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description

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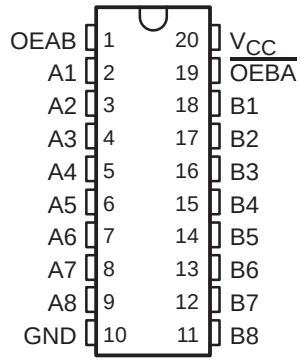
This device allows data transmission from the A bus to the B bus or from the B bus to the A bus depending upon the logic levels at the output-enable (OEAB and $\overline{\text{OEBA}}$) inputs.

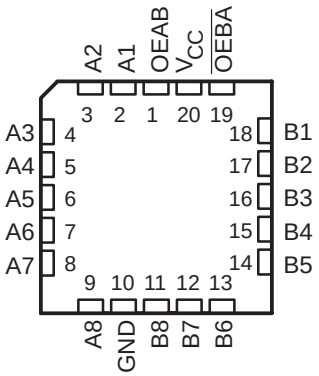
The output-enable inputs can be used to disable the device so that the buses are effectively isolated. The dual-enable configuration gives the transceivers the capability of storing data by simultaneously enabling OEAB and $\overline{\text{OEBA}}$. Each output reinforces its input in this configuration. When both OEAB and $\overline{\text{OEBA}}$ 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.

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



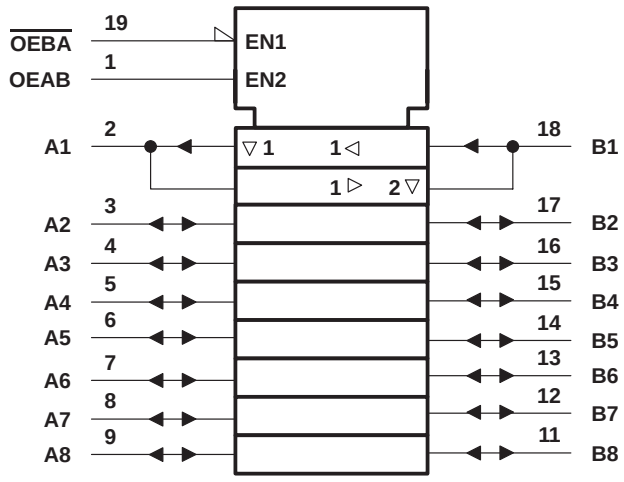
SN54BCT623 . . . FK PACKAGE
(TOP VIEW)



FUNCTION TABLE

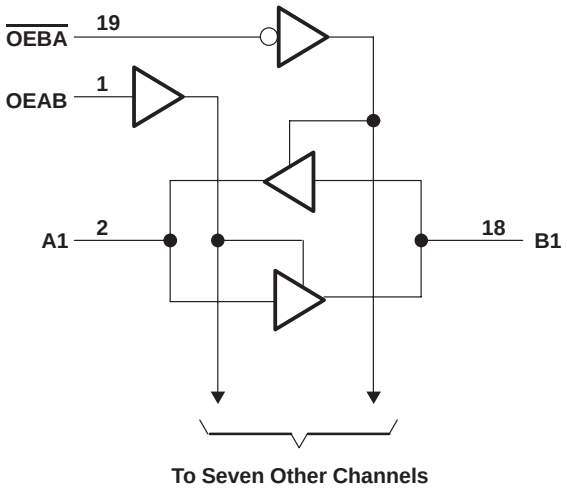
INPUTS		OPERATION
$\overline{\text{OEBA}}$	OEAB	
L	L	B data to A bus
L	H	B data to A bus, A data to B bus
H	L	Isolation
H	H	A data to B bus

logic symbol†



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

logic diagram (positive logic)



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

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

PARAMETER		TEST CONDITIONS		SN54BCT623			SN74BCT623			UNIT
				MIN	TYP†	MAX	MIN	TYP†	MAX	
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 | APPLICATION NOTES | USER GUIDES | MORE LITERATURE

PRODUCT SUPPORT: TRAINING

SN54BCT623, Octal Bus Transceivers With 3-State Outputs
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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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'.

