

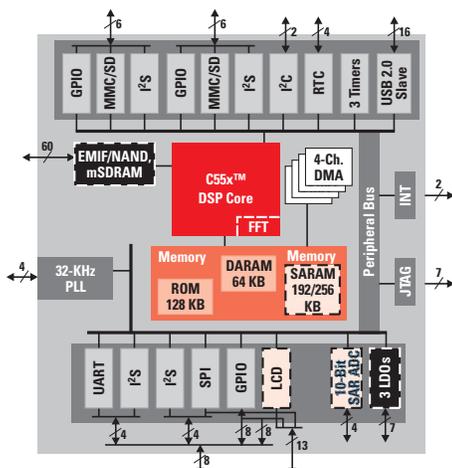
# TMS320C5505/04/15/14 DSPs

## Industry's lowest power 16-bit DSPs



### Maximize battery life with TMS320C5505/04/15/14 DSPs

Combining industry-leading, cutting-edge 90-nm process technology with low-leakage transistor technology, the four new TMS320C5505/04/15/14 DSPs offer the industry's lowest standby power consumption (<0.15 mW) at the industry's lowest active power consumption (<0.15 mW/MHz) for performance up to 120 MHz – maximizing energy efficiency and extending battery life for portable devices. TMS320C5505 and TMS320C5504 DSPs are also available in 150 MHz extending the industry's lowest power leadership to higher performance. 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-



▲ C5505/04/15/14 block diagram and deltas

### C5505/04/15/14 DSP Feature Comparison

Device	Speed	Software Compatibility	Integrated Peripherals	On-Chip Memory	Hardware Accelerator (HWA)	Integrated Power Management
C5505A	100/120/150 MHz	C55x DSP	LCD I/F 4-ch, 10-bit SAR ADC	320 KB	Up to 1024-pt programmable FFT HWA	1 ANA LDO extensive power mgmt.
C5504A	100/120/150 MHz	C55x™ DSP		256 KB		1 ANA LDO extensive power mgmt.
C5515A	100/120 MHz	C55x DSP	LCD I/F 4-ch, 10-bit SAR ADC	320 KB	Up to 1024-pt programmable FFT HWA	3 LDOs extensive power mgmt.
C5514A	100/120 MHz	C55x DSP		256 KB		3 LDOs extensive power mgmt.



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

The improved power management available on these devices combined with multiple power-down states, dynamic frequency, voltage scaling, clock gating, the freedom to turn on and off individual peripherals and other power-saving architectural features allow for maximum battery life of several applications. Power consumption as low as 9 mW<sup>‡</sup> at 60 MHz on C5505/04/15/14 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. There are three on-chip LDOs (Low Drop Out Regulators) in C5515/14 processors that reduce system-level BOM cost and simplify the power-management circuitry.

### Reduce system power via high peripheral integration

These new 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 with PHY),

SAR ADC, three on-chip LDOs, LCD controllers and several serial interfaces negating the need for external processors and logic. On-chip

#### Key Features:

- Industry's lowest standby (<0.15 mW) and active power (<0.15 mW/MHz) DSP
- Dynamic voltage and frequency scaling for maximum power savings
- Large on-chip memory and optimized FFT coprocessor for faster, cost-efficient and energy-efficient performance
- High-speed USB 2.0 interface with PHY
- On-chip LDOs for system cost reduction and system power design simplification
- Extensive connectivity options and extensive peripheral support
- One-fourth the power consumption of previous-generation TMS320C55x™ DSPs

<sup>‡</sup> Power-use scenario – active: 1.05-V core (60 MHz) running at 75% DMAC + 25% ADD at 25°C

memory options of up to 320 KB reduce the need for external memory in several applications, providing the most cost-efficient way to boost performance and also saving system power.

The 10x10-mm, 0.65-mm pitch BGA package provides designers with a solution for more ergonomic designs and applications that have space constraints.

The C5505/04/15/14 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. \$4.95 in 1 KU quantities.

For more information on TMS320C5505/04/15/14 DSPs, visit [www.ti.com/c5000wiki](http://www.ti.com/c5000wiki).

## Get started quickly



▲ C5515 EVM

To get started quickly, designers can purchase the C5515 Evaluation Module (C5515 EVM) with built-in emulation for U.S. \$395. Get

more information at [www.ti.com/tmdxevm5515](http://www.ti.com/tmdxevm5515).

There are also two low-cost eZdsp™ USB stick development tools with built-in XDS100 emulation available for U.S. \$49 and \$79. All EVMs include full board support packages



▲ C5505 eZdsp

and the associated debugging environment. C5505/04/15/14 DSPs are supported by

Code Composer Studio™ (CCStudio) integrated development environment. Additional information can be



▲ C5515 eZdsp

found at [www.ti.com/tmdx5515ezdsp](http://www.ti.com/tmdx5515ezdsp).

For customers interested in specific fingerprint biometric applications, there's an FDK (Fingerprint Development Kit) at [www.ti.com/fdk](http://www.ti.com/fdk) that can help reduce time to market significantly.

Those interested in portable medical applications such as electrocardiogram, pulse oximeter or digital stethoscope, can benefit from the Medical Development Kits. Visit [www.ti.com/po](http://www.ti.com/po), [www.ti.com/ds](http://www.ti.com/ds) and [www.ti.com/ecg](http://www.ti.com/ecg) for additional information.

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