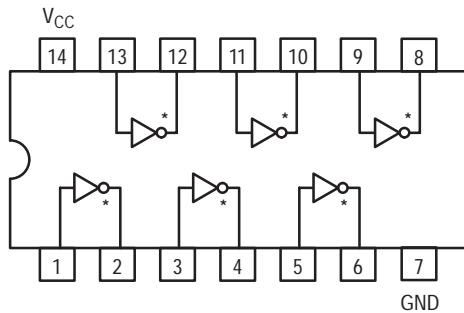


SN74LS05

Hex Inverter



*OPEN COLLECTOR OUTPUTS

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 |
| V_{OH} | Output Voltage – High | | | 5.5 | V |
| I_{OL} | Output Current – Low | | | 8.0 | mA |

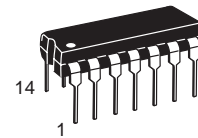


ON Semiconductor

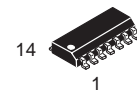
Formerly a Division of Motorola

<http://onsemi.com>

**LOW
POWER
SCHOTTKY**



**PLASTIC
N SUFFIX
CASE 646**



**SOIC
D SUFFIX
CASE 751A**

ORDERING INFORMATION

| Device | Package | Shipping |
|-----------|------------|------------------|
| SN74LS05N | 14 Pin DIP | 2000 Units/Box |
| SN74LS05D | 14 Pin | 2500/Tape & Reel |

SN74LS05

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 | | | 0.8 | V | Guaranteed Input LOW Voltage for All Inputs |
| V_{IK} | Input Clamp Diode Voltage | | -0.65 | -1.5 | V | $V_{CC} = \text{MIN}$, $I_{IN} = -18 \text{ mA}$ |
| I_{OH} | Output HIGH Current | | | 100 | μA | $V_{CC} = \text{MIN}$, $V_{OH} = \text{MAX}$ |
| V_{OL} | Output LOW Voltage | | 0.25 | 0.4 | V | $I_{OL} = 4.0 \text{ mA}$ $V_{CC} = V_{CC} \text{ MIN}$, $V_{IN} = V_{IL} \text{ or } V_{IH}$ per Truth Table |
| | | | 0.35 | 0.5 | V | |
| I_{IH} | Input HIGH Current | | | 20 | μA | $V_{CC} = \text{MAX}$, $V_{IN} = 2.7 \text{ V}$ |
| | | | | 0.1 | mA | $V_{CC} = \text{MAX}$, $V_{IN} = 7.0 \text{ V}$ |
| I_{IL} | Input LOW Current | | | -0.4 | mA | $V_{CC} = \text{MAX}$, $V_{IN} = 0.4 \text{ V}$ |
| I_{CC} | Power Supply Current Total, Output HIGH Total, Output LOW | | | 2.4 | mA | $V_{CC} = \text{MAX}$ |
| | | | | 6.6 | | |

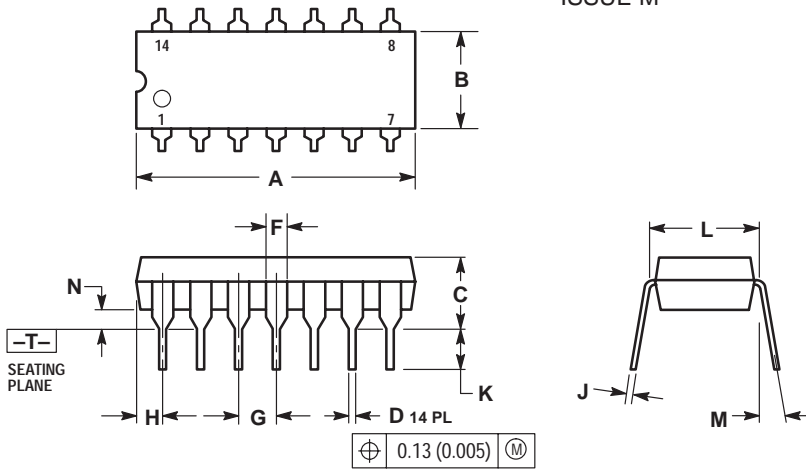
AC CHARACTERISTICS ($T_A = 25^\circ\text{C}$)

| Symbol | Parameter | Limits | | | Unit | Test Conditions |
|-----------|---------------------------------|--------|-----|-----|------|---------------------------------------------------------------------------------|
| | | Min | Typ | Max | | |
| t_{PLH} | Turn-Off Delay, Input to Output | | 17 | 32 | ns | $V_{CC} = 5.0 \text{ V}$ $C_L = 15 \text{ pF}$, $R_L = 2.0 \text{ k}\Omega$ |
| t_{PHL} | Turn-On Delay, Input to Output | | 15 | 28 | ns | |

SN74LS05

PACKAGE DIMENSIONS

N SUFFIX PLASTIC PACKAGE CASE 646-06 ISSUE M

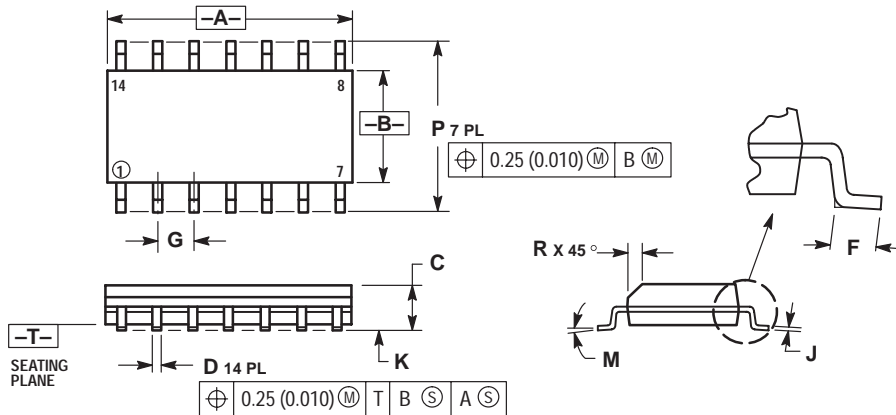


NOTES:

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

| DIM | INCHES | | MILLIMETERS | |
|-----|--------------------|-------|-------------|-------|
| | MIN | MAX | MIN | MAX |
| A | 0.715 | 0.770 | 18.16 | 18.80 |
| 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 | 0.290 | 0.310 | 7.37 | 7.87 |
| M | --- 10° --- 10° | | | |
| N | 0.015 | 0.039 | 0.38 | 1.01 |


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



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSIONS A AND B DO NOT INCLUDE MOLD PROTRUSION.
4. MAXIMUM MOLD PROTRUSION 0.15 (0.006) PER SIDE.
5. 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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