

DM54ALS5620/DM74ALS5620 Octal TRI-STATE® Transceivers

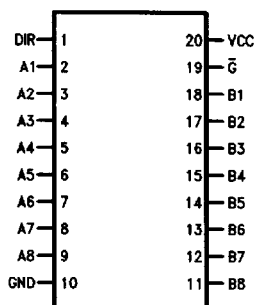
General Description

This octal bus transceiver is designed to have the performance of the 'ALS5620 device with the addition of hysteresis on the inputs. The input hysteresis provides improved noise margin. Data is transmitted either from the A bus to the B bus or the B bus to the A bus depending on the logic level of the direction control input (DIR). The device can be disabled via the enable input (G) which causes the outputs to enter the high impedance mode so the busses are effectively isolated.

Features

- Advanced oxide-isolated, ion implanted Schottky TTL process
- Switching specification guaranteed over the full temperature and V_{CC} range
- PNP inputs to reduce input loading
- Hysteresis on the inputs to improve noise rejection

Connection Diagram



TL/F/9166-1

Order Number DM54ALS5620J or DM74ALS5620WM, N
See NS Package Number J20A, M20B or N20A

Function Table

Control Inputs		Operation
$\overline{G}BA$	GAB	
L	X	$\overline{B}$ Data to A Bus
X	H	$\overline{A}$ Data to B Bus
H	L	High Impedance

L = Low Logic Level, H = High Logic Level
X = Don't Care (Either Low or High Logic Level)

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Absolute Maximum Ratings

If Military/Aerospace specified devices are required, please contact the National Semiconductor Sales Office/Distributors for availability and specifications.

Supply Voltage	7V
Input Voltage	
Control Inputs	7V
I/O Ports	5.5V

Operating Free Air Temperature Range

DM54ALS	−55°C to +125°C
DM74ALS	0°C to +70°C

Storage Temperature Range

−65°C to +150°C

Note: The "Absolute Maximum Ratings" are those values beyond which the safety of the device cannot be guaranteed. The device should not be operated at these limits. The parametric values defined in the "Electrical Characteristics" table are not guaranteed at the absolute maximum ratings. The "Recommended Operating Conditions" table will define the conditions for actual device operation.

Recommended Operating Conditions

Symbol	Parameter	DM54ALS5620			DM74ALS5620			Units
		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 _{OH}	High Level Output Current			−12			−15	mA
I _{OL}	Low Level Output Current			12			24	mA
T _A	Operating Free Air Temperature Range	−55		125	0		70	°C

Electrical Characteristics over recommended free air temperature range

Symbol	Parameter	Test Conditions	DM54ALS5620			DM74ALS5620			Units
			Min	Typ	Max	Min	Typ	Max	
V _{IC}	Input Clamp Voltage	V _{CC} = Min, I _I = −18 mA			−1.5			−1.5	V
HYS	Input Hysteresis (V _{T+} − V _{T−})	V _{CC} = Min	0.2			0.2			V
V _{OH}	High Level Output Voltage	V _{CC} = 4.5V to 5.5V, I _{OH} = −0.4 mA	V _{CC} − 2			V _{CC} − 2			V
		V _{CC} = Min, I _{OH} = −3 mA	2.4	3.2		2.4	3.2		
		I _{OH} = Max	2			2			
V _{OL}	Low Level Output Voltage	V _{CC} = Min, I _{OL} = 12 mA		0.25	0.4		0.25	0.4	V
		I _{OL} = 24 mA					0.35	0.5	
I _I	Input Current @ Max Input Voltage	V _{CC} = Max, I/O Ports, V _I = 5.5V			100			100	μA
		Control Inputs, V _I = 7V			100			100	
I _{IH}	High Level Input Current	V _{CC} = Max, V _I = 2.7V (Note 1)			20			20	μA
I _{IL}	Low Level Input Current	V _{CC} = Max, V _I = 0.4V (Note 1)			−100			−100	μA
I _O	Output Drive Current	V _{CC} = Max, V _O = 2.25V	−30		−112	−30		−112	mA
I _{CC}	Supply Current	V _{CC} = Max, Outputs High		24	39		24	34	mA
		Outputs Low		25	49		31	44	
		Outputs Disabled		27	52		33	47	

