- **State-of-the-Art BiCMOS Design Significantly Reduces I_{CCZ}**
- **ESD Protection Exceeds 2000 V Per MIL-STD-883C, Method 3015**
- **Package Options Include Plastic Small-Outline (DW) Packages, Ceramic Chip Carriers (FK) and Flatpacks (W), and Plastic and Ceramic 300-mil DIPs (J, N)**

SN54BCT623 . . . J OR W PACKAGE
SN74BCT623 . . . DW OR N PACKAGE
(TOP VIEW)

```
        ┌────────┐
OEAB  │1     20│ V_CC
  A1  │2     19│ OEBA
  A2  │3     18│ B1
  A3  │4     17│ B2
  A4  │5     16│ B3
  A5  │6     15│ B4
  A6  │7     14│ B5
  A7  │8     13│ B6
  A8  │9     12│ B7
 GND  │10    11│ B8
        └────────┘
```

SN54BCT623 . . . FK PACKAGE
(TOP VIEW)

```
          A2  A1 OEAB V_CC OEBA
           3   2   1   20  19
        ┌─────────────────────┐
A3 │4                      18│ B1
A4 │5                      17│ B2
A5 │6                      16│ B3
A6 │7                      15│ B4
A7 │8                      14│ B5
        └─────────────────────┘
           9  10  11  12  13
          A8  GND B8  B7  B6
```
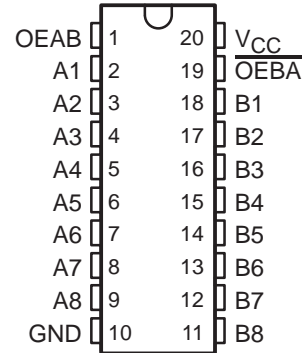
description

The ′BCT623 bus transceiver is designed for asynchronous communication between data buses. The control function implementation allows for maximum flexibility in timing. The ′BCT623 provides true data at its outputs.

This 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 levels at the output-enable (OEAB and OEBA) inputs.
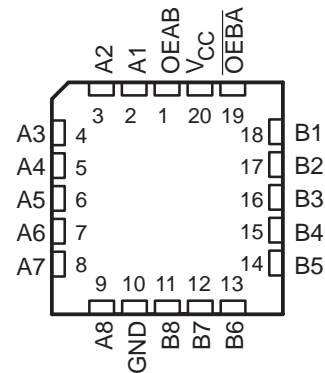
The output-enable inputs can be used to disable the device so that the buses are effectively isolated. The dual-enable configuration gives the transceivers the capability of storing data by simultaneously enabling OEAB and OEBA. Each output reinforces its input in this configuration. When both OEAB and OEBA are enabled and all other data sources to the two sets of bus lines are at high impedance, both sets of bus lines (16 in all) will remain at their last states.

The SN54BCT623 is characterized for operation over the full military temperature range of −55°C to 125°C. The SN74BCT623 is characterized for operation from 0°C to 70°C.

FUNCTION TABLE

INPUTS		OPERATION
OEBA	OEAB	
L	L	B data to A bus
L	H	B data to A bus, A data to B bus
H	L	Isolation
H	H	A data to B bus

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SN54BCT623, SN74BCT623
OCTAL BUS TRANSCEIVERS
WITH 3-STATE OUTPUTS

SCBS020A – SEPTEMBER 1988 – REVISED NOVEMBER 1993

logic symbol†

logic diagram (positive logic)

To Seven Other Channels

† This symbol is in accordance with ANSI/IEEE Std 91-1984
  and IEC Publication 617-12.

absolute maximum ratings over operating free-air temperature range (unless otherwise noted)‡

Supply voltage range, V_{CC} .... − 0.5 V to 7 V
Input voltage range: Control inputs (see Note 1) .... − 0.5 V to 7 V
           I/O ports (see Note 1) .... − 0.5 V to 5.5 V
Voltage range applied to any output in the disabled or power-off state, V_O .... − 0.5 V to 5.5 V
Voltage range applied to any output in the high state, V_O .... − 0.5 V to V_{CC}
Input clamp current, I_{IK} .... −30 mA
Current into any output in the low state: SN54BCT623 .... 96 mA
                        SN74BCT623 .... 128 mA
Operating free-air temperature range: SN54BCT623 .... − 55°C to 125°C
                         SN74BCT623 .... 0°C to 70°C
Storage temperature range .... − 65°C to 150°C

