

## FEATURES

- Single-chip PCMCIA host adapters
- Direct connection to ISA (PC AT) bus
- Direct connection to PCMCIA socket
- Compliant with PCMCIA 2.1 and JEIDA 4.1
- 82365SL-compatible register set, ExCA™-compatible
- Automatic Low-power Dynamic mode for lowest power consumption
- Programmable Suspend mode
- Five programmable memory windows per socket
- Two programmable I/O windows per socket
- Programmable card access cycle timing
- 8- or 16-bit CPU interface
- 8- or 16-bit PCMCIA interface support
- ATA disk interface support
- DMA support (CL-PD6722)
- Easy host interface using ISA I/O addresses 03E0h and 03E1h
- Mixed-voltage (3.3V or 5V) operation
- Single-socket interface: 144-pin VQFP for smallest form factor (CL-PD6710)
- Dual-socket interface: 208-pin PQFP and VQFP (CL-PD6722)

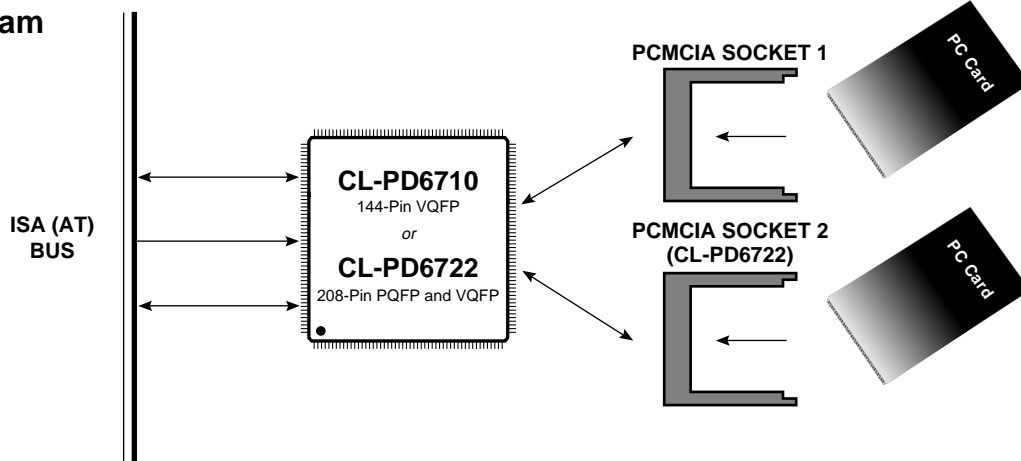
## PCMCIA Host Adapters

## OVERVIEW

The CL-PD6710 and CL-PD6722 are single-chip PCMCIA host adapter chips capable of controlling one (CL-PD6710) or two (CL-PD6722) PCMCIA sockets. The chips are fully PCMCIA-2.1 and JEIDA-4.1 compliant and are optimized for use in notebook and handheld computers where reduced form factor and low power consumption are critical design objectives. With the CL-PD6710, a complete PCMCIA solution with power-control logic can occupy as little as 1.5 square inches (excluding the connector). The CL-PD6722 enables a complete dual-socket PCMCIA solution with power-control logic in less than 2 square inches (excluding connectors).

The CL-PD6710 and CL-PD6722 chips employ energy-efficient mixed-voltage technology that can reduce system power consumption by over 50 percent. The chips also provide a Suspend mode, which stops the internal clock, and an automatic Low-power Dynamic mode, which stops transactions on the PCMCIA bus, stops internal clock distribution, and turns off much of the internal circuitry. *(cont.)*

## System Block Diagram



**OVERVIEW** (cont.)

PC applications typically access PCMCIA cards through the socket/card-services software interface. To assure full compatibility with existing socket/card-services software and PC-card applications, the register set in the CL-PD6710 and CL-PD6722 is a superset of the Intel® 82365SL register set.

Both chips provide fully buffered PCMCIA interfaces, meaning that no external logic is required for buffering signals to/from the interface, and power consumption can be controlled by limiting signal transitions on the PCMCIA bus.

