**ARTERIS IP**

Datasheet

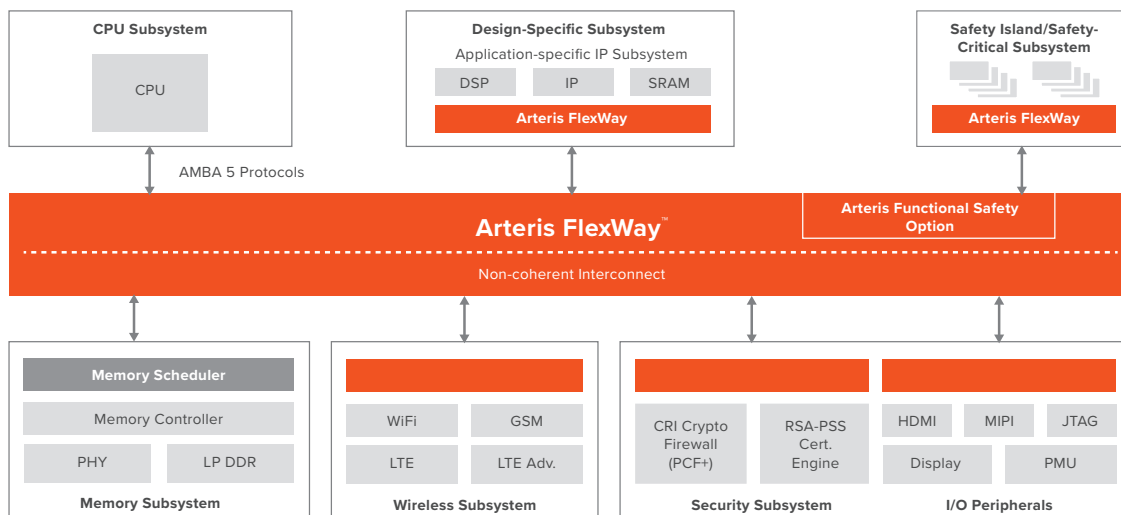# FlexWay™ 5 Core Interconnect IP

## Overview

FlexWay 5 from Arteris is an essential entry-level IP generator for cost-efficient, high-performance network-on-chip (NoC) designs. It revolutionizes SoC development with optimized interconnects, reduced time-to-market, improved performance, lower power consumption, and compact die size. By automating design tasks and supporting tailored topologies, it enhances system responsiveness.

Advanced power management, security, and QoS features optimize battery life, system integrity, and performance. AMBA protocol support simplifies IP integration, while the FlexWay FuSa Option helps to enable functional safety up to ASIL D. With a mature and proven solution, trusted by industry leaders, FlexWay 5 enables secure, performant, and resilient designs in mobile, automotive, consumer, and enterprise applications.

## Highlights

- Improves development time, performance, power consumption, and die size.
- Supports protocols: AMBA 5 AHB, AXI, APB.
- Enables implementation of 10s of IP blocks with various topologies.
- Lowest die area, congestion, latency, and power consumption.
- Provides optimal QoS, integrated simulation, and verification support.
- FuSa Option for data protection and reliability meets ISO 26262 ASIL B and D requirements for functional safety.
- Magillem import/export for enhanced productivity.
- Supports single NoC instances per design. Check out FlexNoC for multliple instances.
- Support up to 50 network interfaces per design. Check out FlexNoC for a higher number of interfaces.

## Benefits

### Streamlined development.
FlexWay 5 automates simulation, verification, and timing closure tasks, reducing development time and mitigating schedule risks.

### Performance optimization.
FlexWay 5 supports flexible interconnect topologies (tree, ring, mesh), reducing latency and offering optimal Quality of Service (QoS) for improved system performance.

### Power consumption reduction.
FlexWay 5 optimizes interconnects and incorporates advanced power management, ensuring efficient power utilization and extending battery life in power-constrained applications.

