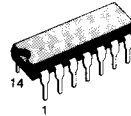


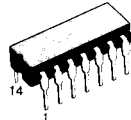
HEX INVERTER

DESCRIPTION

The T54LS04/T74LS04 is a high speed HEX INVERTER fabricated in LOW POWER SCHOTTKY technology.



B1
Plastic Package



D1/D2
Ceramic Package



M1
Micro Package



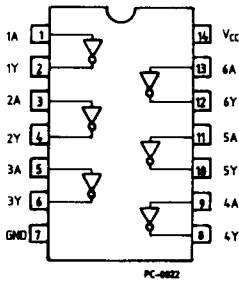
C1
Plastic Chip Carrier

ORDERING NUMBERS:

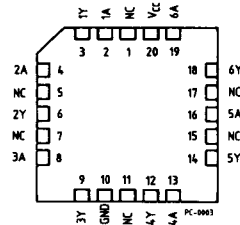
| | |
|------------|------------|
| T54LS04 D2 | T74LS04 C1 |
| T74LS04 D1 | T74LS04 M1 |
| T74LS04 B1 | |

PIN CONNECTION (top view)

DUAL IN LINE

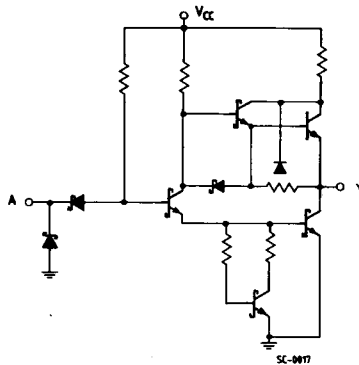


CHIP CARRIER



NC = No Internal Connection

SCHEMATIC





LOGIC DIAGRAM AND TRUTH TABLE



| | |
|---|---|
| A | Y |
| L | H |
| H | L |

L = LOW Voltage Level
H = HIGH Voltage Level

ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | Value | Unit |
|----------|-----------------------------------|------------|------|
| V_{CC} | Supply Voltage | -0.5 to 7 | V |
| V_I | Input Voltage, Applied to Input | -0.5 to 15 | V |
| V_O | Output Voltage, Applied to Output | -0.5 to 10 | V |
| I_I | Input Current, Into Inputs | -30 to 5 | mA |
| I_O | Output Current, Into Outputs | 50 | mA |

Stresses in excess of those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions in excess of those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

GUARANTEED OPERATING RANGES

| Part Numbers | Supply Voltage | | | Temperature |
|--------------|----------------|-------|--------|-----------------|
| | Min | Typ | Max | |
| T54LS04D2 | 4.5 V | 5.0 V | 5.5 V | -55°C to +125°C |
| T74LS04XX | 4.75 V | 5.0 V | 5.25 V | 0°C to +70°C |

XX = package type.



DC CHARACTERISTICS OVER OPERATING TEMPERATURE RANGE

| Symbol | Parameter | | Limits | | | Test Conditions (Note 1) | Units |
|------------------|--|-------|--------|-------|-----------|--|----------|
| | | | Min. | Typ. | Max. | | |
| V _{IH} | Input HIGH Voltage | | 2.0 | | | Guaranteed input HIGH Voltage | V |
| V _{IL} | Input LOW Voltage | 54 | | | 0.7 | Guaranteed input LOW Voltage | V |
| | | 74 | | | 0.8 | | |
| V _{CD} | Input Clamp Diode Voltage | | | -0.65 | -1.5 | V _{CC} = MIN, I _{IN} = -18mA | V |
| V _{OH} | Output HIGH Voltage | 54 | 2.5 | 3.4 | | V _{CC} = MIN, I _{OH} = -400μA, V _{IN} = V _{IL} | V |
| | | 74 | 2.7 | 3.4 | | | |
| V _{OL} | Output LOW Voltage | 54,74 | | 0.25 | 0.4 | I _{OL} = 4.0mA | V |
| | | 74 | | 0.35 | 0.5 | I _{OL} = 8.0mA | |
| I _{IH} | Input HIGH Current | | | 1.0 | 20 0.1 | V _{CC} = MAX, V _{IN} = 2.7V V _{CC} = MAX, V _{IN} = 7.0V | μA mA |
| I _{IL} | Input LOW Current | | | | -0.4 | V _{CC} = MAX, V _{IN} = 0.4V | mA |
| I _{OS} | Output Short Circuit Current (Note 2) | | -20 | | -100 | V _{CC} = MAX, V _{OUT} = 0V | mA |
| I _{CCH} | Supply Current HIGH | | | 1.2 | 2.4 | V _{CC} = MAX, V _{IN} = 0V | mA |
| I _{CCL} | Supply Current LOW | | | 3.6 | 6.6 | V _{CC} = MAX, inputs Open | mA |

AC CHARACTERISTICS: T_A = 25°C (See page 576 for AC test circuit and waveforms)

| Symbol | Parameter | | Limits | | | Test Conditions | Units |
|------------------|---------------------------------|--|--------|------|------|---|-------|
| | | | Min. | Typ. | Max. | | |
| t _{PLH} | Turn Off Delay, Input to Output | | | 9 | 15 | V _{CC} = 5.0V C _L = 15pF | ns |
| t _{PHL} | Turn On Delay, Input to Output | | | 10 | 15 | | ns |

Notes:

- 1) For conditions shown as MIN or MAX, use the appropriate value specified under guaranteed operating ranges.
- 2) Not more than one output should be shorted at a time.
- 3) Typical values are at V_{CC} = 5.0V, T_A = 25°C.