

# Product Brief

## 5VT2510 GPON ONT SoC Family



### Highly Optimized GPON ONT SoC with Dual-Core Process and Soft-DSP for high performance, low cost GPON+VoIP SFU/HGU applications

The 5VT2510 is a low-cost, highly-integrated GPON ONT (Optical Network Terminal) SoC (System-on-Chip) compliant to ITU-T G.984 GPON standards as well as China Telecom E8-C GPON specifications. 5VT2510 SoC is designed to support the GPON SFU (Single Family Unit) and HGU (Home Gateway Unit) devices with small form-factor & Low Power Consumption.

5VT2510 contains a high performance Dual-Core 32Bit Processor running up to 600MHz, NAND/SPI Flash Memory Controller, Multi-port DDR2/3 SDRAM Memory Controller (MDMC), PCI-e Controller, USB2.0 master controller, L2/L3/L4 Gigabit Ethernet Switch with four 10/100/1000Mbps physical layer transceivers, GPON ONT MAC with SerDes/CDR, and numerous other serial and parallel interfaces which collectively provide an optimal SoC solution for GPON SFU and HGU deployments.

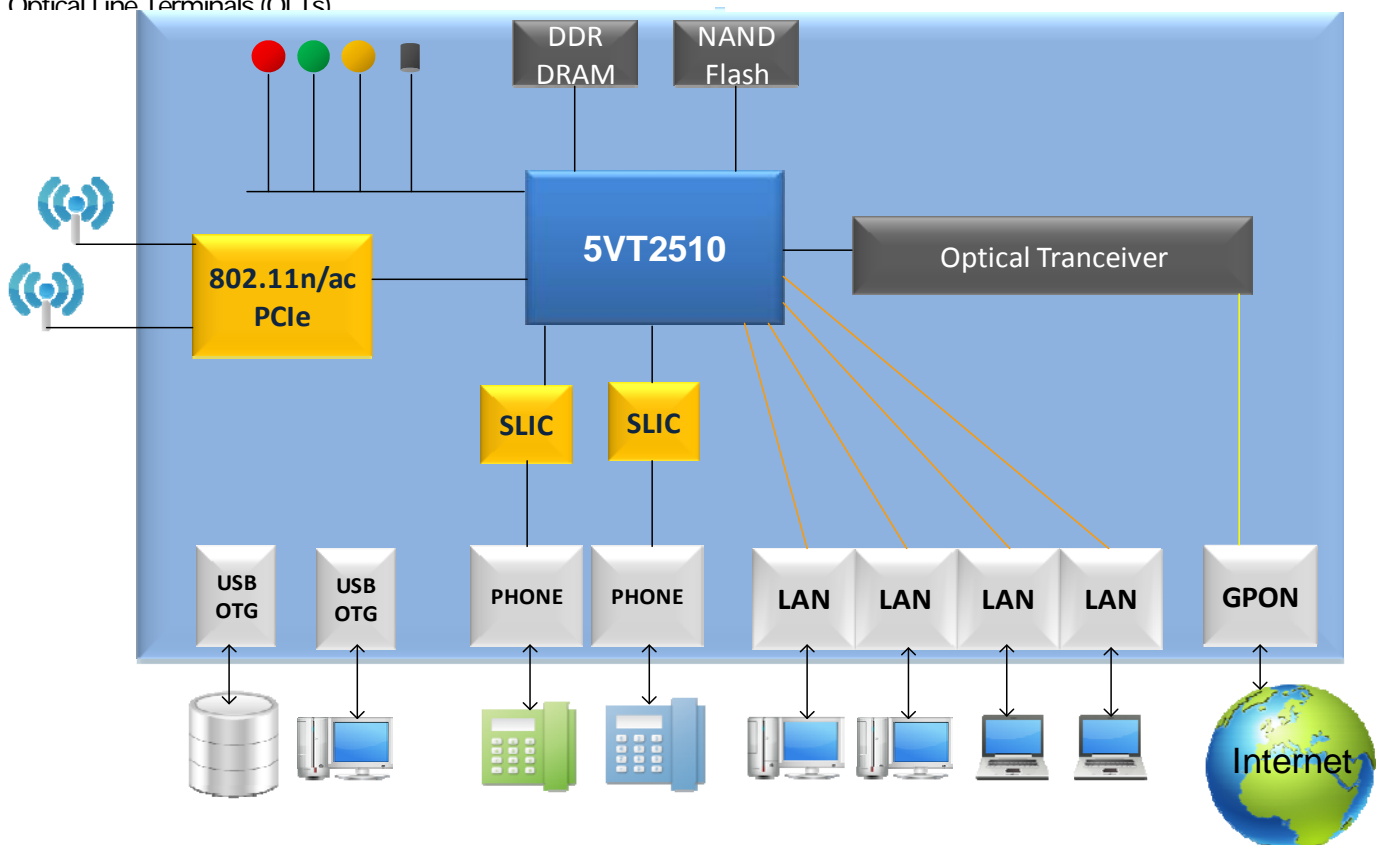
The 5VT2510 supports booting from SPI Flash or NAND Flash. The MDMC provides memory access DDR2/3 800 SDRAM. The L2/L3/L4 GE Switch ensures up to wire-speed performance. 5VT2510 has successfully passed Inter-Operability-Tests (IOTs) with most market-leading GPON Optical Line Terminals (OLTs).

