

4 to 1 Multiplexer GaAs IC for Optical Transmission

The PHS6902 is a 4 to 1 Multiplexer GaAs IC for Optical Transmission systems.

Features

- 4 to 1 Multiplexer with on-chip clock synchronization circuitry
- Clock speed 2.4 GHz
- ECL compatible I/O's
- Single Power Supply of -5.2 V
- 32 pin package containing internal decoupling capacitors.

Absolute Maximum Ratings

Item	Symbol	Ratings	Unit	Remarks
Supply Voltage	V _{SS} (+)	+0.5	V	
	V _{SS} (-)	-7.0		
Input Voltage	V _{IH}	0	V	
	V _{IL}	V _{SS}		
Supply Current	I _{SS}	500	mA	
Output Current	I _O	50	mA	
Power Dissipation	P _D	2.5	W	
Operating Temperature	T _a	-10 to +80	°C	
Storage Temperature	T _{stg}	-65 to +150	°C	

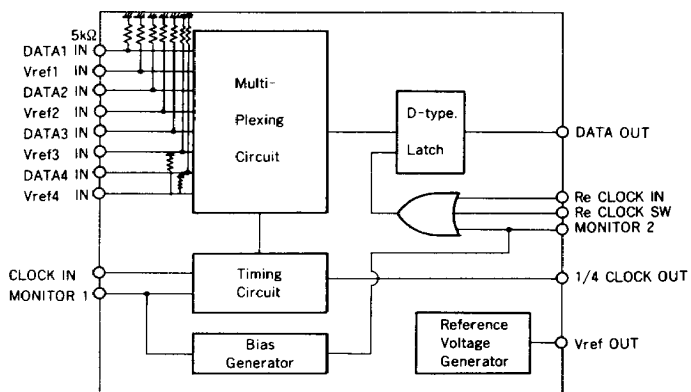
The absolute maximum ratings are limiting values, to be applied individually, beyond which the device may be permanently damaged. Functional operation under any of these conditions is not guaranteed. Exposing a circuit to its absolute maximum rating for extended periods of time may affect the device's reliability.

Recommended Operational Conditions

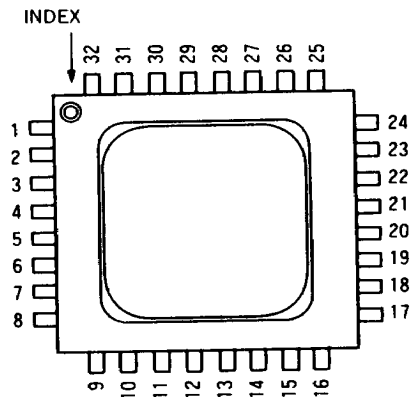
Item	Symbol	Min	Typ	Max	Unit	Remarks
Supply Voltage	V _{SS}	-5.46	-5.20	-4.94	V	
Input Voltage	V _{IH}	-1.1		-0.8	V	
	V _{IL}	-1.8		-1.6		
Output termination Voltage	V _{TT}		-2.0		V	
Input reference Voltage	V _{ref}	-1.386	-1.320	-1.254	V	
Input clock	CK _{p-p}	0.6	0.8	1.2	V _{p-p}	
Input re-clock	RCK _{p-p}	0.6	0.8	1.2	V _{p-p}	



Block Diagram



Pin Description



(Top View)

5

Pin No	Pin Name	Function
1	Monitor 2	Gate Bias Control Pin, Normally Open
2	GND	GND
3	DATA OUT	Data Out of Multiplexer
4	GND	GND
5	1/4 Clock out	1/4 Clock Out of Input Clock
6	GND	GND
7	Monitor 1	Gate Bias Control Pin, Normally Open
8	GND	GND
9	GND	GND
10	Clock In	Clock Input
11	GND	GND
12	GND	GND
13	V _{ss}	-5.2 V Voltage Source Input
14	GND	GND
15	Vref out	Output Pin of ECL Reference Level Voltage
16	GND	GND
17	Data 1 IN	Data 1 INPUT
18	Vref 1 IN	-1.32 V Voltage Source Input
19	Data 2 IN	Data 2 INPUT
20	Vref 2 IN	-1.32 V Voltage Source Input
21	Data 3 IN	Data 3 INPUT
22	Vref 3 IN	-1.32 V Voltage Source Input
23	Data 4 IN	Data 4 INPUT
24	Vref 4 IN	-1.32 V Voltage Source Input



