SparX-5i
L2/L3 TSN-Enabled Industrial Ethernet Switch

Summary

Microchip's next-generation switch family delivers a flexible solution, driving the transition to Time-Sensitive Networking (TSN), seamless redundancy and scalable networks in the Industrial Internet of Things (IIoT).

SparX-5i is a 64 Gbps to 200 Gbps Industrial Ethernet switch family supporting a wide variety of configurations consisting of 1G, 2.5G, 10G and 25G Ethernet ports.

The device provides a rich set of industrial Ethernet switching features including the complete TSN feature set, L2 switching, L3 routing, seamless redundancy, high-precision timing and an extended temperature range. Using multistage versatile content aware processor (VCAP™) technology, it delivers VLAN and QoS processing that enables delivery of differentiated services, security through intelligent frame processing and flexible frame manipulation.

A powerful 1 GHz dual-core CPU enables full management of a layer 2 and layer 3 industrial Ethernet switching solution.

A comprehensive Application Programming Interface (API) and turnkey software development package accelerates time-to-market for managed industrial Ethernet applications. The software API package integrates easily with third-party software, preserving existing software investments.
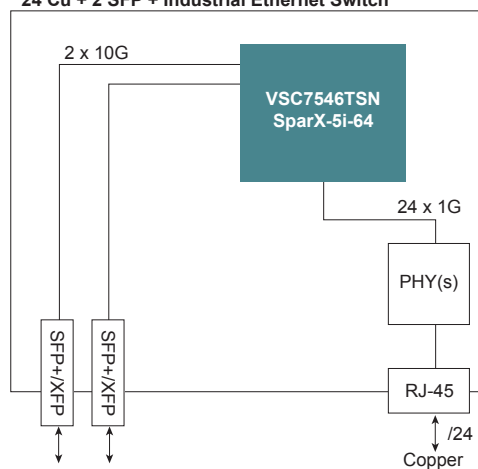
Highlights

- Up to 64 × 1G/2.5G, 32 × 5G, 20 × 10G and 8 × 25G Ethernet ports
- Fully managed L2 switching and L3 routing features
- Complete TSN feature set including time aware shaping, cyclic queueing and forwarding, stream policing, high-precision time synchronization, seamless redundancy and low latency through preemption and cut-through switching
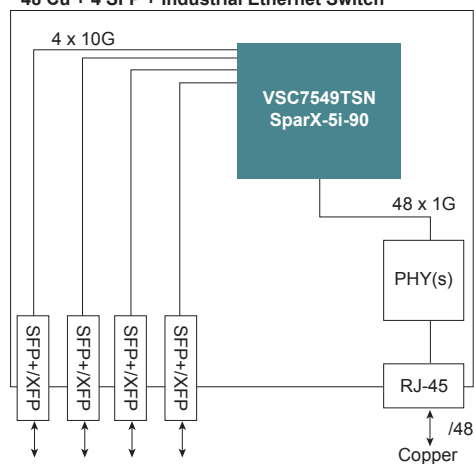- Industrial temperature range

Applications

Industrial Ethernet switching for:
- Factory, building and substation automation
- Process control
- Physical security
- Intelligent transportation systems

24 Cu + 2 SFP + Industrial Ethernet Switch

VSC7546TSN
SparX-5i-64

2 x 10G
24 x 1G
PHY(s)
SFP+/XFP
SFP+/XFP
RJ-45
/24
Copper

48 Cu + 4 SFP + Industrial Ethernet Switch

VSC7549TSN
SparX-5i-90

4 x 10G
48 x 1G
PHY(s)
SFP+/XFP
SFP+/XFP
SFP+/XFP
SFP+/XFP
RJ-45
/48
Copper

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Family and Features

Family of devices supporting from 64 Gbps to 200 Gbps nonblocking switching bandwidth

Part Number	Product
VSC7546TSN	SparX-5i-64
VSC7549TSN	SparX-5i-90
VSC7552TSN	SparX-5i-128
VSC7556TSN	SparX-5i-160
VSC7558TSN	SparX-5i-200

- Flexible interface options including 1/2.5/5/10/25 GbE
- Additional 1/2.5 GbE node processor interface port
- Integrated 1 GHz dual-core Arm® with DDR3/DDR4 SDRAM controller
- PCIe® 2.0/3.0 CPU interface
- Internal shared memory buffer (8 queues per port)
- Jumbo frame support
- Strict priority and DWRR scheduler/shaper

Layer 2 Switching and Layer 3 Routing

- IEEE 802.1Q VLAN switch with 32K MACs and 4K VLANs
- Secure MAC addressing
- Push/pop/translate up to two VLAN tags on ingress and egress
- Policing with storm control and MC/BC protection
- RSTP and MSTP support
- Independent and shared VLAN learning (IVL, SVL)
- Hardware-based and software-based learning
- TCAM-based classification and VCAP-II security
- Layer 3 unicast and multicast routing

Industrial Ethernet

- TSN feature set: 802.1Qbv, 802.1Qch, 802.1Qci,
- 802.1AS-Rev, 802.1CB, 802.1Qbu
- Integrated timing: VeriTime™ (1588v2) and SyncE
- Ethernet Ring Protection Switching (ERPS)

Multicast

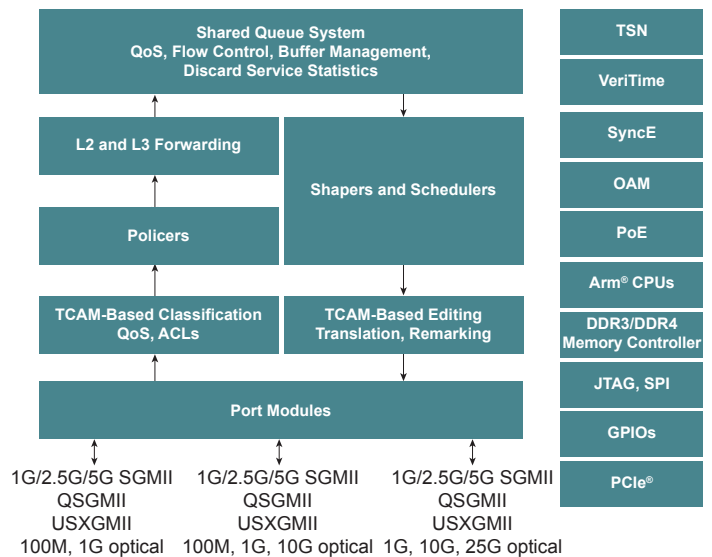- Layer 2
- IPv4 and IPv6
- IGMP and MLD

PoE

- Integrated PoE controller

Key Specifications

- 25 mm × 25 mm BGA
- –40°C to 110°C operating temperature

Related Products

- Ocelot GbE switches
- 1G Ethernet PHYs
- PoE PSE ICs (forward compatible with IEEE 802.3bt)
- Unified API, IStaX™ software

For More Information

www.microsemi.com

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