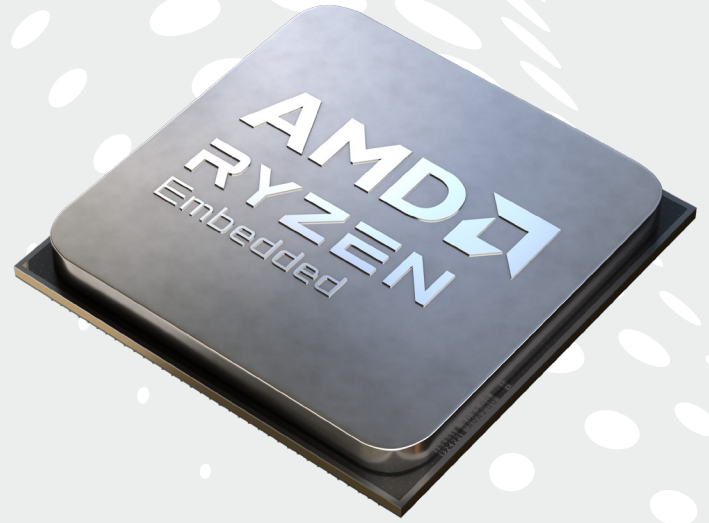**AMD Embedded Solutions**

AMD Product Brief

AMD RYZEN™ EMBEDDED 5000 SERIES

SCALABLE PERFORMANCE UP TO 16 CORES WITH AN ENERGY EFFICIENT THERMAL PROFILE FOR SPACE CONSTRAINED DESIGNS TARGETING 'ALWAYS ON' ENTERPRISE NETWORKING AND SECURITY APPLICATIONS

Product Overview

The AMD Ryzen™ Embedded 5000 Series brings the high-performance "Zen 3" x86 CPU core architecture to the midrange AMD embedded processor portfolio—optimized for enterprise-grade switching and firewall applications requiring an exact balance of compute performance, reliability and power efficiency in a compact footprint. Scalable up to 16 cores/32 threads with thermal design power (TDP) profiles spanning from 65W to 105W, AMD Ryzen™ Embedded 5000 Series processors are ideally suited for space and thermally constrained rackmount and blade systems targeted for enterprise networking security.

Supporting enterprise-grade reliability and planned availability up to 5 years, AMD Ryzen™ Embedded 5000 Series processors are optimized to deliver enterprise-class performance with fast memory transfer speeds and expansive PCIe® Gen4 connectivity up to 24 lanes (CPU only), or up to 36 lanes in an ultra-compact chipset configuration.

| **16** "Zen 3" x86 CPU cores | **65-105** Watts TDP | **DDR4** Dual-Channel w/ECC | **PCLe® Gen4** 24 Lanes *Expandable 36 Lanes with AMD Premium Chipset* | **RAS** (Reliability, Availability, Serviceability) Feature Coverage | **AM4** Socket | **5** Years Planned Manufacturing Availability |

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Scalable Processing Performance, Thermally Optimized

AMD Ryzen™ Embedded 5000 Series processors are available in 6, 8, 12 and 16 core configurations, meeting the scalability and performance needs of enterprise networking and compute processing for next-generation firewall (NGFW) capabilities spanning application awareness and control, packet filtering and inspection, attack and intrusion prevention, threat intelligence and more. The performance scalability is achieved in a range of low TDP profiles spanning from 65W to 105W to meet the crucial sub-120W threshold for densely architected, enterprise network switching and firewall systems.

