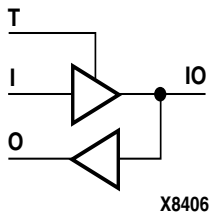


IOBUF

Bi-Directional Buffer with Selectable I/O Interface

Architectures Supported

IOBUF	
Spartan-II, Spartan-IIE	Primitive
Spartan-3	Primitive
Virtex, Virtex-E	Primitive
Virtex-II, Virtex-II Pro, Virtex-II Pro X	Primitive
XC9500, XC9500XV, XC9500XL	No
CoolRunner XPLA3	No
CoolRunner-II	No



For Spartan-II, Spartan-IIE, Virtex, Virtex-E, Virtex-II, Virtex-II Pro, and Virtex-II Pro X, IOBUF are bi-directional buffers whose I/O interface corresponds to a specific I/O standard. You can attach an IOSTANDARD attribute to an IOBUF instance.

IOBUFs are composites of IBUF and OBUFT elements. The O output is X (unknown) when IO (input/output) is Z. IOBUFs can be implemented as interconnections of their component elements.

The hardware implementation of the I/O standards requires that you follow a set of usage rules for the buffers. See the [“Usage Rules”](#) section.

Inputs		Bidirectional	Outputs
T	I	IO	O
1	X	Z	X
0	1	1	1
0	0	0	0

In the above table, where T = 1, data can be driven onto O.

Usage

Below are example templates for instantiating this component into a design. These templates can be cut and pasted directly into the user's source code.

VHDL Instantiation Template

```
-- IOBUF: Single-ended Bi-directional Buffer
--      All devices
-- The current version of the Xilinx HDL Libraries Guide

IOBUF_inst : IOBUF
-- Edit the following generics to specify the I/O standard, drive and
slew rate.
generic map (
    DRIVE => 12,
    IOSTANDARD => "LVCMOS25",
```

```
        SLEW => "SLOW")  
port map (
```