



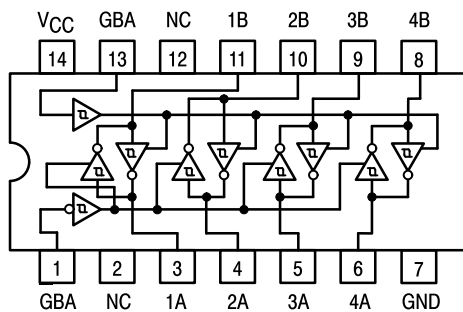
QUAD BUS TRANSCEIVER

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

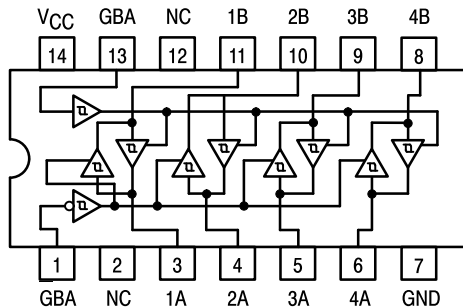
- Hysteresis at Inputs to Improve Noise Immunity
- 2-Way Asynchronous Data Bus Communication
- Input Clamp Diodes Limit High-Speed Termination Effects

LOGIC AND CONNECTION DIAGRAMS DIP (TOP VIEW)

SN54/74LS242



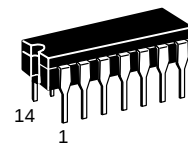
SN54/74LS243



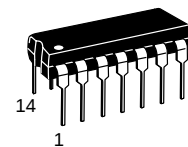
NOTE:
The Flatpak version
has the same pinouts
(Connection Diagram) as
the Dual In-Line Package.

SN54/74LS242
SN54/74LS243

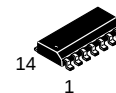
QUAD BUS TRANSCEIVER
LOW POWER SCHOTTKY



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 74			12 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
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
	Total, Output LOW				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 pF, R _L = 667 Ω
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 pF, R _L = 667 Ω
t _{PHZ}	Output Disable Time from HIGH Level		10	18		10	18	ns	

AC WAVEFORMS

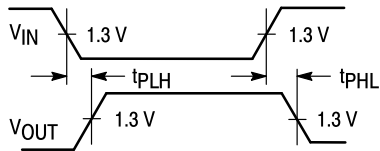


Figure 1

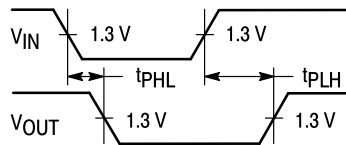


Figure 2

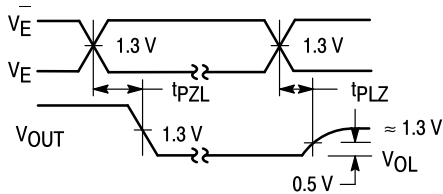


Figure 3

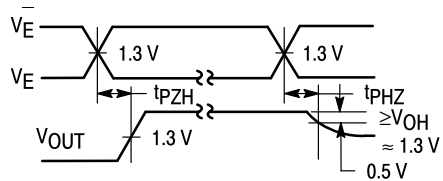
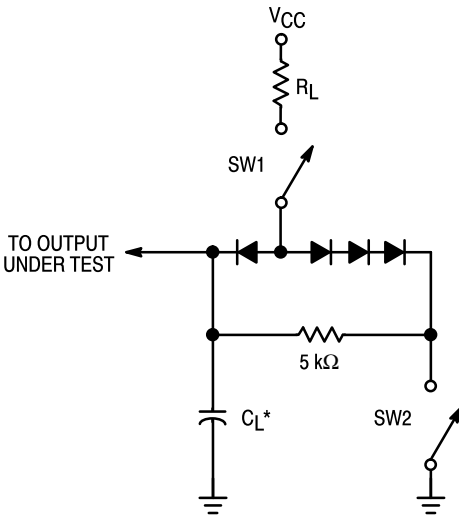


