



CLIPPER PCI BACKPLANE ("CPB")

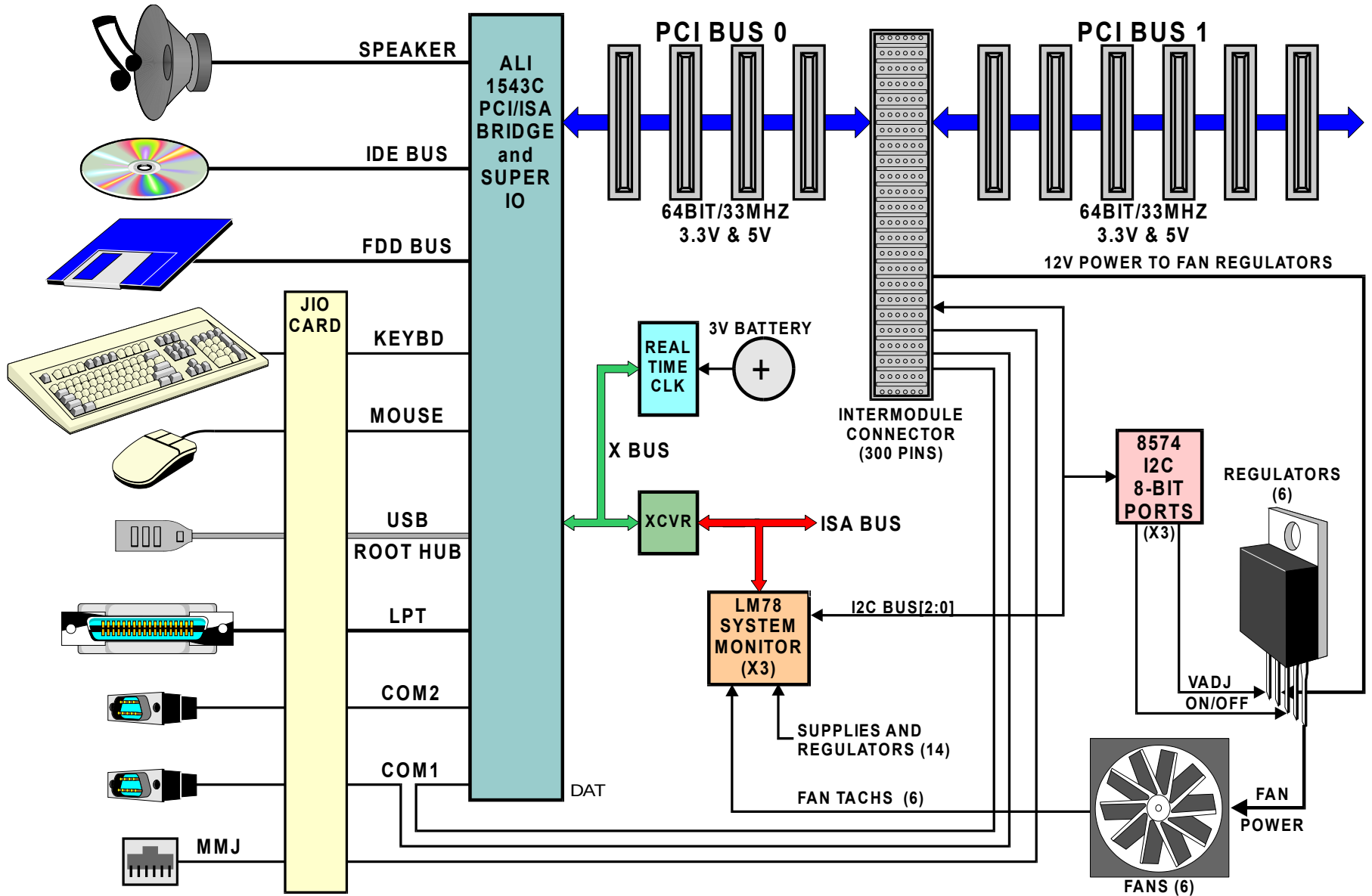
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ASSY 54-31056-01

