

DM74ALS245A Octal 3-STATE Bus Transceiver

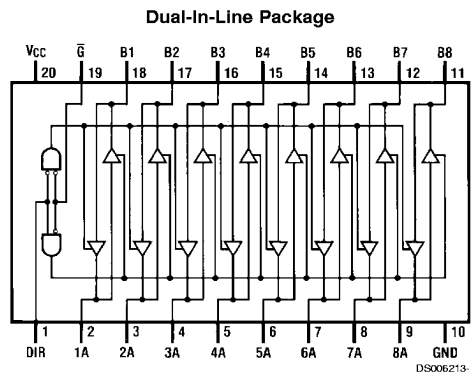
General Description

This advanced low power Schottky device contains 8 pairs of 3-STATE logic elements configured as octal bus transceivers. These circuits are designed for use in memory, micro-processor systems and in asynchronous bidirectional data buses. Two way communication between buses is controlled by the (DIR) input. Data transmits either from the A bus to the B bus or from the B bus to the A bus. Both the driver and receiver outputs can be disabled via the ($\bar{G}$) enable input which causes outputs to enter the high impedance mode so that the buses are effectively isolated.

Features

- Advanced oxide-isolated, ion-implanted Schottky TTL process
- Non-inverting logic output
- Glitch free bus during power up and down
- 3-STATE outputs independently controlled on A and B buses
- Low output impedance to drive terminated transmission lines to 133Ω
- Switching response specified into $500\Omega/50\text{ pF}$
- Specified to interface with CMOS at $V_{OH} = V_{CC} - 2V$
- PNP inputs to reduce input loading
- Switching specifications guaranteed over full temperature and V_{CC} range

Connection Diagram



Order Number DM74ALS245MSA, DM74ALS245AWM, DM74ALS245AN or DM74ALS245ASJ
See Package Number M20B, M20D, MQA20 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	Hi-Z

H = High Logic Level
L = Low Logic Level
X = Either High or Low Logic Level

Absolute Maximum Ratings (Note 1)

Supply Voltage	7V	DM74ALS	0°C to +70°C
Input Voltage		Storage Temperature Range	–65°C to +150°C
Control Inputs	7V	Typical θ_{JA}	
I/O Ports	5.5V	N Package	53.0°C/W
Operating Free Air Temperature Range		M Package	72.0°C/W

Recommended Operating Conditions

Symbol	Parameter	DM74ALS245A			Units
		Min	Typ	Max	
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_{OH}	High Level Output Current			–15	mA
I_{OL}	Low Level Output Current			24	mA
T_A	Operating Free Air Temperature	0		70	°C

Note 1: 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.

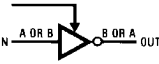
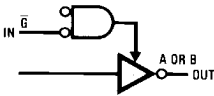
Electrical Characteristics

over recommended operating free air temperature range. All typical values are measured at $V_{CC} = 5V$, $T_A = 25^\circ C$.

Symbol	Parameter	Conditions	Min	Typ	Max	Units
V_{IK}	Input Clamp Voltage	$V_{CC} = 4.5V$, $I_{IN} = -18\text{ mA}$			–1.5	V
V_{OH}	High Level Output Voltage	$V_{CC} = 4.5V$, $I_{OH} = -3\text{ mA}$	2.4	3.2		V
		$V_{CC} = 4.5V$, $I_{OH} = \text{Max}$	2	2.3		V
		$I_{OH} = -0.4\text{ mA}$, $V_{CC} = 4.5V\text{ to }5.5V$	$V_{CC} - 2$			V
V_{OL}	Low Level Output Voltage	$V_{CC} = 4.5V$, $I_{OL} = 24\text{ mA}$		0.35	0.5	V
I_I	Input Current at Max Input Voltage	$V_{CC} = 5.5V$, $V_{IN} = 7V$ Control Inputs			0.1	mA
		$V_{CC} = 5.5V$, $V_{IN} = 5.5V$ A or B Ports			0.1	mA
I_{IH}	High Level Input Current	$V_{CC} = 5.5V$, $V_{IN} = 2.7V$			20	μA
I_{IL}	Low Level Input Current	$V_{CC} = 5.5V$, $V_{IN} = 0.4V$			–0.1	mA
I_O	Output Drive Current	$V_{CC} = 5.5V$, $V_{OUT} = 2.25V$	–30		–112	mA
I_{CC}	Supply Current	$V_{CC} = 5.5V$ Outputs High		30	45	mA
		Outputs Low		36	55	mA
		3-STATE		38	58	mA

