MachXO2 Family Data Sheet Supplement for LVCMOS10 Inputs and BIDIs

Data Sheet

FPGA-DS-02062-1.3

July 2021
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1. Overview
This document is a supplement to the MachXO2 Family Data Sheet and provides the following additions or customizations:
- Support for LVCMOS10R33 and LVCMOS10R25 inputs and BIDIs for all ZE devices and –6 speed grade for HE and HC devices

2. sysI/O Recommended Operating Conditions

Table 2.1. sysI/O Recommended Operating Conditions

| Standard    | $V_{CCIO}$ (V) |               | $V_{REF}$ (V) |               |
|-------------|----------------|---------------|---------------|
| LVCMOS10R33 | 3.135 | 3.3  | 3.6  | 0.35 | 0.5  | 0.65 |
| LVCMOS10R25 | 2.375 | 2.5  | 2.625| 0.35 | 0.5  | 0.65 |

3. sysI/O Single-Ended DC Electrical Characteristics

Table 3.1. sysI/O Single-Ended DC Electrical Characteristics

<table>
<thead>
<tr>
<th>Input/Output Standard</th>
<th>$V_{IL}$</th>
<th>$V_{IH}$</th>
<th>$V_{OL}$ Max. (V)</th>
<th>$V_{OH}$ Min. (V)</th>
<th>$I_{OL}$ (mA)</th>
<th>$I_{OH}$ (mA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LVCNMOS10R33</td>
<td>-0.3</td>
<td>VREF – 0.1</td>
<td>3.465</td>
<td>0.40</td>
<td>N/A Open Drains</td>
<td>N/A Open Drains</td>
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<tr>
<td>LVCNMOS10R25</td>
<td>-0.3</td>
<td>VREF – 0.1</td>
<td>3.465</td>
<td>0.40</td>
<td>N/A Open Drains</td>
<td>N/A Open Drains</td>
</tr>
</tbody>
</table>

1. For I/Os with mixed voltage support, $V_{OH}$ follows respective sysI/O bank $V_{CCIO}$ supply voltage, and $V_{IL}$ / $V_{IH}$ follows the I/O signaling standard.
Technical Support Assistance

Submit a technical support case through www.latticesemi.com/techsupport.
## Revision History

### Revision 1.3, July 2021

<table>
<thead>
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<th>Section</th>
<th>Change Summary</th>
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<tr>
<td>sysI/O Single-Ended DC Electrical Characteristics</td>
<td>Added note 1 in <a href="#">Table 3.1</a> to better clarify the voltage specifications for I/Os with mixed voltage support.</td>
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### Revision 1.2, November 2019

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<tr>
<td>All</td>
<td>• Changed document number from DS103S S to FPGA-DS-02062.</td>
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<tr>
<td></td>
<td>• Updated document template.</td>
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<tr>
<td>Disclaimers</td>
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<td>Added this section.</td>
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### Revision 1.1, November 2015

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### Revision 1.0, November 2015

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