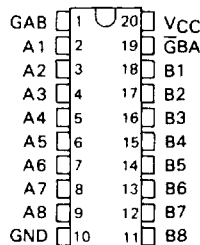


SN54AS2620, SN54AS2623, SN74AS2620, SN74AS2623 OCTAL BUS TRANSCEIVERS/MOS DRIVERS

DECEMBER 1983 - REVISED MAY 1986

- Octal Bus Transceivers for Driving MOS Devices
- I/O Ports Have 25-Ω Series Resistors, So No External Resistors Are Required
- Local Bus-Latch Capability
- Choice of True or Inverting Logic
- Package Options Include Plastic "Small Outline" Packages, Plastic and Ceramic Chip Carriers, and Standard Plastic and Ceramic 300-mil DIPs
- Dependable Texas Instruments Quality and Reliability

SN54AS' . . . J PACKAGE
SN74AS' . . . DW OR N PACKAGE
(TOP VIEW)



description

These octal bus transceivers are designed to drive the capacitive input characteristics of MOS devices and allow asynchronous two-way communication between data buses. The control function implementation allows for maximum flexibility in timing.

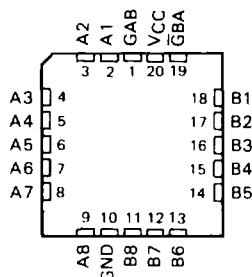
These devices allow data transmission from A bus to the B bus or from the B bus to the A bus depending upon the logic levels at the enable inputs (GBA and GAB).

The enable inputs can be used to disable the device so that the buses are effectively isolated.

The dual-enable configuration gives the 'AS2620 or 'AS2623 the capability to store data by simultaneous enabling of $\overline{\text{GBA}}$ and GAB. Each output reinforces its input in this transceiver configuration. Thus, when both control inputs 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 8-bit codes appearing on the two sets of buses will be identical for the 'AS2623 or complementary for the 'AS2620.

The SN54AS2620 and SN54AS2623 are characterized for operation over the full military temperature range of -55°C to 125°C . The SN74AS2620 and SN74AS2623 are characterized for operation from 0°C to 70°C .

SN54AS' . . . FK PACKAGE
(TOP VIEW)



FUNCTION TABLE

ENABLE INPUTS		OPERATION	
$\overline{\text{GBA}}$	GAB	'AS2620	'AS2623
L	L	$\overline{\text{B}}$ data to A bus	B data to A bus
H	H	$\overline{\text{A}}$ data to B bus	A data to B bus
H	L	Isolation	Isolation
L	H	$\overline{\text{B}}$ data to A bus, $\overline{\text{A}}$ data to B bus	B data to A bus, A data to B bus

PRODUCTION DATA documents contain information 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.


**TEXAS
INSTRUMENTS**

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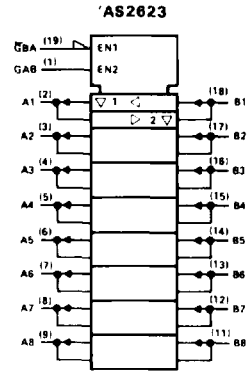
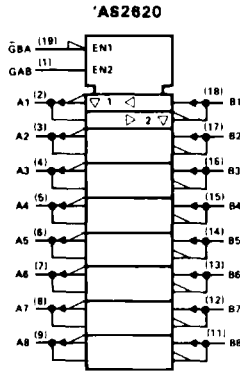
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SN54AS2620, SN54AS2623, SN74AS2620, SN74AS2623 OCTAL BUS TRANSCEIVERS/MOS DRIVERS

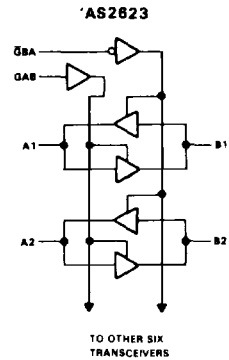
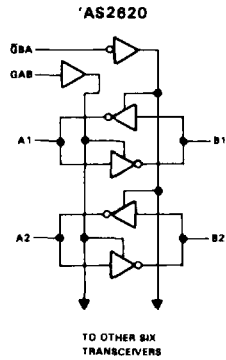
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logic symbols†



†These symbols are in accordance with ANSI/IEEE Std 91-1984 and IEC Publication 617-12.

logic diagrams (positive logic)



