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Embedded - Microcontrollers - Application Specific: Tailored Solutions for Precision and Performance

Embedded - Microcontrollers - Application Specific represents a category of microcontrollers designed with unique features and capabilities tailored to specific application needs. Unlike general-purpose microcontrollers, application-specific microcontrollers are optimized for particular tasks, offering enhanced performance, efficiency, and functionality to meet the demands of specialized applications.

What Are Embedded - Microcontrollers - Application Specific?

Application-specific microcontrollers are engineered to

Details	
Product Status	Active
Applications	Network Processor
Core Processor	MIPS32® 34Kc™
Program Memory Type	SRAM
Controller Series	-
RAM Size	-
Interface	I²C, RMII, UART
Number of I/O	-
Voltage - Supply	-
Operating Temperature	-
Mounting Type	Surface Mount
Package / Case	-
Supplier Device Package	672-FCBGA (27x27)
Purchase URL	https://www.e-xfl.com/product-detail/microchip-technology/wp3160w3nfei-320b1

WP3SL WinPath3 SuperLite
Next Generation Access Systems
Packet Processor
Released Product Brief

Product Overview

The WinPath3 SuperLite provides a powerful, lower-cost WinPath3 solution for access processing in the wireline and wireless access infrastructure equipment market. This device family leverages PMC's broad portfolio of hardened market-ready protocols and industry preferred I/O interfaces and provides this solution at a lower price.

The WinPath3 SuperLite has six WinGine processing elements at up to 400 MHz and supports the latest packet-based protocols: Ethernet, PWE3 (Ethernet TDM, HDLC, ATM), and Packet Network Synchroni-zation (IEEE 1588v2, Synchronous Ethernet, adaptive and differential clock recovery). It also supports ML-PPP, IMA, CES, OAM (Ethernet and ATM), QoS (policing, shaping, per-flow queuing, WRED), and many other protocols. The WP3SL incorporates new WP3 hardware accelerators such as a flexible high performance classifier, a hierar-chical shaper, an integrated security engine and more.

The WinPath3 SuperLite integrates control plane and enhanced data plane processing components. Control plane processing is based on two high-performance MIPS 34K multi-threaded processors. Data plane processing uses new hardware accelerators for packet classifi-cation, hierarchical shaping, additional security standards and more to offload common processing tasks. The accelerators are flexibly combined with a field-proven, fully-programmable, high-perfor-mance multi-threaded multi-core data path processor subsystem.

Benefits

- High performance of WinPath3 device family at a lower cost
- Innovative thread processing architecture provides higher overall system bandwidth with lower system cost and design complexity.
- Straightforward upgrade of WinPath2 applications for improved performance and capability of next-generation access systems
- Minimum design risk, short time-to-market, and lowered costs for new or migrated systems

Product Highlights

- 2x performance, higher integration than 2nd-generation WinPath2
- Numerous WAN and LAN interfaces supported, including 6Gb Ethernet, 24 Fast Ethernet, 16 TDM and dual SPI-3/POS L2/Utopia L2
- Wide range of bus interfaces available including PCIe plus integrated memory controllers supporting DDR2/DDR3 SDRAM with ECC
- Royalty free "production hardened" data path software supporting over 60 protocols, plus C language API for rapid system integration
- RAM-based Data Path code store to facilitate evolving wireline and wireless standards
- Available data path software supports interworking, QoS, and Layer 2 protocols (MPLS, EFM G.Bond, PWE3-SATOP, Link Aggregation, GRE, WRED, WFQ, VLAN-aware bridging and more)
- 100% software compatible with WinPath3; application software can be easily ported between WinPath3 and WinPath3 SuperLite
- Custom programming available via rich suite of development tools plus extensive library of source code and example programs

RISC Control Processor (Optionally Disabled)
- Integrated multi-threaded MIPS 34Kc at 650MHz, 64K/32K I/D caches

Data Path (WinComm3)
- 6 WinGines running at 320 MHz
- 2 Gbit/s @ 64 bytes packets, full duplex Ethernet-based routing/bridging application; 7.5 MPPS incl. classification, policing &shaping

