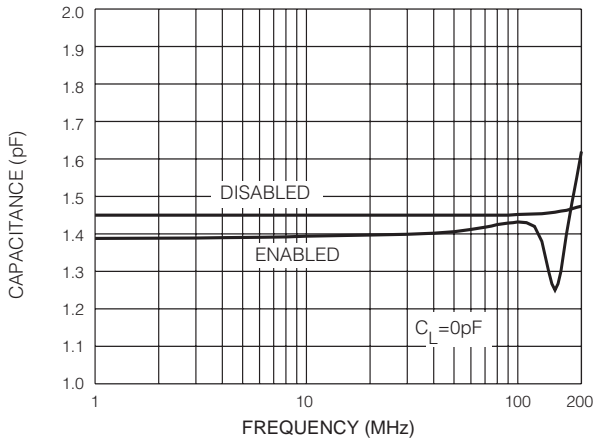


Fig. 3 Input Capacitance

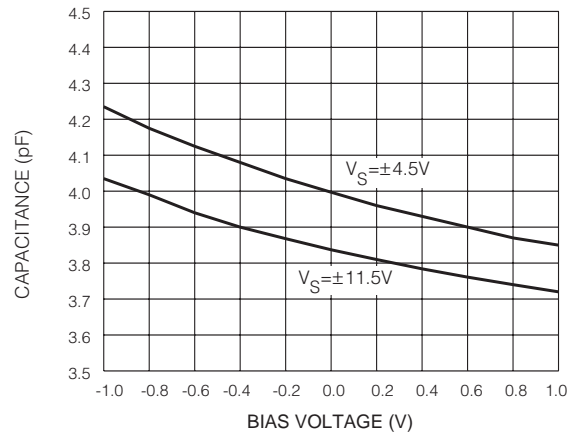


Fig. 4 Output Capacitance

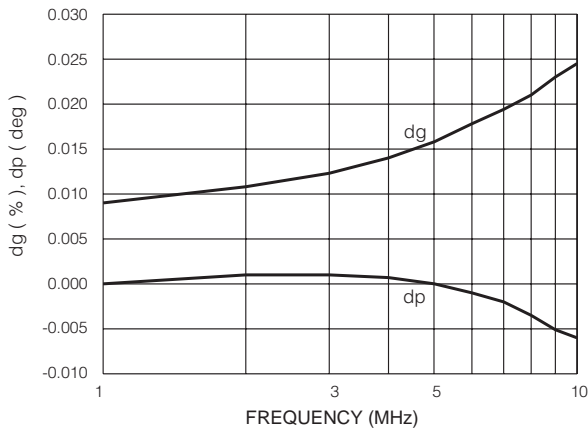
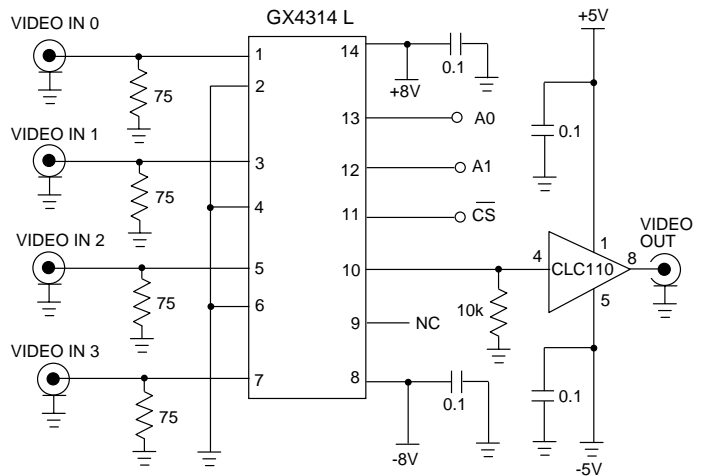
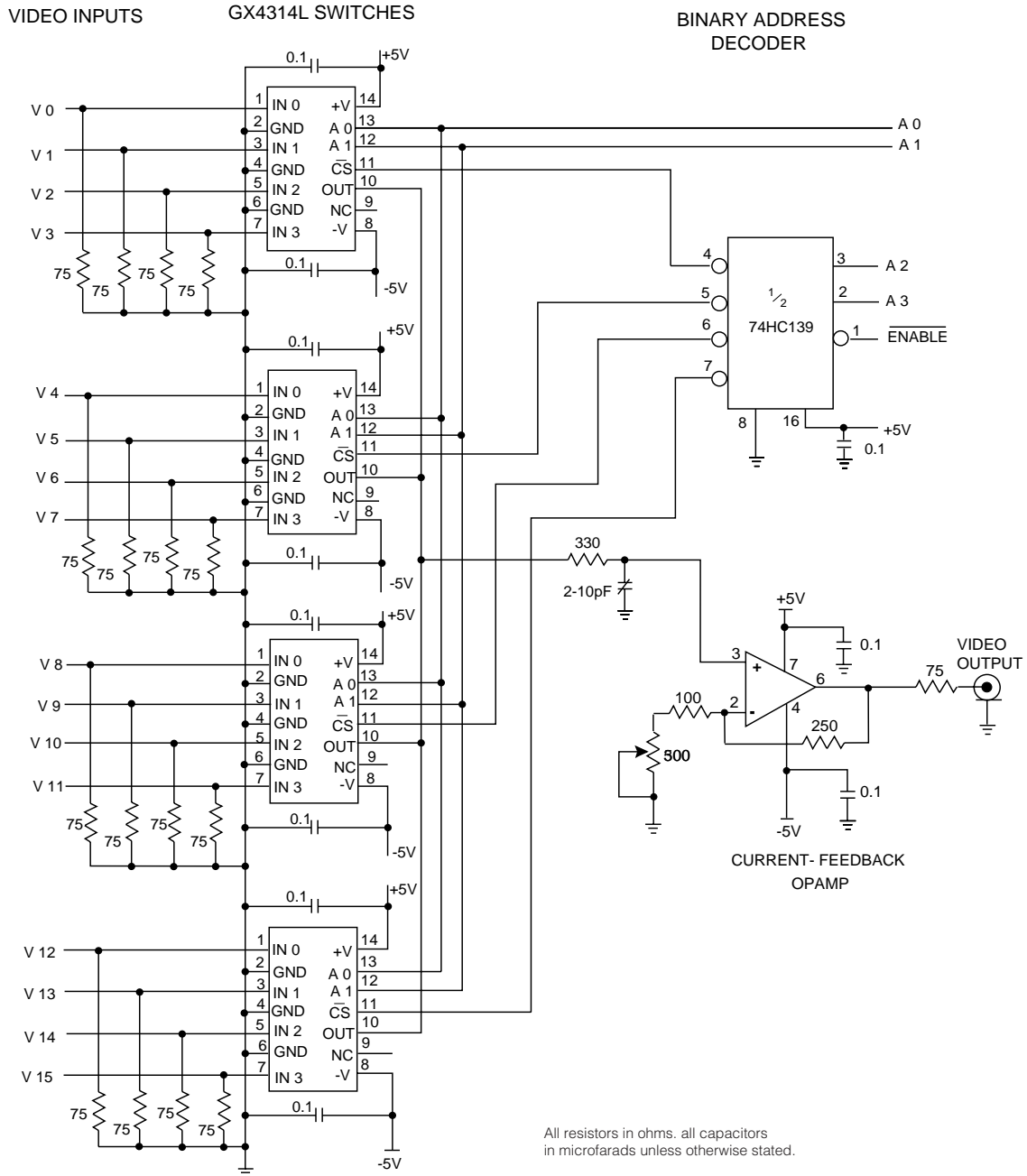


Fig. 5 Differential Gain & Phase



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


Fig. 6 Test Circuit



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

Fig. 7 16 x 1 Video Multiplexer Circuit

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



**DOCUMENT IDENTIFICATION**

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**PRELIMINARY DATA SHEET**  
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