SN54AS2620, SN54AS2623, SN74AS2620, SN74AS2623 OCTAL BUS TRANSCEIVERS/MOS DRIVERS

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

Supply voltage, V_{CC}	7 V
Input voltage: All inputs	7 V
I/O ports	5.5 V
Operating free-air temperature range: SN54AS2620, SN54AS2623	-55 °C to 125 °C
SN74AS2620, SN74AS2623	0 °C to 70 °C
Storage temperature range	-65 °C to 150 °C

recommended operating conditions

		SN54AS2620			SN74AS2620			UNIT
		SN54AS2623			SN74AS2623			
		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
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		SN54AS2620			SN74AS2620			UNIT	
				SN54AS2623			SN74AS2623				
				MIN	TYP†	MAX	MIN	TYP†	MAX		
V_{IK}		$V_{CC} = 4.5 \text{ V}, I_I = -18 \text{ mA}$		-1.2			-1.2			V	
V_{OH}		$V_{CC} = 4.5 \text{ V to } 5.5 \text{ V}, I_{OH} = -2 \text{ mA}$		$V_{CC}-2$			$V_{CC}-2$			V	
V_{OL}		$V_{CC} = 4.5 \text{ V}, I_{OL} = 1 \text{ mA}$		0.15		0.4	0.15		0.4	V	
		$V_{CC} = 4.5 \text{ V}, I_{OL} = 12 \text{ mA}$		0.35		0.7	0.35		0.7		
I_I	Control inputs	$V_{CC} = 5.5 \text{ V}, V_I = 7 \text{ V}$		0.1			0.1			mA	
	A or B ports	$V_{CC} = 5.5 \text{ V}, V_I = 5.5 \text{ V}$		0.1			0.1				
I_{IH}	Control inputs	$V_{CC} = 5.5 \text{ V}, V_I = 2.7 \text{ V}$		20			20			μA	
	A or B ports‡			70			70				
I_{IL}	Control inputs	$V_{CC} = 5.5 \text{ V}, V_I = 0.4 \text{ V}$		-0.5			-0.5			mA	
	A or B ports‡			0.75			-0.75				
I_O^{\S}		$V_{CC} = 5.5 \text{ V}, V_O = 2.25 \text{ V}$		-50		150	-50		150	mA	
I_{OH}		$V_{CC} = 4.5 \text{ V}, V_O = 2 \text{ V}$		-35			-35			mA	
I_{OL}		$V_{CC} = 4.5 \text{ V}, V_O = 2 \text{ V}$		35			35			mA	
I_{CC}	'AS2620	$V_{CC} = 5.5 \text{ V}$		Outputs high		62	100	62		100	mA
				Outputs low		74	121	74		121	
				Outputs disabled		48	77	48		77	
	'AS2623	$V_{CC} = 5.5 \text{ V}$		Outputs high		57	93	57		93	
				Outputs low		116	189	116		189	
				Outputs disabled		72	116	72		116	

†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.

§The output conditions have been chosen to produce a current that closely approximates one half of the true short-circuit output current, I_{OS} .



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SN54AS2620, SN54AS2623, SN74AS2620, SN74AS2623

OCTAL BUS TRANSCEIVERS/MOS DRIVERS

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AS2620 switching characteristics (see Note 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	$V_{CC} = 4.5\text{ V to }5.5\text{ V,}$ $C_L = 50\text{ pF,}$ $R_1 = 500\ \Omega,$ $R_2 = 500\ \Omega,$ $T_A = \text{MIN to MAX}$				UNIT
			SN54AS2620		SN74AS2620		
			MIN	MAX	MIN	MAX	
t_{PLH}	A	B	1	9.5	1	8	ns
t_{PHL}			1	7.5	1	6.5	
t_{PLH}	B	A	1	9.5	1	8	ns
t_{PHL}			1	7.5	1	6.5	
t_{PZH}	$\bar{G}BA$	A	1	11	1	10	ns
t_{PZL}			1	12	1	11	
t_{PHZ}	$\bar{G}BA$	A	1	7.5	1	6	ns
t_{PLZ}			1	15	1	12	
t_{PZH}	GAB	B	1	9	1	8	ns
t_{PZL}			1	9	1	8	
t_{PHZ}	GAB	B	1	12	1	11	ns
t_{PLZ}			1	12	1	11	

AS2623 switching characteristics (see Note 1)

PARAMETER	FROM (INPUT)	TO (OUTPUT)	$V_{CC} = 4.5\text{ V to }5.5\text{ V,}$ $C_L = 50\text{ pF,}$ $R_1 = 500\ \Omega,$ $R_2 = 500\ \Omega,$ $T_A = \text{MIN to MAX}$				UNIT
			SN54AS2623		SN74AS2623		
			MIN	MAX	MIN	MAX	
t_{PLH}	A	B	1	9.5	1	8.5	ns
t_{PHL}			1	8.5	1	7.5	
t_{PLH}	B	A	1	10	1	9	ns
t_{PHL}			1	9	1	7.5	
t_{PZH}	$\bar{G}BA$	A	1	12.5	1	11	ns
t_{PZL}			1	12	1	11	
t_{PHZ}	$\bar{G}BA$	A	1	8.5	1	7.5	ns
t_{PLZ}			1	13	1	12	
t_{PZH}	GAB	B	1	13	1	12	ns
t_{PZL}			1	13.5	1	12	
t_{PHZ}	GAB	B	1	7.5	1	7	ns
t_{PLZ}			1	14.5	1	12.5	

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