New Hardware Accelerators
- Classifier (wire speed classification on all interfaces) with 8K rules including bridging support, up to 400M classification searches/s
- Policer accelerator supports dual leaky bucket for up to 64K policers
- Shaper with 4K flows with WRED accelerators
- eWSE (Snow-3G, PKE; performance comparable to WinPath2)
- Synchronization over packet networks (clock recovery): adaptive, differential, IEEE 1588v2, Synchronous Ethernet

Block Diagram
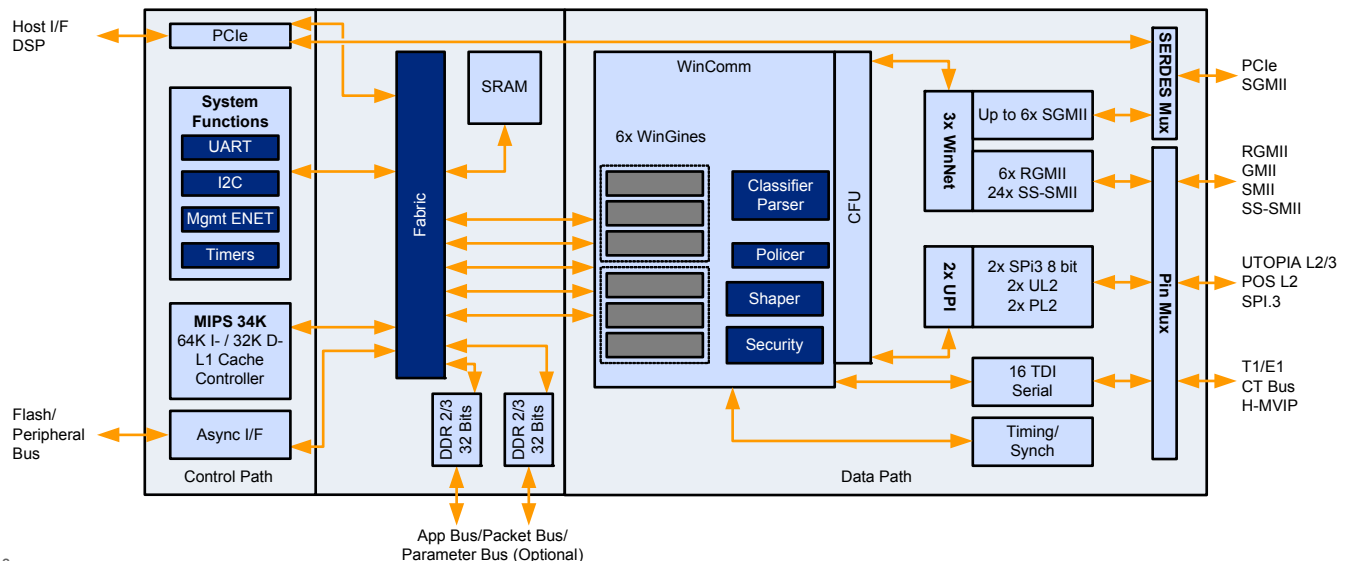
Bus and Memory Interfaces

- 2 x 32bit DDR2/3 @1200 Mbit/s per pin.
- 0.75 Mbytes internal memory (Parameter Memory); NOR and NAND Flash memory support
- Asynchronous peripheral bus
- 1x PCI Express interface v1.1

Serial Interfaces

- 3 WinNet, supporting 6x GigE (SGMII or RGMII or RTBI) or 4 GMII, 3x GigE2.5 (Over-clocked SGMII @ 3.125 Gbit/s), 24 x Enet 10/100 (SMII/SS-SMII)
- 2 UPI supporting 2xUL2/PL2 16 bit or 2x SPI.3 8 bit
- 16 TDI supporting T1/E1/T3/E3 or CTCT/MVIP bus
- Peripheral Ports (Fast Ethernet, UART, I2C, etc)
- 6 multi-standard SERDES lanes shared by SGMII, over-clocked SGMII and PCIe interfaces can directly drive backplanes; integrated CDR

Physical and Electrical

- 65 nm technology; 27mm x 27mm 672 FCBGA with 1mm ball pitch
- Low power: 3 – 6 W at nominal clock rate, depending on configuration

Reference Boards

WinPath3 SuperLite reference boards are available for early software development while a customer's own board is being developed. The boards are offered standalone or in standard AMC form factors for use with any AMC chassis, and with various I/O options and adapter cards to provide equivalent configurations for a range of applications.

