PONCAN
SEMICONDUCTOR

VN180x PON OLT

1-port XGSPON (10G/10G)/XGPON (10G/2.5G)/GPON (2.5G/1.25G) Combo mode MAC

1-port GPON OLT MAC

OVERVIEW

Poncan Semi's PON OLT MAC VN180x is a highly integrated single-chip, high performance PON OLT SoC with support for XGSPON/XGPON/GPON combo, XGPON/GPON combo and GPON that provides feature rich and cost-effective solutions for FTTH and FTTR applications.

The product offers various SKUs to provide flexible options for customers. It includes a combo interface that supports XGS/XGPON/GPON, a combo interface that supports XGPON/GPON, and a GPON interface. This allows customers to choose the best interface option based on their specific needs and requirements.

VN180x integrates standard PON MACs, Network Switch Engine (NSE), burst mode PON SerDes, SoC subsystem, and NNI Ethernet Port that supports SGMII (1G), HSGMII (2.5G) and 10Gbps XFI, KR and USXGMII interfaces, along with many other common peripheral interfaces.

The NSE (Network Switching Engine) of the OLT SoC facilitates seamless interconnections between various interfaces, including PON OLT Port, 10GE Port, and High-Speed SoC Interfaces. It offers advanced multi-media switching and forwarding capabilities among OLT, 10GbE, and GbE interfaces. This versatile solution supports a range of protocols, including L2/L3/L4 Ethernet and IP/TCP, and provides comprehensive parser, lookup, and classification features. In addition, it offers VLAN support, QoS traffic policing, traffic shaping, and scheduling to optimize network performance and ensure efficient data transfer.

The integrated cascade port allows one OLT MAC to cascade with more OLT MACs expanding to a larger
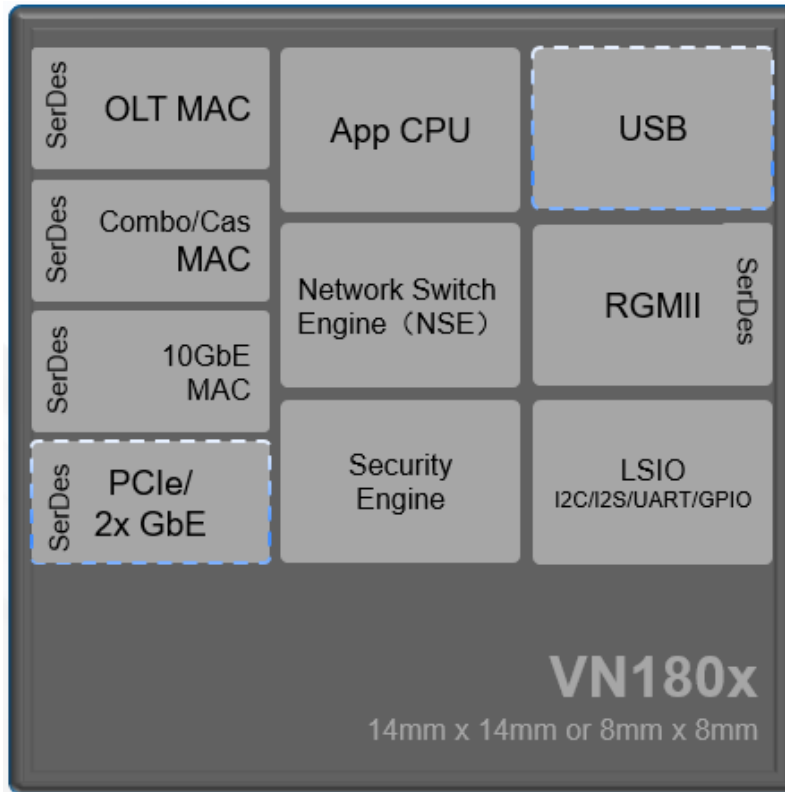
MAIN FEATURES

scale multi-port OLT application such as 4/8/16 PON ports module.