Switching Characteristics

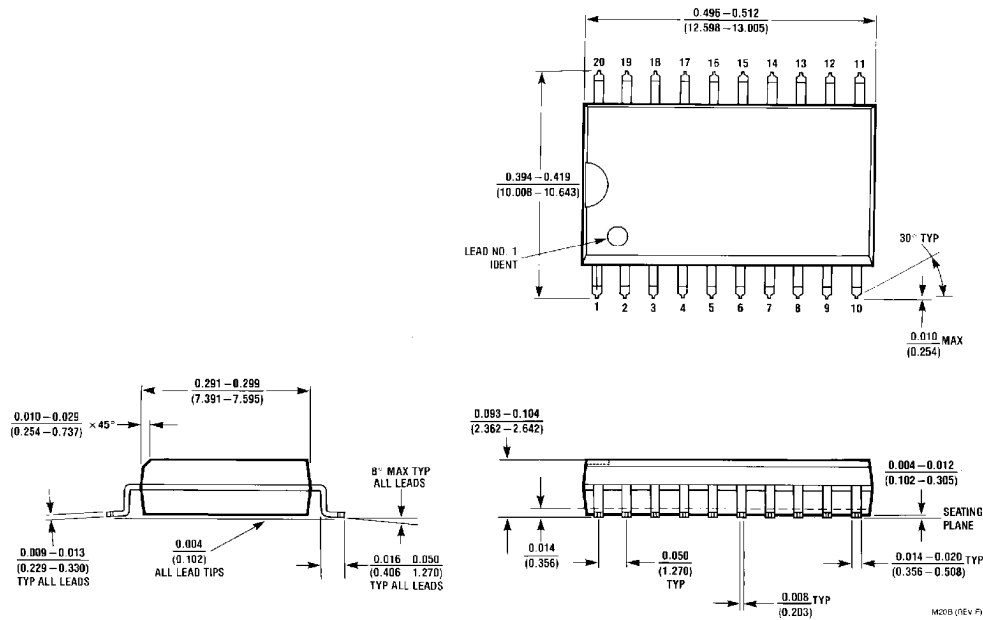
over recommended operating free air temperature range (Notes 2, 3)

Symbol	Parameter	Circuit Configuration	DM74ALS245A		Units
			Min	Max	
t_{PLH}	Propagation Delay Time Low-to-High Level Output		3	10	ns
t_{PHL}	Propagation Delay Time High-to-Low Level Output		3	10	ns
t_{PZL}	Output Enable Time to Low Level		5	20	ns
t_{PZH}	Output Enable Time to High Level		5	20	ns
t_{PLZ}	Output Disable Time from Low Level		4	15	ns
t_{PHZ}	Output Disable Time from High Level		2	10	ns

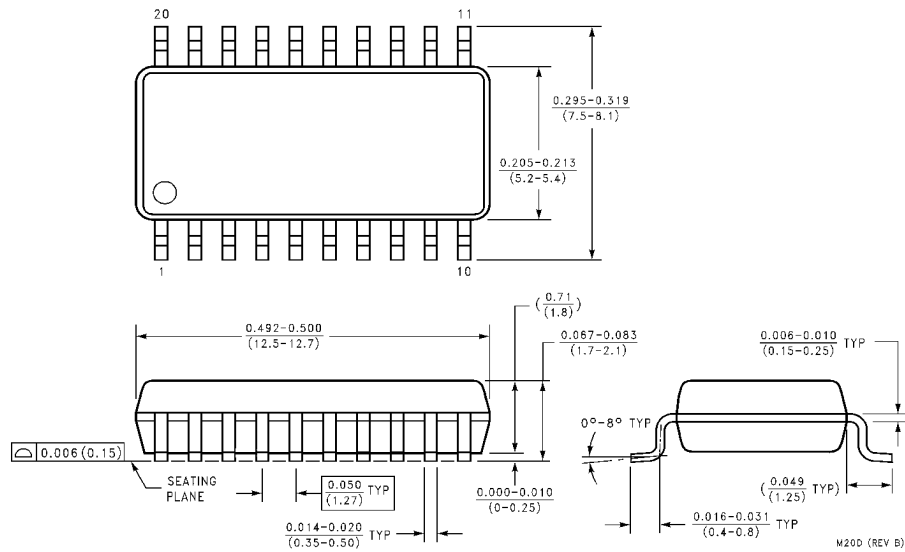
Note 2: See Section 1 for test waveforms and output load.

