

The ECTIVA MachOne™, EV1935, is a 5V single chip PCI audio controller that gives the power and performance of the 132MB/sec PCI bus without sacrificing essential legacy support for the huge installed base of Sound Blaster™ compatible applications. The EV1935 offers the highest assurance of system and operating system compatibility with better cost structure. The EV1935 is ideal for desktop and embedded applications requiring a high level of integration and uncompromising sound quality.

The EV1935's PCI bus master interface ensures extremely low system overhead for audio data transfers, freeing the use of system memory for downloadable MIDI patchsets or Microsoft DirectMusic™ samples.

Hi-Fidelity

ECTIVA's third-generation 16-bit Sigma-Delta codec provides high quality, analog-to-digital and digital-to-analog conversions. The codec is integrated with a low distortion complex mixer and a 3D Stereo Expander™ which dramatically enhances the audio experience with only standard speakers.

In addition to the 20 OPTi FM™ voices, the MachOne architecture provides powerful audio software enhancements, including up to 64-voice wavetable and 3D spatial enhancement—making the MachOne an ideal gaming platform. The Digital Game Port Timer improves overall system performance by offloading from the CPU.

Expandability

The MachOne is an ideal building block for compact audio solutions. The MPU-401 port supports external MIDI devices, such as keyboard. Two sets of asynchronous I/O ports support Zoom Video (MPEG), hardware wavetable, Lucent Technology telephony DSP1642/3 (K56flex™), speaker phone, and more.

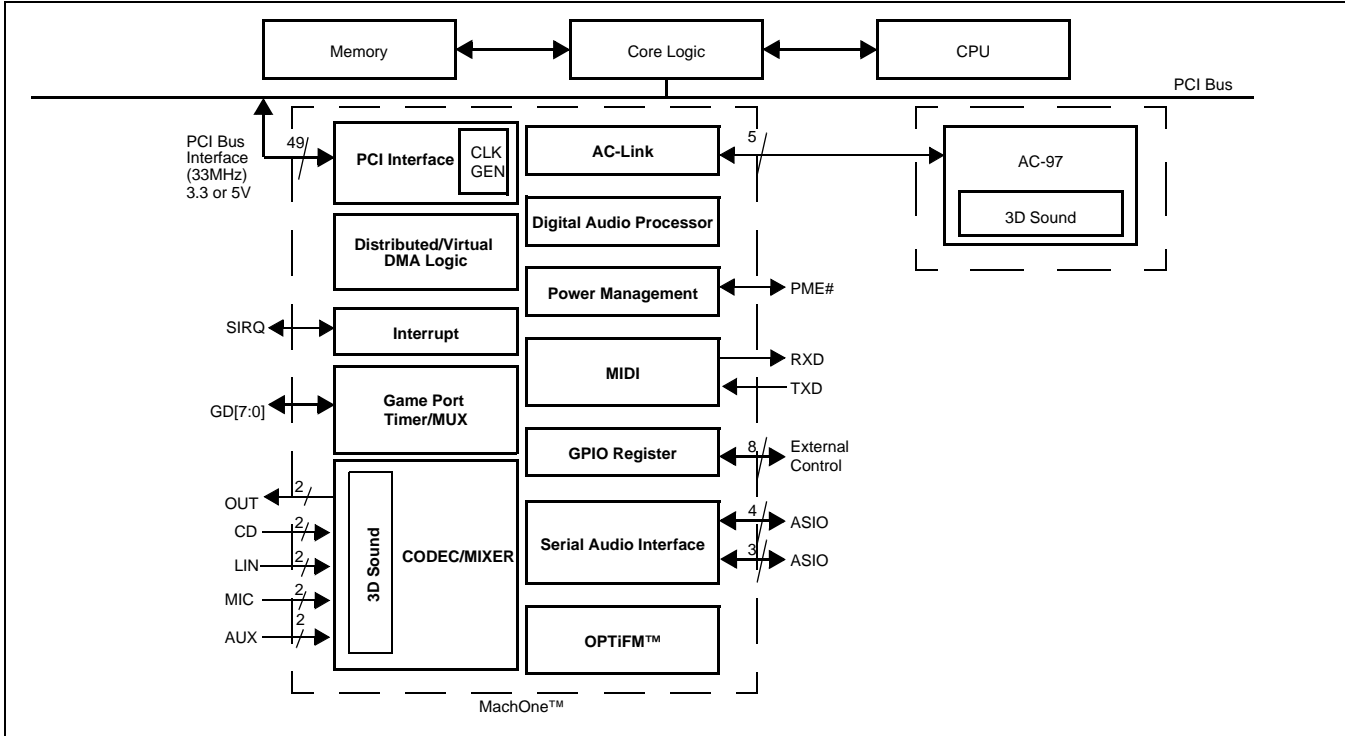
Integration

The high level of integration of the MachOne eliminates the requirement for additional memory, codecs, 3D, and other discrete components. This minimizes the design effort and offers the best cost/performance for PCI audio customers.

