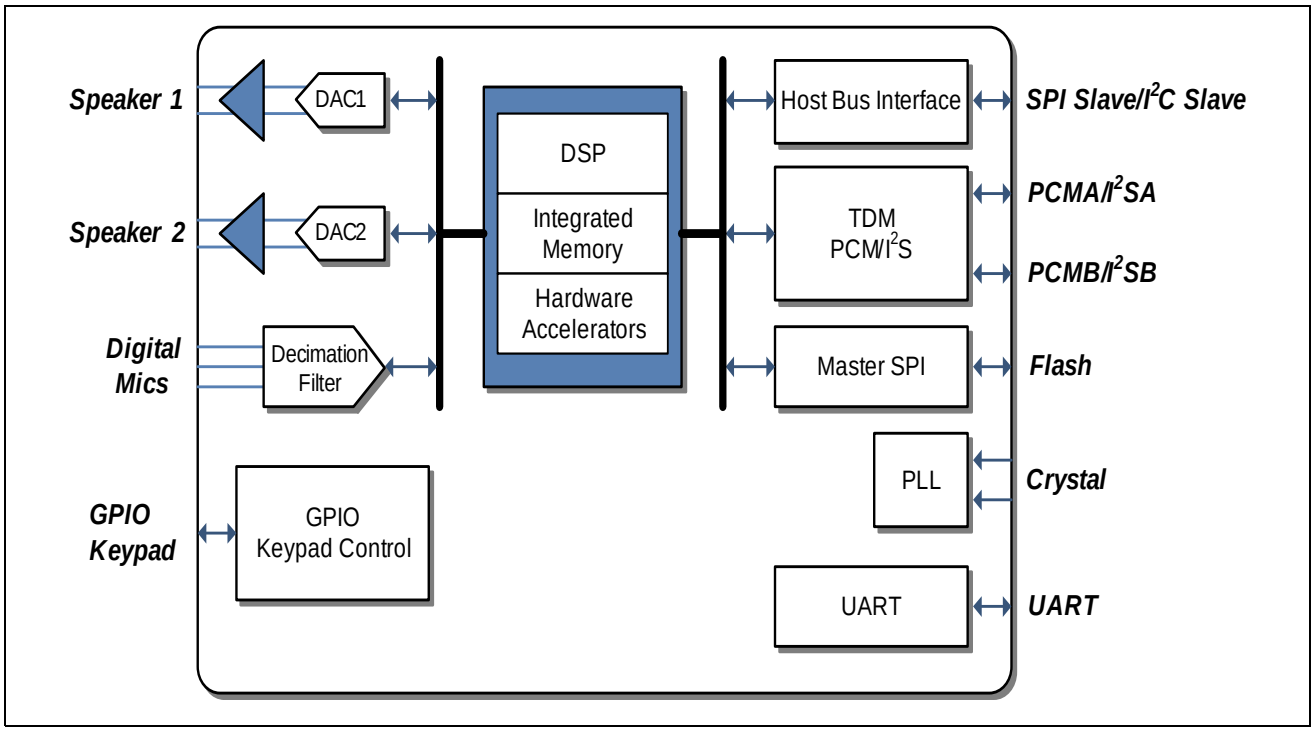
Voice Processing Series Solution Overview

Designed for world-class high definition voice applications, Microsemi's new ZL380 series of audio processors features the company's Microsemi *AcuEdge*™ Technology. This innovative technology is a set of highly-complex and integrated algorithms that allows the user to extract more information from the audio environment. The new Microsemi *AcuEdge* Technology consists of license-free, royalty-free intelligent audio IP algorithms. When combined with Microsemi's highly-integrated ZL380 series of audio processors, the solution accelerates customers' time-to-market via validated reference design and easy-to-use development tools including the Microsemi Audio Interface Box (AIB) Kit which utilizes the *MiTuner*™ GUI software.



