

SN54BCT623, SN74BCT623 OCTAL BUS TRANSCEIVERS WITH 3-STATE OUTPUTS

SCBS020A – SEPTEMBER 1988 – REVISED NOVEMBER 1993

- 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

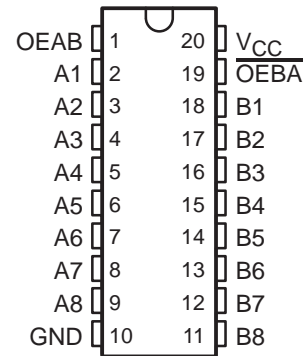
The 'BCT623 bus transceiver is designed for asynchronous communication between data buses. The control function implementation allows for maximum flexibility in timing. The 'BCT623 provides true data at its outputs.

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 \overline{OEBA}) inputs.

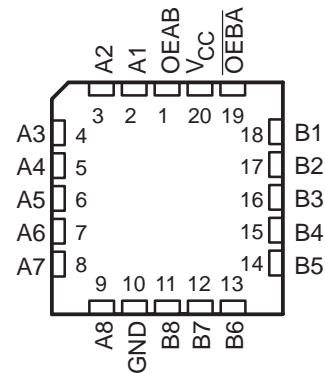
The output-enable inputs can be used to disable the device so that the buses are effectively isolated. The dual-enable configuration gives the transceivers the capability of storing data by simultaneously enabling OEAB and \overline{OEBA} . Each output reinforces its input in this configuration. When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

SN54BCT623, SN74BCT623 OCTAL BUS TRANSCEIVERS WITH 3-STATE OUTPUTS

SCBS020A – SEPTEMBER 1988 – REVISED NOVEMBER 1993

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

PARAMETER		TEST CONDITIONS		SN54BCT623		SN74BCT623		UNIT
				MIN	TYP†	MAX	MIN	
V_{IK}		$V_{CC} = 4.5\text{ V}$,	$I_I = -18\text{ mA}$	-1.2		-1.2		V
V_{OH}	A port	$V_{CC} = 4.5\text{ V}$	$I_{OH} = -1\text{ mA}$	2.5	3.4	2.5	3.4	V
			$I_{OH} = -3\text{ mA}$	2.4	3.3	2.4	3.3	
	B port	$V_{CC} = 4.5\text{ V}$	$I_{OH} = -3\text{ mA}$	2.4	3.3	2.4	3.3	
			$I_{OH} = -12\text{ mA}$	2	3.2			
						2	3.1	
V_{OL}	A port	$V_{CC} = 4.5\text{ V}$	$I_{OL} = 20\text{ mA}$	0.3 0.5				V
			$I_{OL} = 24\text{ mA}$			0.35	0.5	
	B port	$V_{CC} = 4.5\text{ V}$	$I_{OL} = 48\text{ mA}$	0.38 0.55				
			$I_{OL} = 64\text{ mA}$			0.42	0.55	
I_I	A or B port	$V_{CC} = 5.5\text{ V}$,	$V_I = 5.5\text{ V}$	1		1		mA
	OEAB or OEBA			0.1		0.1		
I_{IH}^\ddagger	A or B port	$V_{CC} = 5.5\text{ V}$,	$V_I = 2.7\text{ V}$	70		70		μA
	OEAB or OEBA			20		20		
I_{IL}^\ddagger	A or B port	$V_{CC} = 5.5\text{ V}$,	$V_I = 0.5\text{ V}$	-0.65		-0.65		mA
	OEAB or OEBA			-0.6		-0.6		
I_{OS}^\S	A port	$V_{CC} = 5.5\text{ V}$,	$V_O = 0$	-60	-150	-60	-150	mA
	B port			-100	-225	-100	-225	
I_{CCL}	A to B	$V_{CC} = 5.5\text{ V}$		58	92	58	92	mA
I_{CCH}	A to B	$V_{CC} = 5.5\text{ V}$		33	53	33	53	mA
I_{CCZ}		$V_{CC} = 5.5\text{ V}$		6	11	6	11	mA
C_i	OEAB or OEBA	$V_{CC} = 5\text{ V}$,	$V_I = 2.5\text{ V}$ or 0.5 V	5		5		pF
C_{io}	A to B	$V_{CC} = 5\text{ V}$,	$V_O = 2.5\text{ V}$ or 0.5 V	9		9		pF
	B to A			12		12		

† All typical values are at $V_{CC} = 5\text{ V}$, $T_A = 25^\circ\text{C}$.

‡ 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.

SN54BCT623, SN74BCT623 OCTAL BUS TRANSCEIVERS WITH 3-STATE OUTPUTS

SCBS020A – SEPTEMBER 1988 – REVISED NOVEMBER 1993

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}	$\overline{\text{OEBA}}$	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}	$\overline{\text{OEBA}}$	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.

IMPORTANT NOTICE

Texas Instruments and its subsidiaries (TI) reserve the right to make changes to their products or to discontinue any product or service without notice, and advise customers to obtain the latest version of relevant information to verify, before placing orders, that information being relied on is current and complete. All products are sold subject to the terms and conditions of sale supplied at the time of order acknowledgement, including those pertaining to warranty, patent infringement, and limitation of liability.

TI warrants performance of its semiconductor products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are utilized to the extent TI deems necessary to support this warranty. Specific testing of all parameters of each device is not necessarily performed, except those mandated by government requirements.

CERTAIN APPLICATIONS USING SEMICONDUCTOR PRODUCTS MAY INVOLVE POTENTIAL RISKS OF DEATH, PERSONAL INJURY, OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE ("CRITICAL APPLICATIONS"). TI SEMICONDUCTOR PRODUCTS ARE NOT DESIGNED, AUTHORIZED, OR WARRANTED TO BE SUITABLE FOR USE IN LIFE-SUPPORT DEVICES OR SYSTEMS OR OTHER CRITICAL APPLICATIONS. INCLUSION OF TI PRODUCTS IN SUCH APPLICATIONS IS UNDERSTOOD TO BE FULLY AT THE CUSTOMER'S RISK.

In order to minimize risks associated with the customer's applications, adequate design and operating safeguards must be provided by the customer to minimize inherent or procedural hazards.

TI assumes no liability for applications assistance or customer product design. TI does not warrant or represent that any license, either express or implied, is granted under any patent right, copyright, mask work right, or other intellectual property right of TI covering or relating to any combination, machine, or process in which such semiconductor products or services might be or are used. TI's publication of information regarding any third party's products or services does not constitute TI's approval, warranty or endorsement thereof.