

TMS320VC5504 and TMS320VC5505 DSPs

Best-in-Class Combination of Standby and Active Power



Maximize battery life with TMS320C5504/05 DSPs

Combining industry-leading, cutting-edge 90-nm process technology with low-leakage transistor technology, the new TMS320VC5505 and TMS320VC5504 DSPs offer the industry's lowest standby power consumption (<150 μ W) at the industry's lowest active power consumption (<0.15 mW/MHz) – maximizing energy efficiency and extending battery life for portable devices. These pin-to-pin compatible processors provide a high level of integration reducing overall system cost and enabling extensive end product differentiation. These devices also offer feature and cost flexibility to support different application requirements including portable voice/audio (i.e., voice recorders, noise-cancellation headphones, musical instruments), portable medical (i.e., electrocardiogram, pulse oximeter, digital

stethoscope and multi-parameter patient monitors), biometrics, smart sensors, software-defined radios and telephony.

The improved power management available on these devices combined with multiple additional power-down states, dynamic frequency, voltage scaling, clock gating, the freedom to turn on and off individual peripherals and other power-saving architectural features found on C5505 and C5504 DSPs allow for maximum battery life of several applications. Power consumption as low as 9 mW[†] at 60 MHz on C5504/05 processors greatly extends the portability of such products and allows designers to add more features without decreasing battery life. On-board FFT coprocessors further provide higher energy efficiency for FFT-intensive algorithms.

Reduce system power via high peripheral integration

C5505 and C5504 DSPs offer a variety of peripherals and interfaces. Designers can save significant system cost through peripheral integration such as USB 2.0 slave (high speed), SAR ADC, on-chip analog LDO, LCD controllers and several serial interfaces negating the need for external processors and logic. On-chip memory scalability options of up to 320 KB reduce the need for external memory in several applications, providing the most cost-efficient way to boost performance.

The 10×10-mm, 0.65-mm pitch BGA package provides designers with a solution for

Key Features:

- Industry's best combination of standby (<0.15 mW) and active power (<0.15 mW/MHz)
- Large on-chip memory and optimized FFT coprocessor for faster, cost- and energy-efficient performance
- Extensive connectivity options and extensive peripheral support
- One-fourth the power consumption of existing TMS320C55x™ DSPs

more ergonomic designs and applications that have space constraints.

The C5505 and C5504 devices have full code and tool compatibility with existing TMS320C55x™ products to make it easy for designers to port their designs to the new devices. The low-power, 16-bit fixed-point TMS320C55x DSP core, flat memory architecture, FFT acceleration, DMA subsystem and dynamic power management functionality provide designers with a flexible, scalable platform to add extended battery life to any application. Devices start as low as U.S. \$5.60 in 1 KU quantities.

[†] Power-use scenario – active: 1.3-V core (100 MHz) running at 75% DMAC + 25% ADD at 25°C

DSP

TMS320C550x



TEXAS
INSTRUMENTS

Technical details

TMS320VC5504 DSP:

- Highly-integrated peripherals reduce system cost and enable more user-friendly portable features:
 - High-speed USB 2.0
 - I²S
 - UART
 - SPI
 - MMC/SD
 - GPIOs
- Up to 256 KB of on-chip memory saves both power and system cost by reducing the need for external memory

TMS320VC5505 DSP:

- C5505 DSP builds on the C5504 DSP with an additional 64 KB on-chip memory (320 KB total)
- Up to 1024-point programmable FFT hardware accelerator
- Integrated LCD display controller and 10-bit 4-channel SAR ADC – reduce system cost and enable more user-interactive portable features
- Scalable and pin-to-pin compatible with the C5504 DSP allowing for the ability to design an entire product portfolio using the same hardware and software platform

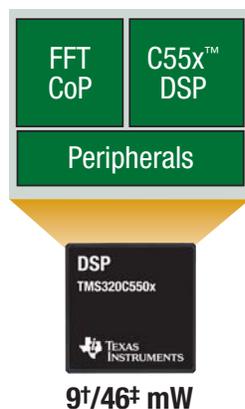
Applications

- Portable audio recording
- Wireless microphone
- Noise cancellation headphones
- Medical monitoring
- Biometrics
- Smart sensors

Get started quickly

To get started quickly, designers can purchase C5505 Evaluation Module (C5505 EVM) with built-in emulation for less than U.S. \$395. All EVMs include full board support packages and the associated debugging environment. C5504/05 DSPs are supported by Code Composer Studio™ (CCStudio) integrated development environment.

For more information on TMS320C5504/05 DSPs, visit www.ti.com/c550x.



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‡ Power-use scenario – active: 1.3-V core (100 MHz) running at 75% DMAC + 25% ADD at 25°C