

## Excellent Integrated System Limited

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[Fairchild Semiconductor](#)  
[DM74AS245N](#)

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October 1986  
Revised February 2000

## 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, 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

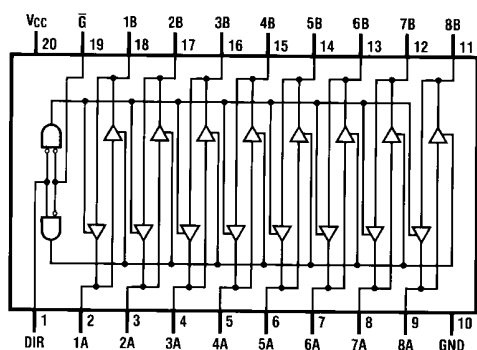
- Advanced oxide-isolated, ion-implanted Schottky TTL process
- Non-inverting logic output
- 3-STATE outputs independently controlled on A and B buses
- Low output impedance to drive terminated transmission lines to 133Ω
- Switching response specified into 500Ω/50 pF
- Specified to interface with CMOS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

#### Ordering Code:

Order Number	Package Number	Package Description
DM74AS245WM	M20B	20-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-013, 0.300 Wide
DM74AS245SJ	M20D	20-Lead Small Outline Package (SOP), EIAJ TYPE II, 5.3mm Wide
DM74AS245N	N20A	20-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-001, 0.300 Wide

Devices also available in Tape and Reel. Specify by appending the suffix letter "X" to the ordering code.

#### Connection Diagram



#### 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

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## Absolute Maximum Ratings (Note 1)

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

**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 tables 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	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

## 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	$\mu A$
			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	97	mA
			Output LOW	95	149	
			3-STATE	79	123	

