

DM54ALS2645A/DM74ALS2645A Octal TRI-STATE® Transceivers

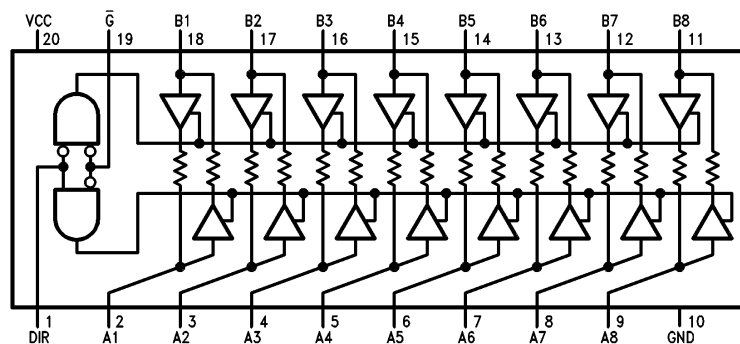
General Description

This octal bus transceiver is designed for asynchronous two way communication between data buses. Data is transmitted either from the A bus to the B bus or from the B bus to the A bus depending on the logic level of the direction control (DIR) input. The device can be disabled via the enable input (G) which causes outputs to enter the high impedance mode so the buses 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
- I/O ports have 25Ω series resistors so no external resistors are required

Connection Diagram



TL/F/9168-1

Order Number DM54ALS2645AJ, DM74ALS2645AWM or DM74ALS2645AN
See NS Package Number J20A, M20B or N20A

Function Table

Control Inputs		Operation
$\bar{G}$	DIR	
L	L	B Data to A Bus
L	H	A Data to B Bus
H	X	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
Storage Temperature Range	−65°C to +150°C
ESD rating is to be determined.	

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	DM54ALS2645A			DM74ALS2645A			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			0.7			0.8	V
T _A	Free Air Operating Temperature Range	−55		125	0		70	°C

Electrical Characteristics over recommended free air temperature range

Symbol	Parameter	Test Conditions	DM54ALS2645A			DM74ALS2645A			Units
			Min	Typ	Max	Min	Typ	Max	
V _{IK}	Input Clamp Voltage	V _{CC} = Min, I _I = −18 mA			−1.2			−1.2	V
V _{OH}	High Level Output Voltage	V _{CC} = 4.5V to 5.5V, I _{OH} = −2 mA	V _{CC} − 2			V _{CC} − 2			V
V _{OL}	Low Level Output Voltage	V _{CC} = Min I _{OL} = 1 mA		0.15	0.4		0.15	0.4	V
				0.35	0.7		0.35	0.7	
I _I	Input Current at Maximum Input Voltage	V _{CC} = Max I/O Ports, V _I = 5.5V			100			100	μA
					100			100	
I _{IH}	High Level Input Current (Note 1)	V _{CC} = Max V _I = 2.7V	Control Inputs		20			20	μA
			I/O Ports		70			70	
I _{IL}	Low Level Input Current (Note 1)	V _{CC} = Max V _I = 0.4V	Control Inputs		−500			−500	μA
			I/O Ports		−750			−750	
I _O	Output Drive Current	V _{CC} = Max, V _O = 2.25V	−50		−150	−50		−150	mA
I _{CC}	Supply Current	V _{CC} = Max	Outputs High	58	95		58	95	mA
			Outputs Low	95	155		95	155	
			Outputs Disabled	73	119		73	119	

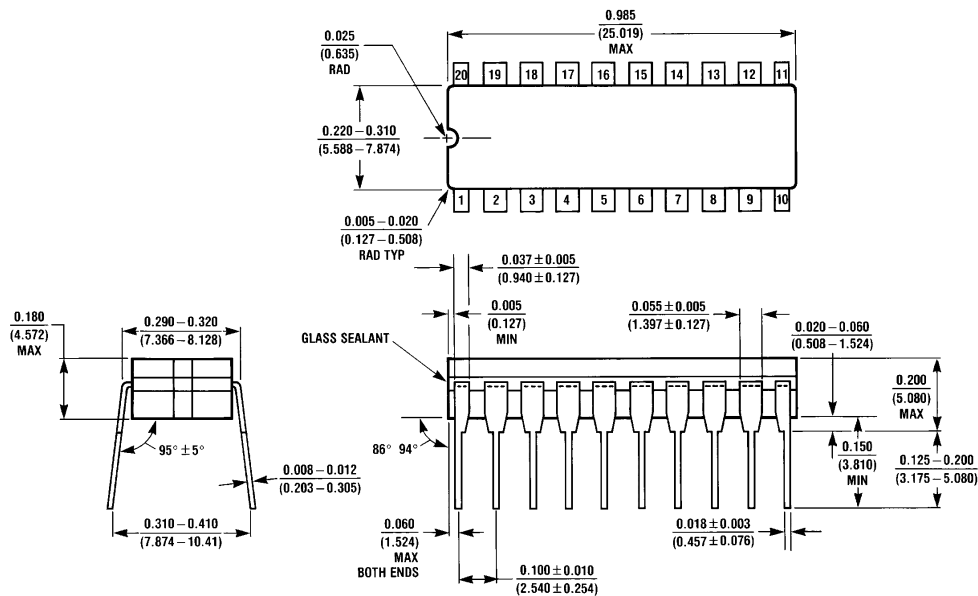
Note 1: For I/O ports, I_{IH} and I_{IL} parameters include the TRI-STATE output currents (I_{OZL} and I_{OZH}).

