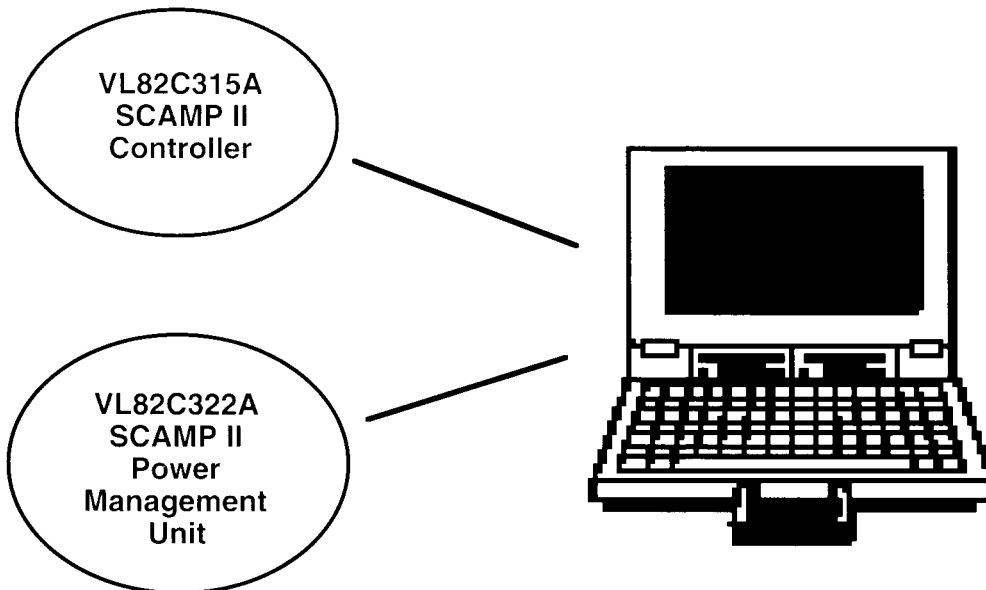


## SCAMP™ II LOW-POWER NOTEBOOK CHIP SET



### OVERVIEW

The VL82C315A SCAMP II System Controller and the VL82C322A SCAMP Power Management Unit (PMU) provide a high-performance, low-chip count, low-power 16-bit notebook solution. These devices support fully-static AMD Am386™ and Cyrix Cx486SLC™ microprocessors with System Management Interrupt and 3.3 volt, 5.0 volt or mixed-mode operation.

The VL82C315A and the VL82C322A provide an excellent chip set solution for 386SX-based notebook systems operating up to 33 MHz.

The VL82C315A supports 387SX-compatible numeric coprocessors including versions that support slow and stop clock operation.

With VLSI's VL82C315A SCAMP II Controller, a system designer is assured of a high-integration single chip that simplifies system design and lowers overall system cost, while the VL82C322A PMU reduces overall system power consumption.



## SCAMP II LOW-POWER NOTEBOOK CHIP SET

### **S** SCAMP II CONTROLLER - VL82C315A

The VL82C315A SCAMP II Controller is the next generation of SCAMP II System Controllers intended primarily for low-power applications, such as notebook computers, that require a high degree of integration.

The SCAMP II Controller is a 208-lead device that replaces the following peripheral logic on the motherboard:

- Two 82C37A DMA controllers
- 74LS612 memory mapper
- Two 82C59A interrupt controllers
- 8254C timer
- 82284 clock generator and Ready interface
- 82288 bus controller
- 8042 keyboard controller
- 146818A real-time clock

The VL82C315A also includes the logic for System Management Interrupt (SMI) control, address/data bus control, memory control, shut down, standard and suspend mode, refresh generation, refresh/DMA arbitration, and advanced power management features.

