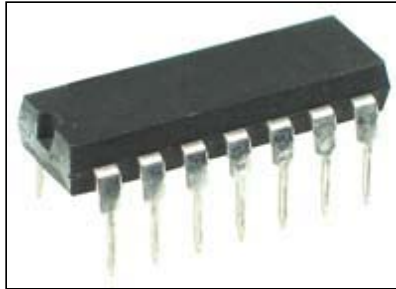


## 7404 - 7404 Hex Inverter Datasheet

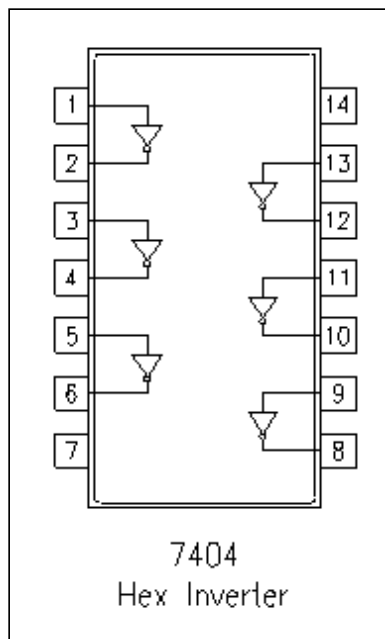
### Photograph



### Features

- ▶ Six Hex Inverters
- ▶ Outputs Directly Interface to CMOS, NMOS and TTL
- ▶ Large Operating Voltage Range
- ▶ Wide Operating Conditions
- ▶ Not Recommended for New Designs Use [74LS04](#)

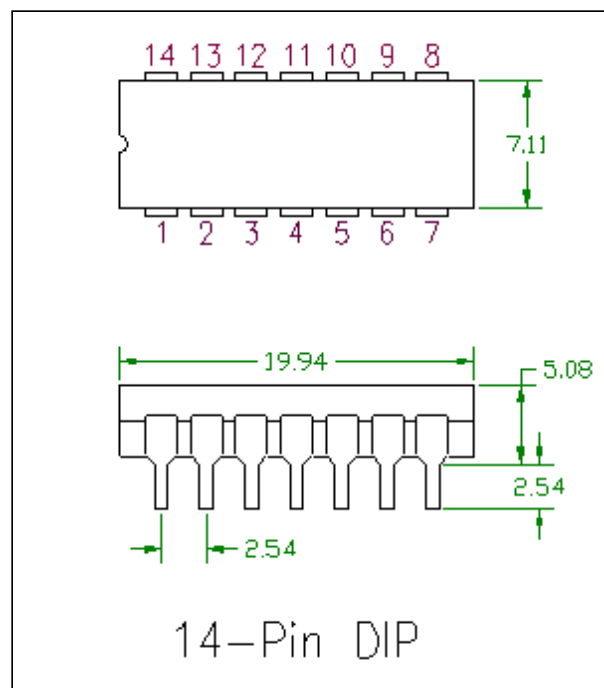
### Pin Layout



## Pin Description

| Pin Number | Description           |
|------------|-----------------------|
| 1          | A Input Gate 1        |
| 2          | Y Output Gate 1       |
| 3          | A Input Gate 2        |
| 4          | Y Output Gate 2       |
| 5          | A Input Gate 3        |
| 6          | Y Output Gate 3       |
| 7          | Ground                |
| 8          | Y Output Gate 4       |
| 9          | A Input Gate 4        |
| 10         | Y Output Gate 5       |
| 11         | A Input Gate 5        |
| 12         | Y Output Gate 6       |
| 13         | A Input Gate 6        |
| 14         | Vcc - Positive Supply |

## Dimensional Drawing



## Technical Data

### Absolute Maximum Ratings

|                                |                 |
|--------------------------------|-----------------|
| Supply Voltage                 | 7V              |
| Input Voltage                  | 5.5V            |
| Operating Free Air Temperature | 0°C to +70°C    |
| Storage Temperature Range      | -65°C to +150°C |

### Recommended Operating Conditions

| Symbol          | Parameter                      | Min  | Typ | Max  | Units |
|-----------------|--------------------------------|------|-----|------|-------|
| V <sub>cc</sub> | Supply Voltage                 | 4.75 | 5   | 5.25 | V     |
| V <sub>ih</sub> | HIGH Level Input Voltage       | 2    |     |      | V     |
| V <sub>il</sub> | LOW Level Input Voltage        |      |     | 0.8  | V     |
| I <sub>oh</sub> | HIGH Level Output Current      |      |     | -0.4 | mA    |
| I <sub>ol</sub> | LOW Level Output Current       |      |     | 16   | mA    |
| T <sub>a</sub>  | Free Air Operating Temperature | 0    |     | 70   | °C    |

### Electrical Characteristics

| Symbol           | Parameter                        | Conditions   | Min | Typ | Max  | Units |
|------------------|----------------------------------|--|-----|-----|------|-------|
| V <sub>i</sub>   | Input Clamp Voltage              | V <sub>cc</sub> =Min I <sub>i</sub> =-12mA                     |     |     | -1.5 | V     |
| V <sub>oh</sub>  | HIGH Level Output Voltage        | V <sub>cc</sub> =Min I <sub>oh</sub> =MAX V <sub>il</sub> =MAX | 2.4 | 3.4 |      | V     |
| V <sub>ol</sub>  | LOW Level Output Voltage         | V <sub>cc</sub> =Min I <sub>ol</sub> =MAX V <sub>ih</sub> =MAX |     | 0.2 | 0.4  | V     |
| I <sub>i</sub>   | Input Current@MAX Input Voltage  | V <sub>cc</sub> =Max V <sub>i</sub> =5.5V                      |     |     | 1    | mA    |
| I <sub>ih</sub>  | HIGH Level Input Current         | V <sub>cc</sub> =Max V <sub>i</sub> =2.4V                      |     |     | 40   | μA    |
| I <sub>il</sub>  | LOW Level Input Current          | V <sub>cc</sub> =Max V <sub>i</sub> =0.4V                      |     |     | -1.6 | mA    |
| I <sub>os</sub>  | Short Circuit Output Current     | V <sub>cc</sub> =Max   | -18 |     | -55  | mA    |
| I <sub>cch</sub> | Supply Current with Outputs HIGH | V <sub>cc</sub> =Max   |     | 4   | 8    | mA    |
| I <sub>ccl</sub> | Supply Current with Outputs LOW  | V <sub>cc</sub> =Max   |     | 12  | 22   | mA    |

### Switching Characteristics at V<sub>cc</sub>=5V, T<sub>a</sub>=25°C

| Symbol           | Parameter                                       | Conditions                                   | Min | Typ | Max | Units |
|------------------|---|--|-----|-----|-----|-------|
| t <sub>plh</sub> | Propagation Delay Time LOW-to-HIGH Level Output | C <sub>i</sub> =15pF<br>R <sub>i</sub> =400R |     |     | 22  | nS    |
| t <sub>phl</sub> | Propagation Delay Time HIGH-to-LOW Level Output | C <sub>i</sub> =15pF<br>R <sub>i</sub> =400R |     |     | 15  | nS    |



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