

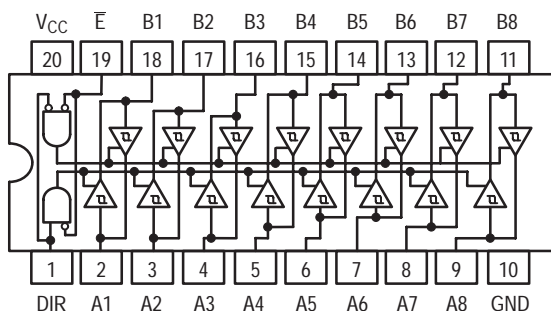
# SN74LS245

## Octal Bus Transceiver

The SN74LS245 is an Octal Bus Transmitter/Receiver designed for 8-line asynchronous 2-way data communication between data buses. Direction Input (DR) controls transmission of Data from bus A to bus B or bus B to bus A depending upon its logic level. The Enable input ( $\bar{E}$ ) can be used to isolate the buses.

- Hysteresis Inputs to Improve Noise Immunity
- 2-Way Asynchronous Data Bus Communication
- Input Diodes Limit High-Speed Termination Effects
- ESD > 3500 Volts

### LOGIC AND CONNECTION DIAGRAMS DIP (TOP VIEW)



### TRUTH TABLE

| INPUTS    |     | OUTPUT              |
|-----------|-----|---------------------|
| $\bar{E}$ | DIR |                     |
| L         | L   | Bus B Data to Bus A |
| L         | H   | Bus A Data to Bus B |
| H         | X   | Isolation           |

H = HIGH Voltage Level  
L = LOW Voltage Level  
X = Immaterial

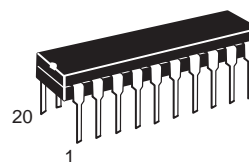
### GUARANTEED OPERATING RANGES

| Symbol   | Parameter                           | Min  | Typ | Max  | Unit |
|----------|-------------------------------------|------|-----|------|------|
| $V_{CC}$ | Supply Voltage                      | 4.75 | 5.0 | 5.25 | V    |
| $T_A$    | Operating Ambient Temperature Range | 0    | 25  | 70   | °C   |
| $I_{OH}$ | Output Current – High               |      |     | -3.0 | mA   |
|          |                                     |      |     | -15  | mA   |
| $I_{OL}$ | Output Current – Low                |      |     | 24   | mA   |

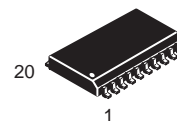


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**LOW  
POWER  
SCHOTTKY**



**PLASTIC  
N SUFFIX  
CASE 738**



**SOIC  
DW SUFFIX  
CASE 751D**

### ORDERING INFORMATION

| Device      | Package    | Shipping         |
|-------------|------------|------------------|
| SN74LS245N  | 16 Pin DIP | 1440 Units/Box   |
| SN74LS245DW | 16 Pin     | 2500/Tape & Reel |