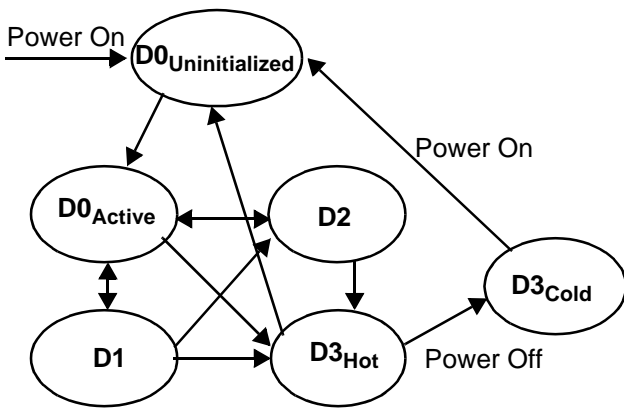
Features

- 32-bit PCI Bus Master, PCI 2.1 compliant.
- Supports Microsoft Windows APM 1.2, four state ACPI 1.0 (D0-D3), PCI Power Management 1.0, OnNow, and WDM.
- Supports hardware PME# triggering.
- Supports PCI-Legacy MS-DOS compatible distributed DMA (DDMA), virtual DMA with stream scatter/gather buffer.
- Transparent Sound Blaster Pro compatible audio without sacrificing PCI bandwidth.
- Integrated sound controller compatible with Ad Lib and Microsoft Windows Sound System (WSS).
- Supports simultaneous full-duplex recording and playback at samples rates of 8, 11.025, 16, 22, 44.1 and 48KHz.
- Supports serial IRQ and driveback IRQ.
- Built-in sigma-delta codec.
- AC-Link supports external AC-97 codec for high performance audio.
- 32-step master volume control.
- Built-in Q-Sound 3D Expander™ engine.
- Two programmable serial port interfaces for:
 - External DSP for sound effect.
 - Lucent Technology telephony DSP1642/3.
 - External Wave Table digital Interface.
 - Zoom Video port for MPEG audio playback.
- High-quality 20-voice, 52-operator, enhanced OPTiFM music synthesizer.
- Built-in 7-channel mixer: 5 stereo and 2 mono channels.
- Integrated dual game ports with Digital Game Port Interface.
- Up to eight programmable general purpose I/O ports.
- 5V analog and digital interface.
- 20-bit 1µs resolution DirectX timer.
- 128-pin PQFP package.
- Best price/performance PCI audio platform.

System Block Diagram

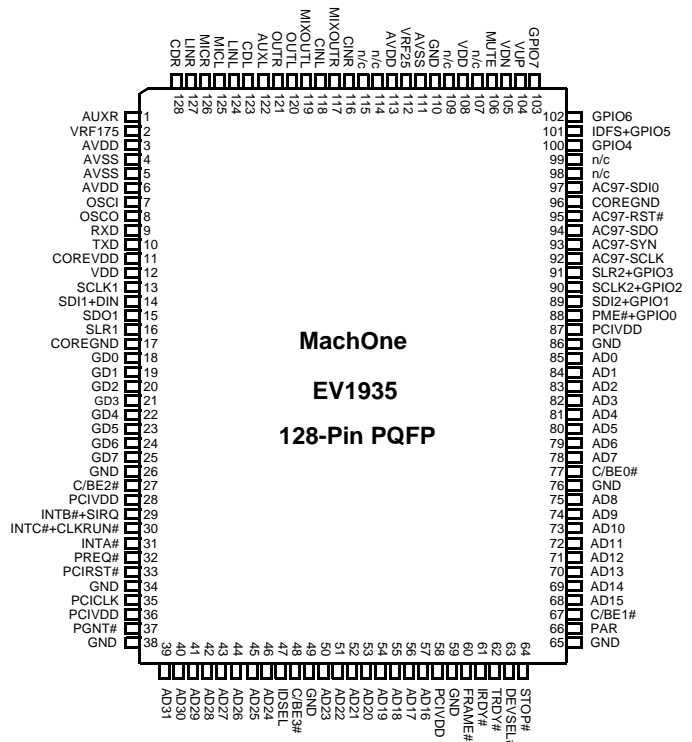


State Diagram



D0 Uninitialized	Audio system is on, and needs to initialize registers
D0 Active	PCI Audio full-on, both analog and digital function on
D1	Light power down. DDMA, DAC, ADC and digital interface off, others on
D2	Heavy power down, digital, AC-link, internal codec off and external analog interface off.
D3	Both analog and digital off, internal clock separated.