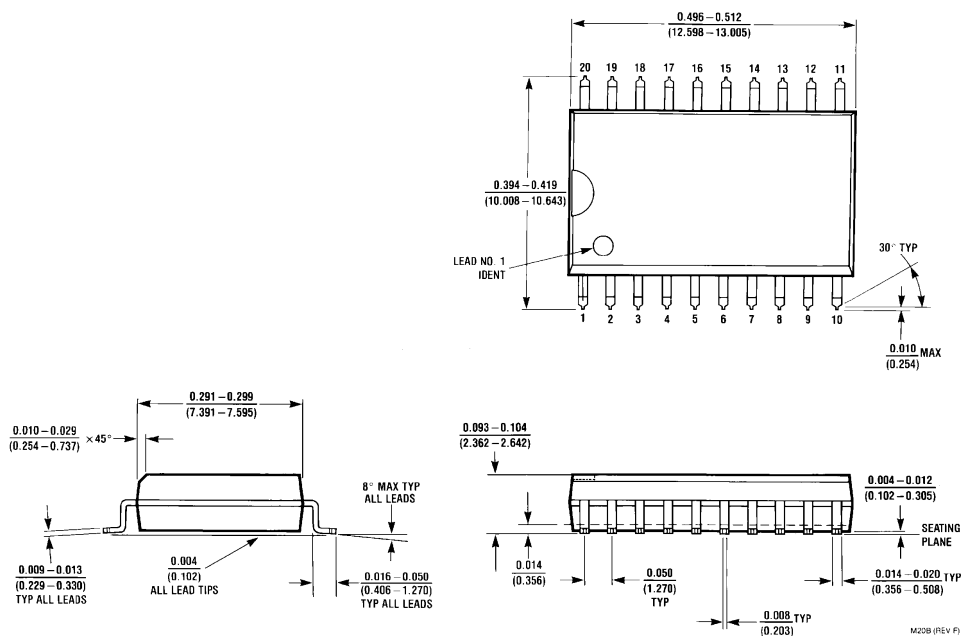
## Switching Characteristics

over recommended operating free air temperature range

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

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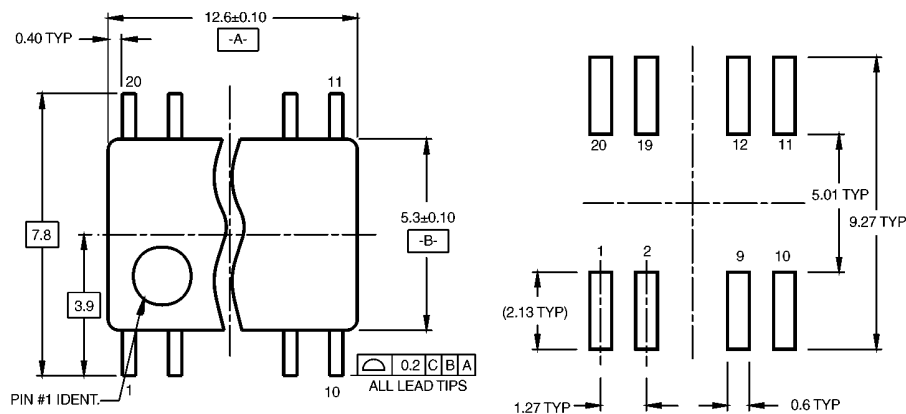
**Physical Dimensions** inches (millimeters) unless otherwise noted



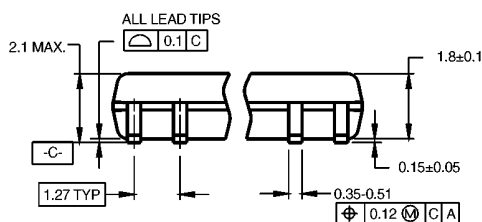
**20-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-013, 0.300 Wide  
Package Number M20B**

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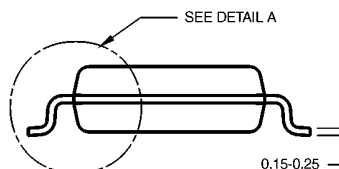
**Physical Dimensions** inches (millimeters) unless otherwise noted (Continued)



**LAND PATTERN RECOMMENDATION**



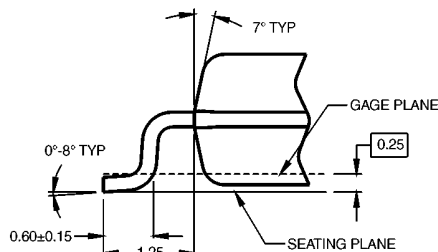
DIMENSIONS ARE IN MILLIMETERS



**NOTES:**

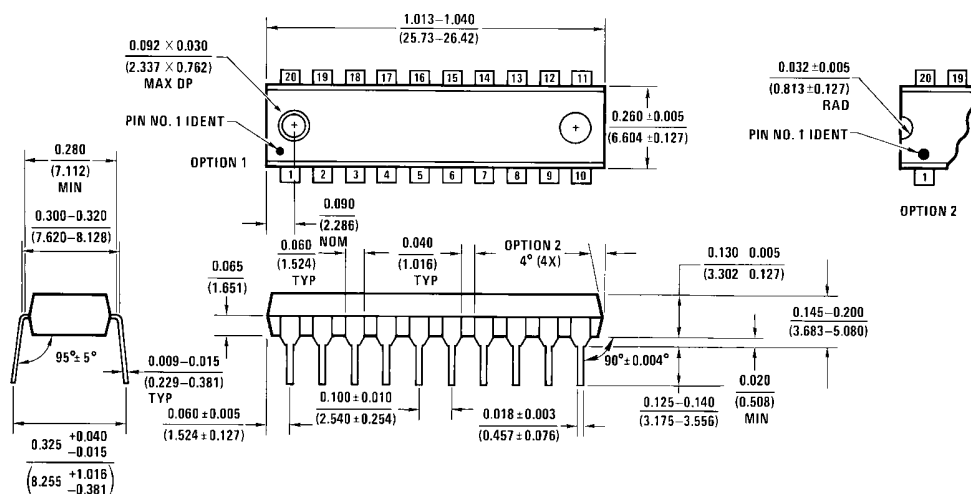
- CONFORMS TO EIAJ EDR-7320 REGISTRATION, ESTABLISHED IN DECEMBER, 1998.
- DIMENSIONS ARE IN MILLIMETERS.
- DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH, AND TIE BAR EXTRUSIONS.

M20DRevB1



**DETAIL A**

**20-Lead Small Outline Package (SOP), EIAJ TYPE II, 5.3mm Wide  
Package Number M20D**

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

**20-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-001, 0.300 Wide  
Package Number N20A**

N20A (REV G)

DM74AS245 Octal Bus Transceiver with 3-STATE Outputs

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