



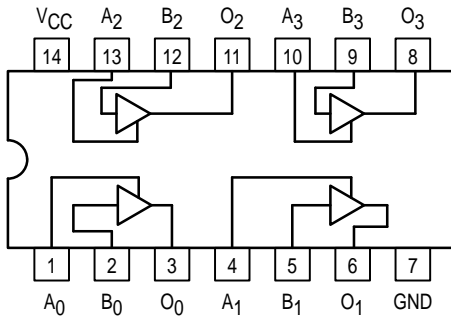
MC74AC126 MC74ACT126

QUAD BUFFER WITH 3-STATE OUTPUTS

Quad Buffer With 3-State Outputs

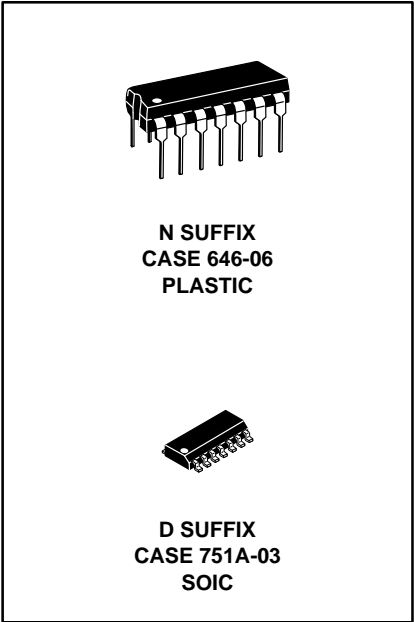
- Outputs Source/Sink
- 'ACT126 Has TTL Compatible Inputs
- 3-State Enable Input (Active High)

PIN ASSIGNMENTS



PIN NAMES

A_n, B_n Inputs
O_n Outputs



FUNCTION TABLE

| Inputs | | Output |
|----------------|----------------|----------------|
| A _n | B _n | O _n |
| H | L | L |
| H | H | H |
| L | X | Z |

H = High Voltage Level
L = Low Voltage Level
Z = High Impedance
X = Immaterial

MAXIMUM RATINGS*

| Symbol | Parameter | Value | Unit |
|------------------|--|-------------------------------|------|
| V _{CC} | DC Supply Voltage (Referenced to GND) | -0.5 to +7.0 | V |
| V _{in} | DC Input Voltage (Referenced to GND) | -0.5 to V _{CC} + 0.5 | V |
| V _{out} | DC Output Voltage (Referenced to GND) | -0.5 to V _{CC} + 0.5 | V |
| I _{in} | DC Input Current, per Pin | ± 20 | mA |
| I _{out} | DC Output Sink/Source Current, per Pin | ± 50 | mA |
| I _{CC} | DC V _{CC} or GND Current per Output Pin | ± 50 | mA |
| T _{stg} | Storage Temperature | -65 to +150 | °C |

* Maximum Ratings are those values beyond which damage to the device may occur. Functional operation should be restricted to the Recommended Operating Conditions.

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RECOMMENDED OPERATING CONDITIONS

| Symbol | Parameter | Min | Typ | Min | Unit | |
|------------------------------------|--|-------------------------|-----|-----------------|------|---|
| V _{CC} | Supply Voltage | 'AC | 2.0 | 5.0 | 6.0 | V |
| | | 'ACT | 4.5 | 5.0 | 5.5 | |
| V _{in} , V _{out} | DC Input Voltage, Output Voltage (Ref. to GND) | 0 | | V _{CC} | V | |
| t _r , t _f | Input Rise and Fall Time (Note 1) 'AC Devices except Schmitt Inputs | V _{CC} @ 3.0 V | | 150 | ns/V | |
| | | V _{CC} @ 4.5 V | | 40 | | |
| | | V _{CC} @ 5.5 V | | 25 | | |
| T _J | Junction Temperature (PDIP) | | | 140 | °C | |
| T _A | Operating Ambient Temperature Range | -40 | 25 | 85 | °C | |
| I _{OH} | Output Current — HIGH | | | -24 | mA | |
| I _{OL} | Output Current — LOW | | | 24 | mA | |

1. V_{in} from 30% to 70% V_{CC}; see individual Data Sheets for devices that differ from the typical input rise and fall times.

2. V_{in} from 0.8 V to 2.0 V; see individual Data Sheets for devices that differ from the typical input rise and fall times.

