5VTechnologies

Product Brief
5VT1310 VoIP SoC

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5VT1310
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Optimal SoC powered by ARM926EJ-S with DSP Extension integrated that enables VoIP flexible to most embedded applications

The 5V Technologies (5VT) 5VT1310 SoC products combine an ARM926EJS processor and the market-leading SoftDSP technology together as an optimal SoC solution to broadband networking as well as VoIP application. Besides to the original optimization for addressing VoIP applications, the powerful and cost effective 5VT1310 SoC is also utilized flexibly for a myriad of CPE networking applications such as Wi-Fi, WiMAX, PLC, Fiber, P2P and other network processor applications.

Indeed, the 5VT1310 is not only widely deployed in a full-range of VoIP applications, such as IP Phone and 1/2/4-port VoIP TA at proved voice quality with many key Telcos and ISPs operated in Asia, Europe and North/South American market space, but also been utilized in mass volume with IEEE 802.11n WLAN AP Routers, high-end VoIP-WLAN Router, WiMAX IAD and home router/gateway with 3.5G/PLC/Fiber connections.

Powerful SoC Solution for most Embedded

The ARM926EJS processor, operating at 300MHz, provides the embedded devices with powerful processing power that required for P2P, networking and SoftDSP support. The dual 10/100 Ethernet MACs go connecting with external PHY or switch for both WAN and multiple-LAN support. The PCI 2.2 Interface could support up to 2 master devices, which are normally equipped with 11b/g/n modules as Wi-Fi AP, WiMAX modules as IAD, PLC module as IAD, 3.5G module as IAD and USB module for versatile peripheral device interface and storage extension. A PCM interface provided support for up to 4 voice ports at either FXS or FXO combination.

Flexible SoftDSP for VoIP Applications

SoftDSP has been proven as the most flexible and cost-effective system framework for real-time voice processing. By further integrating with 5VT SIP turn-key option support, the 5VT1310 SoC provides best voice quality for not only support of legacy VoIP standard but also for advanced features in full-Range of VoIP applications, such as IP-Phone, 1/2/4-port TA and/or VoIP Router deployed with WiMAX, WLAN, 3.5G, PLC and Fiber connections.

IP Phone
P2P VoIP Application
DECT IP-Phone
P2P Home Box
VoIP WLAN Router
3.5G Mobile 802.11n Router
Advanced VoIP TA
WiMAX/Fiber IAD

Key Benefits and Applications

- A powerful SoC powered by ARM926EJS processor provides sufficient computing resources required by most broadband networking applications and DSP extension for VoIP support option.

- A field-proven SoftDSP technology combined with a near turn-key SIP solution option that provides a wide-range of codec support at high voice quality to most VoIP applications for Telco and P2P.

- The PCI 2.2 Interface could support up to 2 master devices, which are normally equipped with 11b/g/n modules as Wi-Fi AP, WiMAX modules as IAD, PLC module as IAD, 3.5G module as IAD and USB module for versatile peripheral device interface and storage extension.

- A cost-effective SoC solution has been deployed successfully as an idea CPU-replacement alternative to many current CPE devices.

Key Features

CPU Platform
- 300MHz/330MIPS, 32-bit ARM926EJ-S
- 16KB I-Cache and 16KB D-Cache
- DSP Extensions
- 32-bit Memory Management Unit (MMU)

External Memory Interface
- NOR Flash Controller, 8-bit/up to 16MB
- SDRAM: addressing up to 32MB
  - 16/32-bit/150MHz

Communication & Connectivity
- PCI 2.2 32-bit Inerface
  - Speed: 33MHz
  - Support PCI, miniPCI peripherals
  - Support up to 2 Master devices
- Voice Interface
  - Support up to 4 ports FXO or FXS or voice codec by by PCM bus
  - SPI interface
- Two Ethernet MAC, 10/100Mbps
  - MII/RMII interface
  - Connect with 10/100Mbps PHY , or 5-Port Ethernet Switch
- One UART interface
- GPIO Interface, up to 12 pins
  - Programmable as input or output
  - Support for keypad, LED, interrupt

System Function
- DMA Controller
- Watchdog timer, 32-bit
- Four 32-bit APB timers
- RTC, 32-bit
- 3 External Interrupt
- JTAG interface with ARM debug access

Operating Voltage
- Core Voltage: 1.27V
- I/O Voltage: 3.3V

System, Networking & Management
- Operating System
  - MontaVista Linux 2.4.20
  - Linux 2.6.17
- TCP/IP Networking Support
  - Routing: NAT, MAC Bridging, IGMP Proxy, IGMP Snooping
  - IP Assignment: Static, PPPoE, DHCP(Client/Server), IP Alias
  - VPN Pass-through: FTP, PPTP, IPSec, L2TP, SIP
  - NAT Traversal: STUN, uPnP
  - DNS: Client/Relay/SRV, DDNS
  - Firewall: MAC/IP/URL Filter, Virtual Server, Virtual DMZ, Port Trigger, DOS (Denial of Service)
  - QoS: DiffServ/TOS, Priority Scheduling, 802.1Q
- Management Interface
  - Web, CLI, SNMP v1/v2, MIB I/II, System Log, Auto-provision
  - Telnet, TFTP, HTTP, HTTPs, SNTP