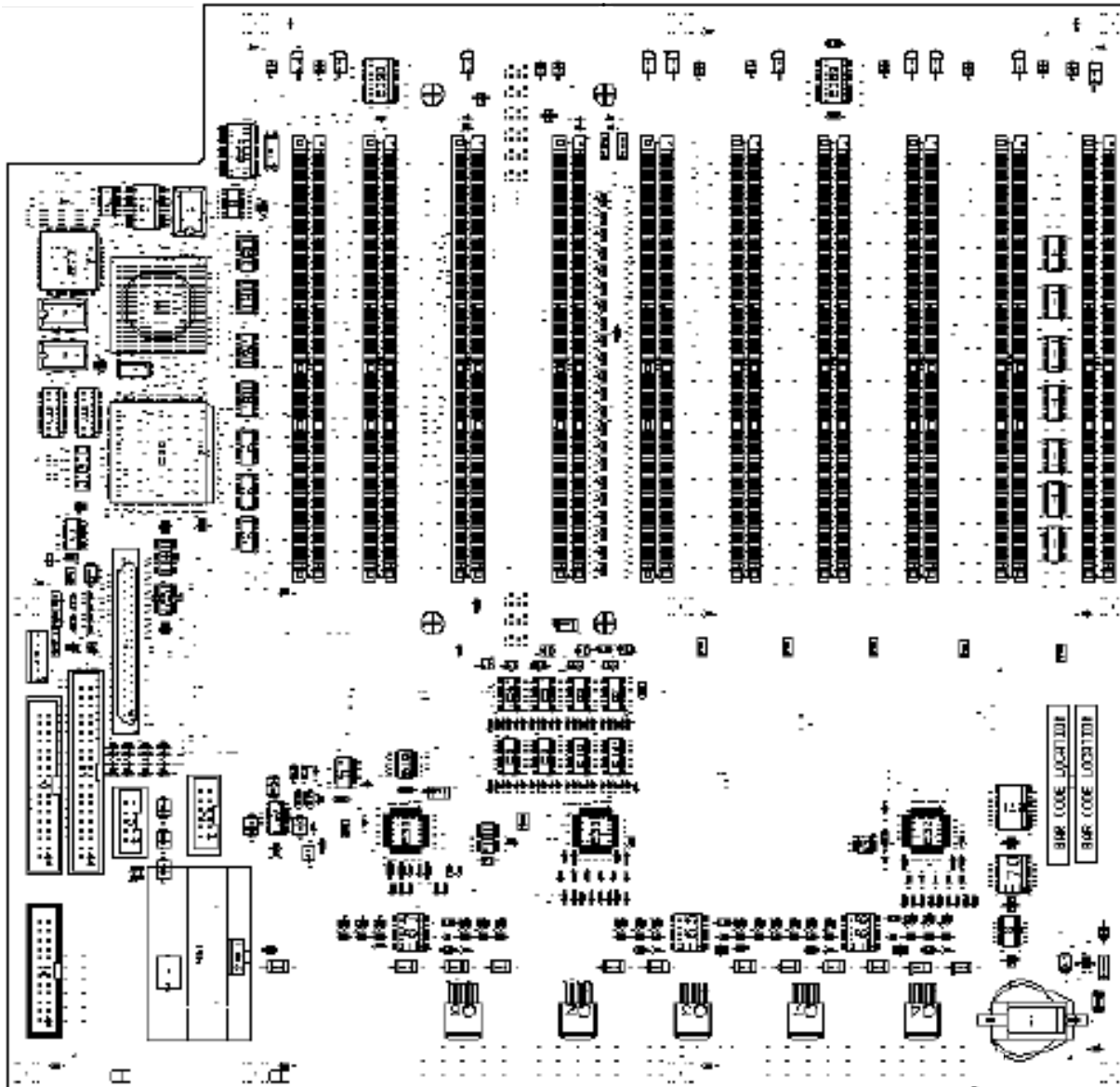
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Alpha Volume Server Engineering

- **Dual 64-Bit 33MHZ PCI buses, 10 slots total**
 - All slots support 3.3V and 5V option cards
 - All slots are bus master capable
 - Arbitration for both PCI buses provided by PChips
- **Integrated IO**
 - IDE interface for ATAPI devices (CD-ROM)
 - Diskette drive interface
 - Serial ports
 - Parallel port
 - Keyboard and mouse ports
 - Universal Serial Bus (“USB”) root hub
 - Real Time Clock and CMOS RAM with battery backup
- **PCI interrupt multiplexer**
- **Remote Maintenance Console support**
- **System hardware monitors**