DC CHARACTERISTICS

| Symbol | Parameter | V _{CC} (V) | 74AC | | 74AC | | Unit | Conditions |
|------------------|---|------------------------|------------------------|-------------------|------------------------------------|----|---|------------|
| | | | T _A = +25°C | | T _A = -40°C to +85°C | | | |
| | | | Typ | Guaranteed Limits | | | | |
| V _{IH} | Minimum High Level Input Voltage | 3.0 | 1.5 | 2.1 | 2.1 | V | V _{OUT} = 0.1 V or V _{CC} - 0.1 V | |
| | | 4.5 | 2.25 | 3.15 | 3.15 | | | |
| | | 5.5 | 2.75 | 3.85 | 3.85 | | | |
| V _{IL} | Maximum Low Level Input Voltage | 3.0 | 1.5 | 0.9 | 0.9 | V | V _{OUT} = 0.1 V or V _{CC} - 0.1 V | |
| | | 4.5 | 2.25 | 1.35 | 1.35 | | | |
| | | 5.5 | 2.75 | 1.65 | 1.65 | | | |
| V _{OH} | Minimum High Level Output Voltage | 3.0 | 2.99 | 2.9 | 2.9 | V | I _{OUT} = - 50 μA | |
| | | 4.5 | 4.46 | 4.4 | 4.4 | | | |
| | | 5.5 | 5.49 | 5.4 | 5.4 | | | |
| V _{OL} | Minimum Low Level Output Voltage | 3.0 | | 2.56 | 2.46 | V | *V _{IN} = V _{IL} or V _{IH} -12 mA I _{OH} - 24 mA - 24 mA | |
| | | 4.5 | | 3.86 | 3.76 | | | |
| | | 5.5 | | 4.86 | 4.76 | | | |
| V _{OL} | Minimum Low Level Output Voltage | 3.0 | 0.002 | 0.1 | 0.1 | V | I _{OUT} = 50 μA | |
| | | 4.5 | 0.001 | 0.1 | 0.1 | | | |
| | | 5.5 | 0.001 | 0.1 | 0.1 | | | |
| V _{OL} | Minimum Low Level Output Voltage | 3.0 | | 0.36 | 0.44 | V | *V _{IN} = V _{IL} or V _{IH} 12 mA I _{OL} 24 mA 24 mA | |
| | | 4.5 | | 0.36 | 0.44 | | | |
| | | 5.5 | | 0.36 | 0.44 | | | |
| I _{IN} | Maximum Input Leakage Current | 5.5 | | ±0.1 | ±1.0 | μA | V _I = V _{CC} , GND | |
| I _{OZ} | V _I (OE) = V _{IL} , V _{IH} V _I = V _{CC} , GND V _O = V _{CC} , GND | 5.5 | | ±0.5 | ±5.0 | μA | V _I (OE) = V _{IL} , V _{IH} V _I = V _{CC} , GND V _O = V _{CC} , GND | |
| I _{OLD} | †Minimum Dynamic Output Current | 5.5 | | | 75 | mA | V _{OLD} = 1.65 V Max | |
| I _{OHD} | | 5.5 | | | -75 | mA | V _{OHD} = 3.85 V Min | |
| I _{CC+} | Maximum Quiescent Supply Current | 5.5 | | 8.0 | 80 | μA | V _{IN} = V _{CC} or GND | |

* All outputs loaded; thresholds on input associated with output under test.

† Maximum test duration 2.0 ms, one input loaded at a time.

Note: I_{IN} and I_{CC} @ 3.0 V are guaranteed to be less than or equal to the respective limit @ 5.5 V.

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AC CHARACTERISTICS

| Symbol | Parameter | V _{CC} * (V) | 74AC | | 74AC | | Unit |
|------------------|-------------------------------------|--------------------------|--|------------|--|------------|------|
| | | | T _A = +25°C C _L = 50 pF | | T _A = -40°C to +85°C C _L = 50 pF | | |
| | | | Min | Max | Min | Max | |
| t _{PLH} | Propagation Delay Data to Output | 3.3 5.0 | 2.0 1.5 | 9.0 6.5 | 1.5 1.0 | 10 7.5 | ns |
| t _{PHL} | Propagation Delay Data to Output | 3.3 5.0 | 2.0 1.5 | 9.0 6.5 | 1.5 1.0 | 10 7.5 | ns |
| t _{PZH} | Output Enable Time | 3.3 5.0 | 2.0 1.5 | 11 8.5 | 1.5 1.0 | 12 9.5 | ns |
| t _{PZL} | Output Enable Time | 3.3 5.0 | 2.0 1.5 | 11 8.5 | 1.5 1.0 | 12 9.5 | ns |
| t _{PHZ} | Output Disable Time | 3.3 5.0 | 2.0 1.5 | 12 9.5 | 1.5 1.0 | 13 10.5 | ns |
| t _{PLZ} | Output Disable Time | 3.3 5.0 | 2.0 1.5 | 12 9.5 | 1.5 1.0 | 13 10.5 | ns |

* Voltage Range 3.3 V is 3.3 V ±0.3 V.
Voltage Range 5.0 V is 5.0 V ±0.5 V.

