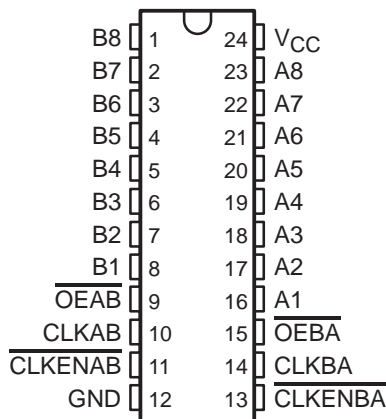


SN74BCT2952 OCTAL BUS TRANSCEIVER AND REGISTER WITH 3-STATE OUTPUTS

SCBS063A – FEBRUARY 1991 – REVISED NOVEMBER 1993

- State-of-the-Art BiCMOS Design Significantly Reduces I_{CCZ}
- ESD Protection Exceeds 2000 V Per MIL-STD-883C, Method 3015
- Two 8-Bit, Back-to-Back Registers Store Data Flowing in Both Directions
- A Port Sinks 24 mA and Sources 3 mA
- B Port Sinks 64 mA and Sources 15 mA
- Noninverting Outputs
- Package Options Include Plastic Small-Outline (DW) Packages and Standard Plastic 300-mil DIPs (NT)

DW OR NT PACKAGE
(TOP VIEW)



description

The SN74BCT2952 consists of two 8-bit back-to-back registers that store data flowing in both directions between two bidirectional buses. Data on the A or B bus is stored in the registers on the low-to-high transition of the clock (CLKAB or CLKBA) input provided that the clock-enable ($\overline{\text{CLKENAB}}$ or $\overline{\text{CLKENBA}}$) input is low. Taking the output-enable ($\overline{\text{OEAB}}$ or $\overline{\text{OEBA}}$) input low accesses the data on either port.

The SN74BCT2952 is characterized for operation from 0°C to 70°C.

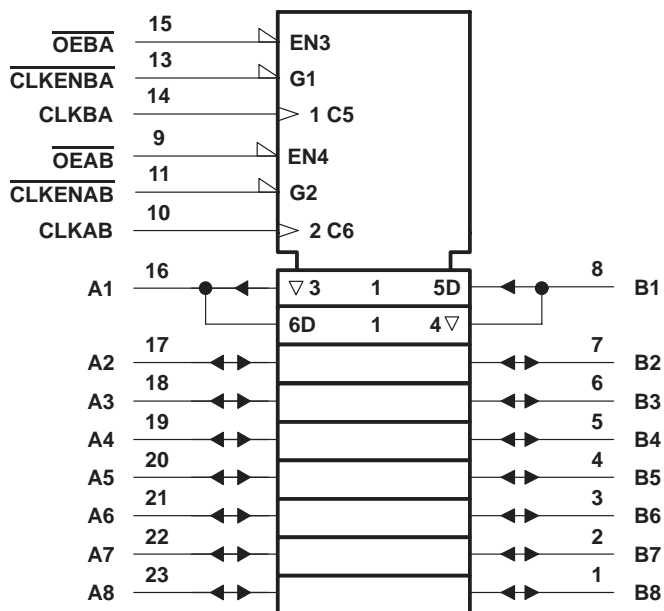
FUNCTION TABLE†

INPUTS				OUTPUT B
$\overline{\text{CLKENAB}}$	CLKAB	$\overline{\text{OEAB}}$	A	
H	X	L	X	B_0^\ddagger
X	H or L	L	X	B_0^\ddagger
L	↑	L	L	L
L	↑	L	H	H
X	X	H	X	Z

† A-to-B data flow is shown; B-to-A data flow is similar but uses $\overline{\text{CLKENBA}}$, CLKBA, and OEBA.

