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20 🛿 V<u>CC</u>

18 B1

17 B2

14 B5 13 B6

12 🛛 B7

OEB/

18 B1

17

16

15 B4

14

B2

B3

B5

20 19

19

16 B3

11 B8

SN54BCT623 ... FK PACKAGE (TOP VIEW)

 \cap

10 11 12 13

B8 B7 B6

2

GND

A3

A4 🛛 5

A5 6

A6 7

A7 8

OEBA

SN54BCT623 ... J OR W PACKAGE

SN74BCT623 ... DW OR N PACKAGE

(TOP VIEW)

OEAB

A1 2

A2 3

A3 4

A4 5

A5 6

A6 7

A7 18

A8 9

GND 10

- 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)

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.

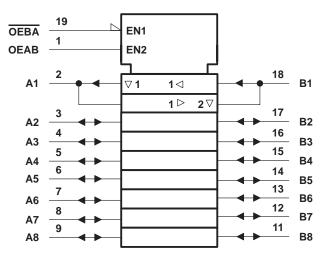
FUNCTION TABLE								
INP	UTS							
OEBA	OEAB	OPERATION						
L	L	B data to A bus						
L	Н	B data to A bus, A data to B bus						
н	L	Isolation						
н	Н	A data to B bus						

PRODUCTION DATA information is current as of publication date. Products conform to specifications per the terms of Texas Instruments
standard warranty. Production processing does not necessarily include testing of all parameters.

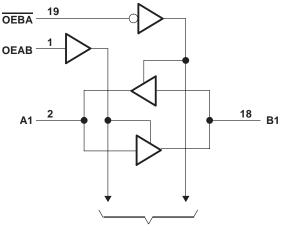


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logic symbol[†]



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 N	lote 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, VO	– 0.5 V to 5.5 V
Voltage range applied to any output in the	high state, V _O	$\dots \dots $
Input clamp current, I _{IK}	-	
Current into any output in the low state: SN	N54BCT623	96 mA
St	N74BCT623	128 mA
Operating free-air temperature range: SN	N54BCT623	– 55°C to 125°C
St	N74BCT623	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

			SN	54BCT6	23	SN				
			MIN	NOM	MAX	MIN	NOM	MAX	UNIT	
VCC	Supply voltage		4.5	5	5.5	4.5	5	5.5	V	
VIH	High-level input voltage		2			2			V	
VIL	Low-level input voltage			0.8			0.8	V		
IIK	Input clamp current			-18			-18	mA		
		A port			-3			-3		
ЮН	High-level output current	B port			-12			-15	mA	
		A port			20			24		
IOL	Low-level output current	B port			48	64		64	mA	
TA	Operating free-air temperature	•	-55		125	0		70	°C	



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

		TEST CONDITIONS			I54BCT6	23	SN	74BCT6	23	
1	PARAMETER	TES	T CONDITIONS	MIN	TYP†	MAX	MIN	TYP [†]	MAX	UNIT
VIK		V _{CC} = 4.5 V,	lj = -18 mA			-1.2			-1.2	V
			$I_{OH} = -1 \text{ mA}$	2.5	3.4		2.5	3.4		
	A port	V _{CC} = 4.5 V	$I_{OH} = -3 \text{ mA}$	2.4	3.3		2.4	3.3		
VOH			$I_{OH} = -3 \text{ mA}$	2.4	3.3		2.4	3.3		V
	B port	$V_{CC} = 4.5 V$	$I_{OH} = -12 \text{ mA}$	2	3.2					
			I _{OH} = -15 mA				2	3.1		
	Anort		I _{OL} = 20 mA		0.3	0.5				
Mai	A port	V _{CC} = 4.5 V	I _{OL} = 24 mA					0.35	0.5	V
VOL	Dimont		I _{OL} = 48 mA		0.38	0.55				v
	B port	V _{CC} = 4.5 V	I _{OL} = 64 mA					0.42	0.55	
т.	A or B port					1			1	mA
Ιj	OEAB or OEBA	V _{CC} = 5.5 V,	V _I = 5.5 V			0.1			0.1	ША
t	A or B port		VI. 07V			70			70	^
IIH‡	OEAB or OEBA	V _{CC} = 5.5 V,	V _I = 2.7 V			20			20	μA
ı _{IL} ‡	A or B port	V _{CC} = 5.5 V,	VI = 0.5 V			-0.65			-0.65	mA
ηΓ+	OEAB or OEBA	VCC = 5.5 V,	V = 0.5 V			-0.6			-0.6	ША
18	A port		$V_{O} = 0$	-60		-150	-60		-150	mA
los§	B port	V _{CC} = 5.5 V,	$V_{O} = 0$	-100		-225	-100		-225	ША
ICCL	A to B	V _{CC} = 5.5 V			58	92		58	92	mA
ICCH	A to B	V _{CC} = 5.5 V			33	53		33	53	mA
ICCZ		V _{CC} = 5.5 V			6	11		6	11	mA
Ci	OEAB or OEBA	V _{CC} = 5 V,	$V_{I} = 2.5 \text{ V or } 0.5 \text{ V}$		5			5		pF
<u>.</u>	A to B	V _{CC} = 5 V,	V _O = 2.5 V or 0.5 V		9			9		pF
Cio	B to A	$v_{CC} = 5 v$,	$v_{\rm O} = 2.5 \ v_{\rm OI} \ 0.5 \ v$		12			12		μ

