KSZ8382 SoC Family

Data Brief

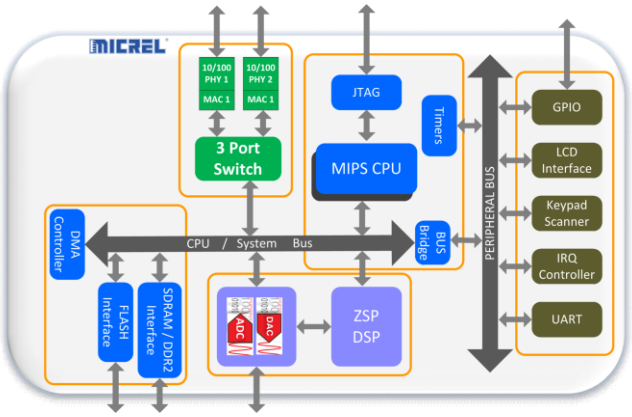
Overview

Micrel's KSZ8382 System-on-Chip (SoC) provides a complete solution for IP-based communication for a wide range of applications. The highly integrated SoC has built-in support for interfaces, which reduces the need for external components.

The KSZ8382 SoC is the ideal choice for IP-based endpoints and is backed by Micrel's high-reliability and solution robustness that has been proven in commercial, industrial, and automotive applications around the globe.

Architecture

The KSZ8382 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.



KSZ8382 Block Diagram

The chip's extensive integration—featuring a high-performance audio subsystem, LCD interface, keypad scanner, memory controllers for both SDRAM and DDR2, 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 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 KSZ8382 processor enables ODMs, OEMs, and VARs to develop a wide range of IP-based communication solutions including:

- IP phones
- Intercom systems
- Paging systems
- Cloud-based services
- Emergency systems
- Kiosks
- Vending systems
- Door systems

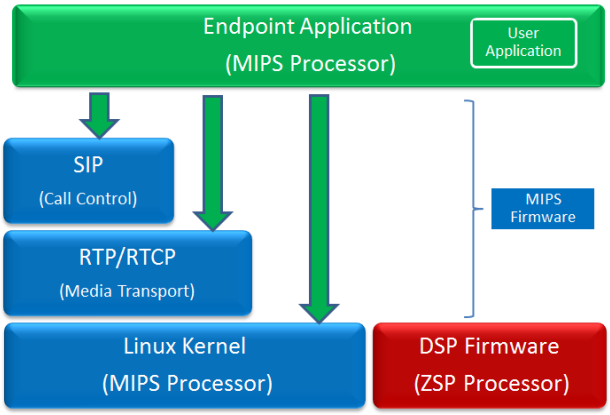
Micrel's solution applies to multiple market segments including enterprise, commercial and residential access, security, healthcare, tele-transactions, and cloud-based services. In addition, this solution enables a cost-effective transition from existing analog solutions to digital/cloud services, adding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

Firmware

Micrel's KSZ8382 modular firmware architecture provides ODMs, OEMs, and VARs with a variety of choices in developing their endpoint applications.

- **Access to Call Control:** Turnkey solution. Developers can leverage the built-in SIP call manager from the endpoint application.
- **Access to Media Transport:** Developers who have their own SIP software (or want to implement other call control protocols) can use the RTP/RTCP access for media transport.
- **Access to DSP Resources:** Developers who want their own call control and media transport (standards-based or even proprietary) can access the DSP resources directly.

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



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. The products offer the following peak performance figures.

Device	CPU clock	DSP clock	Application
KSZ8382L	166MHz	125MHz	Wideband
KSZ8382Q	125MHz	125MHz	Wideband
KSZ8381	125MHz	125MHz	Narrowband

Specifications

Channel Density

- 2 channels

Hardware

- CPU – MIPS32 4KEc
- DSP – ZSP400
- Keypad interface
- LCD interface
- Integrated SSP (SPI/I^2C) controller
- Three inputs for ADC, three outputs for DAC

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 DDR2 and 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

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
- Echo canceller – G.167 (128ms tail length)
- VAD, CNG, packet loss concealment (PLC)
- Adaptive jitter buffer
- Noise reduction
- Equalizer

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