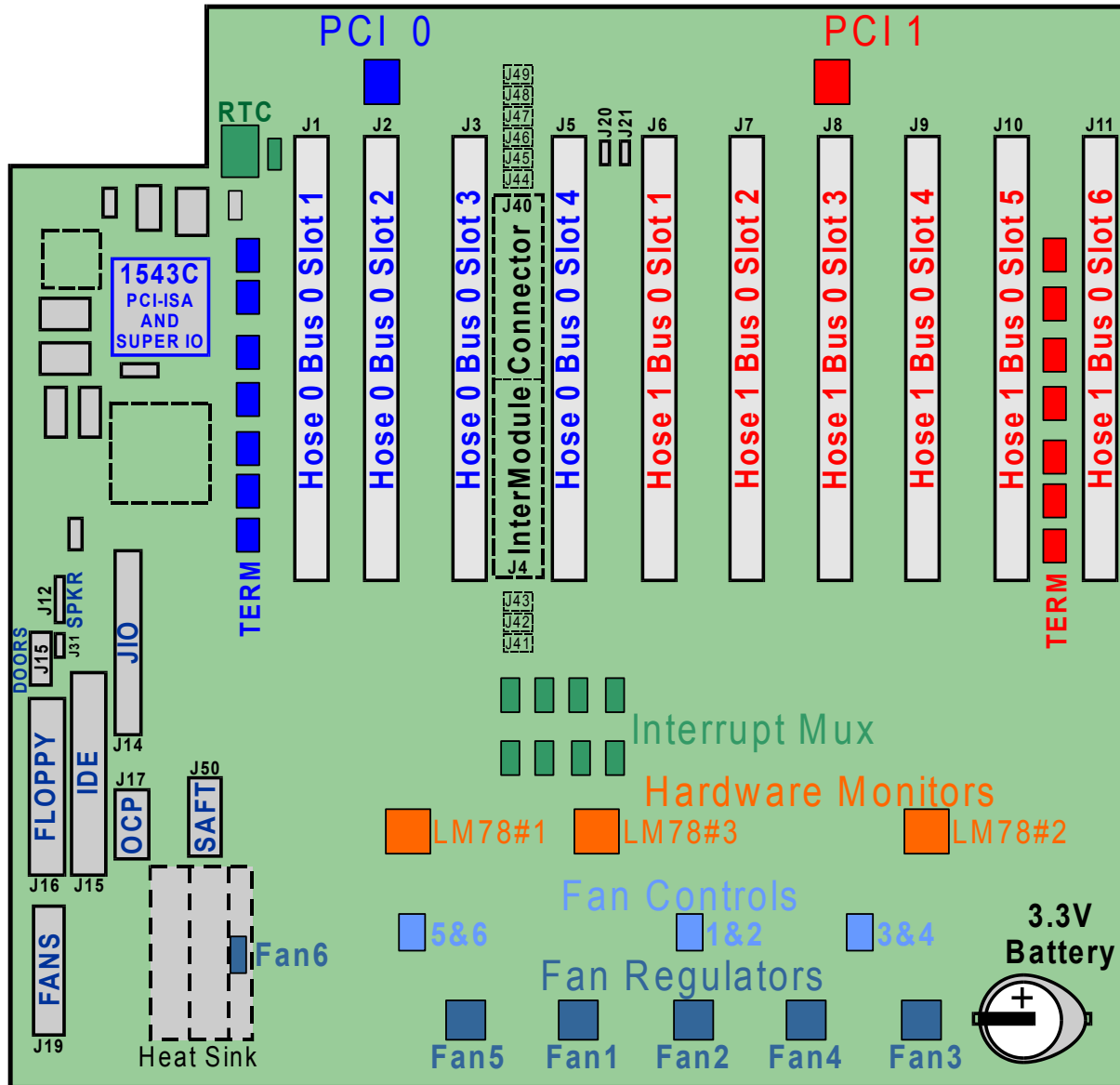
CPB Block Diagram



CPB Assembly - Side 1 View

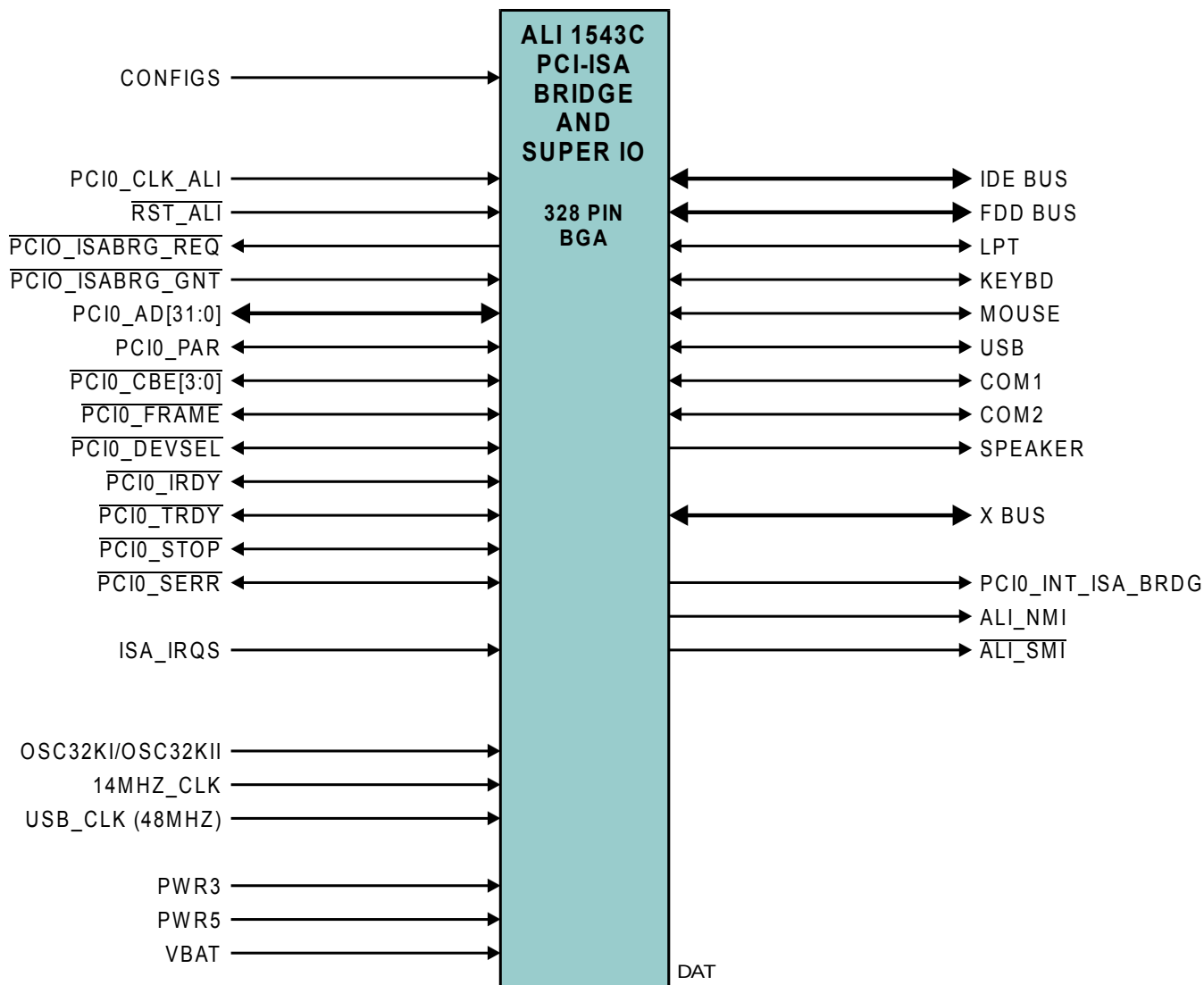


CPB Layout



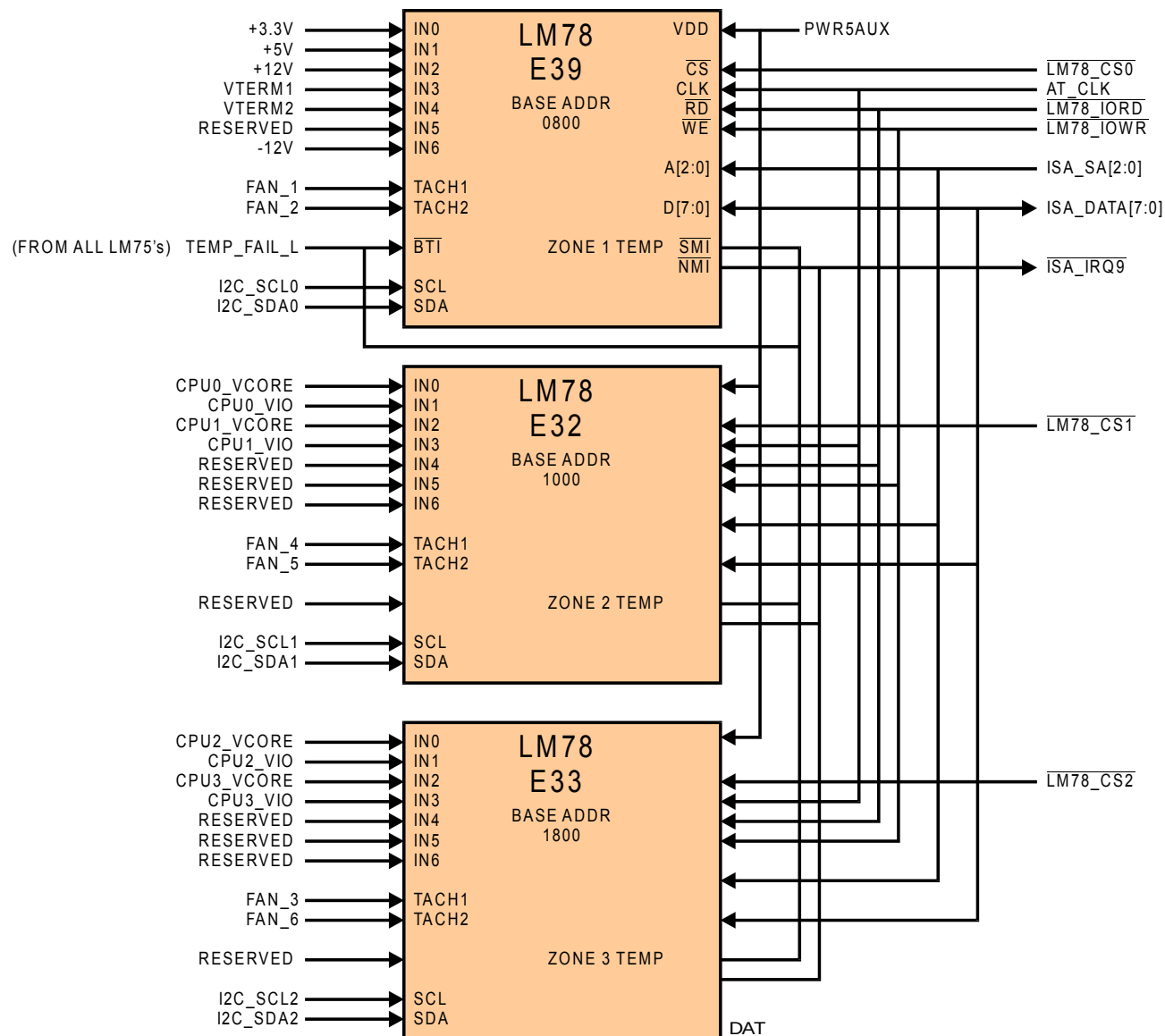
- **Acer Labs ALI1543C**
 - Popular with “Super Socket 7” PC mainboard manufacturers
- **PCI 2.1 compliant**
 - Supports Passive Release and Delayed Transaction
- **3.3 Volt PCI IO, 5 Volt tolerant**
- **Single chip solution for integrated IO**
 - Dual UltraDMA IDE interfaces (Modes 1 and 2 Supported)
 - Floppy disk interface (Up to 1Mbps Data Transfer Rate)
 - Dual serial ports (16550 Compatible)
 - Parallel port (EPP/ECP Capable)
 - USB root hub with 2 ports (supports LS and FS modes)
 - PS2/AT keyboard controller
 - PS2 mouse controller
- **XBUS interface to external RTC/CMOS NVRAM**
 - Benchmarq BQ4285S