ZL38040 Block Diagram

The *ZL38040 Advanced Wideband Audio Processor* provides the following enhanced voice processing feature set.

Microsemi ZL38040 Hardware

- Host Interface: SPI, UART, I^2C
- Standalone (controllerless) auto-boot from Flash
- Two clock independent TDM ports (PCM or I^2S)
- 14 GPIOs, configurable with built-in control features
- Crystal-less operation (with a valid TDM clock)
- Two digital microphone interfaces supporting three digital microphones
- Dual 16-bit digital-to-analog converters (DACs)
  - Headphone amps capable of four single-ended or two differential outputs
  - Two independent headphone drivers
  - 32 mW output drive power into 16 ohms
  - Impulse pop/click protection

Microsemi *AcuEdge*™ Technology ZLS38040 Firmware

- Wideband and Narrowband Acoustic Echo Cancellation
- Initial convergence conditioning
- Psychoacoustic noise reduction
  - Single microphone
  - Stationary noise reduction
- Keypad scanner
- Low active power consumption
- Multi-tone generation
- DTMF detection
- Call Progress Tone detection
- Caller ID Type 1 & 2 detection
- Signal mixing
  - 44.1 kHz/48 kHz music mixed with 8 kHz/16 kHz voice
- Howling detection/cancellation
- Various encoding/decoding options:
  - 16-bit 2's complement (linear)
  - G.711 A/μ law
  - G.722
- Send and receive path equalizers
  - 16-band for Narrowband mode
  - 22-band for Wideband mode
- Comfort noise generation
- 44.1 kHz/48 kHz bypass mode
- Configurable Cross-Point Switch

