


Absolute Maximum Ratings(Note 3)
Supply Voltage
$0^{\circ} \mathrm{C}$ to $+70^{\circ} \mathrm{C}$
$-65^{\circ} \mathrm{C}$ to $+150^{\circ} \mathrm{C}$

Note 3: The "Absolute Maximum Ratings" are those values beyond which the safety of the device cannot be guaranteed. The device should not be operated at these limits. The parametric values defined in the Electrical Characteristics tables are not guaranteed at the absolute maximum ratings. The "Recommended Operating Conditions" table will define the conditions for actual device operation.

## Recommended Operating Conditions

| Symbol | Parameter |  | Min | Nom | Max | Units |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\overline{\mathrm{V}_{\text {CC }}}$ | Supply Voltage |  | 4.75 | 5 | 5.25 | V |
| $\mathrm{V}_{\mathrm{IH}}$ | HIGH Level Input Voltage |  | 2 |  |  | V |
| $\mathrm{V}_{\mathrm{IL}}$ | LOW Level Input Voltage |  |  |  | 0.8 | V |
| ${ }_{\text {I }}$ | HIGH Level Output Current |  |  |  | -0.8 | mA |
| ${ }_{\text {OL }}$ | LOW Level Output Current |  |  |  | 16 | mA |
| $\mathrm{f}_{\text {CLK }}$ | Clock Frequency (Note 4) | A | 0 |  | 32 | MHz |
|  |  | B | 0 |  | 16 |  |
| $t_{\text {w }}$ | Pulse Width (Note 4) | A | 15 |  |  | ns |
|  |  | B | 30 |  |  |  |
|  |  | Reset | 15 |  |  |  |
| $\overline{t_{\text {REL }}}$ | Reset Release Time (Note 4) |  | 25 |  |  | ns |
| $\mathrm{T}_{\mathrm{A}}$ | Free Air Operating Temperature |  | 0 |  | 70 | ${ }^{\circ} \mathrm{C}$ |

## DC Electrical Characteristics

| Symbol | Parameter | Conditions |  | Min | Typ <br> (Note 5) | Max | Units |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathrm{V}_{1}$ | Input Clamp Voltage | $\mathrm{V}_{\mathrm{CC}}=\mathrm{Min}, \mathrm{I}_{\mathrm{I}}=-12 \mathrm{~mA}$ |  |  |  | -1.5 | V |
| $\mathrm{V}_{\mathrm{OH}}$ | HIGH Level Output Voltage | $\begin{aligned} & \mathrm{V}_{\mathrm{CC}}=\mathrm{Min}, \mathrm{I}_{\mathrm{OH}}=\operatorname{Max} \\ & \mathrm{V}_{\mathrm{IL}}=\mathrm{Max}, \mathrm{~V}_{\mathrm{IH}}=\operatorname{Min} \end{aligned}$ |  | 2.4 | 3.4 |  | V |
| $\mathrm{V}_{\mathrm{OL}}$ | LOW Level Output Voltage | $\begin{aligned} & \mathrm{V}_{\mathrm{CC}}=\operatorname{Min}, \mathrm{I}_{\mathrm{OL}}=\operatorname{Max} \\ & \mathrm{V}_{\mathrm{IH}}=\operatorname{Min}, \mathrm{V}_{\mathrm{IL}}=\operatorname{Max}(\text { Note } 6) \end{aligned}$ |  |  | 0.2 | 0.4 | V |
| $I_{1}$ | Input Current @ Max Input Voltage | $\mathrm{V}_{\mathrm{CC}}=\mathrm{Max}, \mathrm{V}_{\mathrm{I}}=5.5 \mathrm{~V}$ |  |  |  | 1 | mA |
| $\mathrm{I}_{\mathrm{IH}}$ | HIGH Level Input Current | $\begin{aligned} & \mathrm{V}_{\mathrm{CC}}=\mathrm{Max} \\ & \mathrm{~V}_{\mathrm{I}}=2.7 \mathrm{~V} \end{aligned}$ | A |  |  | 80 | $\mu \mathrm{A}$ |
|  |  |  | Reset |  |  | 40 |  |
|  |  |  | B |  |  | 120 |  |
| $\overline{I_{L L}}$ | LOW Level Input Current | $\begin{aligned} & \mathrm{V}_{\mathrm{CC}}=\mathrm{Max} \\ & \mathrm{~V}_{\mathrm{I}}=0.4 \mathrm{~V} \end{aligned}$ | A |  |  | -3.2 | mA |
|  |  |  | Reset |  |  | -1.6 |  |
|  |  |  | B |  |  | -4.8 |  |
| Ios | Short Circuit Output Current | $\mathrm{V}_{\mathrm{CC}}=\operatorname{Max}$ (Note 7) |  | -18 |  | -57 | mA |
| $\mathrm{I}_{\mathrm{CC}}$ | Supply Current | $\mathrm{V}_{\mathrm{CC}}=\operatorname{Max}$ (Note 8) |  |  | 29 | 42 | mA |

Note 5: All typicals are at $\mathrm{V}_{\mathrm{CC}}=5 \mathrm{~V}, \mathrm{~T}_{\mathrm{A}}=25^{\circ} \mathrm{C}$.
Note 6: $Q_{A}$ outputs are tested at $I_{O L}=$ Max plus the limit value of $I_{I L}$ for the $B$ input. This permits driving the $B$ input while maintaining full fan-out capability. Note 7: Not more than one output should be shorted at a time.
Note 8: $\mathrm{I}_{\mathrm{CC}}$ is measured with all outputs open, both RO inputs grounded following momentary connection to 4.5 V , and all other inputs grounded.


Physical Dimensions inches (millimeters) unless otherwise noted


14-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-001, 0.300 Wide
Package Number N14A

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