Figure 4

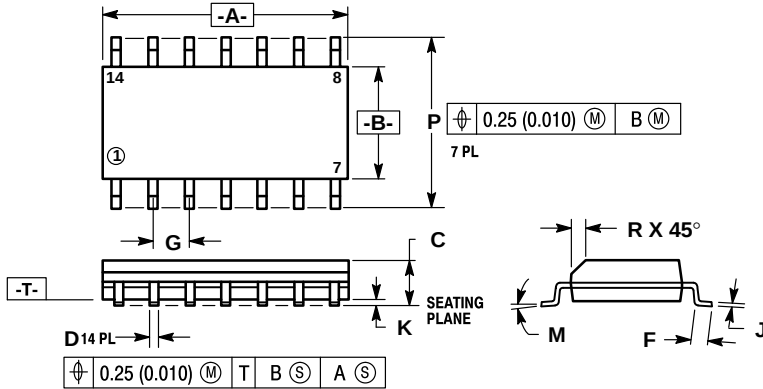


SWITCH POSITIONS

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

Figure 5

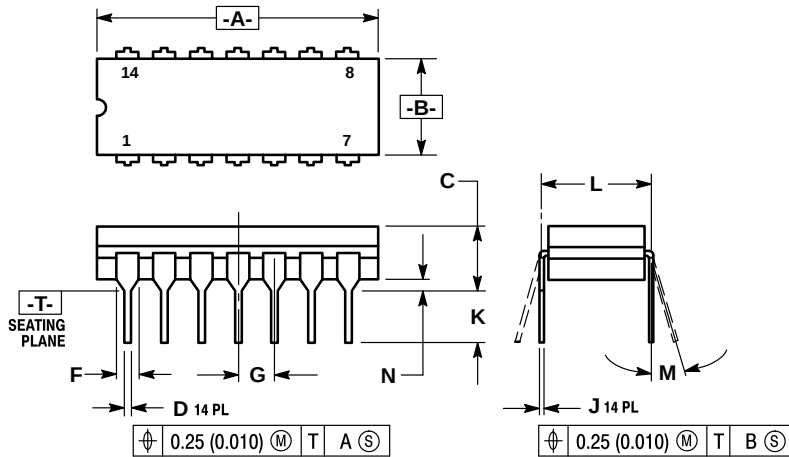
Case 751A-02 D Suffix
14-Pin Plastic
SO-14



- NOTES:
- DIMENSIONS "A" AND "B" ARE DATUMS AND "T" IS A DATUM SURFACE.
 - DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 - CONTROLLING DIMENSION: MILLIMETER.
 - DIMENSION A AND B DO NOT INCLUDE MOLD PROTRUSION.
 - MAXIMUM MOLD PROTRUSION 0.15 (0.006) PER SIDE.
 - 751A-01 IS OBSOLETE, NEW STANDARD 751A-02.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	8.55	8.75	0.337	0.344
B	3.80	4.00	0.150	0.157
C	1.35	1.75	0.054	0.068
D	0.35	0.49	0.014	0.019
F	0.40	1.25	0.016	0.049
G	1.27 BSC		0.050 BSC	
J	0.19	0.25	0.008	0.009
K	0.10	0.25	0.004	0.009
M	0°	7°	0°	7°
P	5.80	6.20	0.229	0.244
R	0.25	0.50	0.010	0.019

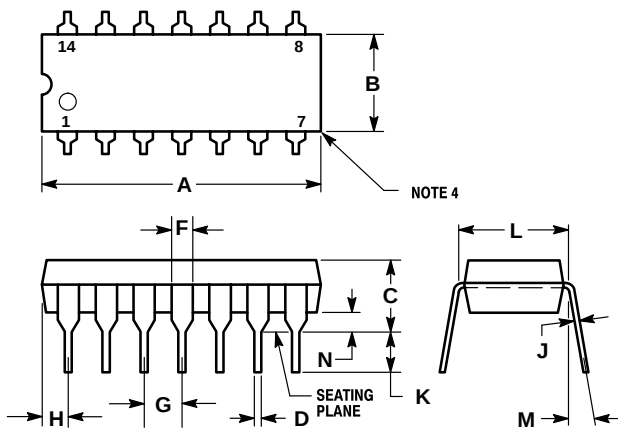
Case 632-08 J Suffix
14-Pin Ceramic Dual In-Line



- NOTES:
- DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 - CONTROLLING DIMENSION: INCH.
 - DIMENSION L TO CENTER OF LEAD WHEN FORMED PARALLEL.
 - DIM F MAY NARROW TO 0.76 (0.030) WHERE THE LEAD ENTERS THE CERAMIC BODY.
 - 632-01 THRU -07 OBSOLETE, NEW STANDARD 632-08.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	19.05	19.94	0.750	0.785
B	6.23	7.11	0.245	0.280
C	3.94	5.08	0.155	0.200
D	0.39	0.50	0.015	0.020
F	1.40	1.65	0.055	0.065
G	2.54 BSC		0.100 BSC	
J	0.21	0.38	0.008	0.015
K	3.18	4.31	0.125	0.170
L	7.62 BSC		0.300 BSC	
M	0°	15°	0°	15°
N	0.51	1.01	0.020	0.040

Case 646-06 N Suffix
14-Pin Plastic



- NOTES:
- LEADS WITHIN 0.13 mm (0.005) RADIUS OF TRUE POSITION AT SEATING PLANE AT MAXIMUM MATERIAL CONDITION.
 - DIMENSION "L" TO CENTER OF LEADS WHEN FORMED PARALLEL.
 - DIMENSION "B" DOES NOT INCLUDE MOLD FLASH.
 - ROUNDED CORNERS OPTIONAL.
 - 646-05 OBSOLETE, NEW STANDARD 646-06.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	18.16	19.56	0.715	0.770
B	6.10	6.60	0.240	0.260
C	3.69	4.69	0.145	0.185
D	0.38	0.53	0.015	0.021
F	1.02	1.78	0.040	0.070
G	2.54 BSC		0.100 BSC	
H	1.32	2.41	0.052	0.095
J	0.20	0.38	0.008	0.015
K	2.92	3.43	0.115	0.135
L	7.62 BSC		0.300 BSC	
M	0°	10°	0°	10°
N	0.39	1.01	0.015	0.039

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