‡ Level of B before the indicated steady-state input conditions were established.

logic symbols§



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

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recommended operating conditions (see Note 2)

		MIN	NOM	MAX	UNIT
V _{CC}	Supply voltage	4.5	5	5.5	V
V _{IH}	High-level input voltage	2			V
V _{IL}	Low-level input voltage			0.8	V
I _{IK}	Input clamp current			-18	mA
I _{OH}	High-level output current	A ports		-3	mA
		B ports		-15	
I _{OL}	Low-level output current	A ports		24	mA
		B ports		64	
T _A	Operating free-air temperature	0		70	°C

NOTE 2: Unused or floating pins (input or I/O) must be held high or low.

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

PARAMETER		TEST CONDITIONS		MIN	TYP†	MAX	UNIT
V _{IK}		V _{CC} = 4.5 V,	I _I = -18 mA			-1.2	V
V _{OH}	A port	V _{CC} = 4.5 V	I _{OH} = -1 mA	2.5	3.4		V
			I _{OH} = -3 mA	2.4	3.3		
	B port	V _{CC} = 4.5 V	I _{OH} = -3 mA	2.4	3.3		
			I _{OH} = -15 mA	2	3.1		
		V _{CC} = 4.75 V,	I _{OH} = -3 mA	2.7			
V _{OL}	A port	V _{CC} = 4.5 V	I _{OL} = 24 mA		0.35	0.5	V
	B port		I _{OL} = 64 mA		0.42	0.55	
I _I ‡	Control inputs	V _{CC} = 5.5 V,	V _I = 5.5 V			1	mA
	A or B ports					0.1	
I _{IH} ‡	Control inputs	V _{CC} = 5.5 V,	V _I = 2.7 V			70	μA
	A or B ports					20	
I _{IL} ‡	Control inputs	V _{CC} = 5.5 V,	V _I = 0.5 V			-70	μA
	A or B ports					-20	
I _{OS} §	Any A	V _{CC} = 5.5 V,	V _O = 0			-60	mA
	Any B					-100	
I _{CCH} ¶		V _{CC} = 5.5 V			2	5	mA
I _{CCL} ¶		V _{CC} = 5.5 V			38	55	mA
I _{CCZ}		V _{CC} = 5.5 V			2	5	mA
C _i	Control inputs	V _{CC} = 5 V,	V _I = 2.5 V or 0.5 V		6		pF
C _{io}	A or B ports	V _{CC} = 5 V,	V _O = 2.5 V or 0.5 V		12.5		pF

† 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-shoot output current.

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

¶ I_{CCH} and I_{CCL} are measured in the A-to-B mode.

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timing requirements over recommended ranges of supply voltage and operating free-air temperature (unless otherwise noted)

		V _{CC} = 5 V, T _A = 25°C		MIN	MAX	UNIT
		MIN	MAX			
f _{clock}	Clock frequency	125			125	MHz
t _w	Pulse duration, CLK high or low	4		4		ns
t _{su}	Setup time before CLK↑	A or B		2.5		ns
		CLKENAB or CLKENBA		2		
t _h	Hold time after CLK↑	A or B		1.5		ns
		CLKENAB or CLKENBA		2.5		

switching characteristics over recommended ranges of supply voltage and operating free-air temperature, C_L = 50 pF (unless otherwise noted) (see Note 3)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	V _{CC} = 5 V, T _A = 25°C			MIN	MAX	UNIT
			MIN	TYP	MAX			
f _{max}			125			125		MHz
t _{PLH}	CLKBA or CLKAB	A or B	3.5	5.7	7.5	3.5	9	ns
t _{PHL}			5	7	9.5	5	10.5	
t _{PZH}	OEBA or OEAB	A or B	2.9	5.2	6.9	2.9	8.2	ns
t _{PZL}			5.2	7.6	11.4	5.2	12.9	
t _{PHZ}	OEBA or OEAB	A or B	3.5	5.3	7.1	3.5	8.4	ns
t _{PLZ}			2.7	4.3	6	2.7	7	

NOTE 3: Load circuits and voltage waveforms are shown in Section 1.

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