# SN74LS245

## DC CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE (unless otherwise specified)

| Symbol                           | Parameter                               | Limits          |       |      | Unit | Test Conditions                                  |
|----------------------------------|---|-----------------|-------|------|------|--|
|                                  |   | Min             | Typ   | Max  |      |  |
| V <sub>IH</sub>                  | Input HIGH Voltage                      | 2.0             |       |      | V    | Guaranteed Input HIGH Voltage for All Inputs     |
| V <sub>IL</sub>                  | Input LOW Voltage                       |                 |       | 0.8  | V    | Guaranteed Input LOW Voltage for All Inputs      |
| V <sub>T+</sub> -V <sub>T-</sub> | Hysteresis                              | 0.2             | 0.4   |      | V    | V <sub>CC</sub> = MIN                            |
| V <sub>IK</sub>                  | Input Clamp Diode Voltage               |                 | -0.65 | -1.5 | V    | V <sub>CC</sub> = MIN, I <sub>IN</sub> = -18 mA  |
| V <sub>OH</sub>                  | Output HIGH Voltage                     | 2.4             | 3.4   |      | V    | V <sub>CC</sub> = MIN, I <sub>OH</sub> = -3.0 mA |
|                                  |   | 2.0             |       |      | V    | V <sub>CC</sub> = MIN, I <sub>OH</sub> = MAX     |
| V <sub>OL</sub>                  | Output LOW Voltage                      |                 | 0.25  | 0.4  | V    | I <sub>OL</sub> = 12 mA                          |
|                                  |   |                 | 0.35  | 0.5  | V    | I <sub>OL</sub> = 24 mA                          |
| I <sub>OZH</sub>                 | Output Off Current HIGH                 |                 |       | 20   | μA   | V <sub>CC</sub> = MAX, V <sub>OUT</sub> = 2.7 V  |
| I <sub>OZL</sub>                 | Output Off Current LOW                  |                 |       | -200 | μA   | V <sub>CC</sub> = MAX, V <sub>OUT</sub> = 0.4 V  |
| I <sub>IH</sub>                  | Input HIGH Current                      | A or B, DR or E |       | 20   | μA   | V <sub>CC</sub> = MAX, V <sub>IN</sub> = 2.7 V   |
|                                  |   | DR or E         |       | 0.1  | mA   | V <sub>CC</sub> = MAX, V <sub>IN</sub> = 7.0 V   |
|                                  |   | A or B          |       | 0.1  | mA   | V <sub>CC</sub> = MAX, V <sub>IN</sub> = 5.5 V   |
| I <sub>IL</sub>                  | Input LOW Current                       |                 |       | -0.2 | mA   | V <sub>CC</sub> = MAX, V <sub>IN</sub> = 0.4 V   |
| I <sub>OS</sub>                  | Output Short Circuit Current (Note 1)   | -40             |       | -225 | mA   | V <sub>CC</sub> = MAX                            |
| I <sub>CC</sub>                  | Power Supply Current Total, Output HIGH |                 |       | 70   | mA   | V <sub>CC</sub> = MAX                            |
|                                  | Total, Output LOW                       |                 |       | 90   |      |  |
|                                  | Total at HIGH Z                         |                 |       | 95   |      |  |

Note 1: Not more than one output should be shorted at a time, nor for more than 1 second.

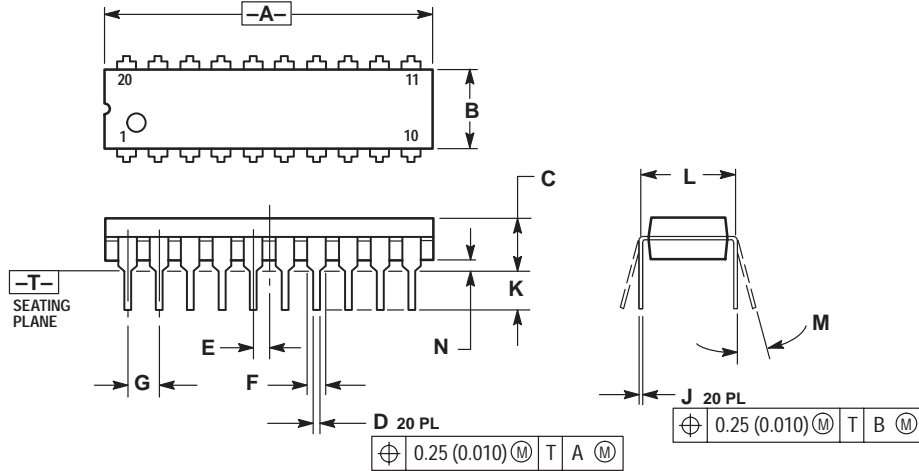
## AC CHARACTERISTICS (T<sub>A</sub> = 25°C, V<sub>CC</sub> = 5.0 V, T<sub>RISE</sub>/T<sub>FALL</sub> ≤ 6.0 ns)

| Symbol                               | Parameter                           | Limits |            |          | Unit | Test Conditions                                    |
|--------------------------------------|-------------------------------------|--------|------------|----------|------|--|
|                                      |                                     | Min    | Typ        | Max      |      |  |
| t <sub>PLH</sub><br>t <sub>PHL</sub> | Propagation Delay, Data to Output   |        | 8.0<br>8.0 | 12<br>12 | ns   | C <sub>L</sub> = 45 pF,<br>R <sub>L</sub> = 667 Ω  |
| t <sub>PZH</sub>                     | Output Enable Time to HIGH Level    |        | 25         | 40       |      |  |
| t <sub>PZL</sub>                     | Output Enable Time to LOW Level     |        | 27         | 40       |      |  |
| t <sub>PLZ</sub>                     | Output Disable Time from LOW Level  |        | 15         | 25       | ns   | C <sub>L</sub> = 5.0 pF,<br>R <sub>L</sub> = 667 Ω |
| t <sub>PHZ</sub>                     | Output Disable Time from HIGH Level |        | 15         | 25       |      |  |