WP3 and WP3SL Comparison

Feature	WinPath3	WinPath3 SuperLite
Packet Engine	Up to 12	Up to 6
Performance	Up to 15 MPPS	Up to 6MPPS
Security Engine	2x WSE	1x WSE
Traffic Manager	16K flows, 3-level H-QoS	4K flows, 3-level H-QoS
Class. Engine	32K rules	8K rules
Policer Accelerator	64K profiles (16K internal)	64K profiles (16K internal)
Internal Memory	2.5 MB	0.75 MB
Memory Interfaces	3xDDR2/3 16/32 bit 600MHz	2xDDR2/3 16/32 bit 600MHz
UPI/POS Interfaces	2x SPI3 32 bit 3x PL2 16 bit 3x PL3 8 bit	2x PL2 16 bit 2x PL3 8 bit
EMPHY	Yes	No
TDM Interfaces	Up to 16	Up to 16
Clock Recovery	Adaptive, differential, 1588v2	Adaptive, differential, 1588v2
Synch. Ethernet	Yes	Yes
WinNets	8	3
XAUI	2	-
Gb Ethernet	12	6
Fast Ethernet (SS)-SMII	72	24
SERDES	14	6
MIPS Cores	2x MIPS 34k 650MHz	1x MIPS 34k 650MHz
PCI Express	Yes	Yes
SRIO	Yes	No
Package	31x31 mm	27x27 mm

WinPath3 SuperLite Software
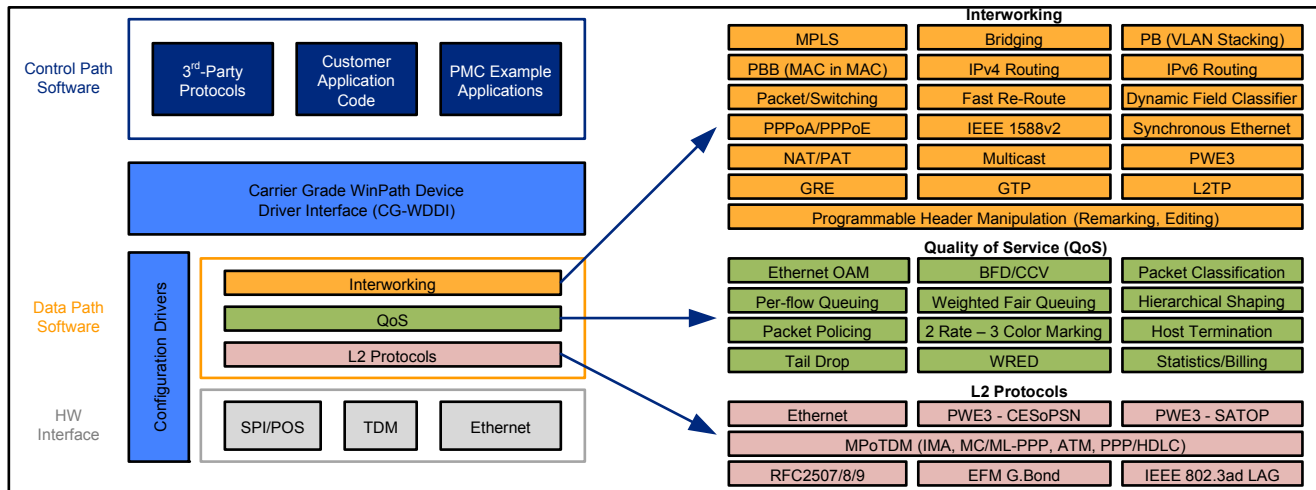
Further Resources

Technology Webpage

www.pmcs.com/products/mobile_network/

Technical Documentation

www.pmcs.com/resources/downloads_support.html

About PMC

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