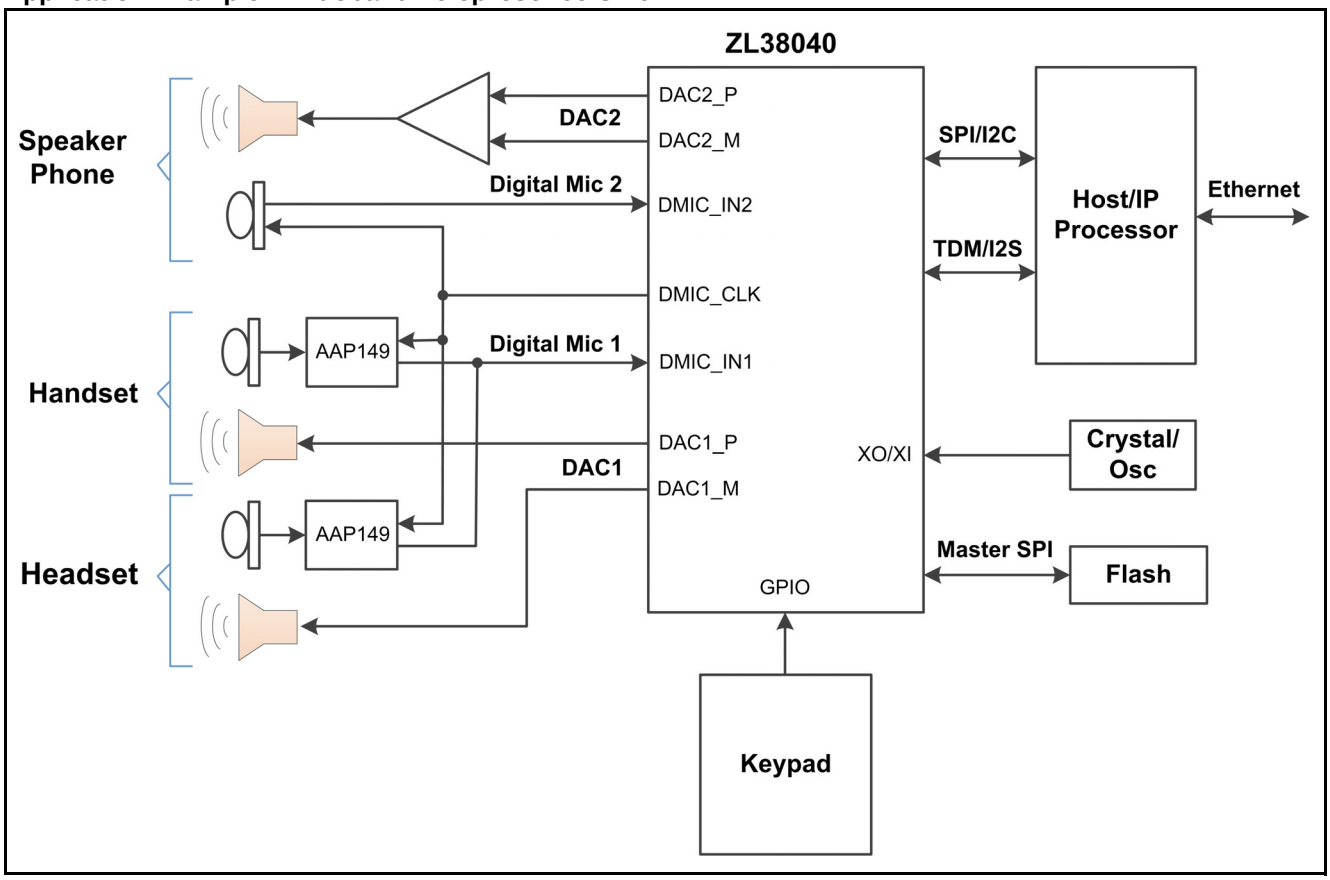
AEC Auto-Tuning

To optimize the acoustic properties of a given system design, the Audio Processor firmware requires gain and level tuning. The mechanical design, including the speaker and microphone quality and placement, will all affect the system's acoustic performance. Microsemi has developed *MiTuner*™ GUI Software (ZLS38508) and the Microsemi Audio Interface Box (AIB) hardware (ZLE38470) to automatically optimize the firmware's tunable parameters for a given hardware design, facilitating the system design process and eliminating the need for tedious manual tuning. The *MiTuner* GUI Software provides step-by-step instructions that allow the software's algorithms to achieve a high level of acoustic performance for a given enclosure.

