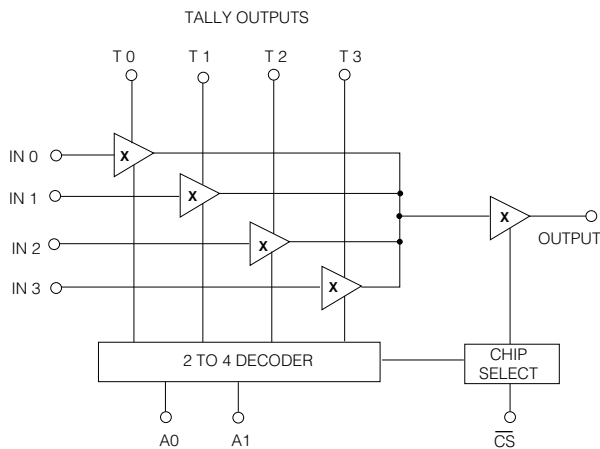


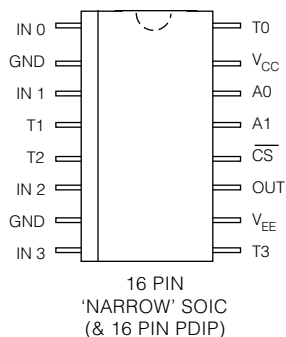
## FEATURES

- low differential phase and gain
- wide bandwidth, 200 MHz at -3 dB
- small switching transient
- $\pm 4.5$  to  $\pm 5.5$  volts supplies
- individual TALLY outputs

## FUNCTIONAL BLOCK DIAGRAM



## PIN CONNECTIONS



## AVAILABLE PACKAGING

16 pin PDIP  
16 pin SOIC  
Tape 16 pin (N) SOIC

## CIRCUIT DESCRIPTION

The GX4404 is a wideband video multiplexer implemented in bipolar technology. This device is characterized by excellent differential phase and gain in the enabled state, very high off-isolation in the disabled state. Fully buffered unilateral signal paths ensure negligible output to input feedback, while delivering minimal output switching transients through make-before-break switching.

For use in NxM routing matrices, these devices feature 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.

The chip is disabled when a logic HIGH is applied to the CS control pin. In this case, regardless of the ADDRESS data, the output of the device assumes a high impedance state. Individual PNP to  $V_{CC}$  TALLY outputs provide positive indication of crosspoint selection.

All logic inputs are TTL and 5V CMOS compatible. Supply voltages can be between  $\pm 4.5$  to  $\pm 5.5$  volts.

## APPLICATIONS

- HDTV
- Very high quality video switching
- Very high density video switching
- Computer graphics
- PCM / data routing matrices

## TRUTH TABLE

CS	A1	A0	OUT	TALLY O/Ps			
				T0	T1	T2	T3
0	0	0	IN 0	ON	*	*	*
0	0	1	IN 1	*	ON	*	*
0	1	0	IN 2	*	*	ON	*
0	1	1	IN 3	*	*	*	ON
1	X	X	HI - Z	*	*	*	*

X = DON'T CARE    \* = OFF (high impedance)

## ORDERING INFORMATION

Part Number	Package Type	Temperature Range
GX4404-CDC	16 pin PDIP	0 to 70°C
GX4404-CKD	16 pin (N) SOIC	0 to 70°C
GX4404-CTD	Tape 16 pin (N) SOIC	0 to 70°C

## ABSOLUTE MAXIMUM RATINGS

PARAMETER	VALUE
Supply Voltage	$\pm 7.5V$
Operating Temperature Range	$0^{\circ}C \leq T_A \leq 70^{\circ}C$
Storage Temperature Range	$-65^{\circ}C \leq T_S \leq 150^{\circ}C$
Lead Temperature (Soldering, 10 Sec)	$260^{\circ}C$

PARAMETER	VALUE
Analog Input Voltage	$(V_{EE} - 1.4) < V_A < (V_{CC} + 0.3)V$
Logic Input Voltage	$-0.5V \leq V_L \leq +5.5V$
TALLY Output Current	2 mA

## ELECTRICAL CHARACTERISTICS ( $V_S = \pm 5V$ DC, $0^{\circ}C \leq T_A \leq 70^{\circ}C$ , $R_L = 10k\Omega$ , $C_L = 30$ pF, unless otherwise shown.)

	PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
DC SUPPLY	Supply Voltage	$\pm V_S$	Operating Range	$\pm 4.5$	-	$\pm 5.5$	V
	Supply Current	$I^+$	$\overline{CS} = 0$	-	30	37	mA
		$I^-$	$\overline{CS} = 0$	-	30	37	mA
		$I^+$	$\overline{CS} = 1$	-	220	300	$\mu A$
		$I^-$	$\overline{CS} = 1$	-	220	380	$\mu A$
STATIC	Analog Output Voltage Swing	$V_{OUT}$	Extremes before clipping occurs	-2.4	-	2.6	V
	Analog Input Bias Current	$I_{BIAS}$		-	12	-	$\mu A$
	Output Offset Voltage	$V_{OS}$	$T_A = 25^{\circ}C$	-13	-4	7	mV
	Output Offset Voltage Drift	$\Delta V_{OS}$		-	35	80	$\mu V/^{\circ}C$
LOGIC	Chip Enable Time	$t_{ON}$	Enable input to appearance of signal	-	200	400	ns
	Chip Disable Time	$t_{OFF}$	Enable input to disappearance of signal at output.	0.6	1.2	-	$\mu s$
	Logic Input Thresholds	$V_{IH}$	1	2.0	-	-	V
		$V_{IL}$	0	-	-	0.8	V
	Logic Input Current	$I_L$		-	-	4	$\mu A$
	TALLY Outputs		$(V_{CC} - V_{TALLY})$ $I_{TALLY} = 1mA$	70	150	300	mV
DYNAMIC	Insertion Loss	I.L.	1V p-p sine or sq. wave at 100 kHz	0.030	0.040	0.055	dB
	Bandwidth (-3dB)	B.W.	small signal $C_L = 0$ pF	-	300	-	MHz
	Input Resistance	$R_{IN}$	$\overline{CS} = 0$ , crosspoint on	0.5	-	-	$M\Omega$
	Input Capacitance	$C_{IN}$	$\overline{CS} = 0$ , crosspoint on	-	1.5	-	pF
	Output Resistance	$R_{OUT}$	$\overline{CS} = 0$ , crosspoint on	-	4	-	$\Omega$
	Output Capacitance	$C_{OUT}$	$\overline{CS} = 1$ , chip disabled	-	3.7	-	pF
	Differential Gain	dg	$f = 3.58$ MHz, $V_{IN} = 40$ IRE	-	-	0.05	%
	Differential Phase	dp	$f = 3.58$ MHz, $V_{IN} = 40$ IRE	-	-	0.04	deg
	All Hostile Crosstalk	$XTLK_{AH}$	1Vp-p on 3 inputs 4 th input has $10\Omega$ resistor to gnd $f=30$ MHz	-	70	-	dB
	Chip Disabled Crosstalk	$XTLK_{CD}$	Enabled device on O/P $f=100$ MHz	-	80	-	dB
	Slew Rate	+SR	$V_{IN} = 3V$ p-p ( $C_L = 0$ pF)	250	-	-	V/ $\mu s$
		-SR	$V_{IN} = 3V$ p-p ( $C_L = 0$ pF)	250	-	-	V/ $\mu s$
	Gain Spread at 30 MHz	$\Delta A_V$		-	-	$\pm 0.05$	dB
	Crosspoint Scatter		$R_S = 75\Omega$				
			$f = 3.58$ MHz	$T_A = 25^{\circ}C$	-	-	$\pm 0.15$ deg
				$0^{\circ}C < T_A < 70^{\circ}C$	-	-	$\pm 0.25$ deg

