

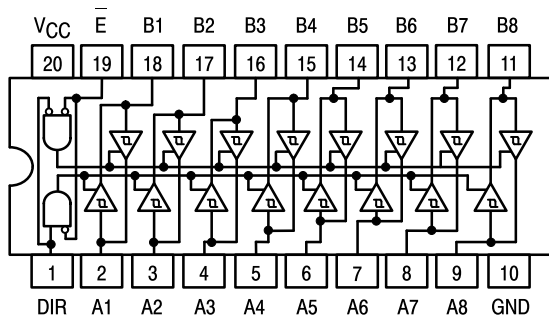


OCTAL BUS TRANSCEIVER

The SN54/74LS245 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 (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)



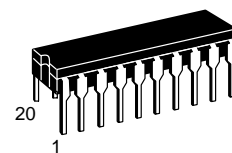
TRUTH TABLE

| INPUTS | | OUTPUT |
|--------|-----|---------------------|
| E | DIR | |
| L | L | Bus B Data to Bus A |
| L | H | Bus A Data to Bus B |
| H | X | Isolation |

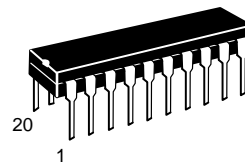
H = HIGH Voltage Level
L = LOW Voltage Level
X = Immaterial

SN54/74LS245

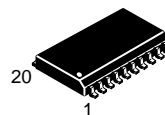
OCTAL BUS TRANSCEIVER LOW POWER SCHOTTKY



J SUFFIX
CERAMIC
CASE 732-03



N SUFFIX
PLASTIC
CASE 738-03



DW SUFFIX
SOIC
CASE 751D-03

ORDERING INFORMATION

SN54LSXXXJ Ceramic
SN74LSXXXN Plastic
SN74LSXXXDW SOIC

GUARANTEED OPERATING RANGES

| Symbol | Parameter | | Min | Typ | Max | Unit |
|-----------------|-------------------------------------|----------|-------------|------------|-------------|------|
| V _{CC} | Supply Voltage | 54 74 | 4.5 4.75 | 5.0 5.0 | 5.5 5.25 | V |
| T _A | Operating Ambient Temperature Range | 54 74 | -55 0 | 25 25 | 125 70 | °C |
| I _{OH} | Output Current — High | 54, 74 | | | -3.0 | mA |
| | | 54 74 | | | -12 -15 | mA |
| I _{OL} | Output Current — Low | 54, 74 | | | 12 24 | mA |
| | | 54 74 | | | 12 24 | mA |

SN54/74LS245

DC CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE (unless otherwise specified)