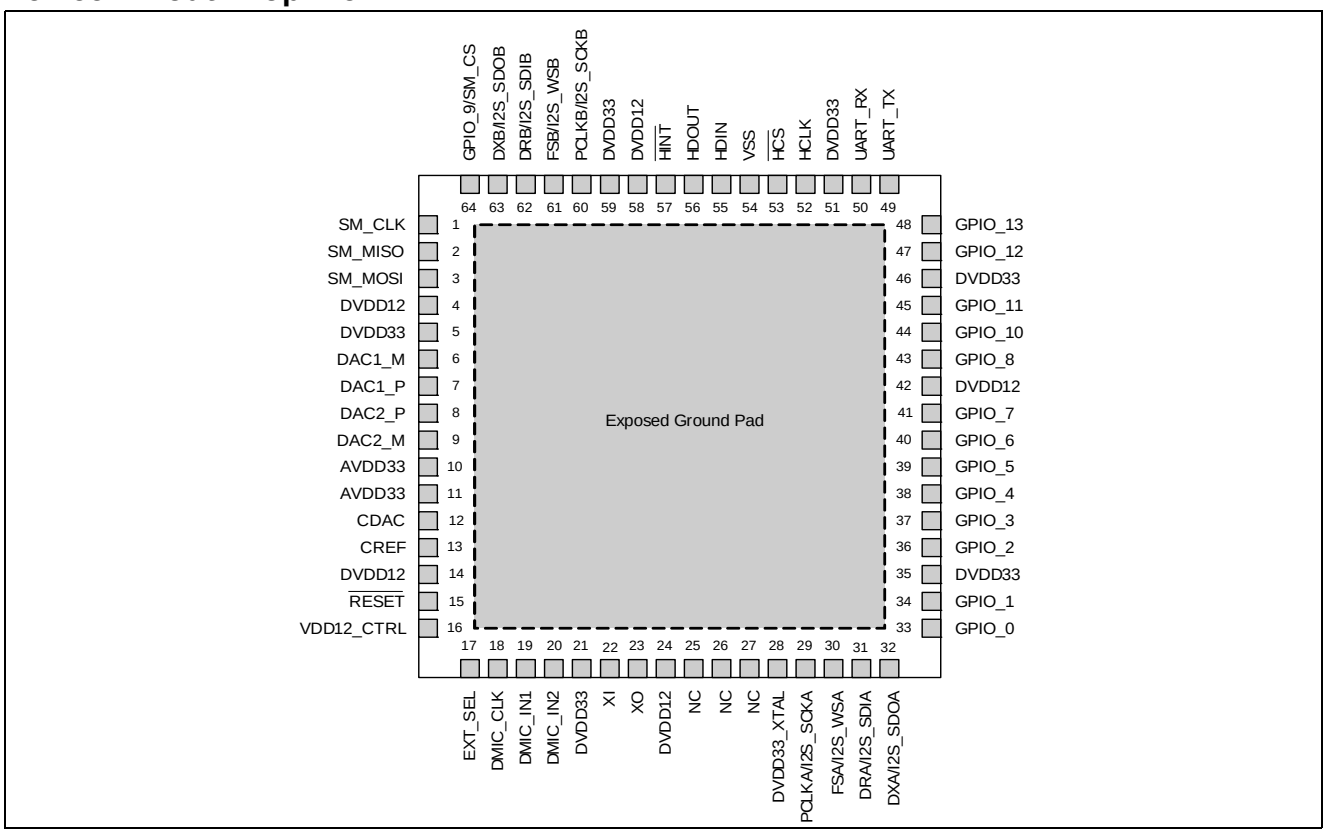
Highly Configurable for Multiple Applications

- Wideband Telepresence device (shown below)
- Home Automation
- Wideband phone

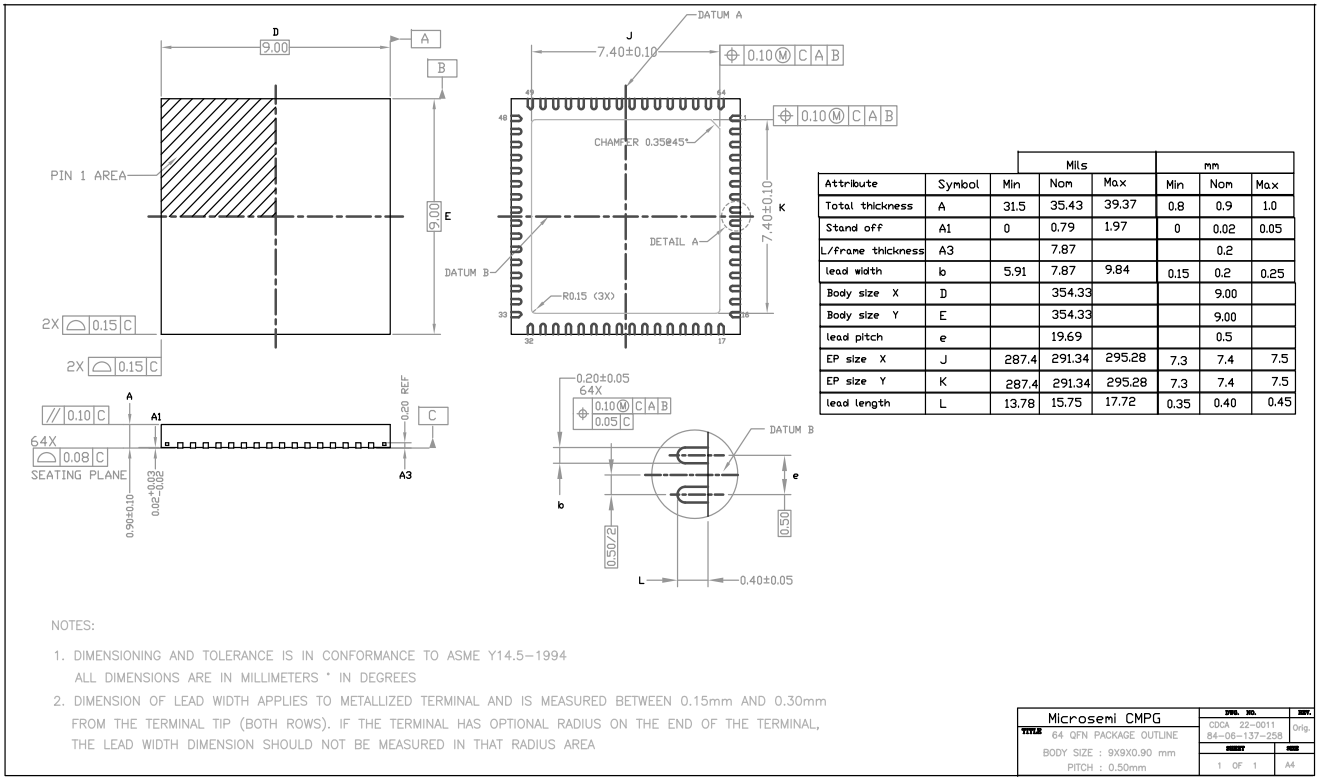
Application Example - Wideband Telepresence Unit