### **P**OWER MANAGEMENT UNIT - VL82C322A

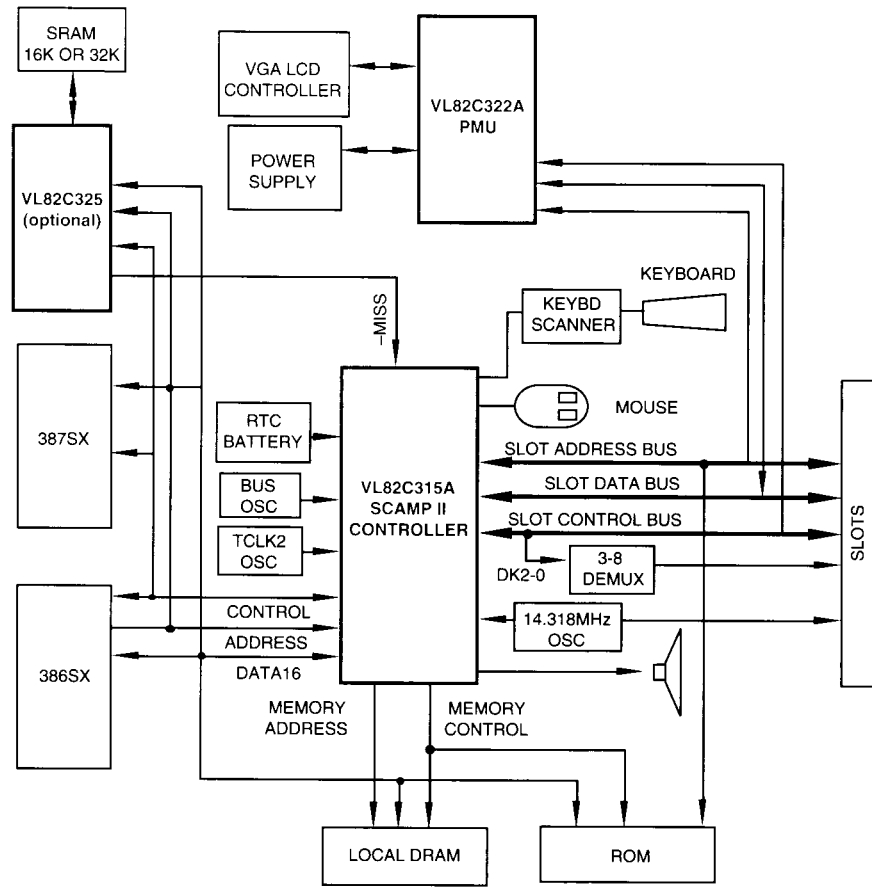
The VL82C322A PMU dramatically reduces overall system power consumption and provides special features for laptop/notebook AT®-compatible computers. The power reduction is accomplished via an activity monitor which detects inactivity in the system, and slows or stops the CPU clock and/or removes power from peripheral devices.

The PMU has five operational modes: ON, DOZE, SLEEP, SUSPEND, and OFF. By monitoring the system activity, the PMU will switch between the states to achieve power saving without impacting the system performance. The PMU also provides independent timers for LCD backlight and display and an auto power-on feature to turn on the system power via a push-button switch, modem ring indicator, or real-time clock time of day alarm.

The VL82C322A can control power to eight external devices independently in all five operational modes. It can be used to maintain system DRAM during SUSPEND mode by generating CAS-before-RAS refresh cycles or it can enable self-refresh in DRAM which supports this mode. Full system leakage current control is provided in SUSPEND mode. Several general purpose I/O ports have useful secondary features. One can be used to generate programmable tones or blink an LED, and several are capable of directly driving LEDs. Two can be used to add more levels of low battery detection.



## SCAMP II LOW-POWER NOTEBOOK CHIP SET



### PACKAGING

PART NUMBER	DESCRIPTION	PACKAGE
VL82C315A-FC	SCAMP II System Controller	208-lead Metric Quad Flat Pack
VL82C322A-FC	Power Management Unit	100-lead Thin Quad Flat Pack
NOTE: Operating temperature range is 0°C to +70°C		



# SCAMP II LOW-POWER NOTEBOOK CHIP SET

## SYSTEM SUPPORT

VLSI Technology offers extensive support for system designers to assist them in their design applications.

