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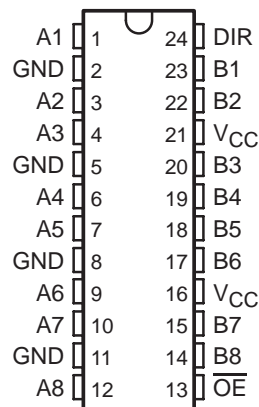
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SN54BCT25245, SN74BCT25245
25-Ω OCTAL BUS TRANSCEIVERS
WITH 3-STATE OUTPUTS

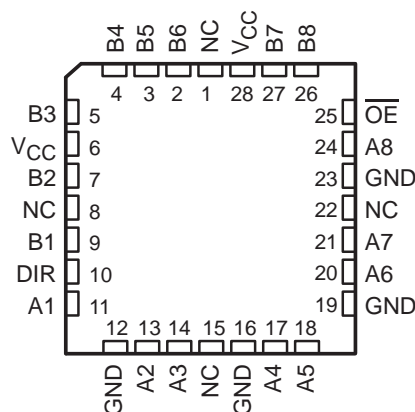
SCBS053B – MAY 1990 – REVISED APRIL 1994

- State-of-the-Art BiCMOS Design Significantly Reduces I_{CCZ}
- ESD Protection Exceeds 2000 V Per MIL-STD-883C, Method 3015; Exceeds 200 V Using Machine Model (C = 200 pF, R = 0)
- Designed to Facilitate Incident-Wave Switching for Line Impedances of 25 Ω or Greater
- Distributed V_{CC} and GND Pins Minimize Noise Generated by the Simultaneous Switching of Outputs
- Package Options Include Plastic Small-Outline (DW) Packages, Ceramic Chip Carriers (FK) and Flatpacks (W), and Standard Plastic and Ceramic 300-mil DIPs (JT, NT)

SN54BCT25245 . . . JT OR W PACKAGE
SN74BCT25245 . . . DW OR NT PACKAGE
(TOP VIEW)



SN54BCT25245 . . . FK PACKAGE
(TOP VIEW)



NC – No internal connection

description

The 'BCT25245 is a 25-Ω octal bus transceiver designed for asynchronous communication between data buses. It improves both the performance and density of 3-state memory address drivers, clock drivers, and bus-oriented transceivers.

The device allows data transmission from the A bus to the B bus or from the B bus to the A bus depending upon the logic level at the direction-control (DIR) input. The output-enable (\overline{OE}) input can disable the device so that both buses are effectively isolated.

These transceivers are capable of sinking 188-mA I_{OL}, which facilitates switching 25-Ω transmission lines on the incident wave. The distributed V_{CC} and GND pins minimize switching noise for more reliable system operation.

The SN54BCT25245 is characterized for operation over the full military temperature range of -55°C to 125°C. The SN74BCT25245 is characterized for operation from 0°C to 70°C.

FUNCTION TABLE

INPUTS		OPERATION
\overline{OE}	DIR	
L	L	B data to A bus
L	H	A data to B bus
H	X	Isolation

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recommended operating conditions

		SN54BCT25245			SN74BCT25245			UNIT
		MIN	NOM	MAX	MIN	NOM	MAX	
V _{CC}	Supply voltage	4.5	5	5.5	4.5	5	5.5	V
V _{IH}	High-level input voltage	2			2			V
V _{IL}	Low-level input voltage			0.8			0.8	V
I _{IK}	Input clamp current			-18			-18	mA
I _{OH}	High-level output current	A port		-53	-80		mA	
		B port		-3	-3			
I _{OL}	Low-level output current	A port		125	188		mA	
		B port		20	24			
T _A	Operating free-air temperature	-55		125	0		70	°C

electrical characteristics over recommended operating free-air temperature range (unless otherwise noted)