VoIP Support
- Signaling Protocol
  - SIP 2.0 (RFC3216)
- Codec Support
  - G.711 a/μ Law with Appendix I & II
  - G.723.1 (5.3, 6.3 Kbps)
  - G.726 (16,24,32,40 Kbps)
  - G.729AB
  - G.722
  - iLBC
  - AMR
- Echo Cancellation
  - G.167 AEC
  - G.168 –2000 LEC
- FAX Relay
  - V.21, V.27ter, V.29, V.17
  - T.38, G.711Fax Pass Through
- Tone Generator
  - CPT Generation, CID CAS Tones, DTMF
- Caller ID
  - DTMF CID generation/detection
  - Bellcore CID type I/II gen./detection
  - ETSI CID type I/II gen./detection
- Tone Detector
  - DTMF, V.21/V.25, CNG
- Voice Enhancement
  - Lost Packet Concealment
  - Adaptive Jitter Buffer
  - VAD (Voice Activity Detection)
  - CNG (Comfort Noise Generation)
  - SID Support
  - Noise Level Matching
  - AGC (Automatic Gain Control)
  - LGC (Linear Gain Control)

Selection Guide for 5VT1310

Part Number	ARM926 Speed	SoftDSP Option	10/100Mbps Ethernet MAC	PCI 2.2 Master	PCM/ACI 8/16-bit	Temperature Range (℃)	Package
5VT1310	300MHz	yes	2	1	4 channels	0 to +70	PBGA-256

Development Tools

5VT makes an evaluation board available for interested parties who wanting to gain development access to 5VT1310 Soc processor.
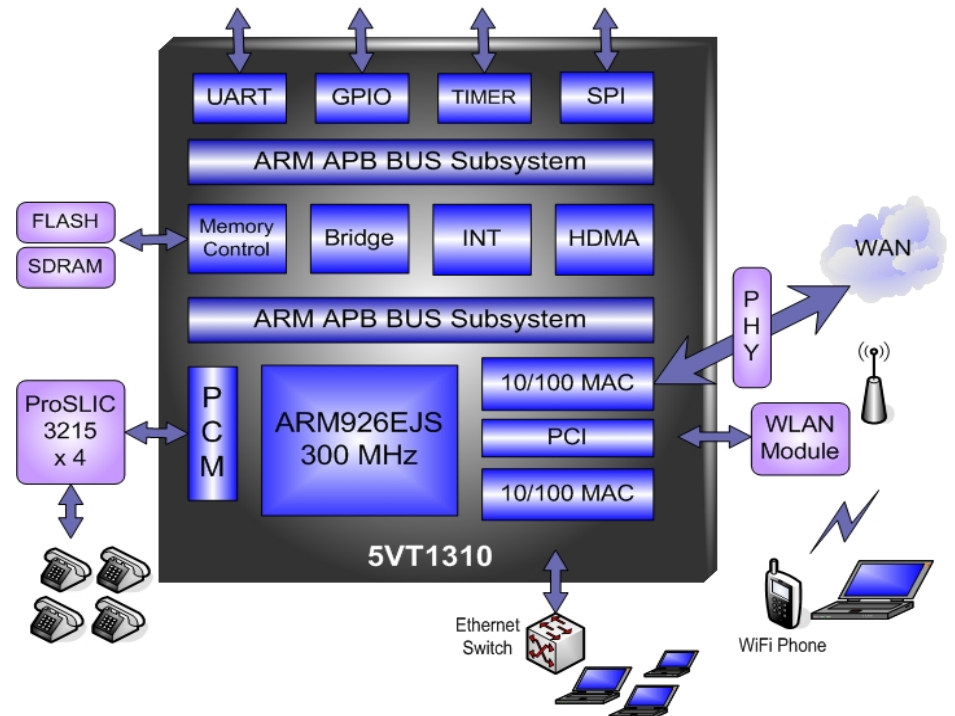
There are two versions of the Evaluation board available. One is for the general controller application of the 5VT chip while the other is for developing VoIP related applications. The VoIP version comes options with four daughter cards for mixing either FXO or FXS, which is configurable upon ordering.

SDK and Software tool-chains are shipped with the boards to help users with the development.

For the most current listings and options, please visit

http://www.5vtechnologies.com

5VT1310 System Block Diagram