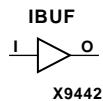


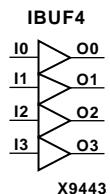
IBUF, 4, 8, 16

Single- and Multiple-Input Buffers

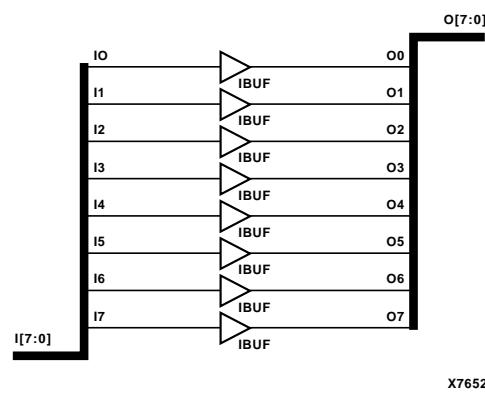
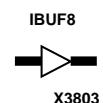
IBUF	
Spartan-II, Spartan-III	Primitive
Spartan-3	Primitive
Virtex, Virtex-E	Primitive
Virtex-II, Virtex-II Pro, Virtex-II Pro X	Primitive
XC9500, XC9500XV, XC9500XL	Primitive
CoolRunner XPLA3	Primitive
CoolRunner-II	Primitive
CoolRunner-IIS	No
IBUF4, IBUF8, IBUF16	
Spartan-II, Spartan-IIIE	Macro
Spartan-3	No
Virtex, Virtex-E	Macro
Virtex-II, Virtex-II Pro, Virtex-II Pro X	Macro
XC9500, XC9500XV, XC9500XL	Macro
CoolRunner XPLA3	Macro
CoolRunner-II	Macro
CoolRunner-IIS	No



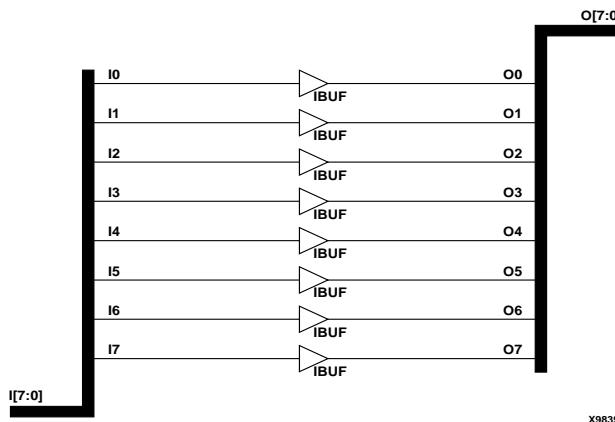
IBUF, IBUF4, IBUF8, and IBUF16 are single- and multiple-input buffers. An IBUF isolates the internal circuit from the signals coming into a chip. IBUFs are contained in input/output blocks (IOBs). IBUF inputs (I) are connected to an IPAD or an IOPAD. IBUF outputs (O) are connected to the internal circuit.



For Spartan-II, Spartan-IIIE, Spartan-3, Virtex, Virtex-E, Virtex-II, Virtex-II Pro, and Virtex-II Pro X, see “[IBUF_selectIO](#)” for information on IBUF variants with selectable I/O interfaces.



IBUF8 Implementation XC9500/XV/XL, CoolRunner XPLA3, CoolRunner-II, Spartan-II, Spartan-II E, Virtex, Virtex-E



X9839

IBUF8 Implementation Spartan-3, Virtex-II, Virtex-II Pro, Virtex-II Pro X

Usage

IBUFs are typically inferred for all top level input ports, but they can also be instantiated if necessary.

VHDL Instantiation Template

```
-- Component Declaration for IBUF should be placed
-- after architecture statement but before begin keyword

component IBUF
    port (O : out STD_ULOGIC;
          I : in STD_ULOGIC);
end component;

-- Component Attribute specification for IBUF
-- should be placed after architecture declaration but
-- before the begin keyword

-- Enter attributes here

-- Component Instantiation for IBUF should be placed
-- in architecture after the begin keyword

IBUF_INSTANCE_NAME : IBUF
    port map (O => user_O,
              I => user_I);
```

Verilog Instantiation Template

```
IBUF instance_name (.O (user_O),
                   .I (user_I));
```

Commonly Used Constraints

BUFG (CPLDs)

IOSTANDARD

IOBDELAY