Note 3: Switching characteristic conditions are $V_{CC} = 4.5V$ to $5.5V$, $R_L = 500\Omega$, $C_L = 50$ pF.

Physical Dimensions inches (millimeters) unless otherwise noted

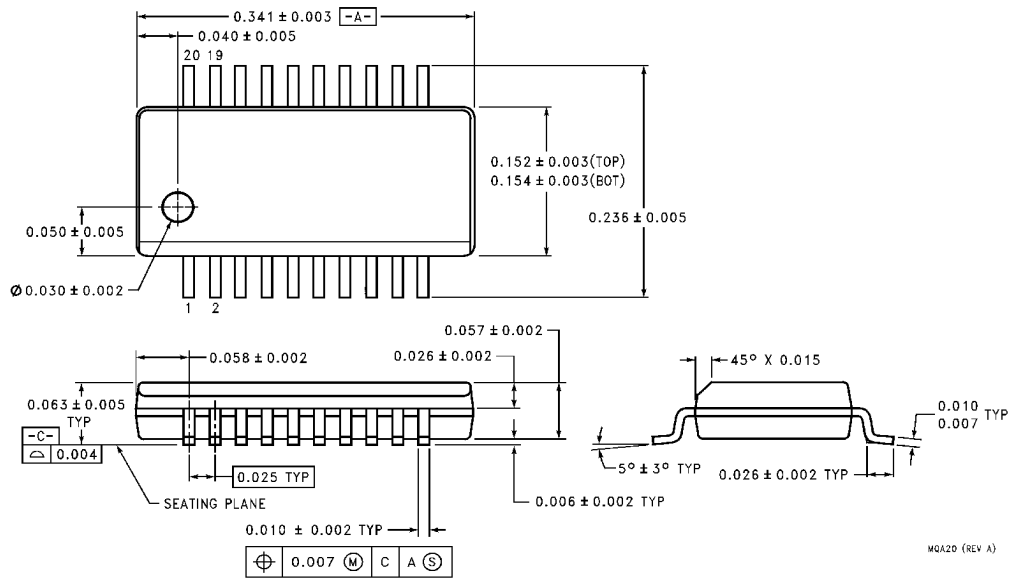


20-Lead (0.300" Wide) Small Outline Package (M)
Order Number DM74ALS245MSA or DM74ALS245AWM
Package Number M20B

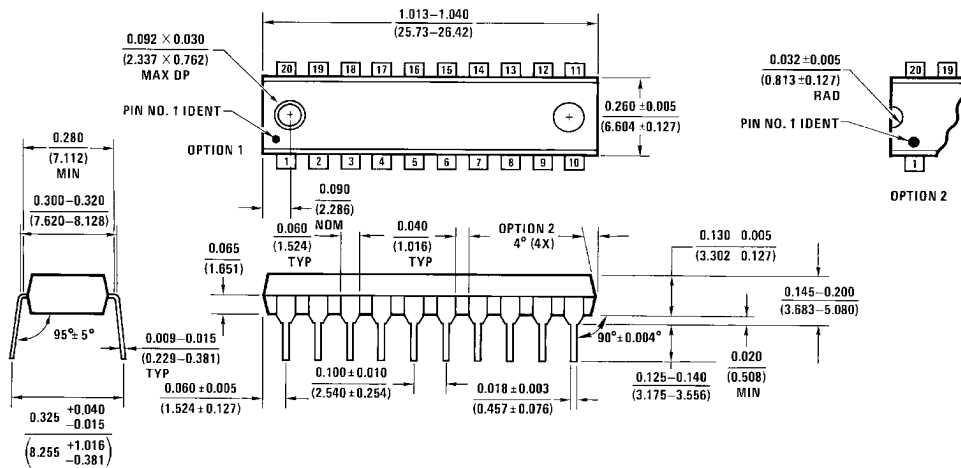


20-Lead Small Output Package-EIAJ (SJ)
Order Number DM74ALS245ASJ
Package Number M20D

Physical Dimensions inches (millimeters) unless otherwise noted (Continued)



**20-Lead (0.150" Wide) Shrink Small Outline Package, JEDEC
Package Number MQA20**



Molded Dual-In-Line Package (N)
Order Number DM74ALS245AN
Package Number N20A