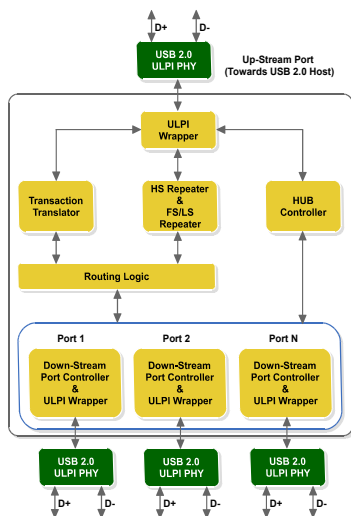


IP Core

USB 2.0 HUB (USB20HUB)

The USB 2.0 Hub IP core provides a link between the USB2.0 Host and multiple USB peripherals via UTMI + Low pin interface (ULPI). It supports High speed, Full speed and Low speed peripheral devices. Its rich features and ease of use makes it more suitable for embedded applications.

Architecture



Features

- Supports High speed, Full speed and Low speed peripheral devices
- Integrated Transaction Translator (TT)
- Supports individual port power switching
- Remote wakeup capable
- Configurable Hub speed
 - Enables you to reduce resource utilization based on your needs
- Configurable Transaction Translator buffers
- Supports Suspend and Resume
- Supports connect/disconnect detection of down-stream ports
- Supports standard as well as hub class-specific requests
- Supports UTMI + Low Pin interface (ULPI)
- Reliable
 - Verified against Chapter 9 Tests and Hub Tests available in USB2.0 Command Verifier
- Easy to use

Support

- IP integration support available with the purchase of full version
- Additional support on chargeable basis for a period of 3 months or more
- Core modification support available at additional cost

Licensing

- **OpenCore Plus Evaluation** : 1 month evaluation license at no cost
- **Full** : 1 Year development license with full version purchase for single project and single site
- **Renewal** : OpenCore Plus Evaluation license update at discounted price

Verification

- This IP has been tested by interfacing it with USB 2.0 PHY (RN1133) on Nios II development board having Cyclone III device.
- It has also been verified under simulation environment.

Implementation Results

Supported Families	High Speed Capable	Resource Utilization	Performance (fmax) MHz	Memory Bits
Cyclone IV E	Yes	4870 LE	60.71	25344
	No	2920 LE	60.29	4096
Stratix III	Yes	3450 ALUT	67.20	25344
	No	2190 ALUT	65.06	4096
Stratix IV	Yes	3450 ALUT	66.30	25344
	No	2190 ALUT	66.68	4096
Stratix V	Yes	2030 ALUT	64.41	25344
	No	1210 ALUT	63.16	4096
Arria V	Yes	2050 ALM	60.84	25344
	No	1230 ALM	60.95	4096
MAX 10	Yes	4830 LE	63.40	25344
	No	2890 LE	64.00	4096

Note: Resource Summary is provided for 2 Port HUB.

Deliverables

Contents	Eval	Full
OpenCore Plus Evaluation: One (1) month evaluation license at no cost	✓	
Full Version: One (1) Year development license with full version purchase for single project and single site. Other licensing schemes are also available.		✓
Demonstration: 1) USB2.0 Hub with 2 down-stream ports	✓	✓
Time-limited (4 hours) SOF generation support	✓	
Full programming files generation support		✓
Reference Design for CoreCommander II Board	✓	✓
Simulation library for Altera Modelsim	✓	✓
Documentation: 1) IP Core User Guide	✓	✓

Applications



Download the evaluation version for the core from <http://www.slscore.com/ip-cores/communication/usb-2-0-hub-usb20hub.html>