



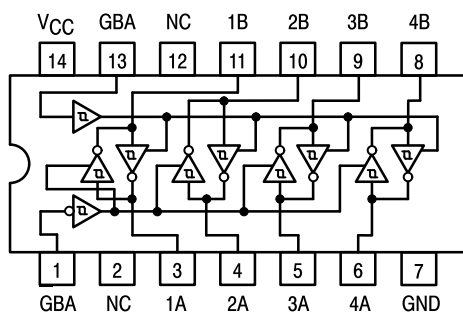
QUAD BUS TRANSCEIVER

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

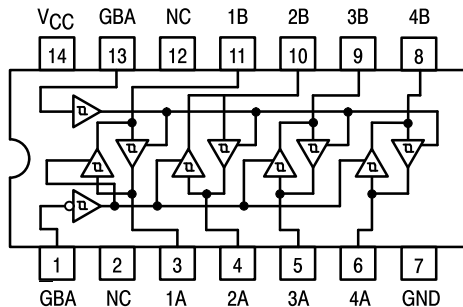
- Hysteresis at Inputs to Improve Noise Immunity
- 2-Way Asynchronous Data Bus Communication
- Input Clamp Diodes Limit High-Speed Termination Effects

LOGIC AND CONNECTION DIAGRAMS DIP (TOP VIEW)

SN54/74LS242



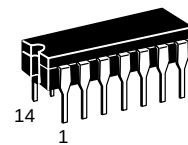
SN54/74LS243



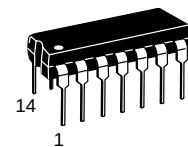
NOTE:
The Flatpak version
has the same pinouts
(Connection Diagram) as
the Dual In-Line Package.

SN54/74LS242
SN54/74LS243

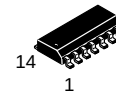
QUAD BUS TRANSCEIVER
LOW POWER SCHOTTKY



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°C, V_{CC} = 5.0 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

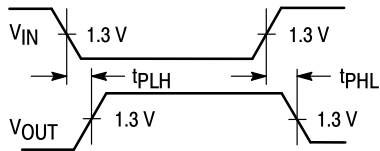


Figure 1

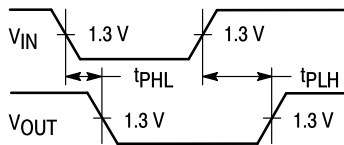


Figure 2

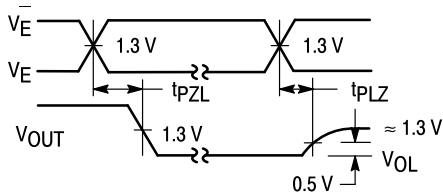


Figure 3

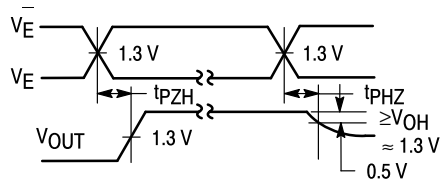
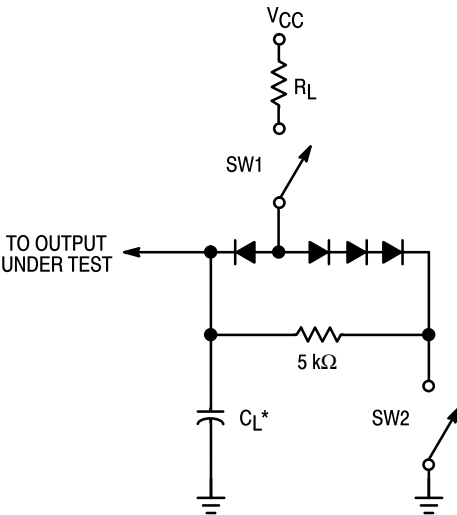


