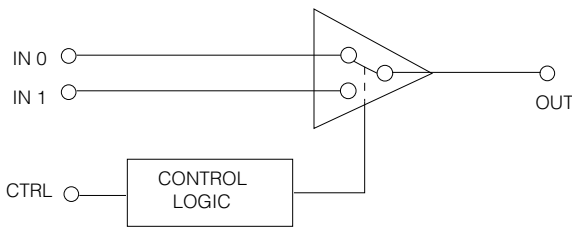


FEATURES

- 20 ns switching time (toggle)
- make-before-break switching
- 100 MHz at ± 0.1 dB, bandwidth (flattened)
- typically 0.04 dB insertion loss at 1 MHz
- typically 0.03 % differential gain at 3.58 MHz
- typically 0.01 degree differential phase at 3.58 MHz

FUNCTIONAL BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

PARAMETER	VALUE
Supply Voltage	± 6.0 V
Operating Temperature Range	0°C to 70°C
Storage Temperature Range	-65°C to 150°C
Lead Temperature (Soldering, 10 Sec)	260°C
Analog Input Voltage (IN 0, IN 1)	$V_{EE} < V_{IN} < V_{CC} + 0.3$ V
Control Input Voltage Range	-5 V $< V_{CTRL} < V_{CC} + 0.3$ V

ORDERING INFORMATION

Part Number	Package Type	Temperature Range
GY4102ACDA	8 pin PDIP	0 - 70°C
GY4102ACKA	8 pin SOIC	0 - 70°C

CIRCUIT DESCRIPTION

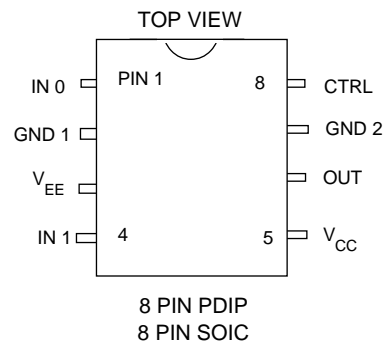
The GY4102A is a bipolar, monolithic SPDT video switch incorporating fast control logic. The analog signal path is characterised by low differential gain, low differential phase and low insertion loss, coupled with a ± 0.1 dB bandwidth of typically 100 MHz into a 10 pF load, using an external series resistor.

In demanding video applications the GY4102A features a typical switching glitch of less than 30 mV over a 3 ns period. The device offers toggle rates up to 50 MHz. The control input is TTL and 5 V CMOS compatible.

APPLICATIONS

- Sub-pixel video switching
- Fast data sampling
- Modulation
- Special Effects video switching

PIN CONNECTIONS



TRUTH TABLE

CTRL	OUTPUT
0	IN 0
1	IN 1

AVAILABLE PACKAGING

- 8 pin PDIP
- 8 pin SOIC

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

	PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
DC SUPPLY	Supply Voltage	$\pm V_S$		4.5	5	5.5	V
	Supply Current	I+		-	23	30	mA
		I-			-	25	32
LOGIC	Control Input Bias	I_{CTRL}	Control = 1	-	5	25	μA
	Logic Level threshold	V_{LOGIC}	1	2	-	-	V
			0	-	-	0.8	V
STATIC	Analog Input Bias Current	I_{BIAS}	Selected channel	-	12	30	μA
	Deselected channel		-	26	60	μA	
	Signal Voltage Swing	V_{SIG}	Extremes before clipping occurs	-1.5	-	+3	V
	Output Offset Voltage	V_{OS}	$T_A = 25^\circ\text{C}$	-6	+4	+14	mV
	Output Offset Voltage	$V_{OSCH-CH}$	$T_A = 25^\circ\text{C}$ channel to channel	-	1	5	mV
	Output Offset Drift	$\Delta V_{OS}/T$		-	+93	+200	$\mu\text{V}/^\circ\text{C}$
DYNAMIC	Input Resistance	R_{IN}	Channel On	500	-	-	$\text{k}\Omega$
	Input Capacitance	C_{IN}	Channel On	1.3	-	-	pF
	Frequency Response		DC - 100 MHz $R_S = 33\ \Omega$	-	± 0.2	-	dB
	Flatness		DC - 8 MHz $R_S = 33\ \Omega$	-	-	± 0.01	dB
	Insertion Loss	I.L.	$f = 1\text{ MHz}$	-	0.04	-	dB
	Differential Gain	dg	$f = \text{colorburst } 3.58 \text{ or } 4.43\text{ MHz}$	-	0.03	-	%
	Differential Phase	dp	$f = \text{colorburst } 3.58 \text{ or } 4.43\text{ MHz}$	-	0.01	-	degrees
	Crosstalk (all hostile)	$XTALK_{AH}$	$f = 10\text{ MHz}$ see fig. 3	75	80	-	dB
	Slew Rate	+SR	$V_{IN} = 2\text{ Vp-p}$ $T_A = 25^\circ\text{C}$	400	620	-	$\text{V}/\mu\text{s}$
-SR		250		330	-	$\text{V}/\mu\text{s}$	