- Support and integrate multi-speed XGSPON/XGPON/GPON OLT MAC

- Integrate two multi-rate burst-mode PON SerDes circuitry enabling glue-less interfaces to PON OLT transceivers

- Integrate 10GE (NNI) SerDes circuitry supporting SGMII (1G), HSGMII (2.5G) and 10Gbps XFI, KR and USXGMII interfaces

- Integrate internal PLL, only need one 25MHz XO clock externally
  (*customer application dependent)

- Support Flexible Upstream Hybrid Bandwidth Scheduler (DBA)

- Support Advanced Network Switch Engine (NSE)

- Support High-Speed Interfaces
  - 10Gb/2.5G/1.25G PON OLT MAC
  - 10GbE XFI/XGMII/USXGMII/SGMII
  - PCIe G3 RC/EP or 2x GbE SFI/SGMII
  - GbE RGMII/RMII

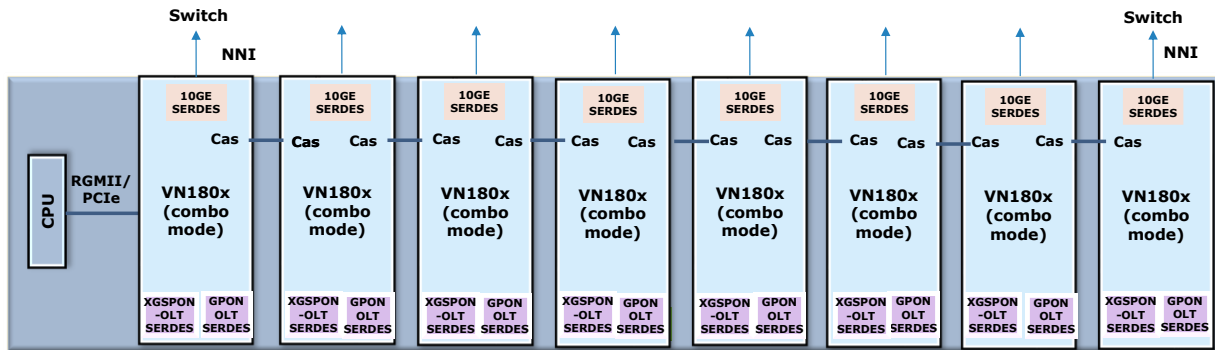- Support Low-Speed Interfaces
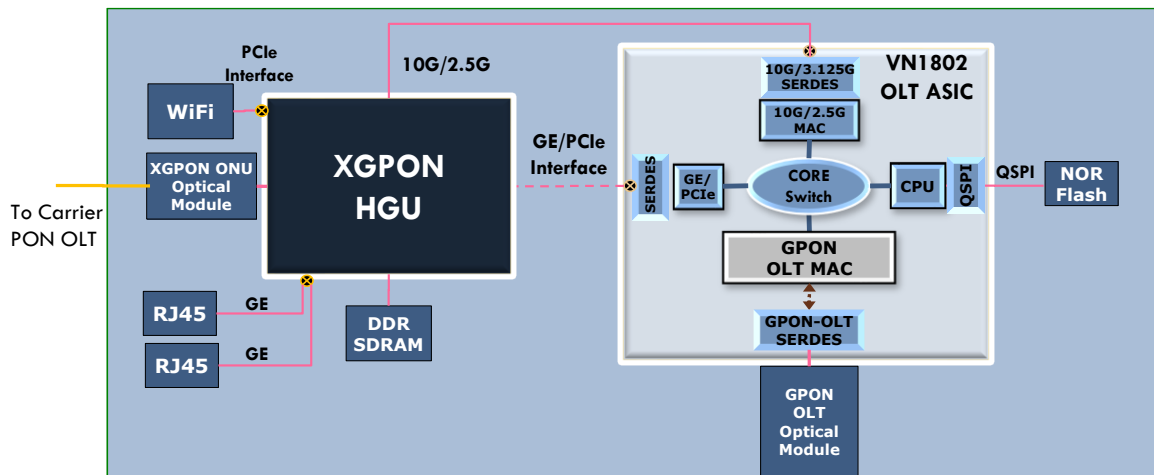 - UART, I2C, I2S, GPIOs, QSPI

BLOCK DIAGRAM

VN180x Block Diagram

APPLICATIONS

- **FTTH application: OLT line card of chassis-based product**

Multiple VN180x SoCs cascaded to form a 2/4/8/16 ports OLT line card

- **FTTR application: Mini-OLT for Main Gateway**

FTTR Main Gateway consists of a standard XG(S)PON HGU and a mini-OLT.