PARAMETER		TEST CONDITIONS		SN54BCT25245		SN74BCT25245		UNIT	
				MIN	TYP†	MAX	MIN		TYP†
V _{IK}		V _{CC} = 4.5 V, I _I = -18 mA				-1.2		-1.2	V
V _{OH}	A port	V _{CC} = 4.5 V	I _{OH} = -53 mA	2				V	
			I _{OH} = -80 mA			2			
	V _{CC} = 4.75 V, I _{OH} = -3 mA			2.7					
B port	V _{CC} = 4.5 V, I _{OH} = -3 mA	2.4	3.3	2.4	3.3				
V _{OL}	A port	V _{CC} = 4.5 V	I _{OL} = 94 mA	0.38	0.55	0.42	0.55	V	
			I _{OL} = 125 mA			0.8			
			I _{OL} = 188 mA				0.7		
	B port	V _{CC} = 4.5 V, I _{OL} = 20 mA	0.3	0.5		0.35	0.5		
	I _{OL} = 24 mA								
I _I	A or B port	V _{CC} = 5.5 V, V _I = 5.5 V			0.25		0.25	mA	
	Control input				0.1		0.1		
I _{IH} ‡	A or B port	V _{CC} = 5.5 V, V _I = 2.7 V			70		70	μA	
	Control input				20		20		
I _{IL} ‡	A or B port	V _{CC} = 5.5 V, V _I = 0.5 V			-0.6		-0.6	mA	
	Control input				-0.6		-0.6		
I _{OS} §	B port only¶	V _{CC} = 5.5 V, V _O = 0	-60		-150	-60		-150	mA
I _{CCH}	A to B	V _{CC} = 5.5 V		36	46	36	46	mA	
	B to A			63	80	63	80		
I _{CCL}	A to B	V _{CC} = 5.5 V		48	60	48	60	mA	
	B to A			95	125	95	125		
I _{CCZ}		V _{CC} = 5.5 V		12	16	12	16	mA	
C _i	Control input	V _{CC} = 5 V, V _I = 2.5 V or 0.5 V		8		8		pF	
C _{io}	A port	V _{CC} = 5 V, V _O = 2.5 V or 0.5 V		18		18		pF	
	B port			8		8			

† All typical values are at V_{CC} = 5 V, T_A = 25°C.

‡ For I/O ports, the parameters I_{IH} and I_{IL} include the off-state output current.

§ Not more than one output should be tested at a time, and the duration of the test should not exceed one second.

¶ Testing for this parameter on the A port is not recommended.

PRODUCT PREVIEW information concerns products in the formative or design phase of development. Characteristic data and other specifications are design goals. Texas Instruments reserves the right to change or discontinue these products without notice.



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25-Ω OCTAL BUS TRANSCEIVERS
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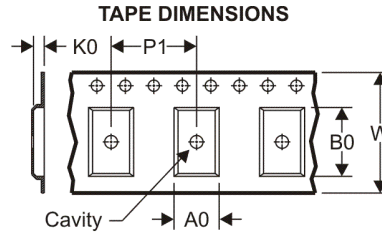
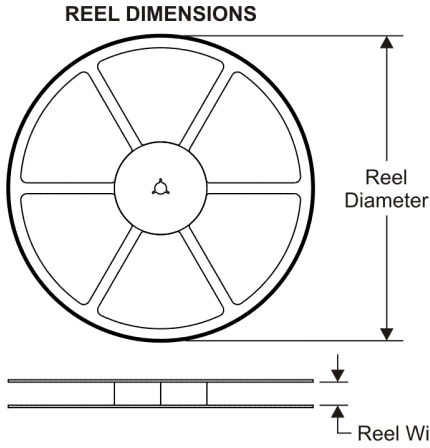
switching characteristics (see Note 2)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V _{CC} = 5 V, C _L = 50 pF, R ₁ = 500 Ω, R ₂ = 500 Ω, T _A = 25°C			V _{CC} = 4.5 V to 5.5 V, C _L = 50 pF, R ₁ = 500 Ω, R ₂ = 500 Ω, T _A = MIN to MAX†				UNIT
			74BCT25245			SN54BCT25245		SN74BCT25245		
			MIN	TYP	MAX	MIN	MAX	MIN	MAX	
t _{PLH}	A	B	1.2	3.3	5.1	1.2	5.8	1.2	5.7	ns
t _{PHL}			1.9	4.3	6.7	1.9	7.6	1.9	7.2	
t _{PLH}	B	A	1.2	3.3	4.8	1.2	5.7	1.2	5.5	ns
t _{PHL}			2.1	4	5.6	2.1	6.4	2.1	6.2	
t _{PZH}	\overline{OE}	A	3.7	6.3	8.4	3.7	10.1	3.7	9.6	ns
t _{PZL}			4.5	7.4	9.2	4.5	11.1	4.5	10.3	
t _{PHZ}	\overline{OE}	A	1.8	3.7	5.5	1.8	6.4	1.8	6.2	ns
t _{PLZ}			3.3	5.1	7.2	3.3	9.6	3.3	8.3	
t _{PZH}	\overline{OE}	B	3.4	5.7	7.9	3.4	9.2	3.4	8.9	ns
t _{PZL}			4.3	6.6	8.7	4.3	10.1	4.3	9.7	
t _{PHZ}	\overline{OE}	B	2.7	4.5	6.3	2.7	7.2	2.7	6.9	ns
t _{PLZ}			1.7	4.5	6.8	1.7	8.3	1.7	7.5	