Figure 4

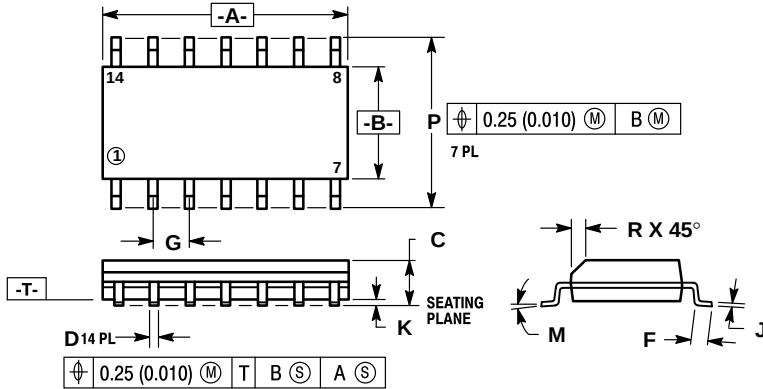


SWITCH POSITIONS

SYMBOL	SW1	SW2
t _{PZH}	Open	Closed
t _{PZL}	Closed	Open
t _{PLZ}	Closed	Closed
t _{PHZ}	Closed	Closed

Figure 5

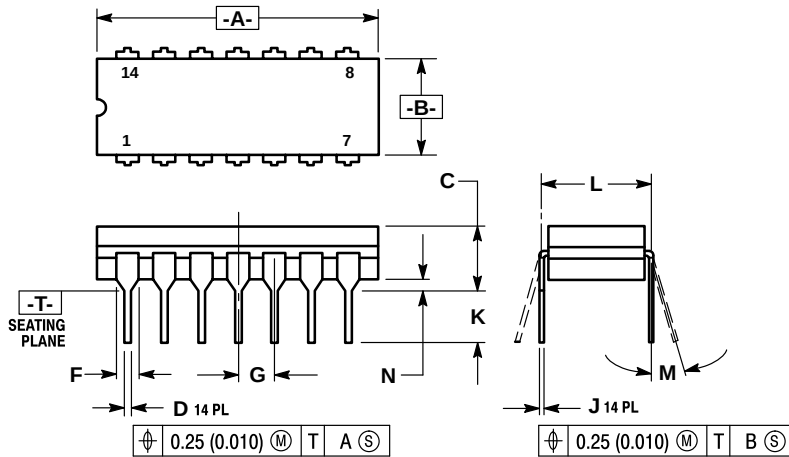
Case 751A-02 D Suffix
14-Pin Plastic
SO-14



- NOTES:
1. DIMENSIONS "A" AND "B" ARE DATUMS AND "T" IS A DATUM SURFACE.
 2. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 3. CONTROLLING DIMENSION: MILLIMETER.
 4. DIMENSION A AND B DO NOT INCLUDE MOLD PROTRUSION.
 5. MAXIMUM MOLD PROTRUSION 0.15 (0.006) PER SIDE.
 6. 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

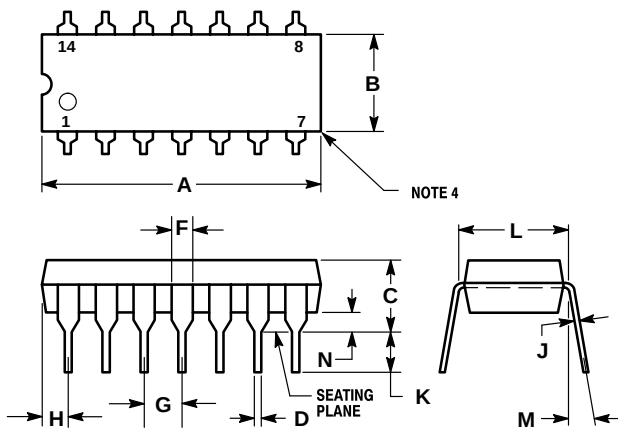
Case 632-08 J Suffix
14-Pin Ceramic Dual In-Line



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.
 3. DIMENSION L TO CENTER OF LEAD WHEN FORMED PARALLEL.
 4. DIM F MAY NARROW TO 0.76 (0.030) WHERE THE LEAD ENTERS THE CERAMIC BODY.
 5. 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:
1. LEADS WITHIN 0.13 mm (0.005) RADIUS OF TRUE POSITION AT SEATING PLANE AT MAXIMUM MATERIAL CONDITION.
 2. DIMENSION "L" TO CENTER OF LEADS WHEN FORMED PARALLEL.
 3. DIMENSION "B" DOES NOT INCLUDE MOLD FLASH.
 4. ROUNDED CORNERS OPTIONAL.
 5. 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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