



StealthMem

Advanced Memory Encryption IP With Comprehensive Security

Comprehensive security for your entire memory ecosystem through high-performance encryption and authentication. Built on industry-leading StealthAES technology with AXI bus mastering and hardware-based key management.

DDR/Flash/NVMe

Memory Protection

1B+

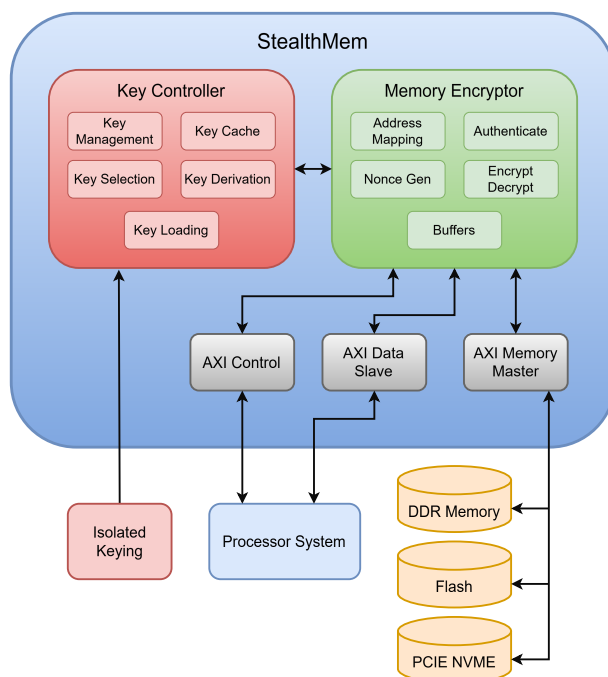
Trace SCA Resistance

Multi-Region

Security Architecture

Key Features

- **Comprehensive Memory Protection**
Real-time encryption for RAM, flash, NVMe
- **Verified Side-Channel Resistance**
1B+ operations tested with TVLA
- **AXI Bus Mastering**
Direct memory access with low latency
- **Hardware Key Management**
Secure key vault with access controls
- **Authenticated Encryption**
AES-GCM prevents tampering attacks
- **Scalable Performance**
Multiple configurations for area/speed
- **Defense-Grade Security**
Proven in mission-critical applications
- **FPGA and ASIC Ready**
Complete RTL or encrypted netlist



Applications

Secure Boot & Firmware

- Boot protection
- Firmware integrity
- Encrypted execution
- Anti-tampering

AI/ML & Edge

- Model protection
- Secure inference
- Training data security
- Edge device protection

Defense Systems

- Tamper protection
- Classified storage
- Secure communications
- Mission-critical systems

StealthMem Product Overview

Technical Specifications

Encryption	AES-GCM authentication and encryption with 256-bit keys
Memory Support	DDR3/4/5, SPI/QSPI flash, NVMe, on-chip SRAM/BRAM
Key Management	Hardware key vault with secure loading and rotation
Interfaces	AXI4/AXI4-Lite compatible, configurable performance

Security Features

Physical Attack Protection:

- Real-time memory encryption
- Protection against probe attacks
- Bus snooping prevention
- Memory extraction defense

Side-Channel Resistance:

- Proven StealthAES countermeasures
- Power analysis protection
- EM emanation resistance
- Timing attack mitigation

Key Management:

- Hardware-based key vault
- Cryptographic isolation
- Secure key rotation
- Multi-domain support

Implementation Options

Delivery Options:

- Complete RTL source code
- Encrypted netlist
- Custom interfaces available
- Integration support included

Memory Interfaces:

- DDR controller integration
- Flash memory controllers
- NVMe host controllers
- Custom memory interfaces

Performance Options:

- Area-optimized configurations
- Performance-optimized variants
- Low-power implementations
- Custom configurations available

Why Choose StealthCores?

Proven Security

Built on industry-leading StealthAES with verified countermeasures tested across billions of operations.

Seamless Integration

AXI-compatible interfaces and comprehensive documentation ensure rapid deployment.

Expert Support

Decades of cryptographic experience with dedicated integration support.

Mission-Critical Reliability

Designed for commercial, industrial, and defense applications.

Ready to Secure Your Memory Systems?

info@stealthcores.com | www.stealthcores.com | © 2025 StealthCores | Rev. 25.1

