Overview

The Vadem VG-469 is a compact, highly integrated PC Card controller chip implementing the latest revisions to the PCMCIA/ JEIDA specifications alongwith ExCA™ extensions. It's register set is a superset of the Intel®82365SL. Supporting two PC Card sockets, it is uniquely designed for space-limited, cost-sensitive applications where battery life is an important factor. For systems requiring more than two sockets, the VG-469 can be cascaded to support up to four sockets without external logic. With external decoder logic, unlimited cascading is possible. Typical VG-469 applications include small notebook computers, palmtops and other personal information devices, as well as docking stations for portable computers.
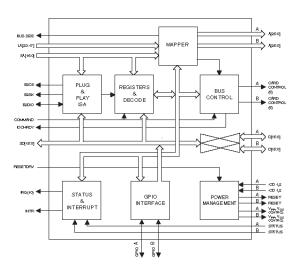
The VG-469 supports the system bus timing of standard ISA and EISA architectures, including those based on the Intel 386SL. A programmable configuration mechanism allows the system manufacturer to control many PC Card setup parameters in software or firmware.

The VG-469 supports mixed voltage operation and is compliant with the new PCMCIA low voltage card interface specification. The ISA bus and each of the two PC Card sockets can be independently operated at either 3.3V or 5V.

Power management based on activity monitoring together with the VG-469's very low current-draw combine to minimize its demand for battery power.

Jumperless add-in card installation is supported by the VG-469 with the on-chip implementation of the Plug and Play ISA version 1.0.

VG-469 Block Diagram

Key Features

- 208-pin chip provides full ExCA/PCMCIA implementation of two PC Card sockets.

  Supports both memory cards and I/O cards (miniature peripherals).
  Supports PCMCIA-ATA hard disks and semiconductor disks.
  Memory-saving execute-in-place standard (XIP).
  Supports overlapping I/O windows across sockets and duplicate I/O cards via *INPACK signal.
  Cascadable up to four sockets without "glue," unlimited cascading with external logic.

Register-compatible with Intel 82365SL.

Five mappable memory windows and two I/O windows for each socket.

Internal buffering supports "hot" insertion and removal of cards.

Selectable programming voltage for various programmable devices.

Power Management Support.

  Integrated timer supports power management based on activity monitoring.
  Individual socket power control.
  Power saving with windows inactivity.

Plug and Play ISA version 1.0 support.

Mixed voltage operation.

  Supports 3.3V or 5V ISA bus interface.
  Supports the new PCMCIA 5V, 3.3V or X.XV card interface specification.
  Internal logic operates at either 3.3V or 5V.

Built-in over-voltage protection logic.

  Prevents damage to low-voltage cards.
  (3.3V and X.XV)

Optional buffer direction/enable controls for buffered cable driving.

Optional support for PC Card DMA operation.

Socket activity LED support.

Includes two GPIO pins.

With external buffers.

Functional Description

■ The VG-469 interfaces directly to a synchronous or asynchronous ISA bus. No external buffers or transceivers are needed. The VG-469 provides the special signals *SPKROUT, *INTR and *RIO.

A single VG-469 supports two PC Card sockets directly. Up to four PC Card sockets may be supported by cascading two VG-469's. Each VG-469 is uniquely selected using a pull-up/pull-down resistor. If an external decoder is used, any number of sockets can be supported.

Up to five memory window mapping ranges and up to two I/O window ranges are supported to avoid the possibility of system configuration conflicts. Each window is independently enabled and controlled.

Each memory window may map portions of the 64 Mbytes PC Card common memory or attribute memory space into 16 Mbytes system address space. Memory data bus width, system bus wait states, write protect and card enable are controlled on a per window basis. Minimum memory window size is 4 Kbytes. Window range overlapping among memory windows is not allowed.

Each I/O window can be located anywhere in the first 64 Kbytes of the I/O address space. I/O data bus width, system bus wait states and card enable are controlled on a per window basis. Minimum I/O window size is 1 byte. Window range overlapping among I/O windows is allowed if the card generates *INPACK signal.

To avoid the possibility of conflicting interrupts from multiple PC Cards at the same interrupt level, the VG-469 permits steering of interrupt requests to any of ten system bus interrupts. The interrupts can be configured as edge-triggered or level mode.

The status of the PC Card including card detection, memory write protect status, battery voltage detect, card power and ready/busy are accessible through the status register. A change in card status can cause an interrupt.

The VG-469 supports I/O cards with special signals (e.g. *SPKR). These signals are passed through to the system bus without modification.

Supports Intel®/Microsoft® Plug and Play for the ISA bus to provide automatic configuration capability. No jumpers are needed in add-on card implementation.

Supports PCMCIA cards that are capable of DMA. Applications include floppy drives, LAN cards, sound cards and CD-ROM drives.

Fully independent mixed voltage operation is supported. Each socket can dynamically support either 3.3V or 5V, independent of the setting of the other socket and ISA interface.
Compliant with the new PCMCIA low volt card interface, the VG-469 has built-in protection against damaging low volt cards in 5V sockets.

ADDITIONAL INFORMATION
Additional information regarding pinout and pin descriptions, register descriptions, timing characteristics and operating conditions may be obtained from the VG-469 data manual.