

## CS8227 and CS8288 CHIPSlite CHIPSlite-sx

### Notebook Support Circuits

CHIPSlite is the systems control portion of Chips complete solution for the design of portable computers. Each member of the CHIPSlite family of CHIPSets consists of two integrated circuits: a memory/bus controller (either SCAT 82C235, or SCATsx 82C836) and an Enhanced Power Control Unit, the 82C641. Together these chips provide memory control, AT bus control, real time clock, coprocessor interface, and power management functions.

Combining CHIPSlite with a CHIPS graphics controller, CHIPS peripheral controller and standard off-the-shelf memory, you can implement a complete laptop with less than twenty integrated circuits (not including memory). For graphics support, Chips offers the 82C426 Color Flat Panel/CRT CGA Controller and the 82C456 Enhanced Flat Panel/CRT VGA Controller. For peripheral support, Chips offers the 82C710 and 82C711 Multifunction Floppy Controllers.

### Features

- Part of a complete laptop solution from Chips and Technologies, Inc.
- Complete set of system control functions contained in SCAT 82C235 and SCATsx 82C836
  - Two DMA controllers, two programmable interrupt controllers
  - Programmable interval timer
  - Real time clock
- 100% IBM PC/AT compatible
- Supports up to 16 MB of DRAM
- Improved performance with Shadow RAM
- Optimized power conservation
  - Automatic power down for LCD backlight
  - SMARTSLEEP for short intervals of power reduction
  - Standby mode for maximum power savings
  - Support for slow refresh DRAMs
  - CAS-before-RAS refresh
- Support for combined 8-bit ROM
- Two 160-pin plastic flat packs

## Power Management

CHIPS lite has been tailored to notebook designs by maintaining a focus on power management and maximum integration. Power management features are essential to notebooks because they provide a way to reduce battery size and weight without sacrificing battery lifetime. CHIPS lite features include SMARTSLEEP, standby, automatic backlight power Off, CAS-before-RAS refresh, modem ring power ON, and support for slow refresh DRAMs. All of these power management features are integrated into the CHIPS lite BIOS.

SMARTSLEEP monitors keyboard activity in order to detect idle loops in many different application packages. When an idle loop is detected, SMARTSLEEP saves power by shutting off or slowing down the clocks until the next interrupt. With standby, users can reduce power consumption by powering down the system during periods of inactivity—without the delay of a typical disk bootstrap. For further power savings, the refresh rate of main memory can be reduced.

## Design Options

CHIPS lite provides an upgrade path from 12 MHz 286 designs all the way to 20 and 25 MHz paged or cached memory 386sx architectures. The Enhanced Power Control Unit is common to all designs. Upgrading from a 286 to 386sx with cache or paged memory architectures can be done with small changes to motherboard design. The following table lists the devices that make up the various versions of the CHIPS lite family of products.

**Table 1-1.** *The CHIPS lite Family of Products*

Description	CHIPS lite	CHIPS lite-sx	CHIPS lite-sx/cache
Main Control	82C235	82C836	82C836
Enhanced PCU	82C641	82C641	82C641
Cache Control			82C835

Figure 1-5. CS8227 CHIPS lite Block Diagram

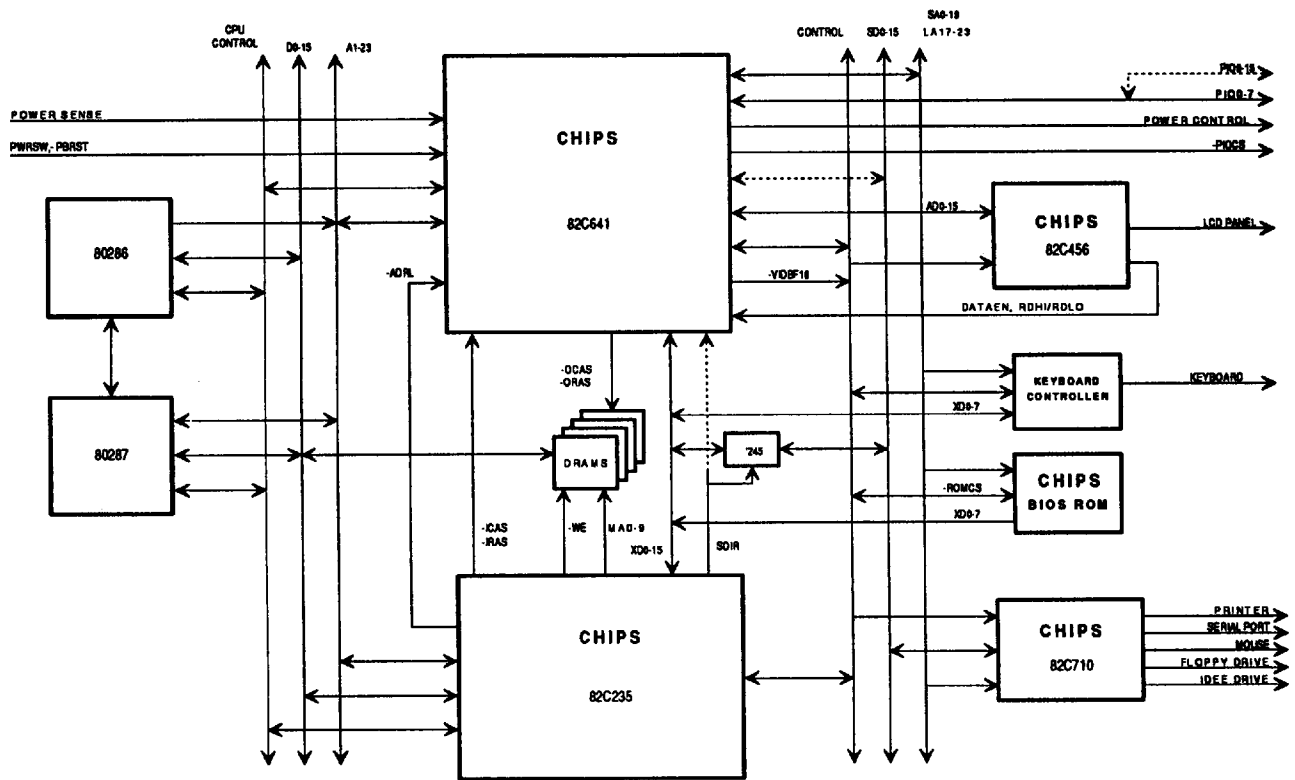


Figure 1-6. CS8288 CHIPSlite-sx Block Diagram