Device Pinout - Top View



Package Outline (64-Pin QFN)



		Mils			mm		
Attribute	Symbol	Min	Nom	Max	Min	Nom	Max
Total thickness	A	31.5	35.43	39.37	0.8	0.9	1.0
Stand off	A1	0	0.79	1.97	0	0.02	0.05
L/frame thickness	A3		7.87			0.2	
lead width	b	5.91	7.87	9.84	0.15	0.2	0.25
Body size X	D		354.33			9.00	
Body size Y	E		354.33			9.00	
lead pitch	e		19.69			0.5	
EP size X	J	287.4	291.34	295.28	7.3	7.4	7.5
EP size Y	K	287.4	291.34	295.28	7.3	7.4	7.5
lead length	L	13.78	15.75	17.72	0.35	0.40	0.45

NOTES:

1. DIMENSIONING AND TOLERANCE IS IN CONFORMANCE TO ASME Y14.5–1994
   ALL DIMENSIONS ARE IN MILLIMETERS ° IN DEGREES
2. DIMENSION OF LEAD WIDTH APPLIES TO METALLIZED TERMINAL AND IS MEASURED BETWEEN 0.15mm AND 0.30mm FROM THE TERMINAL TIP (BOTH ROWS). IF THE TERMINAL HAS OPTIONAL RADIUS ON THE END OF THE TERMINAL, THE LEAD WIDTH DIMENSION SHOULD NOT BE MEASURED IN THAT RADIUS AREA

Microsemi CMPG
TITLE 64 QFN PACKAGE OUTLINE
BODY SIZE : 9X9X0.90 mm
PITCH : 0.50mm
DRG. NO. CDCA 22-0011 84-06-137-258
REV. Orig.
SHEET 1 OF 1
SIZE A4

For more information about all Microsemi products visit our website at www.microsemi.com

TECHNICAL DOCUMENTATION – NOT FOR RESALE

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Microsemi Corporation (NASDAQ: MSCC) offers a comprehensive portfolio of semiconductor solutions for: aerospace, defense and security; enterprise and communications; and industrial and alternative energy markets. Products include mixed-signal ICs, SoCs, and ASICs; programmable logic solutions; power management products; timing and voice processing devices; RF solutions; discrete components; and systems. Microsemi is headquartered in Aliso Viejo, Calif. Learn more at **www.microsemi.com**.