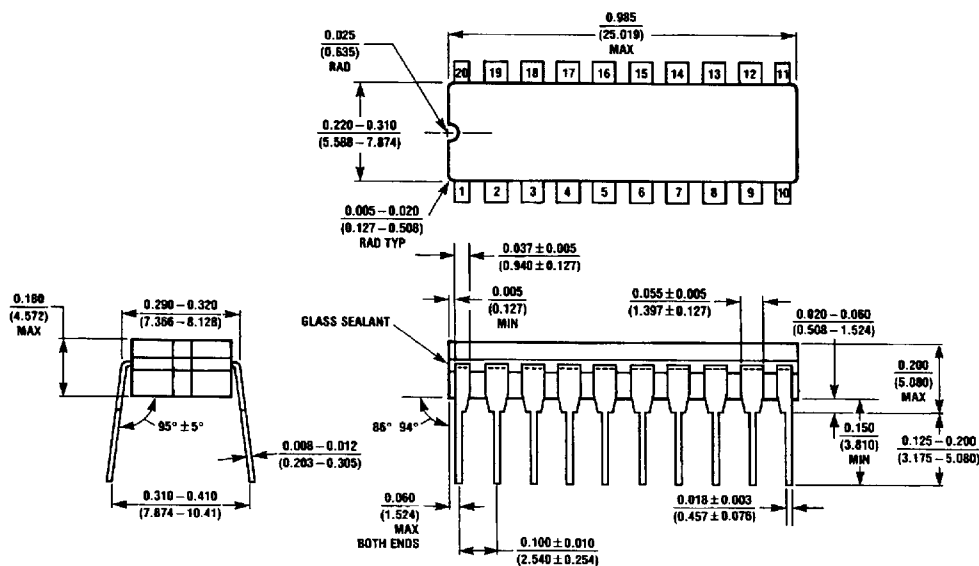
Note 1: For I/O ports, I_{IH} and I_{IL} parameters include the TRI-STATE output currents (I_{OZL} and I_{OZH}).

Switching Characteristics over recommended operating free air temperature range

Symbol	Parameter	Conditions	From (Input) To (Output)	DM54ALS5620		DM74ALS5620		Units
				Min	Max	Min	Max	
t_{PLH}	Propagation Delay Time Low to High Level Output	$V_{CC} = 4.5V$ to $5.5V$, $R_1 = R_2 = 500\Omega$, $C_L = 50$ pF (Note 1)	A or B to B or A	2	12	2	10	ns
t_{PHL}	Propagation Delay Time High to Low Level Output		A or B to B or A	2	12	2	10	ns
t_{PZH}	Output Enable Time to High Level Output		$\overline{G}BA$ or $G\overline{B}A$ to A or B	3	23	3	17	ns
t_{PZL}	Output Enable Time to Low Level Output		$\overline{G}BA$ or $G\overline{B}A$ to A or B	5	31	4	25	ns
t_{PHZ}	Output Disable Time from High Level Output		$\overline{G}BA$ or $G\overline{B}A$ to A or B	2	14	3	12	ns
t_{PLZ}	Output Disable Time from Low Level Output		$\overline{G}BA$ or $G\overline{B}A$ to A or B	3	22	4	18	ns

Note 1: See Section 5 for test waveforms and output load.

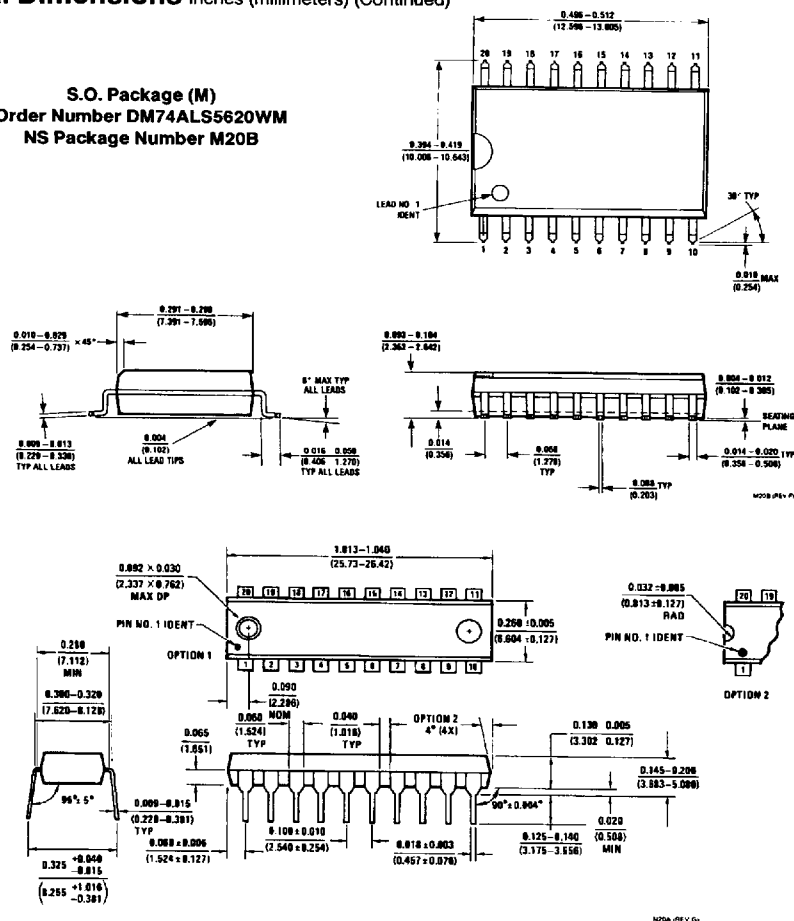
Physical Dimensions inches (millimeters)



Ceramic Dual-In-Line Package (J)
Order Number DM54ALS5620J
NS Package Number J20A

Physical Dimensions inches (millimeters) (Continued)

S.O. Package (M)
Order Number DM74ALS5620WM
NS Package Number M20B



Molded Dual-In-Line Package (N)
Order Number DM74ALS5620N
NS Package Number N20A

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