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417

25	GND	GND
26	GND	GND
27	GND	GND
28	GND	GND
29	GND	GND
30	Re Clock IN	Clock input for clock syconization to DATA OUT
31	Re Clock SW	ON/OFF switch for clock syconization to DATA OUT
32	GND	GND

Electrical Characteristics

DC Characteristics

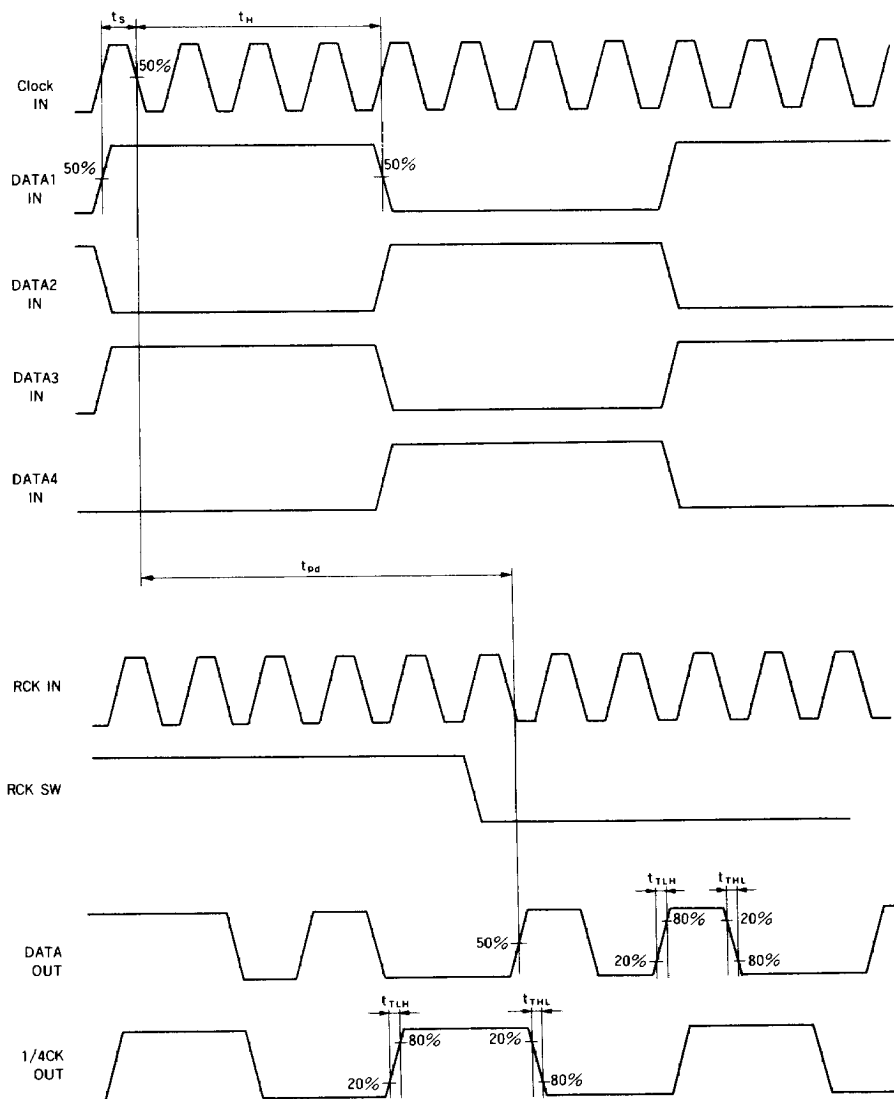
Item	Symbol	Test Conditions	Min	Typ	Max	Unit
Output Voltage	V_{OH}	$V_{IN} = V_{IH} \text{ max, } R_T = 50 \Omega$	-1.1		-0.8	V
	V_{OL}	$V_{IN} = V_{IL} \text{ min, } V_{TT} = -2 \text{ V}$	-1.8		-1.6	
Input Voltage	V_{IH}		-1.1			V
	V_{IL}				-1.5	
Input Current	I_{IH}	$V_{IN} = V_{IH} \text{ max}$		160		μA
	I_{IL}	$V_{IN} = V_{IL} \text{ min}$		360		
Output Current	I_{OH}	$R_T = 50 \Omega$			24	mA
	I_{OL}	$V_{TT} = -2 \text{ V}$			8	
Supply Current	I_{SS}			300		mA