VN1802 is a GPON mini-OLT that connects multiple sub-gateways (ONUs) in a house, supporting high-speed applications such as AR, VR, and 8K video. Unlike FPGA-based OLT solutions, VN1802 is a dedicated ASIC OLT chip with much lower power consumption and support for up to a 1:128 optical splitting ratio.

PONCAN SEMICONDUCTOR

PRODUCT MATRIX

SKU Part number			VN1808-B001	VN1808-B002	VN1803-B001	VN1803-B002	VN1802-B001	VN1802-B002
General Description			XGS/XG/GPON combo OLT	XGS/XG/GPON OLT Stick	FTTH/POL GPON OLT	GPON OLT Stick	FTTR GPON OLT	FTTR GPON OLT
Features		Package size	14mmx14mm	8mmx8mm	14mmx14mm	8mmx8mm	14mmx14mm	8mmx8mm
	PON modes/Ports	GPON	Support		1	1	1	1
		XGPON	Support	1	-	-	-	-
		XGSPON	Support		-	-	-	-
		XGS/XG/GPON combo	1	-	-	-	-	-
		10G Cascade port	1 (N/A with Combo mode)	-	1	-	-	-
		Split Ratio(ONUs)	128	128	128	128	32	32
	Interfaces& capacity	10G/2.5G(XFI/HSGMII)	1	1	1	1	1	1
		PCIe3.0 or 2*SGMII	1	-	1	-	1	-
		RGMII	1	-	1	-	1	-
	Main Functions	L2 Switching	✓	✓	✓	✓	-	-
		L2 Learning	✓	✓	✓	✓	-	-
		Multicasting	✓	✓	✓	✓	✓	✓
		IGMP Proxy	✓	✓	✓	✓	✓	✓
		DBA	✓	✓	✓	✓	✓	✓
		PON Redundancy	✓	-	✓	-	-	-
		multple ports OLT	✓	-	✓	-	-	-
	OAM Functions	OMCI stack for FTTR	-	-	-	-	✓	✓
		OMCI stack for FTTH/POL	✓	✓	✓	✓	-	-
		Sideband Management	✓	-	✓	-	-	-
		Inband Management	✓	✓	✓	✓	✓	✓

ORDER INFORMATION

Part Number	Description	Package Info	Ambient Temperature
VN1808-B001	1-port XGS/XG/GPON OLT MAC support Combo mode	14mm x 14mm, 441-ball FCCSP, 0.65 ball pitch	-40°C – 85°C
VN1808-B002	1-port XGS/XGPON OLT MAC	8mm x 8mm, 225-ball FCCSP, 0.50 ball pitch	-40°C – 85°C
VN1803-B001	1-port GPON OLT MAC (Support >32 ONUs)	14mm x 14mm, 441-ball FCCSP, 0.65 ball pitch	-40°C – 85°C
VN1803-B002	1-port GPON OLT MAC support	8mm x 8mm, 225-ball FCCSP, 0.50 ball pitch	-40°C – 85°C
VN1802-B001	1-port GPON mini-OLT MAC (Support up to 16 or 32 ONUs)	14mm x 14mm, 441-ball FCCSP, 0.65 ball pitch	-40°C – 85°C
VN1802-B002	1-port GPON mini-OLT MAC (Support up to 16 or 32 ONUs)	8mm x 8mm, 225-ball FCCSP, 0.50 ball pitch	-40°C – 85°C