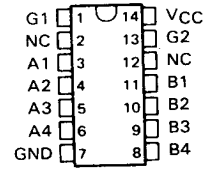
TYPES SN54HCT242, SN54HCT243
SN74HCT242, SN74HCT243
QUADRUPLE BUS TRANSCEIVERS WITH 3-STATE OUTPUTS

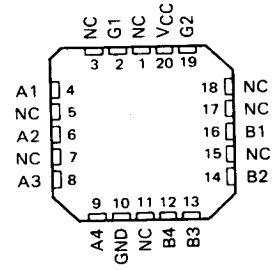
D2804, MARCH 1984

- **Inputs are TTL-Voltage Compatible**
- **2-Way Asynchronous Communication Between Data Buses**
- **High-Current Outputs Can Drive up to 15 LSTTL Loads**
- **Package Options Include Both Plastic and Ceramic Chip Carriers in Addition to Plastic and Ceramic DIPs**
- **Dependable Texas Instruments Quality and Reliability**

SN54HCT242, SN54HCT243 . . . J PACKAGE
SN74HCT242, SN74HCT243 . . . J OR N PACKAGE
(TOP VIEW)



SN54HCT242, SN54HCT243 . . . FH OR FK PACKAGE
SN74HCT242, SN74HCT243 . . . FH OR FN PACKAGE
(TOP VIEW)



NC – No internal connection

description

These four-data line transceivers are designed for asynchronous two-way communications between data buses. The SN74HCT' devices can be used to drive terminated lines down to 133 ohms.

These parts differ from their TTL counterparts (LS, ALS, and AS) in that these CMOS parts do not have a bus-latching mode in which both the outputs are simultaneously enabled. Instead of this latched mode, the buses are isolated, thus preventing potential bus conflicts if both buses are active. However, with the exception of the fourth line of the function table, their functional operation is identical to their TTL counterparts. The two enables have been renamed G1 and G2 since they work together to determine the direction of transmission rather than each enable controlling one direction independently of the other. Whenever G1 and G2 are at opposite logic levels with respect to each other, isolation between buses results.

The SN54HCT' family is characterized for operation over the full military temperature range of −55°C to 125°C. The SN74HCT' family is characterized for operation from −40°C to 85°C.

FUNCTION TABLE

INPUTS		'HCT242	'HCT243
G1	G2		
L	L	$\overline{A}$ to B	A to B
H	H	$\overline{B}$ to A	B to A
H	L	Isolation	Isolation
L	H	Isolation	Isolation

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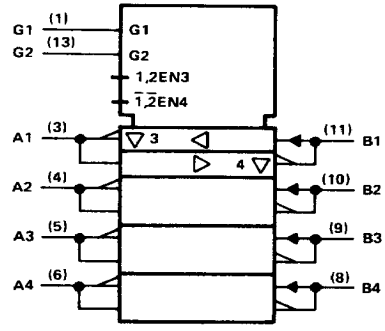
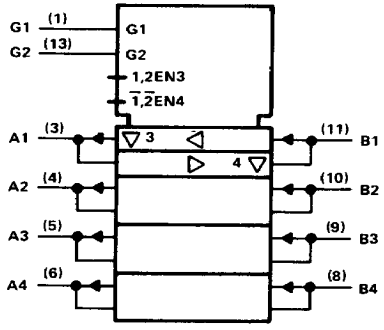
logic symbol

'HCT242

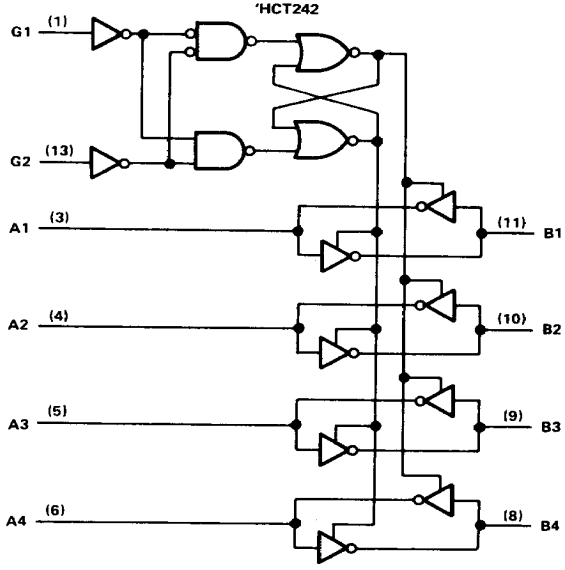


'HCT243

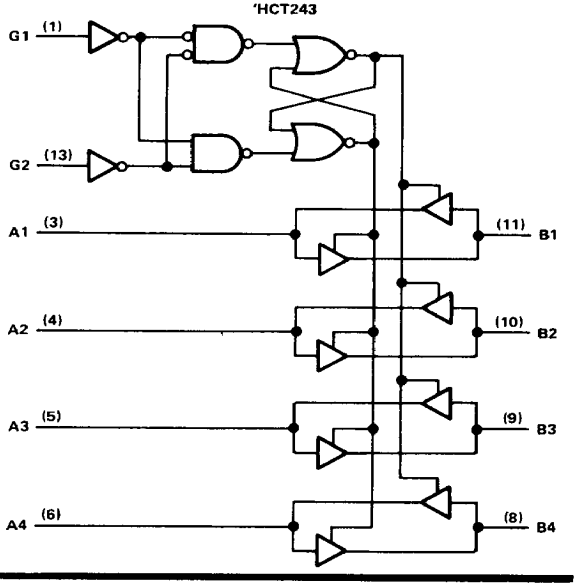


logic diagrams (positive logic)

'HCT242



'HCT243



Pin numbers shown are for J and N packages.

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maximum ratings, recommended operating conditions, and electrical characteristics

See Table VII, page 2-14

switching characteristics over recommended operating free-air temperature range (unless otherwise noted), C_L = 50 pF (see Note 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V_{CC}	T_A = 25°C			SN54HCT242 SN54HCT243		SN74HCT242 SN74HCT243		UNIT
				MIN	TYP	MAX	MIN	MAX	MIN	MAX	
t_{pd}	A or B	B or A	4.5 V		15	30		45		38	ns
			5.5 V		13	27		41		34	
t_{en}	G1 or G2	A or B	4.5 V		21	40		60		50	ns
			5.5 V		19	36		54		45	
t_{dis}	G1 or G2	A or B	4.5 V		19	40		60		50	ns
			5.5 V		18	36		54		45	
t_t		A or B	4.5 V		8	12		18		15	ns
			5.5 V		7	11		16		14	

C_{pd}	Power dissipation capacitance per transceiver	No load, T_A = 25°C	40 pF typ

switching characteristics over recommended operating free-air temperature range (unless otherwise noted), C_L = 150 pF (see Note 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V_{CC}	T_A = 25°C			SN54HCT242 SN54HCT243		SN74HCT242 SN74HCT243		UNIT
				MIN	TYP	MAX	MIN	MAX	MIN	MAX	
t_{pd}	A or B	B or A	4.5 V		21	47		71		59	ns
			5.5 V		18	42		64		53	
t_{en}	G1 or G2	A or B	4.5 V		27	57		86		71	ns
			5.5 V		24	51		77		64	
t_t		A or B	4.5 V		17	42		63		53	ns
			5.5 V		14	38		57		48	

NOTE 1: For load circuit and voltage waveforms, see page 1-14.

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