AC Characteristics

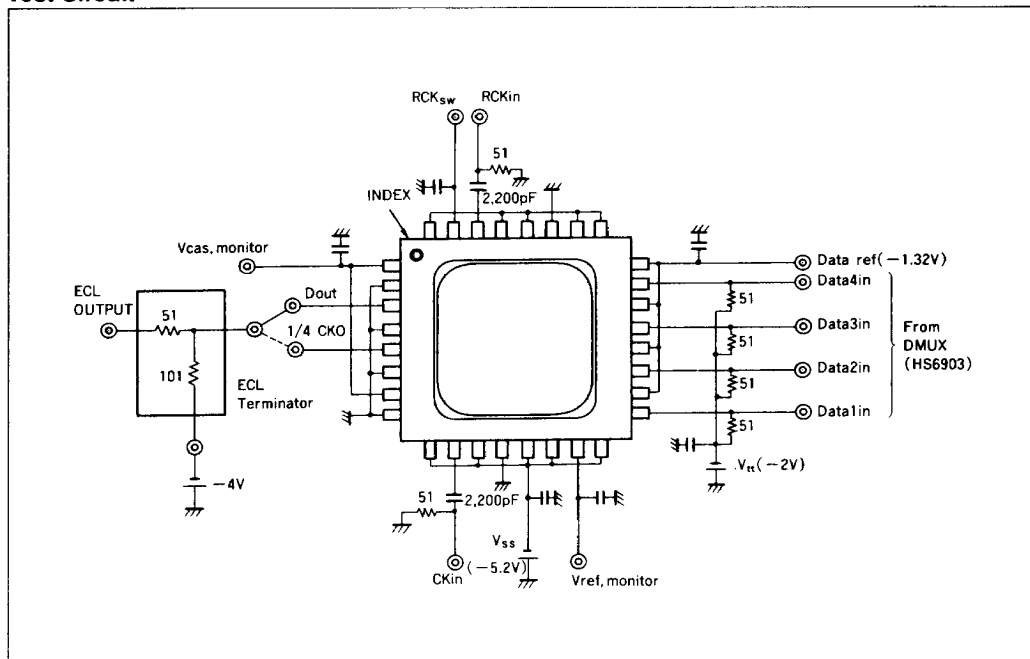
Item	Symbol	Test Conditions	Min	Typ	Max	Unit
Propagation delay between clock input and output data	tpd	50% to 50%		1.0		ns
Input data setup time	t_s	50% to 50%	0.1			ns
Input data hold time	t_H	50% to 50%	0.1			ns
Clock input rate	$f_c \text{ max}$		2.4	3.0		GHz
	$f_c \text{ min}$				0.5	
Output transition time	t_{PLH}	20% to 80%, $C_L = 2 \text{ pF}$		0.15		ns
	t_{THL}	$R_T = 50 \Omega$		0.15		



Time chart



Test Circuit



Mechanical Drawings

Item	Content
Outward Form	12 x 12 x 3.35 t (mm) quad leaded chip carrier
Pin Count	32
Pin Pitch	1.27 (mm)
Characteristic Impedance of Signal Line	50 ± 5 (Ω)
Noise Decoupling Chip Capacitors	located in package
Thermal Resistance	20 (°C/W) with Fin at natural convection