[†] 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.



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switching characteristics (see Note 2)

PARAMETER	FROM TO (INPUT) (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		SN54B		SN74B		
			MIN	TYP	MAX	MIN	MAX	MIN	MAX	
^t PLH	А	В	0.5	3.1	4.7	0.5	5.3	0.5	5.2	ns
^t PHL	7	В	1.7	4.9	6.9	1.7	7.6	1.7	7.4	115
^t PLH	В	А	0.9	4.1	5.9	0.9	6.8	0.9	6.7	ns
^t PHL	В		1.8	5.3	7.6	1.8	8.3	1.8	8	
^t PZH	OEBA	•	3.1	6.8	9.1	3.1	10.7	3.1	10.6	
^t PZL	OEBA	A	3.3	7.2	9.6	3.3	11.3	3.3	10.7	ns
^t PHZ	OEBA		1.9	6.1	8.3	1.9	10.6	1.9	9.8	
^t PLZ	OEBA	A	1.1	4.6	7	1.1	8.1	1.1	7.8	ns
^t PZH		Р	2	5	6.8	2	7.8	2	7.6	
^t PZL	OEAB	В	2.7	6.2	8	2.7	9.3	2.7	8.9	ns
^t PHZ		В	1.1	4.6	6.5	1.1	8	1.1	7.7	ns
^t PLZ	OEAB	B	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.





25-Sep-2013

PACKAGING INFORMATION

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish	MSL Peak Temp	Op Temp (°C)	Device Marking (4/5)	Samples
5962-9094001M2A	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type	-55 to 125	5962- 9094001M2A SNJ54BCT 623FK	Samples
5962-9094001MRA	ACTIVE	CDIP	J	20	1	TBD	A42	N / A for Pkg Type	-55 to 125	5962-9094001MR A SNJ54BCT623J	Samples
5962-9094001MSA	ACTIVE	CFP	W	20	1	TBD	Call TI	N / A for Pkg Type	-55 to 125	5962-9094001MS A SNJ54BCT623W	Samples
SN74BCT623N	ACTIVE	PDIP	Ν	20	20	Pb-Free (RoHS)	CU NIPDAU	N / A for Pkg Type	0 to 70	SN74BCT623N	Samples
SN74BCT623NE4	ACTIVE	PDIP	N	20	20	Pb-Free (RoHS)	CU NIPDAU	N / A for Pkg Type	0 to 70	SN74BCT623N	Samples
SN74BCT623NSR	ACTIVE	SO	NS	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	0 to 70	BCT623	Samples
SN74BCT623NSRE4	ACTIVE	SO	NS	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	0 to 70	BCT623	Samples
SN74BCT623NSRG4	ACTIVE	SO	NS	20	2000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	0 to 70	BCT623	Samples
SNJ54BCT623FK	ACTIVE	LCCC	FK	20	1	TBD	POST-PLATE	N / A for Pkg Type	-55 to 125	5962- 9094001M2A SNJ54BCT 623FK	Samples
SNJ54BCT623J	ACTIVE	CDIP	J	20	1	TBD	A42	N / A for Pkg Type	-55 to 125	5962-9094001MR A SNJ54BCT623J	Samples
SNJ54BCT623W	ACTIVE	CFP	W	20	1	TBD	Call TI	N / A for Pkg Type	-55 to 125	5962-9094001MS A SNJ54BCT623W	Samples

⁽¹⁾ The marketing status values are defined as follows: **ACTIVE:** Product device recommended for new designs.