**Notebook Computer Design Priorities**

- Small Form Factor
  
- Minimum Power Consumption
  
- High Performance
  
- Compatibility

**Supporting Features**

- Single-chip solutions
- No external buffers for host or socket
- Efficient board layout
  
- Automatic Low-power Dynamic mode
- Suspend mode
- Mixed-voltage operation
  
- Write cache
- Programmable timing supports more cards, faster reads and writes
- Automatic bus sizing for 8- or 16-bit
- DMA available with the CL-PD6722
  
- Compliant with PCMCIA 2.1 and JEIDA 4.1
- 82365SL A-step register-compatible, ExCA-compatible

**Host Adapter Form Factor**

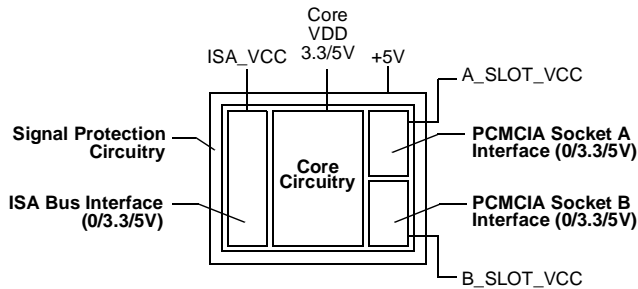

# CL-PD6710/ PD6722

PCMCIA Host Adapters



## MIXED VOLTAGE SUPPORT

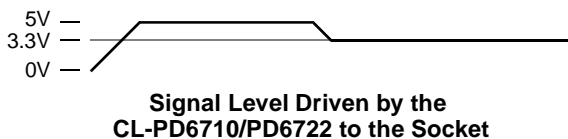
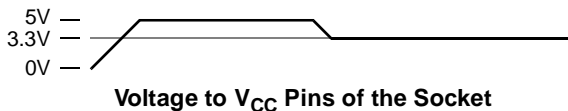
The CL-PD6710/PD6722 host controllers support fully mixed voltage operation, a key feature for low-power system design and low-power card operation. The core, ISA interface, and each PCMCIA socket interface can all operate independent of each other at either 3.3V or 5V.



**Fully Independent Voltage Operation  
of CL-PD6710/PD6722 Interfaces**

Also, each socket interface on the CL-PD6722 can dynamically support either 3.3V or 5V operation, independent of the setting of the other. For example, one socket could be operating a 3.3V SRAM card while the other socket is operating a 5V modem card.

Not only can each socket operate independently, but the operating voltage of each socket interface can be switched back and forth between 3.3V and 5V operation without requiring that the socket be powered down, thus providing dynamic operating voltage support of multi-voltage-capable cards. A special Cirrus Logic tracking feature matches each interface's address, data, and control signal voltages to each socket interface's operating voltage. This eliminates the possibility of excessive current consumption at socket interfaces that is commonly caused by mismatched socket interface levels and card voltages.



## DMA-CAPABLE CARD SUPPORT

The CL-PD6722 host controller supports PCMCIA cards that are capable of DMA (direct memory access). Using DMA features on a DMA-capable card improves system performance in three ways:

- DMA relieves CPU intervention when large data transfers are required from a PCMCIA I/O card device.
- Since the CPU is not required for the DMA data transfer, it is free to fetch and process other instructions.
- Because the system DMA controller is specifically designed for moving data from an I/O device to memory, it can complete this task faster, using less bandwidth than the CPU would by doing the equivalent I/O cycles to the card.

DMA is used in applications where rapid data transfers are necessary. The most common applications are PCMCIA floppy disk drives, where data must be quickly transferred from the drive to memory. Other likely applications are LAN (local area network) cards, sound cards, SCSI adapter cards running hard disks or CD-ROM drives, and other removable drives.

### Why Add DMA to PCMCIA?

Notebook and subnotebook designs can be made smaller, lighter weight, and more portable if bulky hard disks and floppy drives become external accessories. Devices that at one time were required to be continuously carried as part of the main unit can now be PCMCIA peripherals, carried only when needed, and easily interchanged.

### Implementing DMA Using a CL-PD6722

With supplemental logic, the CL-PD6722 can connect to any specific DMA channel. The CL-PD6722 can allow software to select any of the three 8- or 16-bit DMA channels, thus providing optimal flexibility for DMA implementation. For more information, please contact your Cirrus Logic representative.



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