Pin Diagram



Signal Description

Signal Name	PQFP	Type	Signal Description
PCI Bus Signals			
AD[31:24]	39-46	I/O	PCI Address and Data
AD[23:16]	50-57		
AD[15:8]	68-75		
AD[7:0]	78-85		
C/BE#[3:0]	48, 27, 67, 77	I/O	PCI Bus Command and Enable
PCI Bus Control Signals			
FRAME#	60	I/O	PCI Frame, bus cycle start
IRDY#	61	I/O	PCI Initiator Ready
TRDY#	62	I/O	PCI Target Ready
DEVSEL#	63	I/O	PCI Device Select
STOP#	64	I/O	PCI Stop cycle
PAR	66	I/O	PCI Parity
IDSEL	47	I	PCI Initialization Device Select
PCIRST#	33	I	PCI and Chip Reset
PREQ#	32	O-T	PCI Bus Request
PGNT#	37	I-T	PCI Bus Grant
INTA#	31	OD	PCI Interrupt Request
INTB#	29		
INTC#	30		
PCICLK	35	I	33MHz PCI Clock
ACPI Control			
PME#	88	I/O	Power Management Enable
CLKRUN#	30	OD	PCI Clock Monitor
Serial Interrupt Control			
SIRQ	29	OD	Serial IRQ Request
Primary Serial Audio Interface			
SCLK1	13	I/O	Serial Clock
SDI1	14	I	Serial Data In
SDO1	15	O	Serial Data Out
SLR1	16	O	Serial Digital Audio Framing Signal for DAC
Secondary Serial Audio Interface			
SCLK2	90	I/O	Serial Clock
SDI2	89	I	Serial Data In
SLR2	91	O	Serial Digital Audio Framing Signal for DAC
External AC Link Interface			
AC97-SDO	94	O	AC97 Serial Data Out
AC97-SCLK	92	I	AC97 System Clock
AC97-SDI	97	I	AC97 Serial Data In
AC97-SYN	93	O	AC97 Data Frame Sync
AC97-RST#	95	O	AC97 Reset
Subsystem ID - PAL Interface			
DIN	15	I/O	PAL data input
IDFS	101	I/O	Frame Signal clock output
MIDI Interface Signal			
RXD	9	I	Receive Data
TXD	10	O	Transmit Data
Volume Control			
MUTE	106	I	Volume Mute
VOLDN	105	I	Volume Down
VOLUP	104	I	Volume Up

Signal Description (cont.)

Signal Name	PQFP	Type	Signal Description
General Purpose I/O			
GPI00	88	I/O	General Purpose I/O
GPI01	89		
GPI02	90		
GPI03	91		
GPI04	100		
GPI05	101		
GPI06	102		
GPI07	103		
Game Port			
GD7	25	I/O	Game Port Data
GD6	24		
GD5	23		
GD4	22		
GD3	21		
GD2	20		
GD1	19		
GD0	18		
AC-97 Codec/Mixer Interface Signal			
CDR	128	I	CD Input Left/Right
CDL	123		
LINER	127	I	Line Input Left/Right
LINEL	124		
MICR	126	I	Microphone Input Left/Right
MICL	125		
AUXR	1	I	Auxiliary Input Left/Right
AUXL	122		
OUTR	121	O	Output Left/Right
OUTL	120		
MIXOUTR	117	O	Mixer Output Left/Right
MIXOUTL	119		
OSCI	7	I	Oscillator Input
OSCO	8	O	Oscillator Output
VRF25	112	I/O	Internal DAC reference voltage filter (2.5V)
VRF175	2	I/O	Internal ADC reference voltage filter (1.75V)
CINR	116	I	ADC input loopback
CINL	118		
Analog Power/Ground			
AVSS	4, 5, 111	G	Analog ground
AVDD	3, 6, 113	P	Analog power, 5V only
Digital Power/Ground			
GND	26, 34, 38, 49, 59, 65, 76, 86, 110	G	System digital ground
COREGND	17, 96	G	
VDD	12, 108	P	System digital voltage, 5V
COREVDD	11	P	System core voltage, 5V
PCI-VDD	28, 36, 58, 87	P	PCI interface voltage, 3.3V or 5V (must be same voltage)
n/c	98,99, 107,109, 114,115	NC	No connection.

Bundled Software and Drivers

- Device drivers for:
 - Microsoft Windows 95
 - Microsoft Windows NT
 - Microsoft DOS / Windows 3.1
 - Microsoft Windows 98 / NT (WDM)
- MediaRack™
- Cyber Keyboard
- Microsoft NetShow™
- WebPhone™
- 32/64 voices MIDI Sample Library

OEM Package

- Databook
- Evaluation Board
- Schematic / Gerber File
- Audio on System Board Layout Guide
- User's Manual Master File
- Driver CD Gold Master
- Microsoft PC9X Documentation
- Compatibility Test Report
- Audio Quality Report
- Power Consumption Report

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