† For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions.

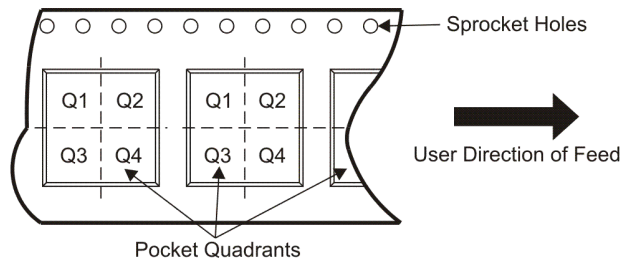
NOTE 2: Load circuits and voltage waveforms are shown in Section 1.

TAPE AND REEL INFORMATION



A0	Dimension designed to accommodate the component width
B0	Dimension designed to accommodate the component length
K0	Dimension designed to accommodate the component thickness
W	Overall width of the carrier tape
P1	Pitch between successive cavity centers

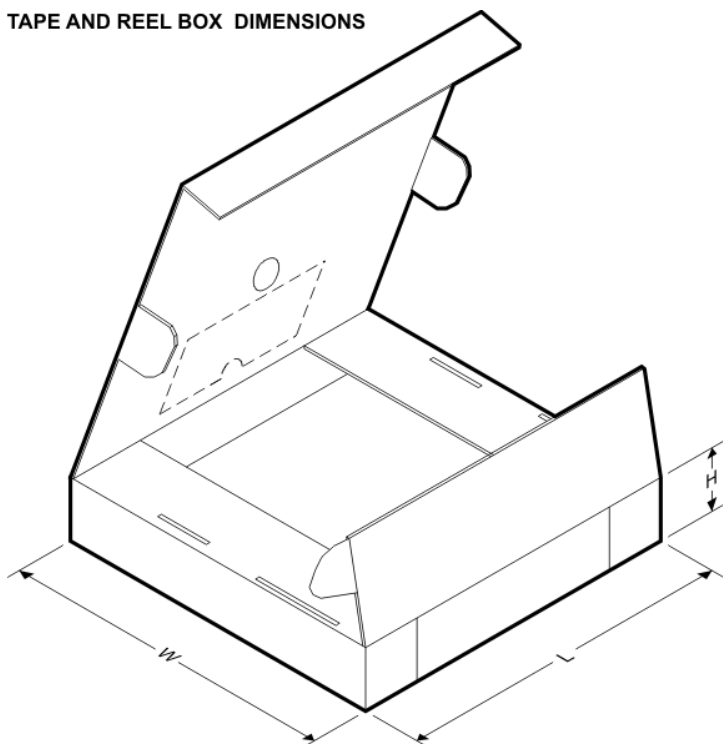
QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE



*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
SN74BCT25245DWR	SOIC	DW	24	2000	330.0	24.4	10.75	15.7	2.7	12.0	24.0	Q1

TAPE AND REEL BOX DIMENSIONS



*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
SN74BCT25245DWR	SOIC	DW	24	2000	346.0	346.0	41.0

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