### Quick time to the market with bundled OMCI software package

The OMCI software module for ONT, which is ITU G.984/988 and BBF TR-156 Compliant, enables GPON equipment vendors to create GPON ONT system products rapidly. With the ease of software architecture and advanced feature set, it allows quick implementation of GPON ONT products to easily interoperate with OLT from different vendors.

### Highly Flexible Soft-DSP Technology Solution

The bundled 5VT software package also includes market proven Soft-DSP features offering highly flexible, cost effective & carrier-grade VoIP software development. Connected with the TDM (PCM compatible) interface for connection to external SLICs (SubscriberLine Interface Circuits), 5VT2510 offers extensive support for real-time VoIP voice processing.



## Key Features

### Processor

- ▶ Dual Core 32Bit, 600MHz, MMU
- ▶ 64KB I-Cache and 32KB D-Cache (Primary)
- ▶ 32KB I-Cache and 16KB D-Cache (Secondary)
- ▶ Power-down support
- ▶ EJTAG debug interface

### External Memory Interface

- ▶ NAND Flash: 8-bit, page size: 512B~8kB
- ▶ SPI Serial Flash: up to 62.5MHz
- ▶ DDR2/3 SDRAM: 8/16-bit bus width, with density up to 1Gb

### System Function

- ▶ Boot-up from NAND/SPI Flash memory
- ▶ Single 25MHz Crystal for System Operation
- ▶ 2-layer PCB design

### GPON

- ▶ GPON ONT MAC
  - ITU-T G.984.x/G.988 Compliant
  - CTC E8-C GPON specifications
  - TR-156/167
  - 32 T-CONT, 128 GEM port
  - AES, Key Switch
  - HW dying gasp
- ▶ CDR SerDes
  - Integrated 2.488/1.244Mbps CDR
  - Single-ended and Differential Burst-Enable
  - Support CML TX/RX Interface

### Ethernet & Misc.

- ▶ Switching Capabilities
  - Five Gigabit ethernet switch with four 10/100/1000Mbps PHY
  - 802.1Q VLAN
  - 802.1ad Stacking VLAN
  - 802.1X
  - 802.3ad
  - Layer-2 Learning
  - Spanning Tree Protocol
  - QoS Support
  - ACL rules support
- ▶ L3/L4 hardware NAT/NAPT support
- ▶ One I<sup>2</sup>C, Master, with 7bit address support
- ▶ IPv4/IPv6 dual stack capable
- ▶ TDM (PCM compatible) interface
  - SLIC SPI/ZSI/ISI interface support
  - Up to 4 voice channels
- ▶ Two 16550-compatible UART
- ▶ Two PCI Express interface
- ▶ Two USB 2.0 Master interface
- ▶ Up to 37 GPIO/ 15 GPO share pins support
- ▶ Serial LED support
- ▶ IEEE 1588v2 timing synchronization