LIFEBUY: TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

NRND: Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

PREVIEW: Device has been announced but is not in production. Samples may or may not be available.

OBSOLETE: TI has discontinued the production of the device.



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⁽²⁾ Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check http://www.ti.com/productcontent for the latest availability information and additional product content details.

TBD: The Pb-Free/Green conversion plan has not been defined.

Pb-Free (RoHS): TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes. **Pb-Free (RoHS Exempt):** This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.

Green (RoHS & no Sb/Br): TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

⁽³⁾ MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

⁽⁴⁾ There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.

(5) Multiple Device Markings will be inside parentheses. Only one Device Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Device Marking for that device.

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OTHER QUALIFIED VERSIONS OF SN54BCT623, SN74BCT623 :

Catalog: SN74BCT623

• Military: SN54BCT623

NOTE: Qualified Version Definitions:

- Catalog TI's standard catalog product
- Military QML certified for Military and Defense Applications

PACKAGE MATERIALS INFORMATION

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TAPE AND REEL INFORMATION

REEL DIMENSIONS

TEXAS INSTRUMENTS





TAPE DIMENSIONS



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

TAPE AND REEL INFORMATION

*All dimensions are nominal

Device		Package Drawing		SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
SN74BCT623NSR	SO	NS	20	2000	330.0	24.4	8.2	13.0	2.5	12.0	24.0	Q1

TEXAS INSTRUMENTS

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PACKAGE MATERIALS INFORMATION

14-Jul-2012



*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
SN74BCT623NSR	SO	NS	20	2000	367.0	367.0	45.0

J (R-GDIP-T**) 14 LEADS SHOWN

CERAMIC DUAL IN-LINE PACKAGE



NOTES: A. All linear dimensions are in inches (millimeters).

- B. This drawing is subject to change without notice.
- C. This package is hermetically sealed with a ceramic lid using glass frit.
- D. Index point is provided on cap for terminal identification only on press ceramic glass frit seal only.
- E. Falls within MIL STD 1835 GDIP1-T14, GDIP1-T16, GDIP1-T18 and GDIP1-T20.

W (R-GDFP-F20)

CERAMIC DUAL FLATPACK



- NOTES: A. All linear dimensions are in inches (millimeters).
 - B. This drawing is subject to change without notice.
 - C. This package can be hermetically sealed with a ceramic lid using glass frit.
 - D. Index point is provided on cap for terminal identification only.
 - E. Falls within Mil-Std 1835 GDFP2-F20



LEADLESS CERAMIC CHIP CARRIER

FK (S-CQCC-N**) 28 TERMINAL SHOWN



NOTES: A. All linear dimensions are in inches (millimeters).

B. This drawing is subject to change without notice.

- C. This package can be hermetically sealed with a metal lid.
- D. Falls within JEDEC MS-004



N (R-PDIP-T**)

PLASTIC DUAL-IN-LINE PACKAGE

16 PINS SHOWN



NOTES:

- A. All linear dimensions are in inches (millimeters).B. This drawing is subject to change without notice.
- Falls within JEDEC MS-001, except 18 and 20 pin minimum body length (Dim A).
- \triangle The 20 pin end lead shoulder width is a vendor option, either half or full width.



MECHANICAL DATA

PLASTIC SMALL-OUTLINE PACKAGE

0,51 0,35 ⊕0,25⊛ 1,27 8 14 0,15 NOM 5,60 8,20 5,00 7,40 \bigcirc Gage Plane ₽ 0,25 7 1 1,05 0,55 0°-10° Δ 0,15 0,05 Seating Plane — 2,00 MAX 0,10PINS ** 14 16 20 24 DIM 10,50 10,50 12,90 15,30 A MAX A MIN 9,90 9,90 12,30 14,70 4040062/C 03/03

NOTES: A. All linear dimensions are in millimeters.

NS (R-PDSO-G**)

14-PINS SHOWN

- B. This drawing is subject to change without notice.
- C. Body dimensions do not include mold flash or protrusion, not to exceed 0,15.



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