

## Product Bulletin

# Client-Side Telephony Solution

Customers developing applications such as remote data collection, telephony co-processing and voice-band processing have a powerful new solution with the TMS320C54CST DSP. With 14 of the industry's most demanded software algorithms on-chip, designers have a greatly simplified, cost-effective method of speeding differentiated Public Switched Telephone Network (PSTN)-connected products to market.

The TMS320C54CST (C54CST) DSP, based on the power-efficient TMS320C5000™ DSP platform, significantly minimizes design and investment risk by integrating the hardware and software needed to create a wide range of applications. The solution lowers system cost by combining an open DSP/BIOS™ real-time kernel software framework with a complete telephony algorithm library, on-chip memory and peripherals. The solution also lowers start-up and development costs by eliminating up-front license fees and non-recurring engineering (NRE) fees.

In addition, the high level of integration with all peripherals, memory and algorithms on chip delivers increased cost and design-time savings by simplifying design through the elimination of many external components.

### Key Features

- On-chip telephony library includes 14 of the industry's most popular algorithms and no up-front license fees
- Highly integrated DSP solution for PSTN-connected applications
- Ultra-low 50 mW power consumption
- On-chip software complies with TI's TMS320™ DSP Algorithm Standard

### Highly Integrated, Low Power Solution

Through its significant levels of integration, the C54CST DSP delivers major system size and power savings. The chip combines software; on-chip digital data access arrangement (DAA) for modem applications; 40K words SRAM; 128K words ROM; hardware UART; two Multi-channel Buffered Serial Ports (McBSPs);

two timers and a host processor interface. As a result of this integration and the low-power C5000™ DSP architecture, the C54CST DSP operates at less than 50 mW power consumption.

### Get Started Today

For designers who want to explore the full functionality of the C54CST DSP, TI offers the Client-Side Telephony Developer's Kit. The kit includes an evaluation board with

## CST eXpressDSP™-Compliant Algorithm Summary

### Data Algorithms

**V.32bis/V.32:** 14.4-/9.6-kbps modem

**V.22bis/V.22:** 2.4-/1.2-kbps modem

**V.42bis:** data compression

**V.42:** data error correction

### Telephony Algorithms

**DTMF (Dual-Tone Multi-Frequency) generation:** generates touch tones

**DTMF (Dual-Tone Multi-Frequency) detection:** detects touch tones

**CPTD (Call Progress Tone Detect):** monitors progress on line (i.e. busy tone, dial tone, etc.)

**CID Type 1/Type 2:** Caller ID/ Caller ID during call waiting

### Voice Algorithms

**VAD (Voice Activity Detection):** detects presence of speech and adjusts level of noise in signal

**AGC (Automatic Gain Control):** amplifies voice signal; works in conjunction with VAD

**CNG (Comfort Noise Generator):** generates small amount of noise to indicate "live" line

**G.726:** voice compression from 64 kbps to selectable 16, 24, 32, or 40 kbps

**G.711:** converts  $\mu$ -law/A-law PCM signal to linear PCM (or vice versa)

**G.165/G.168:** line echo cancellation (cancels echo tail length of 16, 32 or 64 ms)

## CST Developer's Kit



the TMS320C54CST DSP and 14 on-chip algorithms; external Flash, SRAM, JTAG connector and daughter card connection; RS-232 cable, RJ-11 phone line and power supply. A TI reference design features all schematic and layout guidelines, the bill of materials list and all documentation including a CD-ROM with board manual, quick start guide and a C54CST DSP overview.

TI has worked closely with Third Party Network member SPIRIT to incorporate 14 eXpressDSP™-compliant algorithms into the developer's kit. [www.spiritdsp.com/cst](http://www.spiritdsp.com/cst)  
[CSTsupport@spiritDSP.com](mailto:CSTsupport@spiritDSP.com)



## For More Information

To learn more about the C54CST DSP or the Client-Side Telephony Developer's Kit, please contact your local TI representative. Or visit [www.ti.com/clientsidetelephony](http://www.ti.com/clientsidetelephony)

## TI Worldwide Technical Support

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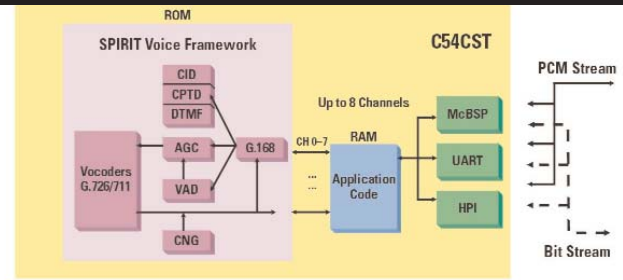
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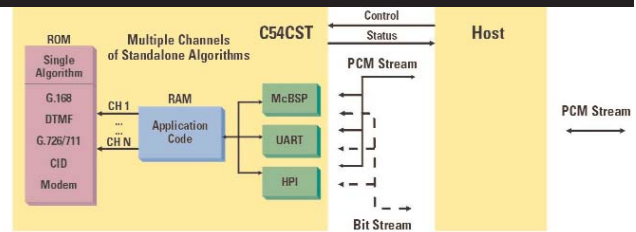
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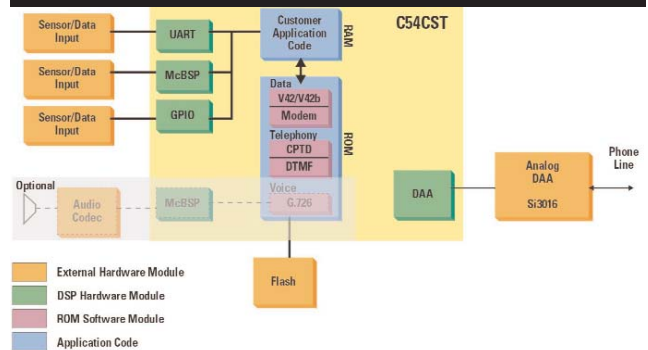
## Voiceband Processor Block Diagram



## Telephony Co-Processor Block Diagram



## Remote Data Collection Block Diagram



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