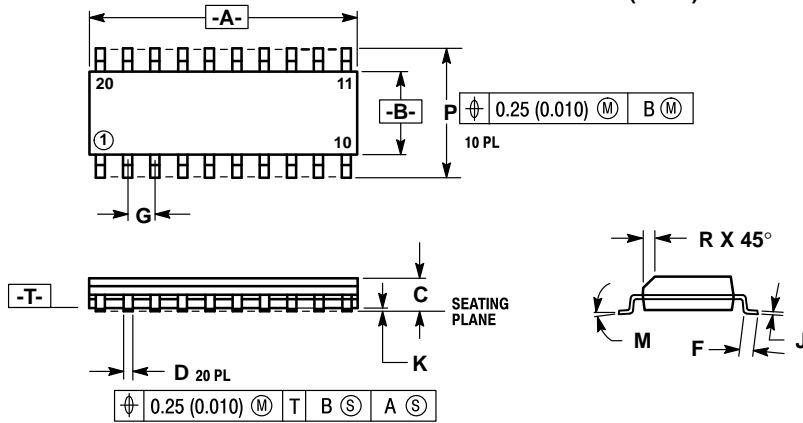
| Symbol | Parameter | | Limits | | | Unit | Test Conditions | |
|----------------------------------|--|-----------------|--------|-------|------|------|--|---|
| | | | Min | Typ | Max | | | |
| V _{IH} | Input HIGH Voltage | | 2.0 | | | V | Guaranteed Input HIGH Voltage for All Inputs | |
| V _{IL} | Input LOW Voltage | 54 | | | 0.7 | V | Guaranteed Input LOW Voltage for All Inputs | |
| | | 74 | | | 0.8 | | | |
| V _{T+} –V _{T–} | Hysteresis | | 0.2 | 0.4 | | V | V _{CC} = MIN | |
| V _{IK} | Input Clamp Diode Voltage | | | –0.65 | –1.5 | V | V _{CC} = MIN, I _{IN} = –18 mA | |
| V _{OH} | Output HIGH Voltage | 54, 74 | 2.4 | 3.4 | | V | V _{CC} = MIN, I _{OH} = –3.0 mA | |
| | | 54, 74 | 2.0 | | | V | V _{CC} = MIN, I _{OH} = MAX | |
| V _{OL} | Output LOW Voltage | 54, 74 | | 0.25 | 0.4 | V | I _{OL} = 12 mA | V _{CC} = V _{CC} MIN, V _{IN} = V _{IL} or V _{IH} per Truth Table |
| | | 74 | | 0.35 | 0.5 | V | I _{OL} = 24 mA | |
| I _{OZH} | Output Off Current HIGH | | | | 20 | μA | V _{CC} = MAX, V _{OUT} = 2.7 V | |
| I _{OZL} | Output Off Current LOW | | | | –200 | μA | V _{CC} = MAX, V _{OUT} = 0.4 V | |
| I _{IH} | Input HIGH Current | A or B, DR or E | | | 20 | μA | V _{CC} = MAX, V _{IN} = 2.7 V | |
| | | DR or E | | | 0.1 | mA | V _{CC} = MAX, V _{IN} = 7.0 V | |
| | | A or B | | | 0.1 | mA | V _{CC} = MAX, V _{IN} = 5.5 V | |
| I _{IL} | Input LOW Current | | | | –0.2 | mA | V _{CC} = MAX, V _{IN} = 0.4 V | |
| I _{OS} | Output Short Circuit Current (Note 1) | | –40 | | –225 | mA | V _{CC} = MAX | |
| I _{CC} | Power Supply Current Total, Output HIGH | | | | 70 | mA | V _{CC} = 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 ($T_A = 25^\circ\text{C}$, $V_{CC} = 5.0 \text{ V}$, $T_{RISE}/T_{FALL} \leq 6.0 \text{ ns}$)

| Symbol | Parameter | | Limits | | | Unit | Test Conditions | |
|------------------------|-------------------------------------|--|--------|------------|----------|------|--|--|
| | | | Min | Typ | Max | | | |
| t_{PLH} t_{PHL} | Propagation Delay, Data to Output | | | 8.0 8.0 | 12 12 | ns | $C_L = 45 \text{ pF}$, $R_L = 667 \Omega$ | |
| t_{PZH} | Output Enable Time to HIGH Level | | | 25 | 40 | ns | | |
| t_{PZL} | Output Enable Time to LOW Level | | | 27 | 40 | ns | | |
| t_{PLZ} | Output Disable Time from LOW Level | | | 15 | 25 | ns | $C_L = 5.0 \text{ pF}$, $R_L = 667 \Omega$ | |
| t_{PHZ} | Output Disable Time from HIGH Level | | | 15 | 25 | ns | | |

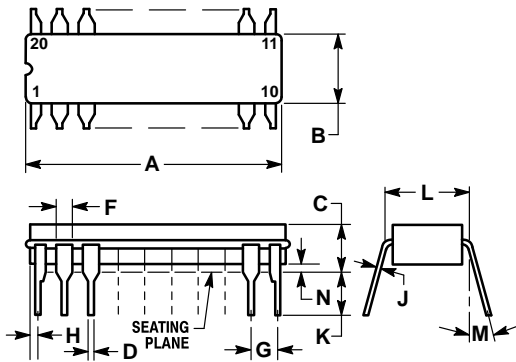
**Case 751D-03 DW Suffix
20-Pin Plastic
SO-20 (WIDE)**



