



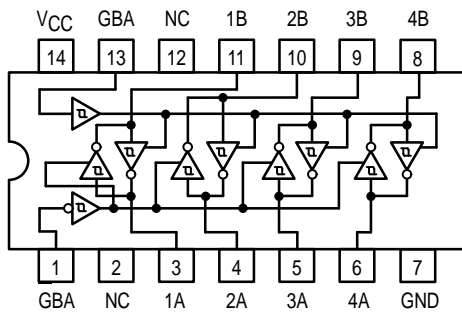
# QUAD BUS TRANSCEIVER

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

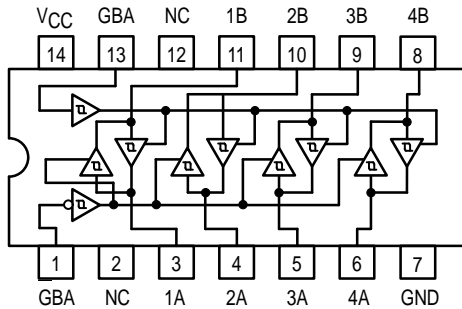
- Hysteresis at Inputs to Improve Noise Immunity
- 2-Way Asynchronous Data Bus Communication
- Input Clamp Diodes Limit High-Speed Termination Effects

## LOGIC AND CONNECTION DIAGRAMS DIP (TOP VIEW)

**SN54/74LS242**



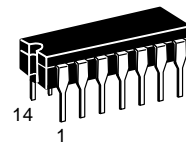
**SN54/74LS243**



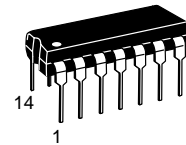
NOTE:  
The Flatpak version has the same pinouts (Connection Diagram) as the Dual In-Line Package.

**SN54/74LS242**  
**SN54/74LS243**

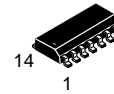
**QUAD BUS TRANSCEIVER**  
**LOW POWER SCHOTTKY**



**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 <sub>CC</sub>	Supply Voltage	54 74	4.5 4.75	5.0 5.0	5.5 5.25	V
T <sub>A</sub>	Operating Ambient Temperature Range	54 74	-55 0	25 25	125 70	°C
I <sub>OH</sub>	Output Current — High	54, 74			-3.0	mA
		54 74			-12 -15	mA
I <sub>OL</sub>	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 <sub>IH</sub>	Input HIGH Voltage	2.0			V	Guaranteed Input HIGH Voltage for All Inputs	
V <sub>IL</sub>	Input LOW Voltage	54		0.7	V	Guaranteed Input LOW Voltage for All Inputs	
		74		0.8			
V <sub>T+</sub> -V <sub>T-</sub>	Hysteresis	0.2	0.4		V	V <sub>CC</sub> = MIN	
V <sub>IK</sub>	Input Clamp Diode Voltage		-0.65	-1.5	V	V <sub>CC</sub> = MIN, I <sub>IN</sub> = -18 mA	
V <sub>OH</sub>	Output HIGH Voltage	54, 74	2.4	3.4	V	V <sub>CC</sub> = MIN, I <sub>OH</sub> = -3.0 mA	
		54, 74	2.0		V	V <sub>CC</sub> = MIN, I <sub>OH</sub> = MAX	
V <sub>OL</sub>	Output LOW Voltage	54, 74		0.25	0.4	V	I <sub>OL</sub> = 12 mA
		74		0.35	0.5	V	I <sub>OL</sub> = 24 mA
						V <sub>CC</sub> = V <sub>CC</sub> MIN, V <sub>IN</sub> = V <sub>IL</sub> or V <sub>IH</sub> per Truth Table	
I <sub>OZH</sub>	Output Off Current HIGH			40	μA	V <sub>CC</sub> = MAX, V <sub>OUT</sub> = 2.7 V	
I <sub>OZL</sub>	Output Off Current LOW			-200	μA	V <sub>CC</sub> = MAX, V <sub>OUT</sub> = 0.4 V	
I <sub>IH</sub>	Input HIGH Current	D, E <sub>1</sub> , E <sub>2</sub>		20	μA	V <sub>CC</sub> = MAX, V <sub>IN</sub> = 2.7 V	
		E <sub>1</sub> , E <sub>2</sub>		0.1	mA	V <sub>CC</sub> = MAX, V <sub>IN</sub> = 7.0 V	
		D Input		0.1	mA	V <sub>CC</sub> = MAX, V <sub>IN</sub> = 5.5 V	
I <sub>IL</sub>	Input LOW Current			-0.2	mA	V <sub>CC</sub> = MAX, V <sub>IN</sub> = 0.4 V	
I <sub>OS</sub>	Output Short Circuit Current (Note 1)	-40		-225	mA	V <sub>CC</sub> = MAX	
I <sub>CC</sub>	Power Supply Current Total, Output HIGH			38	mA	V <sub>CC</sub> = 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

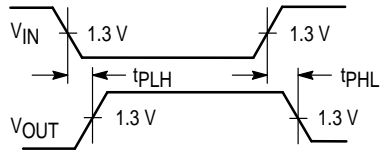


Figure 1

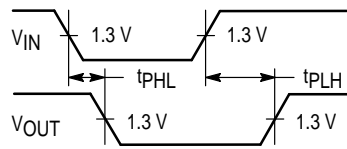


Figure 2

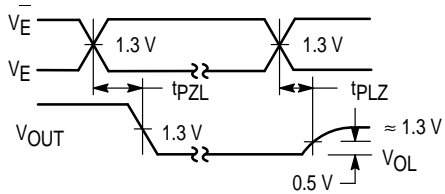


Figure 3

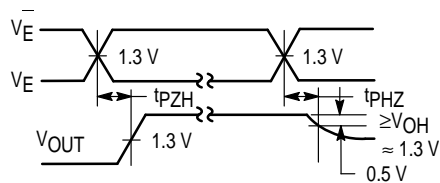
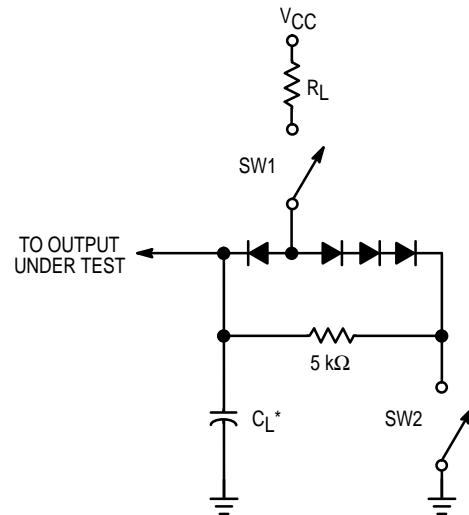


Figure 4



## SWITCH POSITIONS

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

Figure 5