### Flexible interoperability.
FlexWay 5 supports industry-standard protocols (AMBA 5, AHB, AXI, APB), simplifying the integration of diverse IP blocks and peripherals within the SoC, enhancing flexibility and scalability.

### Functional safety and reliability.
FlexWay 5 includes a Functional Safety (FuSa) Option, providing hardware-based data protection and meeting ISO 26262 ASIL B and D requirements for safety-critical applications.

### Scalability and productivity.
FlexWay 5 enables SoCs with tens of IP blocks, offering flexible design configurations and efficient resource utilization. It incorporates automation, simulation, and verification technologies to enhance productivity.

### Industry proven and trusted.
FlexWay 5 is a mature solution with a proven track record. It is the trusted choice of industry leaders like Axelera, TI, Mobileye, Semidrive and Andes, ensuring reliability, performance, and value.

## Features

### Network interfaces.
The product supports up to 50 network interfaces per design*, including AXI, AHB, APB, OCP, and PIF. This comprehensive support ensures seamless integration with diverse IP blocks and peripherals, facilitating efficient communication and interoperability within the SoC.
*For support of interfaces above 50, check out FlexNoC.*

### AMBA 5 support, DVM v8.1.
FlexWay 5 is compatible with the AMBA 5 specification, specifically supporting the DVM (Distributed Virtual Memory) version 8.1. This compatibility ensures compliance with the industry-standard AMBA protocol, enabling reliable and efficient data transfers within the SoC.

### General transport capabilities.
FlexWay 5 offers a versatile set of transport capabilities to accommodate various system requirements with a single NoC instance*. It supports different topologies, including switches, FIFOs, converters, and source-synchronous async bridges. This flexibility enables designers to tailor the interconnect structure to meet specific design needs.
*For support of multiple NoC instances per design, check out FlexNoC.*

### Quality of service (QoS).
FlexWay 5 provides advanced quality of service features, ensuring efficient bandwidth allocation and latency control within the interconnect. It incorporates a bandwidth regulator and limiter, allowing designers to define and enforce specific QoS requirements, guaranteeing optimal performance and resource utilization.

### Domains.
The product supports multiple clock, power, and voltage domains, accommodating complex design requirements. FlexWay 5 facilitates seamless integration of IP blocks operating at different clock frequencies or voltage levels, enabling efficient power management and domain-specific optimizations.

### Power management.
FlexWay 5 includes power management capabilities, including unit-level clock gating. This allows designers to selectively gate clocks to inactive units, minimizing power consumption and optimizing energy efficiency in the SoC design.

### Security.
FlexWay 5 offers native and user-defined firewall features, providing robust security mechanisms within the interconnect. This ensures secure data transfers and protects against unauthorized access or malicious attacks, enhancing the overall security of the SoC.

### Safety – up to ISO 26262 ASIL D.
FlexWay 5 supports safety-critical applications and complies with the ISO 26262 functional safety standard up to ASIL D level. This ensures that the interconnect reliably operates in safety-critical environments, providing the necessary level of safety and reliability required in automotive and other safety-critical applications.

### In-silicon debug.
FlexWay 5 incorporates in-silicon debug capabilities, enabling on-chip performance monitoring and debug functionalities. It supports the ATB (Advanced Trace Bus) 128b interface with timestamps, allowing for comprehensive and efficient debugging of the SoC's operation and performance.

## Complementary Products

FlexWay is a cost-efficient entry-level NoC product with an optimized feature subset of FlexNoC for smaller-scale SoC designs.

Both FlexWay and FlexNoC products can export IP-XACT files that can then be used in the Arteris Magillem import/export for enhanced productivity.

## About Arteris

Arteris is a leading provider of system IP for the acceleration of system-on-chip (SoC) development across today's electronic systems. Arteris network-on-chip (NoC) interconnect IP and SoC integration technology enable higher product performance with lower power consumption and faster time to market, delivering better SoC economics so its customers can focus on dreaming up what comes next. Learn more at arteris.com.

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