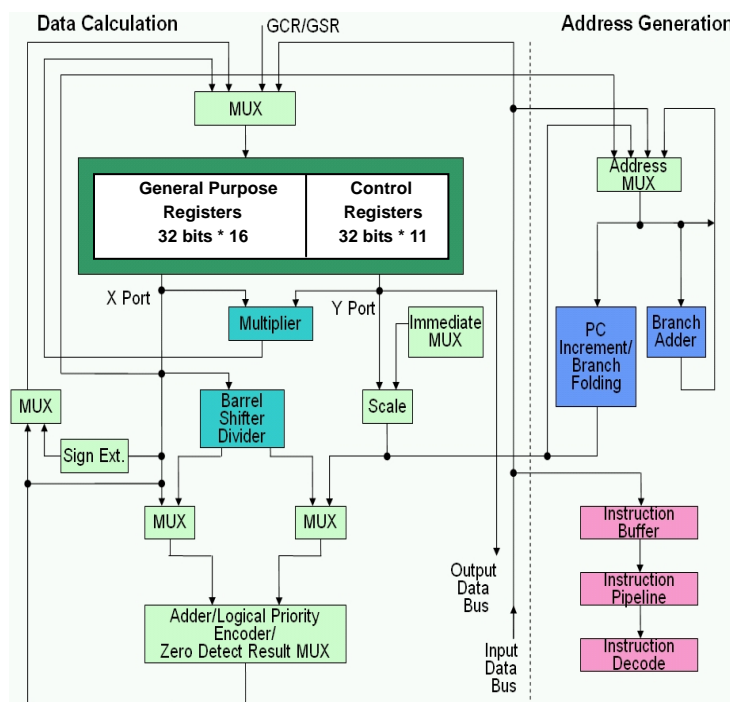


CS327D 32-Bit Secure RISC Processor

Data Sheet

Overview

The CS327D is a member of the C*Core™ 32-bit RISC core family, designed specifically for secure System on Chip (SoC) applications, which combine China's Guomiban (国密办) software, manufacturer's secure boot-code and customer/user's Operating System (O/S) and application software. In addition to providing most of the C*Core/C310 features, the CS327D incorporates advanced techniques to enable secure functionality, including a dedicated memory protection unit (MPU) integrated with the core. The MPU module provides security features to the CS327D core, which include powerful access protection modes. It enhances protection against unauthorized access to sensitive data by providing three fixed and six programmable memory regions. The CS327D provides three distinct levels of privilege, each with different access permissions.



Feature Summary

- ◆ Low power RISC core
- ◆ 32-bit load/store architecture
- ◆ Highly optimized 4-stage pipeline
- ◆ Single-cycle 32x16 multiplier
- ◆ Fixed-length 16-bit instructions
 - Mostly single-cycle execution
 - Two-cycle branch execution
- ◆ 16 32-bit general purpose registers
- ◆ 11 32-bit control registers
- ◆ C*Bus MLB bus architecture
 - Support byte/halfword/word access
 - Optional AMBA wrapper
- ◆ Debug support via JTAG-based OnCE™ design
- ◆ Fast interrupt support
 - Two sets of shadow registers
 - Vectored/autovectored interrupts
 - 128 interrupt/exception vectors
- ◆ Powerful security features
 - Integrated Memory Protection Unit (MPU)
 - Programmable access protection
 - Nine memory/access regions
 - Third “Hypervisor” privilege level
- ◆ Scrambled and optimized layout
- ◆ Strong protection against software attacks

Application Examples

- ◆ Smart Cards
- ◆ Banking
- ◆ Security Keys
- ◆ SIM Cards

Performance examples

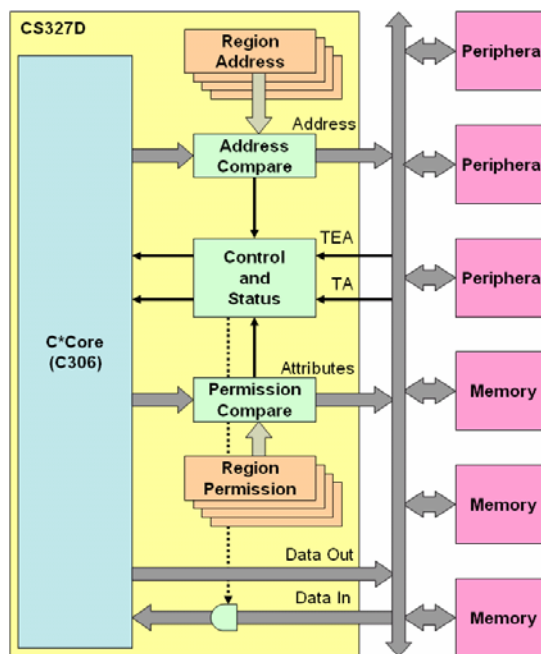
Core	Technology	Speed (<i>wcs</i>)	Area	Power (<i>typ</i>)	Note
CS327D	0.13μ	133MHz	0.25mm ²	0.08mW/MHz	(area optimized)
CS327D	0.13μ	166MHz	0.28mm ²	0.10mW/MHz	(speed optimized)

C*Core CPU cores are normally delivered as a square-shape hard-macro using 5-metal layers (50% of the top metal is available for on-chip routing). Each CPU is available in a range of technologies (e.g. Hejian, HHNEC, SMIC, TSMC), with optimizations for speed or area. Other implementations (layers, shape, frequency, features, etc) are available on request, generally delivered within two to three weeks.

Availability

- ◆ Q1, 2009

The CS327D is available in all major process technologies (e.g. SMIC, TSMC, 0.25μ, 0.18μ, 0.13μ, 0.09μ, etc) and can be designed on request to meet specific customer requirements (area, shape, speed, power, etc).



To obtain more information about the CS327D core or other C*Core[™] products and services, please contact C*Core Technology Co., Ltd. by phone: 0512-68091372, email: support@china-core.com or web: <http://www.china-core.com>.

C*Core[™] and OnCE[™] are trade marks of C*Core Technology Co., Ltd.