



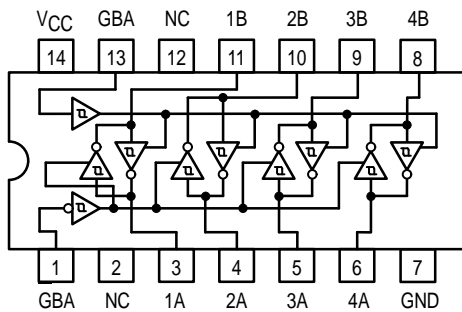
QUAD BUS TRANSCEIVER

The SN54/74LS242 and SN54/74LS243 are Quad Bus Transmitters/Receivers designed for 4-line asynchronous 2-way data communications between data buses.

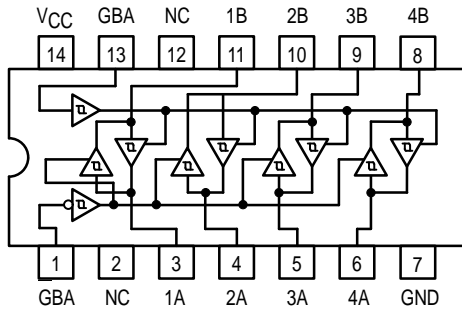
- Hysteresis at Inputs to Improve Noise Immunity
- 2-Way Asynchronous Data Bus Communication
- Input Clamp Diodes Limit High-Speed Termination Effects

LOGIC AND CONNECTION DIAGRAMS DIP (TOP VIEW)

SN54/74LS242



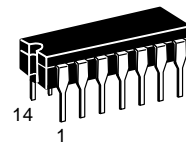
SN54/74LS243



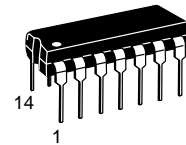
NOTE:
The Flatpak version has the same pinouts (Connection Diagram) as the Dual In-Line Package.

SN54/74LS242
SN54/74LS243

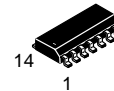
QUAD BUS TRANSCEIVER
LOW POWER SCHOTTKY



J SUFFIX
CERAMIC
CASE 632-08



N SUFFIX
PLASTIC
CASE 646-06



D SUFFIX
SOIC
CASE 751A-02

ORDERING INFORMATION

SN54LSXXXJ Ceramic
SN74LSXXXN Plastic
SN74LSXXXDW SOIC

TRUTH TABLES

SN54/74LS242

INPUTS		OUTPUT	INPUTS		OUTPUT
GAB	D		GAB	D	
L	L	H	L	X	(Z)
L	H	L	H	L	H
H	X	(Z)	H	H	L

SN54/74LS243

INPUTS		OUTPUT	INPUTS		OUTPUT
GAB	D		GAB	D	
L	L	L	L	X	(Z)
L	H	H	H	L	H
H	X	(Z)	H	H	L

H = HIGH Voltage Level
L = LOW Voltage Level
X = Immaterial
Z = HIGH Impedance

SN54/74LS242 • SN54/74LS243

GUARANTEED OPERATING RANGES

Symbol	Parameter		Min	Typ	Max	Unit
V _{CC}	Supply Voltage	54 74	4.5 4.75	5.0 5.0	5.5 5.25	V
T _A	Operating Ambient Temperature Range	54 74	-55 0	25 25	125 70	°C
I _{OH}	Output Current — High	54, 74			-3.0	mA
		54 74			-12 -15	mA
I _{OL}	Output Current — Low	54			12	mA
		74			24	mA

DC CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE (unless otherwise specified)