### Power Supply Voltages

- ▶ Core : 1.0V
- ▶ I/O : 1.0V, 3.3V
- ▶ CoCv4 compliant
- ▶

### Package

- ▶ LQFP-216 E-Pad: 24x24mm<sup>2</sup>, 0.4mm pitch

### Bundled System Software

- ▶ Operating System
  - 5VT ported Linux/Kernel 2.6
- ▶ Soft-DSP for VOIP
  - G.711 a/u law, G.729 AB, G.723.1, G.726,
  - LEC, Adaptive jitter buffer, VAD
  - Tone generation/detection
  - CID generation/detection
  - 3-way conferencing
  - Fax passthrough, T.38 relay
- ▶ TCP/IP Networking Support
  - MAC Bridging
  - IGMP Snooping V1/V2
  - Static IP
  - PPPoE
  - DHCP Client
  - DNS Client
- ▶ Management Interface
  - OMCI
  - TR-069
  - China Telecom ITMS+

## Selection Guide for 5VT2510 Family

Part Number	32bit Dual-Core Speed	DSP Speed	TDM (PCM)	Temperature Range (°C)	Package
5VT2510	600MHz	Soft-DSP	4 channels	0 ~ 70	LQFP-216 E-Pad

## Development Tools

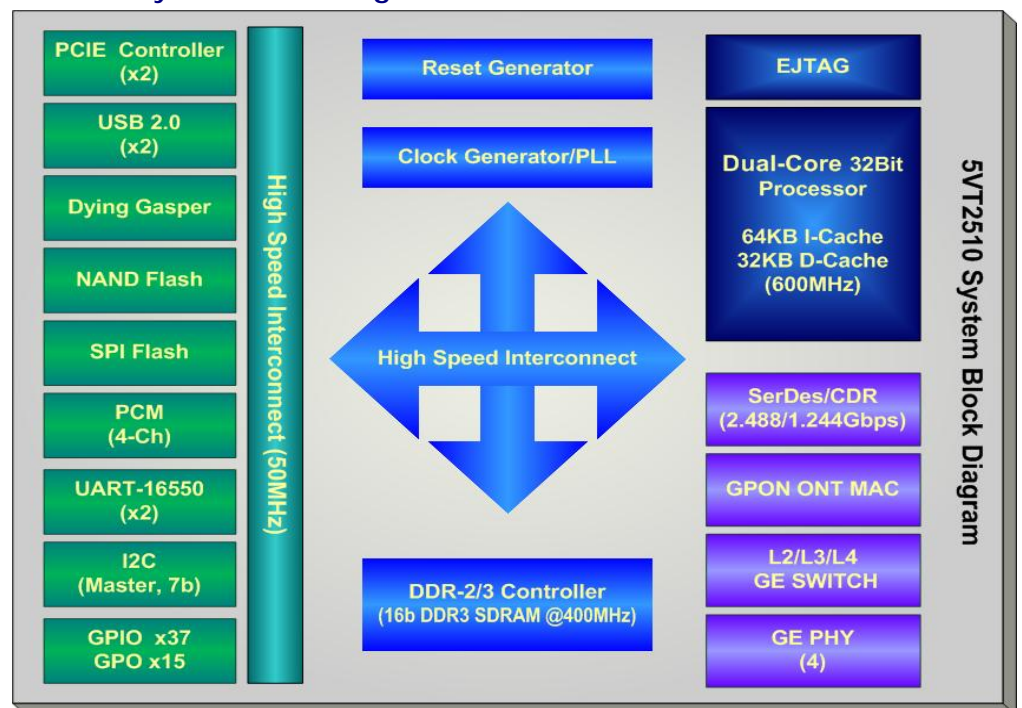
Available to partners: Evaluation Kit composed of the "Evaluation Board" with options of 1-port GE LAN, 4-port GE LANs, 4-port FE LAN, FXS and FXO modules for various application development scenarios.

The SDK and Software tool chain are shipped with the Evaluation Kit to help users with the development efforts.

For most recent updates on Evaluation Kits and all available options, please visit

<http://www.5vtechnologies.com>

## 5VT2510 System Block Diagram



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