

## DM74AS245 Octal Bus Transceiver with 3-STATE Outputs

### General Description

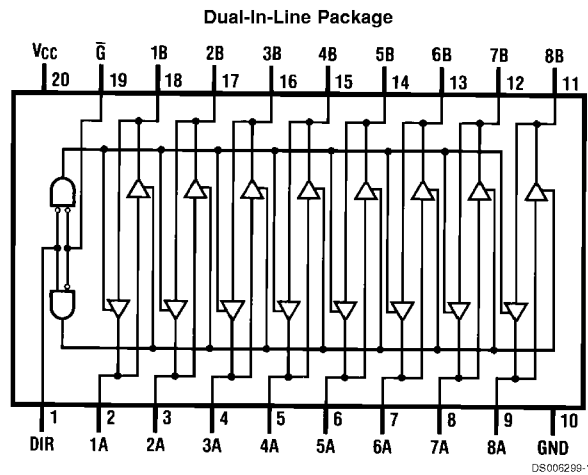
This advanced Schottky device contains 8 pairs of 3-STATE logic elements configured as octal bus transceivers. These circuits are designed for use in memory, microprocessor systems and in asynchronous bidirectional data buses. Two way communication between buses is controlled by the (DIR) input. Data 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.

- Non-inverting logic output
- 3-STATE outputs independently controlled on A and B buses
- Low output impedance to drive terminated transmission lines to 133Ω
- Switching response specified into 500Ω/50 pF
- Specified to interface with CMOS at  $V_{OH} = V_{CC} - 2V$
- PNP inputs reduce input loading
- Switching specifications guaranteed over full temperature and  $V_{CC}$  range

### Features

- Advanced oxide-isolated, ion-implanted Schottky TTL process

### Connection Diagram



Order Number DM74AS245WM or DM74AS245N  
See Package Number 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	Hi-Z

## Absolute Maximum Ratings (Note 2)

Supply Voltage, $V_{CC}$	7V	Range	0°C to 70°C
Input Voltage		Storage Temperature Range	-65°C to +150°C
Control Inputs	7V	Typical $\theta_{JA}$	
I/O Ports	5.5V	N Package	51.5°C/W
Operating Free Air Temperature		M Package	76.0°C/W

## Recommended Operating Conditions

Symbol	Parameter	Min	Typ	Max	Units
$V_{CC}$	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			48	mA
$T_A$	Free Air Operating Temperature	0		70	°C

Note 1: This product meets application requirements of 500 temperature cycles from -65°C to +150°C.

Note 2: 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

Symbol	Parameter	Conditions	Min	Typ	Max	Units	
$V_{IK}$	Input Clamp Voltage	$V_{CC} = 4.5V, I_{IN} = -18\text{ mA}$			-1.2	V	
$V_{OH}$	High Level Output Voltage	$V_{CC} = 4.5V, I_{OH} = -3\text{ mA}$	2.4	3.2		V	
		$V_{CC} = 4.5V, I_{OH} = -15\text{ mA}$	2	2.3			
		$I_{OH} = -2\text{ mA}, V_{CC} = 4.5V\text{ to }5.5V$	$V_{CC} - 2$				
$V_{OL}$	Low Level Output Voltage	$V_{CC} = 4.5V, I_{OL} = \text{Max}$		0.35	0.55	V	
$I_I$	Input Current at Max Input Voltage	$V_{CC} = 5.5V, V_{IN} = 7V,$ ( $V_{IN} = 5.5V$ for A or B Ports)			0.1	mA	
$I_{IH}$	High Level Input Current	$V_{CC} = 5.5V,$ $V_{IN} = 2.7V$	Control Inputs		20	$\mu\text{A}$	
			A or B Ports		70		
$I_{IL}$	Low Level Input Current	$V_{CC} = 5.5V,$ $V_{IN} = 0.4V$	Control Inputs		-0.5	mA	
			A or B Ports		-0.75		
$I_O$	Output Drive Current	$V_{CC} = 5.5V, V_{OUT} = 2.25V$	-50		-150	mA	
$I_{CC}$	Supply Current	$V_{CC} = 5.5V$	Output High		62	mA	
			Output Low		95		149
			3-STATE		79		123

