KSZ8342 SoC Family

Data Brief

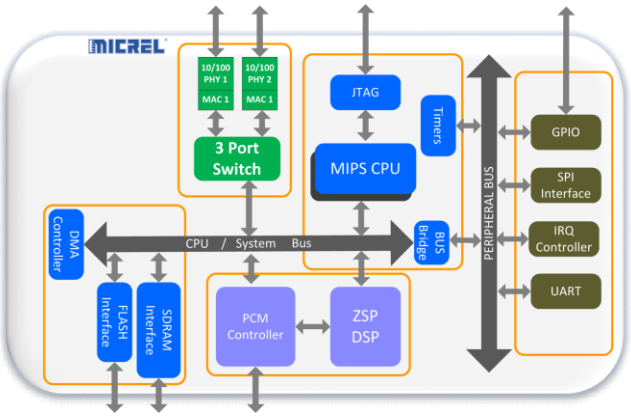
Overview

Micrel's KSZ8342Q System-on-Chip (SoC) provides a complete solution for systems that bridge digital and analog systems, enabling IP-based communication. It addresses a wide range of applications including analog telephone adapters (ATA) and gateways. The highly integrated SoC has built-in support for interfaces, which reduces the need for external components.

The KSZ8342Q SoC is the ideal choice for IP-based systems and is backed by Micrel's high-reliability and solution robustness that has been proven in enterprise, commercial, industrial, and automotive applications around the globe.

Architecture

The KSZ8342 implements a multiprocessor architecture with embedded RISC CPU and powerful DSP, providing a flexible VoIP platform with narrowband and wideband voice processing that enables superior voice quality.



KSZ8342 Block Diagram

The chip's extensive integration—featuring a high-performance audio subsystem, PCM controller, memory controllers for SDRAM, and flexible GPIO—increases performance and reduces BOM cost.

Micrel integrates the industry's most robust and lowest-power 10/100 Ethernet switch, implementing critical functionality for IP telephony, including IEEE 802.1p priority quality of service (QoS), 802.1Q VLANs, and IGMP v1/v2 snooping for multicast packet filtering.

The chip features innovative advanced power management including energy efficient Ethernet (EEE), which makes it the only EEE VoIP SoC in the industry that is compliant with the EU regulation on Ecodesign (Directive 2005/32/EC), limiting standby power of devices to less than 1 watt.

Benefits

- **Cost-effective**: Highly-integrated device significantly reduces the cost of developing IP-based endpoints.
- **Energy efficient**: Industry-leading advanced power management greatly reduces the cost of operation.
- **Integrated 3-Port Switch**: Integrates Micrel's 3-port switch—the industry's lowest power device—which enables connection to an additional IP device.
- **Multicast support**: Built-in IGMP snooping provides industry-leading support for multicast systems.
- **Voice Quality**: Wideband and narrowband codecs provide superior HD voice quality.

Applications

The KSZ8342 processor enables ODMs, OEMs, and VARs to develop a wide range of IP-based communication solutions including:

- ATA
- Intercoms
- Paging systems
- Cloud-based services
- Emergency systems
- Kiosks
- Vending systems
- Door systems

Micrel's solution applies to multiple market segments including enterprise, commercial and residential access, security, healthcare, tele-transactions, and cloud-based services. In addition, this solution enables a cost-effective transition from existing analog solutions to digital/cloud services, adding another product life-cycle to installed systems.

Firmware

Micrel's KSZ8342Q modular firmware architecture provides ODMs, OEMs, and VARs with a variety of choices in developing endpoint applications. It supports 1 FXS, 2 FXS, and 1 FXS/1 FXO, all of which enables the development of a standalone system board or a daughter card that is embedded in other systems, such as broadband modems, gateways, and routers. The firmware supports the development of systems using customized media transport and call control.

The firmware supports a wide range of security features including signaling protection using SIP TLS, media encryption using SRTP, and working across firewalls using STUN.

Micrel offers world-class support, tools, modules, and customization services in developing cost-effective and compelling applications.

Reference Design

Micrel provides a KSZ8342Q Evaluation Kit which is a hardware reference design and an evaluation platform. The kit consists of a universal motherboard that hosts the KSZ8342Q processor and daughter cards in one of three configurations:

- 2 FXS ports
- 1 FXS port
- 1 FXS/1 FXO port

The kit includes complete firmware and documentation for these configurations making the kit a plug-and-play system that can be rapidly converted to a production design.

Specifications

Channel Density

- 2 ports (FXS and FXO)

Hardware

- CPU – MIPS32 4KEc
- DSP – ZSP400
- Integrated SSP (SPI/I^2C) controller
- PCM controller

LAN Support

- Integrated 3-port Ethernet switch, 802.3u compliant
- 2 integrated 10/100 Base-T MAC/PHY ports, 802.3az EEE

Memory Controller

- Interface for SDRAM
- Parallel NAND flash
- Serial NOR flash (Single, dual, and quad SPI)
- Parallel NOR flash

Telephony Signaling

- DTMF generation – TIA 464B
- Programmable call progress tones
- Caller ID

Telephony Support

- FXS and FXO supported

VoIP Signaling Protocols

- SIP – RFC 3261, 3262, 3263, 3264, 2327

Media Processing

- Voice codecs – G.711, G.723, G.726, G.729A/B, iLBC
- Wideband codecs – G.722.2, G.711.1
- Fax T.38
- Echo canceller – G.167 (64ms tail length)
- VAD, CNG, packet loss concealment (PLC)
- Adaptive jitter buffer
- Noise reduction

Packetization

- RTP/RTCP packetization – RFC 3550, 3551, 2198
- DTMF relay – RFC 2833, RFC 4733

Security

- SRTP (Secured RTP) per RFC 3711, 128 bit AES
- SIP TLS
- STUN

Configuration Management

- Embedded web
- TFTP

Operating system

- Linux kernel
- Boot loader and board support

Electrical & Physical

- Power supply +3.3V (+1.2V core via integrated regulator)

MICREL, INC. 2180 FORTUNE DRIVE SAN JOSE, CA 95131 USA
TEL: +1 (408) 944-0800 FAX +1 (408) 474-1000 WEB http://www.micrel.com