DC CHARACTERISTICS

| Symbol | Parameter | V _{CC} (V) | 74ACT | | 74ACT | | Unit | Conditions |
|-------------------|---|------------------------|------------------------|-------------------|------------------------------------|--|------|---|
| | | | T _A = +25°C | | T _A = -40°C to +85°C | | | |
| | | | Typ | Guaranteed Limits | | | | |
| V _{IH} | Minimum High Level Input Voltage | 4.5 | 1.5 | 2.2 | 2.0 | | V | V _{OUT} = 0.1 V or V _{CC} - 0.1 V |
| | | 5.5 | 1.5 | 2.0 | 2.0 | | | |
| V _{IL} | Maximum Low Level Input Voltage | 4.5 | 1.5 | 0.8 | 0.8 | | V | V _{OUT} = 0.1 V or V _{CC} - 0.1 V |
| | | 5.5 | 1.5 | 0.8 | 0.8 | | | |
| V _{OH} | Minimum High Level Output Voltage | 4.5 | 4.49 | 4.4 | 4.4 | | V | I _{OUT} = - 50 μA |
| | | 5.5 | 5.49 | 5.4 | 5.4 | | | |
| | | 4.5 | | 3.86 | 3.76 | | V | *V _{IN} = V _{IL} or V _{IH} - 24 mA I _{OH} - 24 mA |
| | | 5.5 | | 4.86 | 4.76 | | | |
| V _{OL} | Minimum Low Level Output Voltage | 4.5 | 0.001 | 0.1 | 0.1 | | V | I _{OUT} = - 50 μA |
| | | 5.5 | 0.001 | 0.1 | 0.1 | | | |
| | | 4.5 | | 0.36 | 0.44 | | V | *V _{IN} = V _{IL} or V _{IH} - 24 mA I _{OH} - 24 mA |
| | | 5.5 | | 0.36 | 0.44 | | | |
| I _{IN} | Maximum Input Leakage Current | 5.5 | | ±0.1 | ±1.0 | | μA | V _I = V _{CC} , GND |
| I _{OZ} | V _I (OE) = V _{IL} , V _{IH} V _I = V _{CC} , GND V _O = V _{CC} , GND | 5.5 | | ±0.5 | ±5.0 | | μA | V _I (OE) = V _{IL} , V _{IH} V _I = V _{CC} , GND V _O = V _{CC} , GND |
| ΔI _{CCT} | Additional Max. I _{CC} /Input | 5.5 | 0.6 | | 1.5 | | mA | V _I = V _{CC} - 2.1 V |
| I _{OLD} | †Minimum Dynamic Output Current | 5.5 | | | 75 | | mA | V _{OLD} = 1.65 V Max |
| I _{OHD} | | 5.5 | | | -75 | | mA | V _{OHD} = 3.85 V Min |
| I _{CC} | Maximum Quiescent Supply Current | 5.5 | | 8.0 | 80 | | μA | V _{IN} = V _{CC} or GND |

* All outputs loaded; thresholds on input associated with output under test.

† Maximum test duration 2.0 ms, one input loaded at a time.

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AC CHARACTERISTICS

| Symbol | Parameter | V _{CC} * (V) | 74ACT | | 74ACT | | Unit |
|------------------|-------------------------------------|--------------------------|--|------|--|------|------|
| | | | T _A = +25°C C _L = 50 pF | | T _A = -40°C to +85°C C _L = 50 pF | | |
| | | | Min | Max | Min | Max | |
| t _{PLH} | Propagation Delay Data to Output | 5.0 | 1.5 | 8.5 | 1.0 | 9.5 | ns |
| t _{PHL} | Propagation Delay Data to Output | 5.0 | 1.5 | 8.5 | 1.0 | 9.5 | ns |
| t _{PZH} | Output Enable Time | 5.0 | 1.5 | 9.0 | 1.0 | 10 | ns |
| t _{PZL} | Output Enable Time | 5.0 | 1.5 | 9.0 | 1.0 | 10 | ns |
| t _{PHZ} | Output Disable Time | 5.0 | 1.5 | 10.5 | 1.0 | 11.5 | ns |
| t _{PLZ} | Output Disable Time | 5.0 | 1.5 | 10.5 | 1.0 | 11.5 | ns |

* Voltage Range 5.0 V is 5.0 V ±0.5 V.