# SN74LS245

## PACKAGE DIMENSIONS

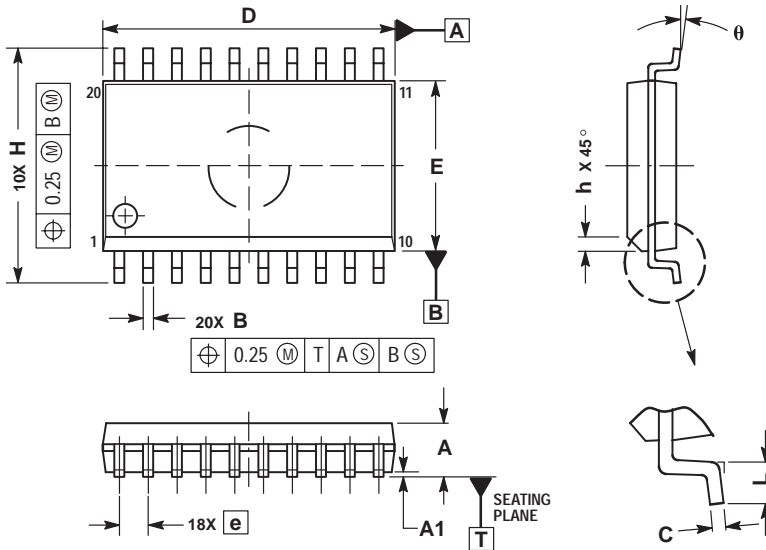
### N SUFFIX PLASTIC PACKAGE CASE 738-03 ISSUE E



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  2. CONTROLLING DIMENSION: INCH.
  3. DIMENSION L TO CENTER OF LEAD WHEN FORMED PARALLEL.
  4. DIMENSION B DOES NOT INCLUDE MOLD FLASH.


| DIM | INCHES    |       | MILLIMETERS |       |
|-----|-----------|-------|-------------|-------|
|     | MIN       | MAX   | MIN         | MAX   |
| A   | 1.010     | 1.070 | 25.66       | 27.17 |
| B   | 0.240     | 0.260 | 6.10        | 6.60  |
| C   | 0.150     | 0.180 | 3.81        | 4.57  |
| D   | 0.015     | 0.022 | 0.39        | 0.55  |
| E   | 0.050 BSC |       | 1.27 BSC    |       |
| F   | 0.050     | 0.070 | 1.27        | 1.77  |
| G   | 0.100 BSC |       | 2.54 BSC    |       |
| J   | 0.008     | 0.015 | 0.21        | 0.38  |
| K   | 0.110     | 0.140 | 2.80        | 3.55  |
| L   | 0.300 BSC |       | 7.62 BSC    |       |
| M   | 0°        | 15°   | 0°          | 15°   |
| N   | 0.020     | 0.040 | 0.51        | 1.01  |

### D SUFFIX PLASTIC SOIC PACKAGE CASE 751D-05 ISSUE F



- NOTES:
1. DIMENSIONS ARE IN MILLIMETERS.
  2. INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M, 1994.
  3. DIMENSIONS D AND E DO NOT INCLUDE MOLD PROTRUSION.
  4. MAXIMUM MOLD PROTRUSION 0.15 PER SIDE.
  5. DIMENSION B DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE PROTRUSION SHALL BE 0.13 TOTAL IN EXCESS OF B DIMENSION AT MAXIMUM MATERIAL CONDITION.

| DIM   | MILLIMETERS |       |
|-------|-------------|-------|
|       | MIN         | MAX   |
| A     | 2.35        | 2.65  |
| A1    | 0.10        | 0.25  |
| B     | 0.35        | 0.49  |
| C     | 0.23        | 0.32  |
| D     | 12.65       | 12.95 |
| E     | 7.40        | 7.60  |
| e     | 1.27 BSC    |       |
| H     | 10.05       | 10.55 |
| h     | 0.25        | 0.75  |
| L     | 0.50        | 0.90  |
| theta | 0°          | 7°    |

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