DATASHEET

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Full datasheet in Acrobat PDF: sn54bct623.pdf (78 KB,Rev.A) (Updated: 11/01/1993)

Product Folder: SN54BCT623, Octal Bus Transceivers With 3-State Outputs

APPLICATION NOTES

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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)
- TI IBIS File Creation, Validation, and Distribution Processes (SZZA034 - Updated: 08/29/2002)
- Understanding and Interpreting Texas Instruments Standard-Logic Products Data Sh (Rev. A) (SZZA036A - Updated: 02/27/2003)

MORE LITERATURE

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- Enhanced Plastic Portfolio Brochure (SGZB004, 387 KB - Updated: 08/19/2002)
- Logic Reference Guide (SCYB004, 1032 KB - Updated: 10/23/2001)
- MicroStar Junior BGA Design Summary (SCET004, 167 KB - Updated: 07/28/2000)
- Military Brief (SGYN138, 803 KB - Updated: 10/10/2000)
- Overview of IEEE Std 91-1984, Explanation of Logic Symbols Training Booklet (Rev. A) (SDYZ001A, 138 KB - Updated: 07/01/1996)
- Palladium Lead Finish User's Manual (SDYV001, 2041 KB - Updated: 11/01/1996)
- QML Class V Space Products Military Brief (Rev. A) (SGZN001A, 257 KB - Updated: 10/07/2002)

USER GUIDES

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- LOGIC Pocket Data Book (SCYD013, 4837 KB - Updated: 12/05/2002)

PRICING/AVAILABILITY/PKG

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DEVICE INFORMATION
Updated Daily

ORDERABLE DEVICE	STATUS	PACKAGE TYPE | PINS	TEMP (°C)	DSCC NUMBER	PRODUCT CONTENT	BUDGETARY PRICING QTY | $US	STD PACK QTY
5962-9094001M2A	ACTIVE	LCCC (FK) | 20	-55 TO 125		View Contents	1KU | 10.65	1
SNJ54BCT623FK	ACTIVE	LCCC (FK) | 20	-55 TO 125	5962-9094001M2A	View Contents	1KU | 10.65	1
5962-9094001MRA	ACTIVE	CDIP (J) | 20	-55 TO 125		View Contents	1KU | 6.95	1
SNJ54BCT623J	ACTIVE	CDIP (J) | 20	-55 TO 125	5962-9094001MRA	View Contents	1KU | 6.95	1
5962-9094001MSA	ACTIVE	CFP (W) | 20	-55 TO 125		View Contents	1KU | 9.20	1
SNJ54BCT623W	ACTIVE	CFP (W) | 20	-55 TO 125	5962-9094001MSA	View Contents	1KU | 9.20	1

TI INVENTORY STATUS
As Of 09:00 AM GMT, 17 Apr 2003

IN STOCK	IN PROGRESS QTY | DATE	LEAD TIME
18*	3985 | 20 May	8 WKS
	>10k | 27 May	
63*	>10k | 20 May	8 WKS
0*	>10k | 20 May	8 WKS
0*	3889 | 20 May	8 WKS
	>10k | 27 May	
106*	>10k | 20 May	8 WKS
0*	>10k | 20 May	8 WKS

REPORTED DISTRIBUTOR INVENTORY
As Of 09:00 AM GMT, 17 Apr 2003

DISTRIBUTOR COMPANY | REGION	IN STOCK	PURCHASE
None Reported View Distributors		
Avnet | Americas	44	BUY NOW
None Reported View Distributors		
None Reported View Distributors		
None Reported View Distributors		
None Reported View Distributors		

Product Folder: SN54BCT623, Octal Bus Transceivers With 3-State Outputs

Table Data Updated on: 4/17/2003