‡ Stresses beyond those listed under "absolute maximum ratings" may cause permanent damage to the device. These are stress ratings only, and
  functional operation of the device at these or any other conditions beyond those indicated under "recommended operating conditions" is not
  implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.
NOTE 1: The input and output voltage ratings may be exceeded if the input and output current ratings are observed.

recommended operating conditions

			SN54BCT623			SN74BCT623			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			−3			−3	mA
		B port			−12			−15	
I_{OL}	Low-level output current	A port			20			24	mA
		B port			48			64	
T_A	Operating free-air temperature		−55		125	0		70	°C

TEXAS
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POST OFFICE BOX 655303 • DALLAS, TEXAS 75265

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

PARAMETER		TEST CONDITIONS		SN54BCT623 MIN	TYP†	MAX	SN74BCT623 MIN	TYP†	MAX	UNIT
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	$I_{OH} = -1$ mA	2.5	3.4		2.5	3.4		V
			$I_{OH} = -3$ mA	2.4	3.3		2.4	3.3		
	B port	$V_{CC} = 4.5$ V	$I_{OH} = -3$ mA	2.4	3.3		2.4	3.3		
			$I_{OH} = -12$ mA	2	3.2					
			$I_{OH} = -15$ mA				2	3.1		
V_{OL}	A port	$V_{CC} = 4.5$ V	$I_{OL} = 20$ mA		0.3	0.5				V
			$I_{OL} = 24$ mA					0.35	0.5	
	B port	$V_{CC} = 4.5$ V	$I_{OL} = 48$ mA		0.38	0.55				
			$I_{OL} = 64$ mA					0.42	0.55	
I_I	A or B port	$V_{CC} = 5.5$ V,	$V_I = 5.5$ V			1			1	mA
	OEAB or $\overline{OEBA}$					0.1			0.1	
I_{IH}‡	A or B port	$V_{CC} = 5.5$ V,	$V_I = 2.7$ V			70			70	μA
	OEAB or $\overline{OEBA}$					20			20	
I_{IL}‡	A or B port	$V_{CC} = 5.5$ V,	$V_I = 0.5$ V			−0.65			−0.65	mA
	OEAB or $\overline{OEBA}$					−0.6			−0.6	
I_{OS}§	A port	$V_{CC} = 5.5$ V,	$V_O = 0$	−60		−150	−60		−150	mA
	B port			−100		−225	−100		−225	
I_{CCL}	A to B	$V_{CC} = 5.5$ V			58	92		58	92	mA
I_{CCH}	A to B	$V_{CC} = 5.5$ V			33	53		33	53	mA
I_{CCZ}		$V_{CC} = 5.5$ V			6	11		6	11	mA
C_i	OEAB or $\overline{OEBA}$	$V_{CC} = 5$ V,	$V_I = 2.5$ V or 0.5 V		5			5		pF
C_{io}	A to B	$V_{CC} = 5$ V,	$V_O = 2.5$ V or 0.5 V		9			9		pF
	B to A				12			12		

† 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.

switching characteristics (see Note 2)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V_{CC} = 5 V, C_L = 50 pF, R1 = 500 Ω, R2 = 500 Ω, T_A = 25°C			V_{CC} = 4.5 V to 5.5 V, C_L = 50 pF, R1 = 500 Ω, R2 = 500 Ω, T_A = MIN to MAX[†]				UNIT
			'BCT623			SN54BCT623		SN74BCT623		
			MIN	TYP	MAX	MIN	MAX	MIN	MAX	
t_{PLH}	A	B	0.5	3.1	4.7	0.5	5.3	0.5	5.2	ns
t_{PHL}			1.7	4.9	6.9	1.7	7.6	1.7	7.4	
t_{PLH}	B	A	0.9	4.1	5.9	0.9	6.8	0.9	6.7	ns
t_{PHL}			1.8	5.3	7.6	1.8	8.3	1.8	8	
t_{PZH}	$\overline{OEBA}$	A	3.1	6.8	9.1	3.1	10.7	3.1	10.6	ns
t_{PZL}			3.3	7.2	9.6	3.3	11.3	3.3	10.7	
t_{PHZ}	$\overline{OEBA}$	A	1.9	6.1	8.3	1.9	10.6	1.9	9.8	ns
t_{PLZ}			1.1	4.6	7	1.1	8.1	1.1	7.8	
t_{PZH}	OEAB	B	2	5	6.8	2	7.8	2	7.6	ns
t_{PZL}			2.7	6.2	8	2.7	9.3	2.7	8.9	
t_{PHZ}	OEAB	B	1.1	4.6	6.5	1.1	8	1.1	7.7	ns
t_{PLZ}			0.3	3.2	6.3	0.3	7.2	0.3	7.1	

[†] 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.