SWITCHING CHARACTERISTICS ($V_S = \pm 5V$, $T_A = 0 - 70^\circ\text{C}$, $C_L = 10\text{pF}$, $R_S = 33\ \Omega$, $R_L = 10\text{k}\Omega$)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS	
Delay Time (see Figure 7)	$t_{d(on1)}$	$V_{SIG} = 0 - 1\text{ V}$	-	5.4	9	ns	
	$t_{d(on2)}$		-	8.2	13	ns	
	$t_{d(off1)}$	$V_{SIG} = 1 - 0\text{ V}$	-	6	11	ns	
	$t_{d(off2)}$		-	12.5	22	ns	
Settling Time (see Figure 7a)	$t_{S(on)}$	To 0.5 IRE on 0 to 1 V output, $T_A = 25^\circ$	-	9	15	ns	
(see Figure 7b)	$t_{S(off)}$	To 0.5 IRE on 1 to 0 V output, $T_A = 25^\circ\text{C}$	-	7	15	ns	
Switching Transient * (Unfiltered)		POS.	Amplitude	-	+30	+50	mV
			Duration	-	3	5	ns
		NEG.	Amplitude	-	-20	-30	mV
			Duration	-	2	3	ns

* CH0 = CH1 = GND

TYPICAL PERFORMANCE CURVES FOR GY4102A

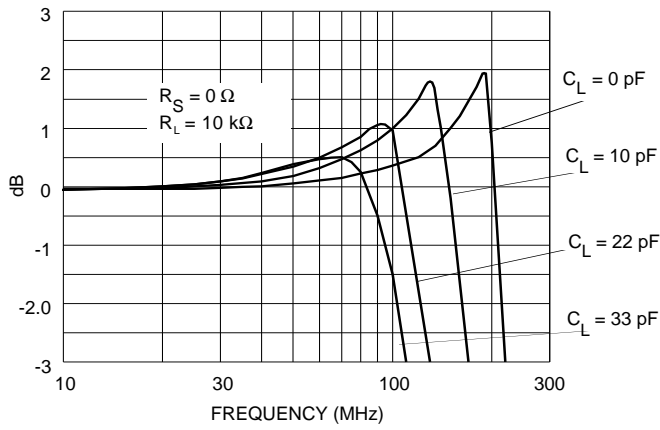


Fig. 1 GY4102A Frequency Response

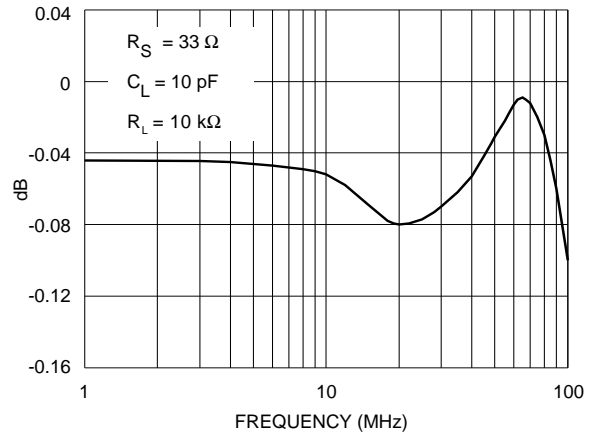


Fig. 2 GY4102A Flattened Frequency Response

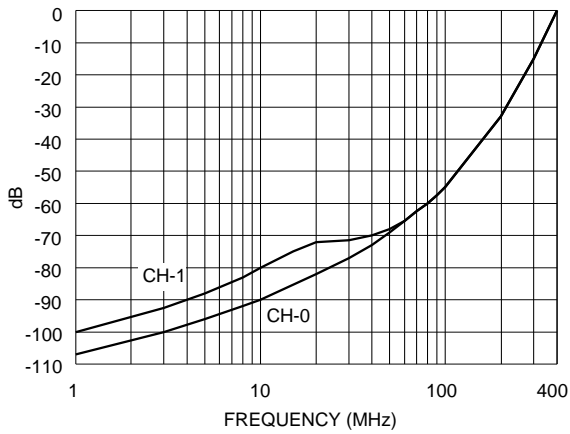


Fig. 3 GY4102A Crosstalk vs Frequency

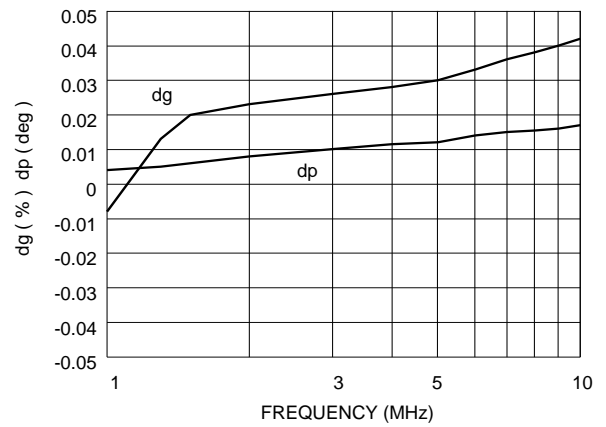
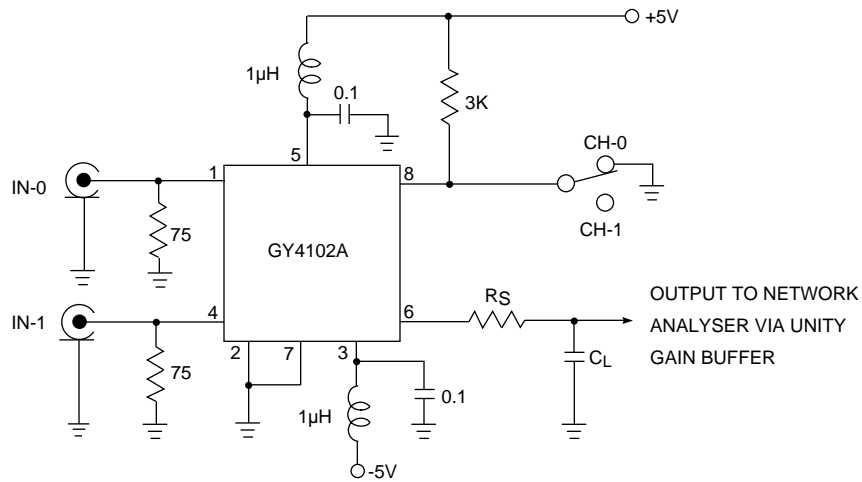


Fig. 4 GY4102A Differential Gain & Phase

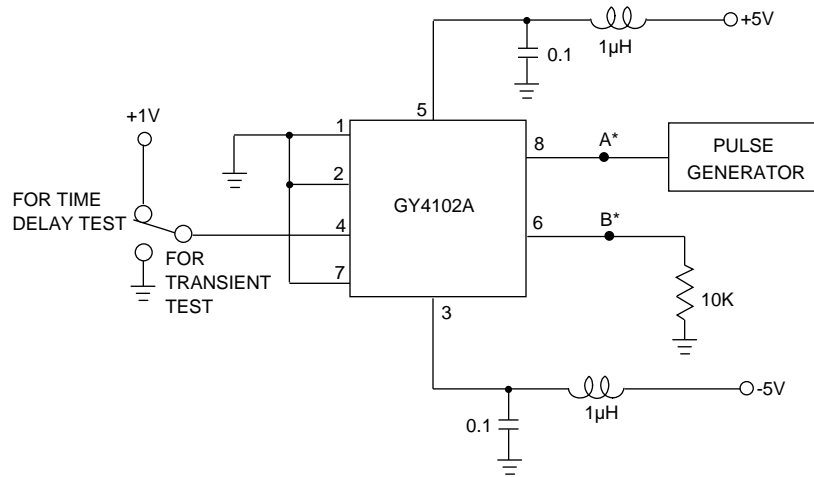
An evaluation board and application note on the GY4102A is available.
Please quote EB4102 for the board and AN 520 - 2 for the application note.
There is no charge for these items.