Switching Characteristics over recommended operating free air temperature range

Symbol	Parameter	Conditions	From (Input) To (Output)	DM54ALS2645A		DM74ALS2645A		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	1	12	1	10	ns
t_{PHL}	Propagation Delay Time High to Low Level Output		A or B to B or A	1	11	1	9.5	ns
t_{PZH}	Output Enable Time to High Level Output		$\bar{G}$ to A or B	1	13	1	11.5	ns
t_{PZL}	Output Enable Time to Low Level Output		$\bar{G}$ to A or B	1	13	1	10.5	ns
t_{PHZ}	Output Disable Time from High Level Output		$\bar{G}$ to A or B	1	9	1	8	ns
t_{PLZ}	Output Disable Time from Low Level Output		$\bar{G}$ to A or B	1	13	1	12	ns

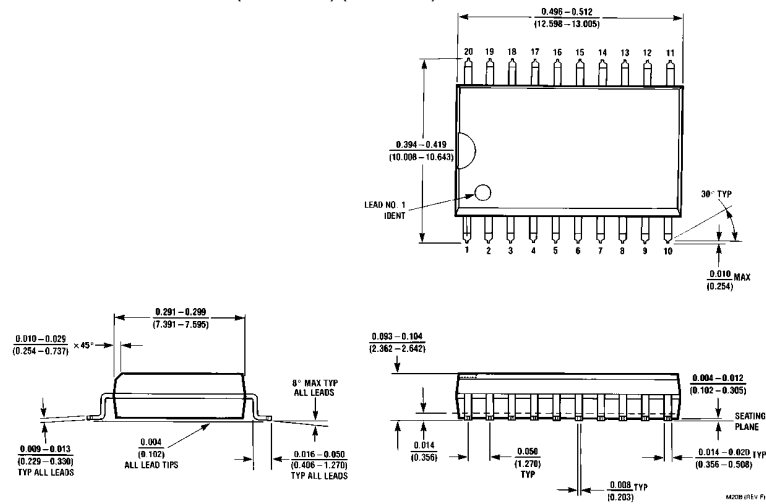
Note 1: See Section 5 for test waveforms and output load.

Physical Dimensions inches (millimeters)

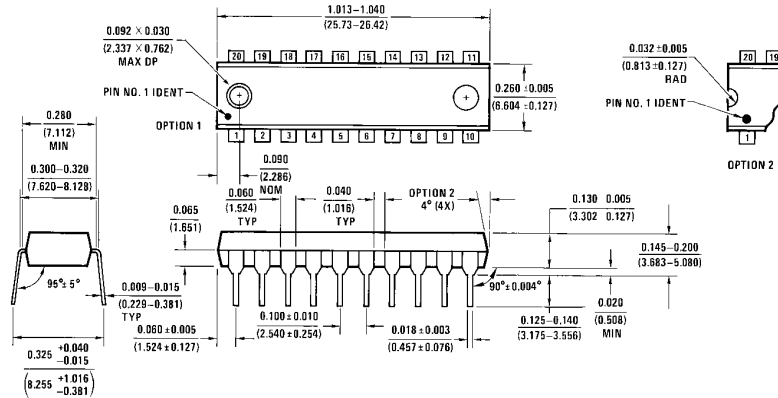


Ceramic Dual-In-Line Package (J)
Order Number DM54ALS2645AJ
NS Package Number J20A

Physical Dimensions inches (millimeters) (Continued)



S.O. Package (M)
Order Number DM74ALS2645AWM
NS Package Number M20B



Molded Dual-In-Line Package (N)
Order Number DM74ALS5245AN
NS Package Number N20A

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National Semiconductor Corporation
 1111 West Bardin Road
 Arlington, TX 76017
 Tel: 1(800) 272-9959
 Fax: 1(800) 737-7018

National Semiconductor Europe
 Fax: (+49) 0-180-530 85 86
 Email: cnjwge@tevm2.nsc.com
 Deutsch Tel: (+49) 0-180-530 85 85
 English Tel: (+49) 0-180-532 78 32
 Français Tel: (+49) 0-180-532 93 58
 Italiano Tel: (+49) 0-180-534 16 80

National Semiconductor Hong Kong Ltd.
 19th Floor, Straight Block,
 Ocean Centre, 5 Canton Rd.
 Tsimshatsui, Kowloon
 Hong Kong
 Tel: (852) 2737-1600
 Fax: (852) 2736-9960

National Semiconductor Japan Ltd.
 Tel: 81-043-299-2309
 Fax: 81-043-299-2408