## TYPICAL PERFORMANCE CURVES

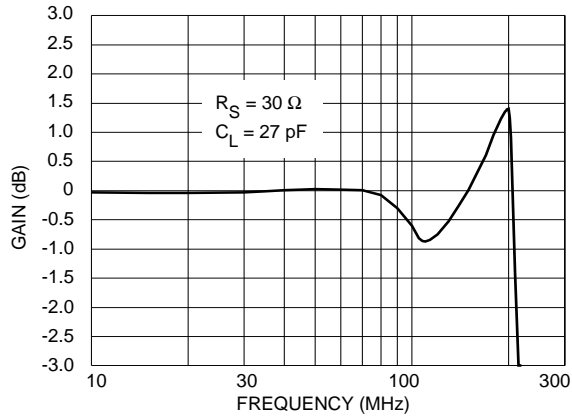


Fig. 1 Flattened Frequency Response

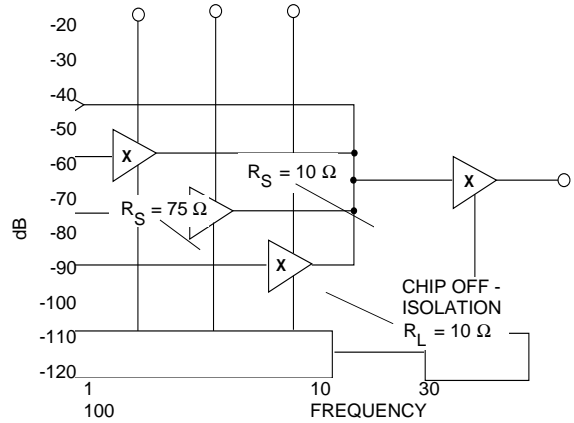


Fig. 2 All Hostile Crosstalk & Isolation

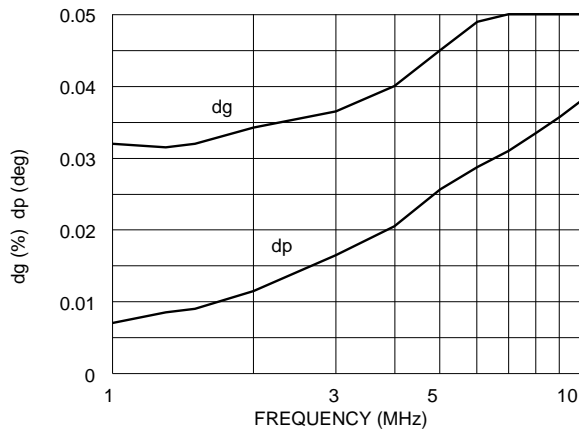


Fig. 3 Differential Gain & Phase

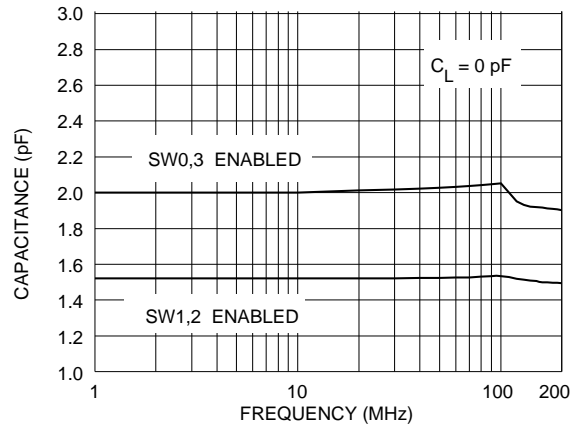
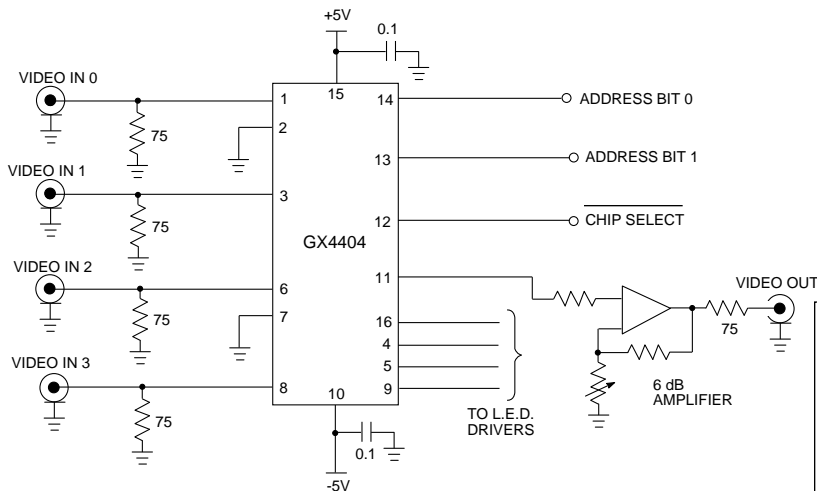
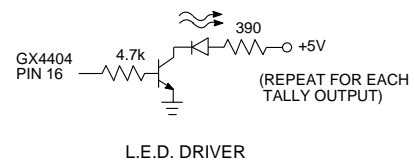


Fig. 4 Input Capacitance



All resistors in ohms, all capacitors in  $\mu\text{F}$  unless otherwise stated

Fig. 5 Test Circuit



### DOCUMENT IDENTIFICATION

#### PRODUCT PROPOSAL

This data has been compiled for market investigation purposes only, and does not constitute an offer for sale.

#### ADVANCE INFORMATION NOTE

This product is in development phase and specifications are subject to change without notice. Gennum reserves the right to remove the product at any time. Listing the product does not constitute an offer for sale.

#### PRELIMINARY DATA SHEET

The product is in a preproduction phase and specifications are subject to change without notice.

#### DATA SHEET

The product is in production. Gennum reserves the right to make changes at any time to improve reliability, function or design, in order to provide the best product possible.

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