Symbol	Parameter	Limits			Unit	Test Conditions	
		Min	Typ	Max			
V _{IH}	Input HIGH Voltage	2.0			V	Guaranteed Input HIGH Voltage for All Inputs	
V _{IL}	Input LOW Voltage	54		0.7	V	Guaranteed Input LOW Voltage for All Inputs	
		74		0.8			
V _{T+} -V _{T-}	Hysteresis	0.2	0.4		V	V _{CC} = MIN	
V _{IK}	Input Clamp Diode Voltage		-0.65	-1.5	V	V _{CC} = MIN, I _{IN} = -18 mA	
V _{OH}	Output HIGH Voltage	54, 74	2.4	3.4	V	V _{CC} = MIN, I _{OH} = -3.0 mA	
		54, 74	2.0		V	V _{CC} = MIN, I _{OH} = MAX	
V _{OL}	Output LOW Voltage	54, 74		0.25	0.4	V	I _{OL} = 12 mA
		74		0.35	0.5	V	I _{OL} = 24 mA
						V _{CC} = V _{CC} MIN, V _{IN} = V _{IL} or V _{IH} per Truth Table	
I _{OZH}	Output Off Current HIGH			40	μA	V _{CC} = MAX, V _{OUT} = 2.7 V	
I _{OZL}	Output Off Current LOW			-200	μA	V _{CC} = MAX, V _{OUT} = 0.4 V	
I _{IH}	Input HIGH Current	D, E ₁ , E ₂		20	μA	V _{CC} = MAX, V _{IN} = 2.7 V	
		E ₁ , E ₂		0.1	mA	V _{CC} = MAX, V _{IN} = 7.0 V	
		D Input		0.1	mA	V _{CC} = MAX, V _{IN} = 5.5 V	
I _{IL}	Input LOW Current			-0.2	mA	V _{CC} = MAX, V _{IN} = 0.4 V	
I _{OS}	Output Short Circuit Current (Note 1)	-40		-225	mA	V _{CC} = MAX	
I _{CC}	Power Supply Current Total, Output HIGH			38	mA	V _{CC} = MAX	
				50			
	Total at HIGH Z	LS242		50			
		LS243		54			

Note 1: Not more than one output should be shorted at a time, nor for more than 1 second.

SN54/74LS242 • SN54/74LS243

AC CHARACTERISTICS ($T_A = 25^\circ\text{C}$, $V_{CC} = 5.0\text{ V}$)

Symbol	Parameter	Limits						Unit	Test Conditions
		LS242			LS243				
		Min	Typ	Max	Min	Typ	Max		
t_{PLH} t_{PHL}	Propagation Delay, Data to Output		9.0 12	14 18		12 12	18 18	ns	$C_L = 45\text{ pF}$, $R_L = 667\ \Omega$
t_{PZH}	Output Enable Time to HIGH Level		15	23		15	23	ns	
t_{PZL}	Output Enable Time to LOW Level		20	30		20	30	ns	
t_{PLZ}	Output Disable Time from LOW Level		15	25		15	25	ns	$C_L = 5.0\text{ pF}$, $R_L = 667\ \Omega$
t_{PHZ}	Output Disable Time from HIGH Level		10	18		10	18	ns	

AC WAVEFORMS

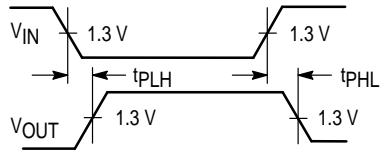


Figure 1

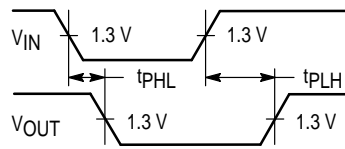


Figure 2

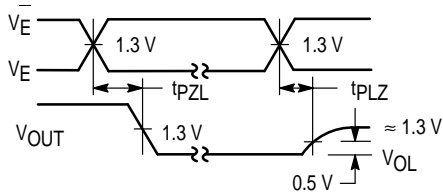


Figure 3

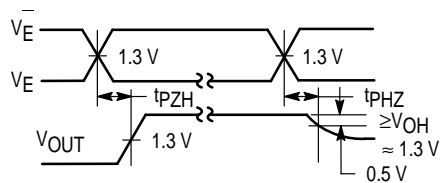
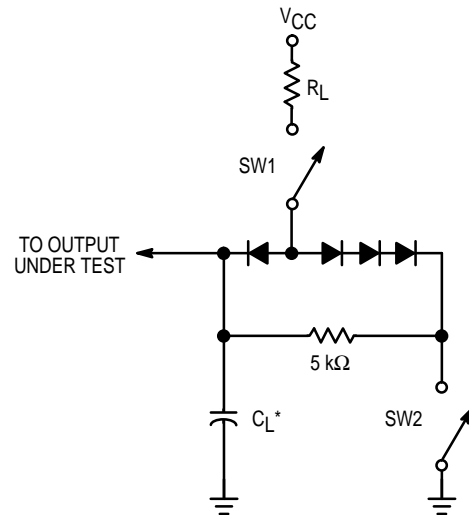


Figure 4



SWITCH POSITIONS

SYMBOL	SW1	SW2
t_{PZH}	Open	Closed
t_{PZL}	Closed	Open
t_{PLZ}	Closed	Closed
t_{PHZ}	Closed	Closed

Figure 5