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: MILLIMETER.
 3. DIMENSION A AND B DO NOT INCLUDE MOLD PROTRUSION.
 4. MAXIMUM MOLD PROTRUSION 0.15 (0.006) PER SIDE.
 5. 751D-01, AND -02 OBSOLETE, NEW STANDARD 751D-03.

| DIM | MILLIMETERS | | INCHES | |
|-----|-------------|-----------|--------|-------|
| | MIN | MAX | MIN | MAX |
| A | 12.65 | 12.95 | 0.499 | 0.510 |
| B | 7.40 | 7.60 | 0.292 | 0.299 |
| C | 2.35 | 2.65 | 0.093 | 0.104 |
| D | 0.35 | 0.49 | 0.014 | 0.019 |
| F | 0.50 | 0.90 | 0.020 | 0.035 |
| G | 1.27 BSC | 0.050 BSC | | |
| J | 0.25 | 0.32 | 0.010 | 0.012 |
| K | 0.10 | 0.25 | 0.004 | 0.009 |
| M | 0° | 7° | 0° | 7° |
| P | 10.05 | 10.55 | 0.395 | 0.415 |
| R | 0.25 | 0.75 | 0.010 | 0.029 |

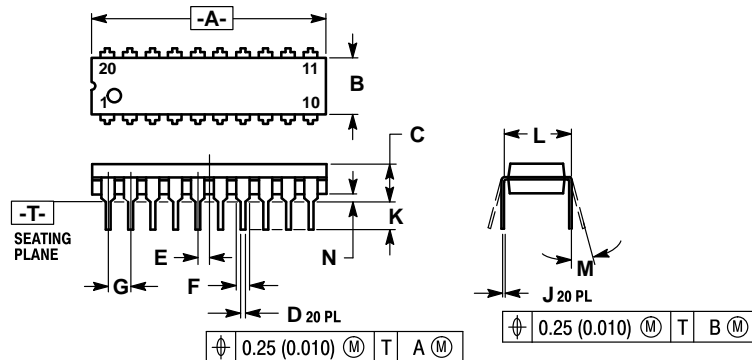
**Case 732-03 J Suffix
20-Pin Ceramic Dual In-Line**



- NOTES:
1. LEADS WITHIN 0.25 mm (0.010) DIA., TRUE POSITION AT SEATING PLANE, AT MAXIMUM MATERIAL CONDITION.
 2. DIM L TO CENTER OF LEADS WHEN FORMED PARALLEL.
 3. DIM A AND B INCLUDES MENISCUS.


| DIM | MILLIMETERS | | INCHES | |
|-----|-------------|-----------|--------|-------|
| | MIN | MAX | MIN | MAX |
| A | 23.88 | 25.15 | 0.940 | 0.990 |
| B | 6.60 | 7.49 | 0.260 | 0.295 |
| C | 3.81 | 5.08 | 0.150 | 0.200 |
| D | 0.38 | 0.56 | 0.015 | 0.022 |
| F | 1.40 | 1.65 | 0.055 | 0.065 |
| G | 2.54 BSC | 0.100 BSC | | |
| H | 0.51 | 1.27 | 0.020 | 0.050 |
| J | 0.20 | 0.30 | 0.008 | 0.012 |
| K | 3.18 | 4.06 | 0.125 | 0.160 |
| L | 7.62 BSC | 0.300 BSC | | |
| M | 0° | 15° | 0° | 15° |
| N | 0.25 | 1.02 | 0.010 | 0.040 |

**Case 738-03 N Suffix
20-Pin Plastic**



- 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.
 5. 738-02 OBSOLETE, NEW STANDARD 738-03.

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

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| SYMBOL | SW1 | SW2 |
|--------|--------|--------|
| tpZH | Open | Closed |
| tpZL | Closed | Open |
| tpLZ | Closed | Closed |