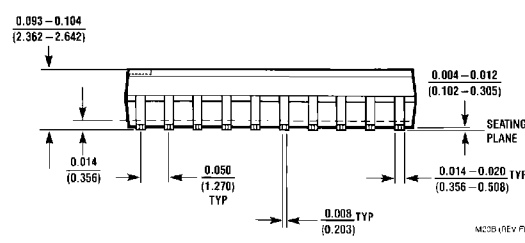
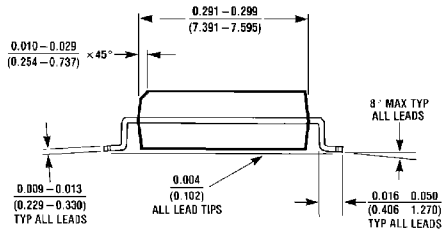
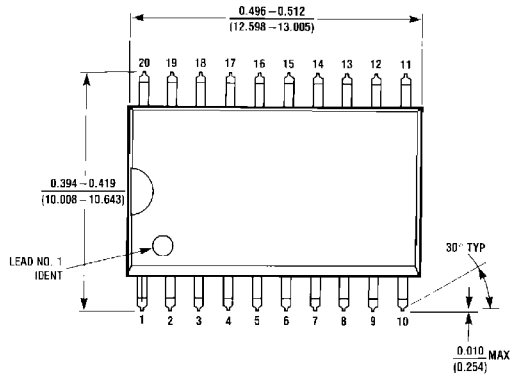
## Switching Characteristics

over recommended operating free air temperature range (Note 3)

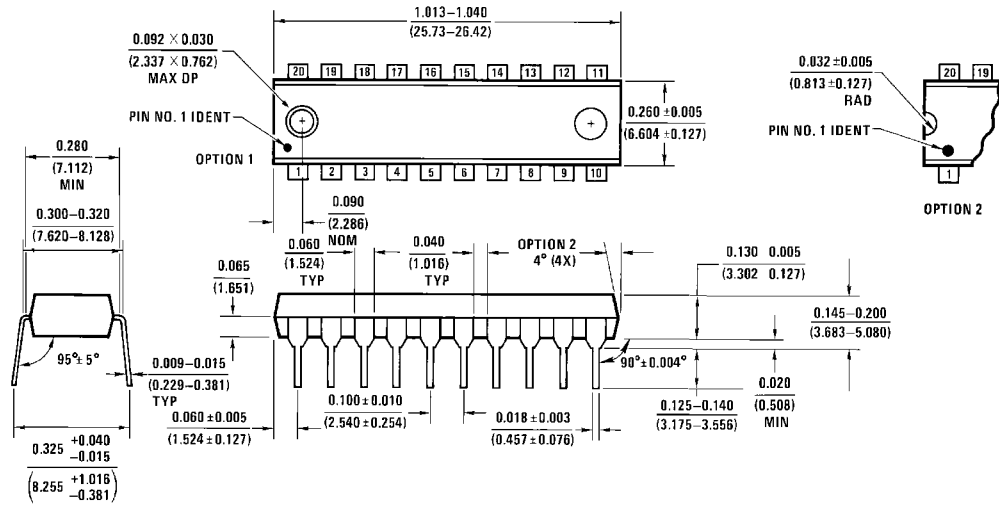
Symbol	Parameter	Conditions	From	To	Min	Max	Units
$t_{PLH}$	Propagation Delay Time High-to-Low Level Output	$V_{CC} = 4.5V\text{ to }5.5V,$ $R_1 = R_2 = 500\Omega,$ $C_L = 50\text{ pF}$	A or B	B or A	2	7.5	ns
$t_{PHL}$	Propagation Delay Time High-to-Low Level Output		A or B	B or A	2	7	ns
$t_{PZL}$	Output Enable Time to Low Level		$\overline{G}$	A or B	2	8.5	ns
$t_{PZH}$	Output Enable Time to High Level		$\overline{G}$	A or B	2	9	ns
$t_{PLZ}$	Output Disable Time from Low Level		$\overline{G}$	A or B	2	9.5	ns
$t_{PHZ}$	Output Disable Time from High Level		$\overline{G}$	A or B	2	5.5	ns

Note 3: See Section 1 for test waveforms and output load.

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



**Small Outline Package (M)**  
**Order Number DM74AS245WM**  
**Package Number M20B**



**Molded Dual-In-Line Package (N)**  
**Order Number DM74AS245N**  
**Package Number N20A**

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