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PRODUCT FOLDER | PRODUCT INFO: FEATURES | DESCRIPTION | DATASHEETS | PRICING/AVAILABILITY/PKG | SAMPLES | APPLICATION NOTES | RELATED DOCUMENTS

PRODUCT SUPPORT: TRAINING

SN74BCT623, Octal Bus Transceivers
DEVICE STATUS: **ACTIVE**

PARAMETER NAME	SN54BCT623	SN74BCT623
Voltage Nodes (V)	5	5
Vcc range (V)	4.5 to 5.5	4.5 to 5.5
Input Level	TTL	TTL
Output Level	TTL	TTL
Output Drive (mA)		-15/64
No. of Outputs	8	8
Logic	True	True
Static Current		72.5
tpd max (ns)		8

FEATURES
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DESCRIPTION
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TECHNICAL DOCUMENTS
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To view the following documents, Acrobat Reader 4.0 is required.
To download a document to your hard drive, right-click on the link and choose 'Save'.

Full datasheet in Acrobat PDF: sn74bct623.pdf (78 KB,Rev.A) (Updated: 11/01/1993)

View Application Notes for Digital Logic

- Bus-Interface Devices With Output-Damping Resistors Or Reduced-Drive Outputs (Rev. A) (SCBA012A - Updated: 08/01/1997)
- Designing With Logic (Rev. C) (SDYA009C - Updated: 06/01/1997)
- Evaluation of Nickel/Palladium/Gold-Finished Surface-Mount Integrated Circuits (SZZA026 - Updated: 06/20/2001)
- Implications of Slow or Floating CMOS Inputs (Rev. C) (SCBA004C - Updated: 02/01/1998)
- Input and Output Characteristics of Digital Integrated Circuits (SDYA010 - Updated: 10/01/1996)
- LVT-to-LVTH Conversion (SCEA010 - Updated: 12/08/1998)
- Live Insertion (SDYA012 - Updated: 10/01/1996)
- Logic Solutions For IEEE Std 1284 (SCEA013 - Updated: 06/01/1999)

View Related Documentation for Digital Logic

- Logic Reference Guide (SCYB004, 1032 KB - Updated: 10/23/2001)
- Logic Selection Guide Second Half 2002 (Rev. R) (SDYU001R, 4274 KB - Updated: 07/19/2002)
- Military Semiconductors Selection Guide 2002 (Rev. B) (SGYC003B, 1648 KB - Updated: 04/22/2002)

ORDERABLE DEVICE	PACKAGE INDUSTRY (TI)	PINS	TEMP (ºC)	STATUS	PRODUCT CONTENT	SAMPLES
SN74BCT623NSR	SOP (NS)	20		ACTIVE	View Product Content	Request Samples

DEVICE INFORMATION							TI INVENTORY STATUS AS OF 3:00 PM GMT, 26 Sep 2002			REPORTED DISTRIBUTOR INVENTORY AS OF 3:00 PM GMT, 26 Sep 2002		
ORDERABLE DEVICE	STATUS	PACKAGE TYPE|PINS	TEMP (ºC)	PRODUCT CONTENT	BUDGETARY PRICING QTY | $US	STD PACK QTY	IN STOCK	IN PROGRESS QTY|DATE	LEAD TIME	DISTRIBUTOR COMPANY|REGION	IN STOCK	PURCHASE
SN74BCT623DW	ACTIVE	SOP (DW) | 20	0 TO 70	View Contents	1KU | 1.68	25	N/A*	8341 | 04 Oct	12 WKS			
								>10k | 11 Oct				
SN74BCT623DWR	ACTIVE	SOP (DW) | 20	0 TO 70	View Contents	1KU | 1.71	2000	N/A*	8341 | 04 Oct	12 WKS			
								>10k | 11 Oct				
SN74BCT623N	ACTIVE	PDIP (N) | 20	0 TO 70	View Contents	1KU | 1.68	20	80	1674 | 19 Sep	12 WKS			
								8341 | 09 Oct				
								>10k | 16 Oct				
								>10k | 23 Oct				
SN74BCT623NSR	ACTIVE	SOP (NS) | 20		View Contents	1KU | 1.75	2000	N/A*	>10k | 14 Oct	12 WKS			

Table Data Updated on: 9/26/2002