Acer Labs 1543C PCI-ISA/SuperIO



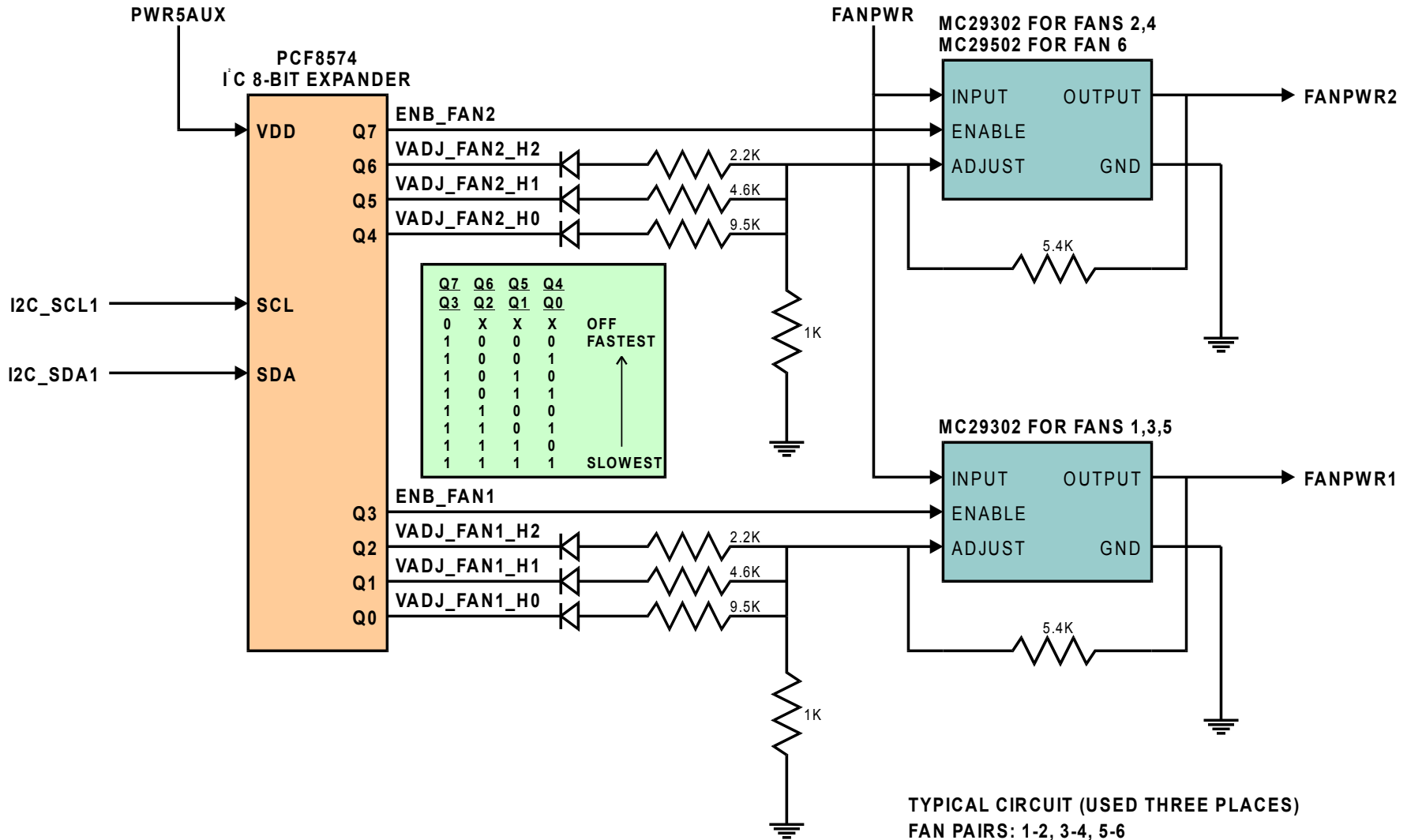
- **(3) NatSemi LM78 System Monitor IC's**
 - Controlled by RMC PIC Processor via I2C
- **Monitor system voltages, temperature, and fan speed**
 - Compares current readings to threshold values set by RMC PIC
- **Provide NMI (to Interrupt MUX) on event detection**
 - Under/over voltage
 - Over temperature (including OR of LM75 over-temp outputs)
 - Fan speed below threshold
- **Internal state can be accessed via ISA bus IO space**
- **RMC PIC copies internal state to Dual Ported RAM**
 - Updates DPR contents when polled and on event detection

LM78 Hardware Monitors



- **Simple Construction**
 - (3) I2C 8-Bit Port Expanders, two fans controlled per expander
 - (6) 5-Terminal Adjustable Low Drop Out Linear Voltage Regulators
- **Provide independent on/off control and 8 speed settings per each of 6 fans**
- **Controlled by RMC PIC processor**
- **RMC PIC varies fan speeds in response to zone temperature variation**
 - Enclosure is divided into two zones:
 - Zone 1: CPU and memory
 - Zone 2: Power supplies, drive bays, and PCI Backplane
- **Fans are spun up to full speed and verified during power-up of system**
- **Functional fans are sped up if a fan fails**