CAPACITANCE

| Symbol | Parameter | Value Typ | Unit | Test Conditions |
|-----------------|-------------------------------|--------------|------|-------------------------|
| C _{IN} | Input Capacitance | 4.5 | pF | V _{CC} = 5.0 V |
| C _{PD} | Power Dissipation Capacitance | 45 | pF | V _{CC} = 5.0 V |

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OUTLINE DIMENSIONS

N SUFFIX PLASTIC DIP PACKAGE CASE 646-06 ISSUE L

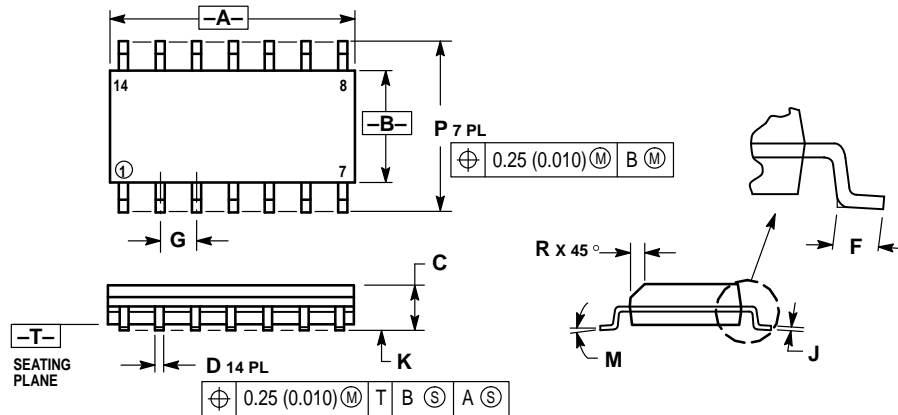


NOTES:

- LEADS WITHIN 0.13 (0.005) RADIUS OF TRUE POSITION AT SEATING PLANE AT MAXIMUM MATERIAL CONDITION.
- DIMENSION L TO CENTER OF LEADS WHEN FORMED PARALLEL.
- DIMENSION B DOES NOT INCLUDE MOLD FLASH.
- ROUNDED CORNERS OPTIONAL.

| DIM | INCHES | | MILLIMETERS | |
|-----|-----------|-------|-------------|-------|
| | MIN | MAX | MIN | MAX |
| A | 0.715 | 0.770 | 18.16 | 19.56 |
| B | 0.240 | 0.260 | 6.10 | 6.60 |
| C | 0.145 | 0.185 | 3.69 | 4.69 |
| D | 0.015 | 0.021 | 0.38 | 0.53 |
| F | 0.040 | 0.070 | 1.02 | 1.78 |
| G | 0.100 BSC | | 2.54 BSC | |
| H | 0.052 | 0.095 | 1.32 | 2.41 |
| J | 0.008 | 0.015 | 0.20 | 0.38 |
| K | 0.115 | 0.135 | 2.92 | 3.43 |
| L | 0.300 BSC | | 7.62 BSC | |
| M | 0° | 10° | 0° | 10° |
| N | 0.015 | 0.039 | 0.39 | 1.01 |

D SUFFIX PLASTIC SOIC PACKAGE CASE 751A-03 ISSUE F



NOTES:

- DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
- CONTROLLING DIMENSION: MILLIMETER.
- DIMENSIONS A AND B DO NOT INCLUDE MOLD PROTRUSION.
- MAXIMUM MOLD PROTRUSION 0.15 (0.006) PER SIDE.
- DIMENSION D DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.127 (0.005) TOTAL IN EXCESS OF THE D DIMENSION AT MAXIMUM MATERIAL CONDITION.

| DIM | MILLIMETERS | | INCHES | |
|-----|-------------|------|-----------|-------|
| | MIN | MAX | MIN | MAX |
| A | 8.55 | 8.75 | 0.337 | 0.344 |
| B | 3.80 | 4.00 | 0.150 | 0.157 |
| C | 1.35 | 1.75 | 0.054 | 0.068 |
| D | 0.35 | 0.49 | 0.014 | 0.019 |
| F | 0.40 | 1.25 | 0.016 | 0.049 |
| G | 1.27 BSC | | 0.050 BSC | |
| J | 0.19 | 0.25 | 0.008 | 0.009 |
| K | 0.10 | 0.25 | 0.004 | 0.009 |
| M | 0° | 7° | 0° | 7° |
| P | 5.80 | 6.20 | 0.228 | 0.244 |
| R | 0.25 | 0.50 | 0.010 | 0.019 |

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MC74AC126/D