- Samples of the SCAMP II Low-Power Notebook Chip Set
- Evaluation boards available
- Documentation
  - VL82C315A Data Manual
  - VL82C322A Data Sheet
  - Sample schematics
  - Schematic databases and netlists available on PC disk
  - Evaluation board artwork available
- Software
  - PhoenixBIOS™/Phoenix-MISER™ BIOS provided by VLSI Technology (others supported by BIOS vendor)
- Support
  - PhoenixBIOS from Phoenix Technologies allows OEM BIOS customization

## RELATED NOTEBOOK PRODUCTS

**SCAMP I Chip Set** – The VL82C310 and VL82C107 SCAMP controller chips are very cost-effective mid-range featured chips designed for use in notebook, laptop, portable, and cached desktop PC/AT-compatible based systems. These chips are intended for use in 80286 microprocessor-based systems with clock speeds from 10 to 20 MHz and in 386SX microprocessor-based systems with clock speeds from 10 to 25 MHz. With the addition of the VL82C312 Power Management Unit, the SCAMP I chip set dramatically reduces overall system power consumption and provides special features for laptop/notebook PC/AT-compatible computers.

**SCAMP II 5 Volt Power-Managed SX Solution** – These VL82C316 and VL82C323 devices support fully-static 386 microprocessors with System Management Interrupt at 5.0 volt operation.

**Kodiak™ 32-Bit Low-Voltage Chip Set** – Consisting of the VL82C315A System Controller, the VL82C322A Power Management Unit and the VL82C3216 Bus Expanding Controller Cache with Write Buffer, Kodiak provides a high-performance, low-chip count 32-bit notebook solution supporting 386DX and 486 microprocessors with System Management Interrupt and 3.3 volt, 5.0 volt or mixed-mode operation. The VL82C3216 offers the solution for interfacing a 386SX-based chip set to 386DX, 486DX or 486SX processors.

## RELATED DESKTOP PRODUCTS

**VL82C480** – 32-bit single-chip ISA controller with on-chip cache controller designed for use in 486-based ISA systems operating at up to 40 MHz.

**SC486™** – Single chip high-performance 486 PC/AT-compatible controller for use in 486SX- and 486DX- based personal computer systems running up to 33 MHz.

**UART Family** – Asynchronous communications elements that serve as serial data input/output interfaces in microcomputer systems. They perform serial-to-parallel conversion on data characters received from peripheral devices or modems, and parallel-to-serial conversion on data characters transmitted by the CPU.

- VL16C451B Single UART (enhanced VL16C451)
- VL16C452B Dual UART (enhanced VL16C452)
- VL16C550 Single enhanced UART (NSC-compatible)
- VL16C551 Single enhanced UART
- VL16C552 Dual enhanced UART



# SCAMP II LOW-POWER NOTEBOOK CHIP SET

## FEATURES

### VL82C315A - SCAMP II Controller

- 33 MHz operation at 5V and 25 MHz at 3.3V
- Supports mixed voltage (3.3/5V) operation without external level shifters
- Supports CAS-before-RAS and self refresh during suspend mode
- Local bus peripheral support for all cycle types
- Built-in keyboard controller and real-time clock
- Supports sleep mode and stop clock
- Supports AMD SMI and I/O trapping

### VL82C322A - Power Management Unit

- Provides 3.3V, 5.0V, or mixed voltage operation without external level shifters
- Very low power operation from 32 kHz clock source
- Supports ON, DOZE, SLEEP, SUSPEND, and OFF operational modes
- Activity detectors and timers allow automatic transition between power management states or via interrupt generation under firmware control
- Programmable to generate NMI, IRQx, or SMI for use as power management interrupt
- Programmable to provide CAS-before-RAS or self refresh during suspend mode
- Provides eight general purpose auto-sequencing power control signals plus dedicated LCD power sequencing controls
- Provides 10 general purpose I/O signals

### VL82C325 – Cache Controller ( Optional)

- High-performance, highly-integrated Cache Controller that is for systems based on VLSI's SCAMP chip sets up to 25 MHz

## BENEFITS

### VL82C315A - SCAMP II Controller

- Designed for latest low-power notebook applications
- Compatible with both current and future designs
- Compatible with multiple DRAM implementations
- Permits versatile peripheral support
- Greatly reduces system parts count and cost
- Saves power in portable applications
- Compatible with AMD and Intel 386 microprocessors

### VL82C322A - Power Management Unit

- Designed for latest low-power consuming notebook applications
- Reduces power consumption
- Supports laptop and portable applications
- User friendly while saving power
- Allows flexible power saving options
- Compatible with multiple DRAM implementations
- Allows design flexibility for system power saving
- Permits the designer system design differentiation

### VL82C325 – Cache Controller ( Optional)

- Improves the overall system performance by reducing the number of wait states during non-cache cycles