GY4102A TEST CIRCUITS



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

Fig. 5 Frequency Response



*USE ULTRA LOW CAPACITANCE SCOPE PROBES AT POINTS A & B

PULSE GENERATOR CHARACTERISTICS $t_r = t_f \leq 1 \text{ ns}$ $V_o = 5 \text{ V}$ $p_{rr} \leq 20 \text{ MHz}$

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

Fig. 6 Switching Transient / Time Delays

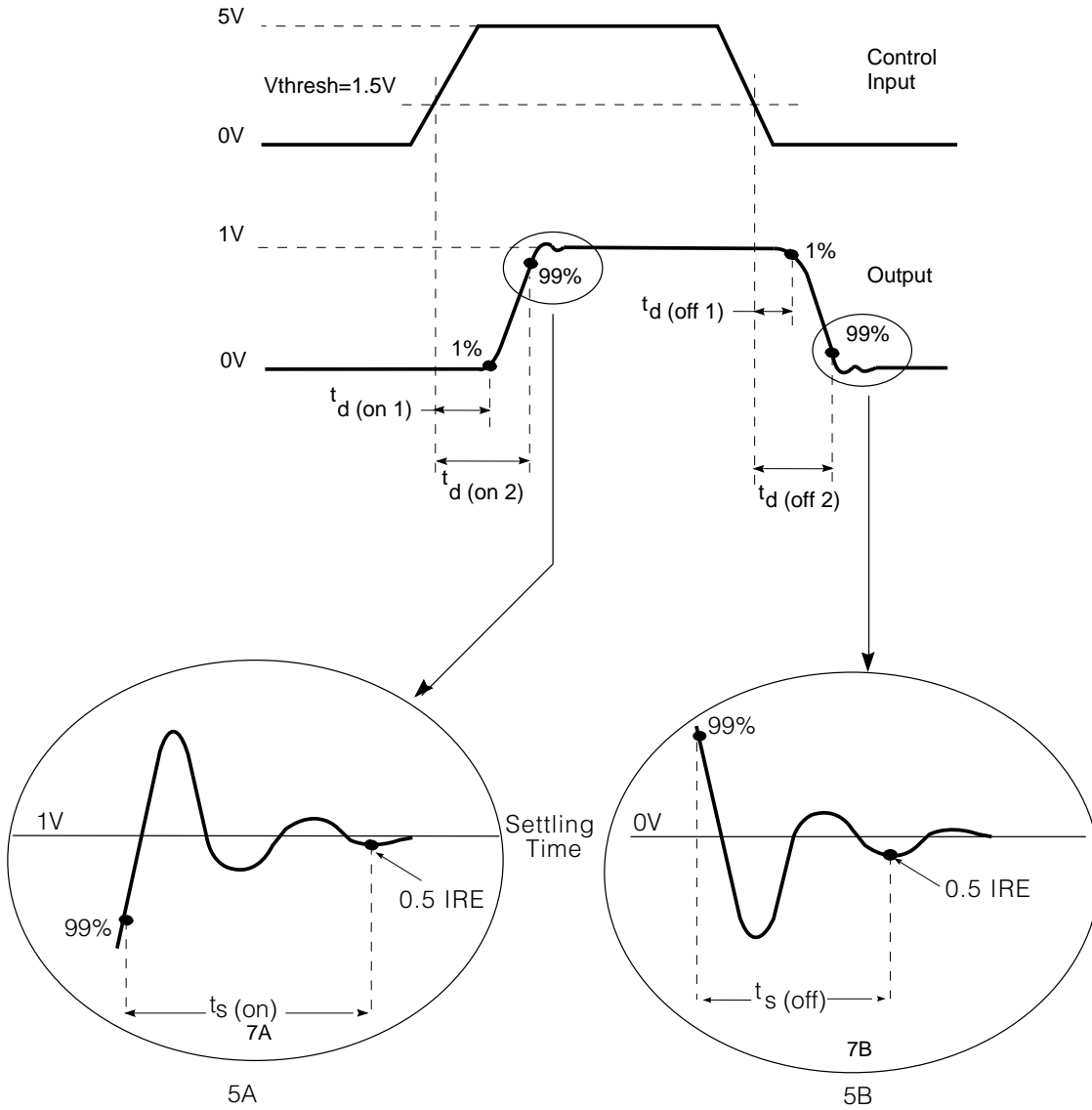



Fig. 7 Delay Time

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



DOCUMENT IDENTIFICATION

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DATA SHEET

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