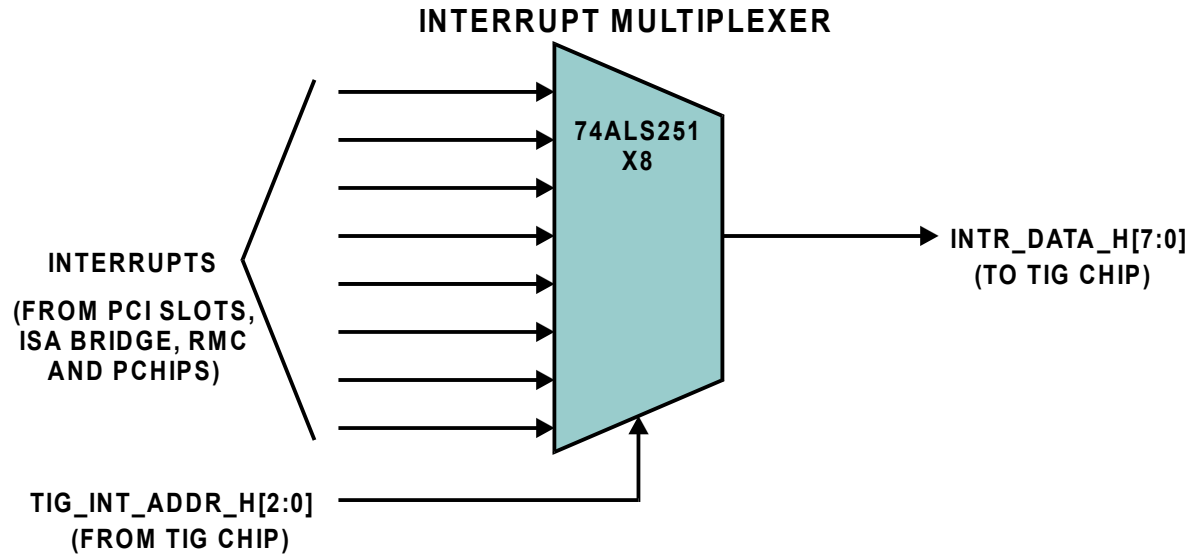
Fan Control Circuit



Interrupt Multiplexer

- Comprised of (8) 74ALS251 8:1 multiplexers
- Gathers all PCI, PCI-ISA bridge, and RMC interrupts into functional groups
- Multiplexes interrupt groups to TIG chip
 - Multiplexer group selection provided by TIG (TIG_INT_ADDR[2:0])
- Reduces pin counts through InterModule Connector and TIG chip
 - Up to 64 interrupts can be supported (48 currently used)
 - Only 11 pins required at IMC and TIG chip

Interrupt Multiplexer



GRP 0	GRP 1	GRP 2	GRP 3	GRP 4	GRP 5	GRP 6	GRP 7	MUX BIT
1	0:2:INTD	0:4:INTD	1:2:INTD	1:4:INTD	1:6:INTD	ALI_INT	0	INTR_DATA_H7
1	0:2:INTC	0:4:INTC	1:2:INTC	1:4:INTC	1:6:INTC	ALI_SMI	PCHIP0_ERR	INTR_DATA_H6
1	0:2:INTB	0:4:INTB	1:2:INTB	1:4:INTB	1:6:INTB	ALI_NMI	PCHIP1_ERR	INTR_DATA_H5
1	0:2:INTA	0:4:INTA	1:2:INTA	1:4:INTA	1:6:INTA	RSVD_MI	0	INTR_DATA_H4
1	0:1:INTD	0:3:INTD	1:1:INTD	1:3:INTD	1:5:INTD	1	0	INTR_DATA_H3
1	0:1:INTC	0:3:INTC	1:1:INTC	1:3:INTC	1:5:INTC	TEMP_INT	RSVD_NMI	INTR_DATA_H2
1	0:1:INTB	0:3:INTB	1:1:INTB	1:3:INTB	1:5:INTB	1	0	INTR_DATA_H1
1	0:1:INTA	0:3:INTA	1:1:INTA	1:3:INTA	1:5:INTA	1	0	INTR_DATA_H0

KEY= HOSE:SLOT:INT

CPB Layout