Markets

Networking

Storage
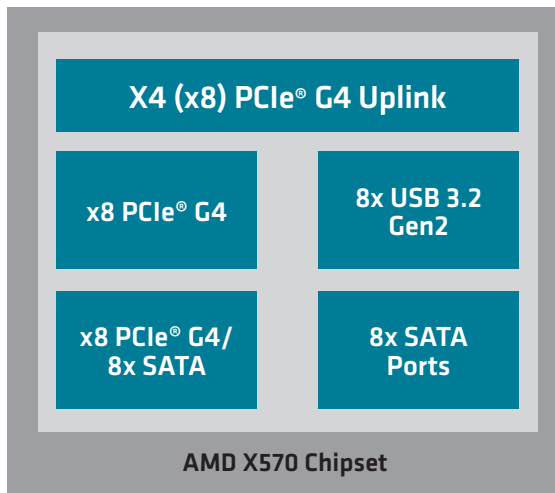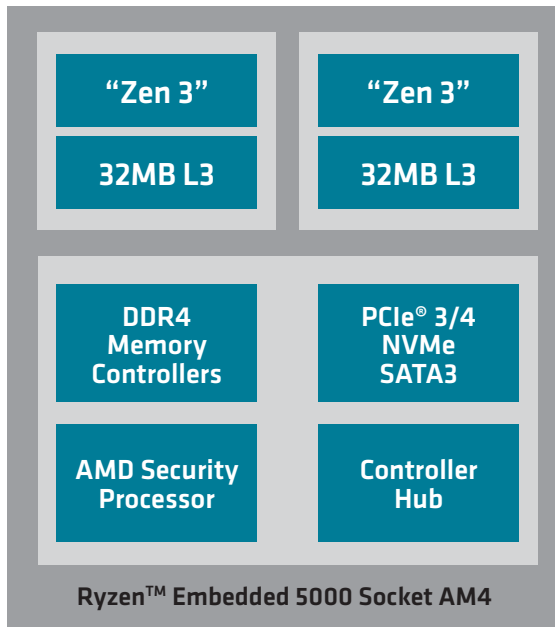
Robust Enterprise Class Reliability

AMD Ryzen™ Embedded 5000 Series processors provide enterprise-grade reliability with planned availability up to five years to support long product lifecycles. Supported features include error correcting code (ECC) for single-bit memory repair, with frequency and CPU power management features to help enable consistent, reliable operations in space and power constrained environments. This profile can be advantageous for systems targeted for conformance with exacting Network Equipment Building System (NEBS) requirements for sustaining short-term system operations in elevated temperatures.

Extreme Memory And I/O Versatility

Equipped with up to 3200 MT/s DDR4 dual-channel memory support, AMD Ryzen™ Embedded 5000 Series processors support rapid memory transfer speeds for maximum compute agility necessary to identify and prioritize threats in seconds. AMD Ryzen™ Embedded 5000 Series processors support up to 24 lanes of PCIe® 4 connectivity in a CPU-only configuration and can be expandable to 36 lanes when paired with the AMD X570 chipset. This provides ample connectivity for additional ASICs and/or controllers to help enable greater design flexibility – all in a standard AM4 socket.

AMD RYZEN™ EMBEDDED 5000 SERIES
PRODUCT STACK

MODEL	NOMINAL TDP (cTDP RANGE)	CPU CORE/THREAD COUNT	CPU BASE FREQ. (GHz)	1T CPU BOOST FREQ. (GHz) (UP TO)	L2 CPU CACHE (MB)	L3 CPU CACHE (MB)	DDR4 CHANNELS (UP TO)	MAX DDR4 RATE (MT/S) (UP TO)	DRAM ECC	MAX PCIe® GEN4 LANES	USB 3.2 GEN2 (UP TO)	SOCKET
AMD RYZEN™ EMBEDDED 5950E	105W	16/32	3.05	3.40	8	64	2	3200	YES	24	4	AM4
AMD RYZEN™ EMBEDDED 5900E	105W	12/24	3.35	3.70	6	64	2	3200	YES	24	4	AM4
AMD RYZEN™ EMBEDDED 5800E	100W (65-100W)	8/16	3.40	3.70	4	32	2	3200	YES	24	4	AM4
AMD RYZEN™ EMBEDDED 5600E	65W	6/12	3.30	3.60	3	32	2	3200	YES	24	4	AM4

AMD

AMD Embedded Solutions

Ryzen™ Embedded 5000 Socket AM4

- "Zen 3"
- 32MB L3
- "Zen 3"
- 32MB L3
- DDR4 Memory Controllers
- PCIe® 3/4 NVMe SATA3
- AMD Security Processor
- Controller Hub

AMD X570 Chipset

- X4 (x8) PCIe® G4 Uplink
- x8 PCIe® G4
- 8x USB 3.2 Gen2
- x8 PCIe® G4/ 8x SATA
- 8x SATA Ports

Additional Key Benefits

- AMD "Zen 3" x86 cores (7nm) with support for up to 16 Cores/32 Threads

- 32MB L3 cache shared by 8 CPU Core CCD, up to 64MB total

- Support for up to 1x4 NVMe devices (or 2x2 NVMe), and up to 2 SATA 3.0 devices, with additional USB 3.2 Gen 2 support

- Enterprise OS support includes RedHat (RHEL), Yocto project

For more information about the specific features and specifications supported by select products in AMD's solutions portfolio, or to learn more about AMD's Ryzen™ Embedded 5000 processor family, visit www.amd.com/ryzen-embedded-5000-series

AMD.com/embedded

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