Product Bulletin

TNETV2502 IP Phone Solution

TI's TNETV2502 is a new turnkey IP phone solution enabling fast time-to-market in the low-end market segment. Typically, IP phones in this segment offer simple features such as either one or two Ethernet ports, a single codec channel and a low cost bill of materials (BOM) of less than $30. With TI's introduction of the TNETV2502, manufacturers will be able to offer a full portfolio of products, including those targeted at low-end enterprise, small and medium business (SMB) or residential markets.

Along with the TNETV2502 solution, TI and Adaptive Digital Technologies (Adaptive Digital), a leading provider of embedded software for TI's digital signal processors (DSPs), also offer turnkey software, as well as a reference design and a software verification board. The base software offers everything needed for a basic IP phone with simple features. Base software cost is bundled with the device and TI provides broad indemnification for customers purchasing the TNETV2502 solution.

TNETV2502 IP Phone Platform

Based on TI's TMS320C55x DSP technology, the 300MHz TNETV2502 delivers high performance at a low price. With a wide variety of peripherals, the TNETV2502 is able to seamlessly interface with other system devices, reducing BOM costs.

Key Features of the TNETV2502 include:

- TMS320C55x™ DSP core
- Three McBSPs
- I^2C
- UART
- Four timers: two 64-bit general purpose timers, one watchdog, one 64-bit DSP/BIOS™ counter
- Eight general-purpose IOs
- 16-KB I-cache
- 64-KB RAM
- Glueless external memory interface to SRAM and SDRAM
- 176 LQFP package

Key Features

- Single-processor, DSP-core platform with base software to meet the needs of low-end IP phone market
- Turnkey IP phone solution reduces time-to-market by offering:
  - Reference design with schematics and bill of materials (BOM)
  - Proven TI C55x™ DSP architecture
  - Turnkey software solution
- No external RAM needed for base software
- Enables BOM less than $30
- TI provides broad indemnification with purchase of TNETV2502 solution

IP Phone Software

Adaptive Digital's low end IP phone software is a turnkey solution allowing manufacturers to quickly bring new IP phones to market. The software includes voice processing, call control, call management, and networking features.

- The TNETV2502 voice processing software features single voice channel with G.711 and G.729AB codecs
  - Conferencing is handled by the network
  - Additional channels or codecs possible via customization through Adaptive Digital
- RTP packetization with configurable periods of 10, 20, and 30 milliseconds
- Handset support with an Acoustic Echo Suppressor (AES), which meets requirements specified in TIA/EIA-810-A
- Group listen speaker mode with volume control
- RFC 2833 DTMF relay support
- Configurable 100-millisecond jitter buffer

- Tone generation
  - DTMF or fixed tone for echoing key presses on keypad
  - Allows for configurable sequence of tones to be generated toward the phone or network or both
- Packet loss concealment compliant with G.711 appendix I
- Comfort noise generation
- Voice activity detection
- Gain control
- Support for:
  - Single Ethernet interface
  - 3x4 keypad
  - Hook-switch and other control switches
  - LEDs
  - 2x24 LCD

TNETV2502 Call Control and Management Software Features

- RFC 3261 and 3550 SIP signaling and RTP media stream protocols
- SIP authentication, invite, ring, ack, ok, bye, and termination messages
- Supports all supplementary services implemented in the network
- Configurable, unique, SIP username and password (credentials) protected in non-volatile memory
- MD5 algorithm digest authentication
- SIP user agent interoperability with proxy servers for outgoing calls, incoming calls, call waiting, conferencing, call forwarding, and call transfer
- Configurable digit map for dialing support

TNETV2502 Networking Software Features

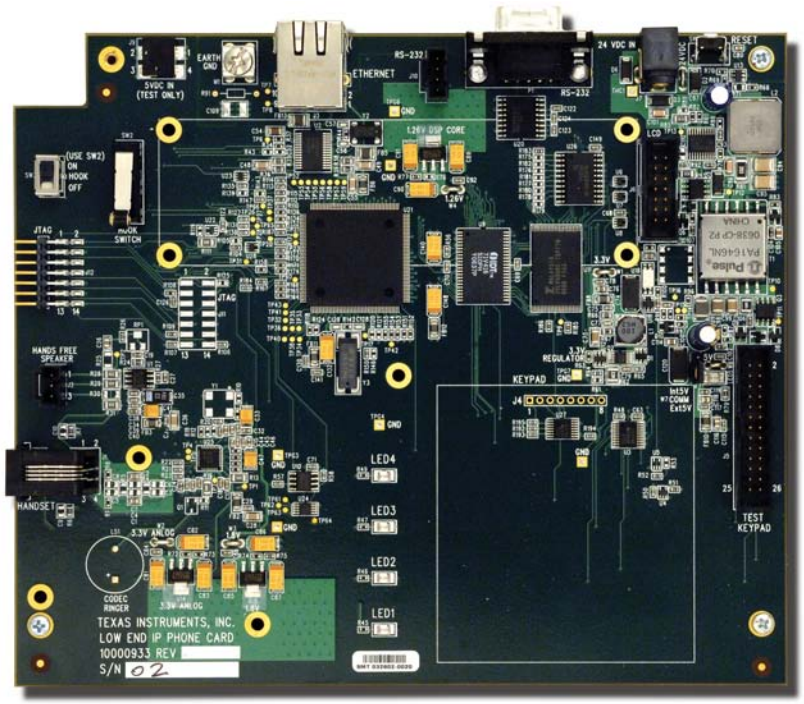
- DHCP and DNS clients, IPv4/UDP/TCP protocols supported
- STUN for NAT traversal behind a firewall for packet routing

TNETV2502 Reference Design and Software Verification Board

TI offers an IP phone reference design to shorten manufacturers' time to market. The reference design includes complete schematics and BOM, which dramatically decreases design costs and time. The software verification board, created from the reference design, can be leveraged to quickly prototype a low-end phone design, and is available for purchase. The board includes a keypad, enclosure, handset, speaker, wall and Power over Ethernet (PoE) power supplies, and LCD.

For More Information

To find out more about how TI's TNETV2502 IP phone solution can help speed your design to market, please contact your TI sales representative or visit **www.ti.com/voip**.



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A010307

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Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265
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