Mobile Media Research, Inc.

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Features

- 100% programmable single-chip interface to PCMCIA bus for I/O devices such as fax/modem cards
- Configuration registers per PCMCIA release 2.0
- Support for up to 2K-bytes of Attribute Memory
- Configurable address space
- Supports the following configuration options:
  - I/O Base Address (2E8h, 2F8h, 3E8h, 3F8h)
- Digital Audio (enable/disable)
- Ring Indicate (enable/disable)
- Card Enable/Disable
- Power Down (enable/disable)
- Card Reset
- Interface for an external 32Kx8 EEPROM
- Support for Speaker/Audio output through the PCMCIA bus
- Supports Rockwell, Sierra, Exar and Intel Fax/Modem chipsets
- ExCA[TM] compatible

Applications

- PCMCIA I/O devices such as fax/modem cards.

AllianceCORE[TM] Facts

Core Specifics	
Device Family	XC3x00A
CLBs Used	50
IOBs Used	46[1]
System Clock f_{max}	10 MHz
Device Features Used	Not Applicable

Supported Devices/Resources Remaining		
	I/O	CLBs
XC3x42A TQ100	36[1]	94

Provided with Core	
Documentation	User Documentation
Design File Formats	ViewLogic Schematic
Constraint Files	Not Applicable
Verification Tool	ViewSim Command Files
Schematic Symbols	Viewlogic
Evaluation Model	Prototyping board Available extra
Reference designs & application notes	None
Additional Items	None

Design Tool Requirements	
Xilinx Core Tools	XACTstep 5.2.1/6.0.1
Entry/Verification Tools	ViewLogic Schematic

Support
Support provided by Mobile Media Research

Notes:

1. Assuming all core signals are routed off-chip.
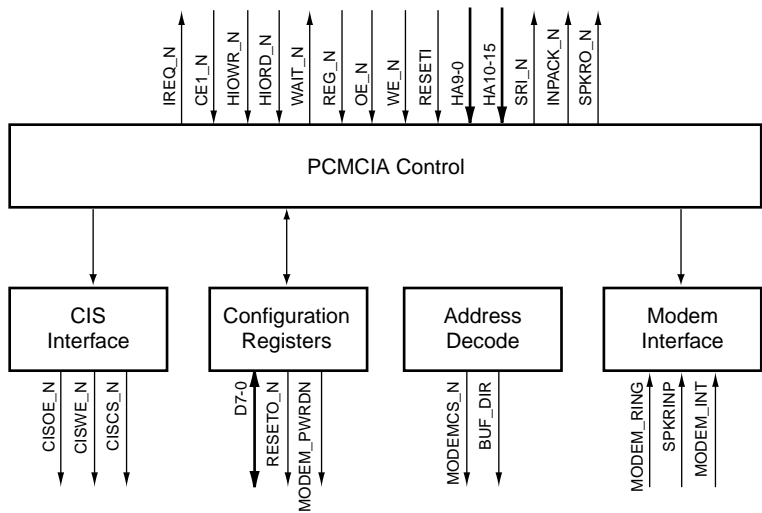
X7945

Figure 1. PCMCIA Fax/Modem Block Diagram

General Description

The PCMCIA Fax/Modem is a Xilinx FPGA-based macro for a PCMCIA fax/modem card using an external fax/modem chipset. The macro implements two PCMCIA Card Configuration Registers as well as the interface logic for controlling an external CIS EEPROM and the interface signals to a serial port. It provides a Modem Chip Select as well as inputs for a Ring Indicator and Speaker through an external DAA.

Functional Description

The fax/modem interface is partitioned into modules as shown in Figure 1 and described below.

PCMCIA Control

The PCMCIA control block decodes the control signals from PCMCIA and manages the data transfers from the Configuration Registers and the fax/modem.

CIS Interface

This interface decodes and controls accesses to the external CIS EEPROM.

Configuration Registers

This block implements the PCMCIA Function Configuration Registers (FCRs) which are used to control and configure the PC Card. These registers are 8-bit registers and include Configuration Option Register as well as the Configuration Status Register.

Address Decode

This decodes the addresses and generates the chip selects as well as transceiver controls. The decode is programmable based upon the configuration of the FCRs.

Modem Interface

This block controls some modem specific signals and passes these on the PCMCIA bus based on configuration.

Pinout

The pinout of the macro has not been fixed to specific FPGA I/O, allowing flexibility with a users application. Signal names are provided in the block diagram shown in Figure 1, and Table 1 below.

Table 1. Pinout

Signal	Signal Direction	Description
PCMCIA Bus Interface Signals		
IREQ_N	Tri-state	Interrupt Request to host
CE1_N	Input	Card Enable from host
HIORD_N	Input	I/O Read from host
HIOWR_N	Input	I/O Write from host
WAIT_N	Tri-state	Wait indication to host
REG_N	Input	Attribute Memory Select
OE_N	Input	Output Enable from host
WE_N	Input	Write enable from PCMCIA
RESETI	Input	Reset from host
HA0-9	Input	Address inputs from host
HA10-15	Input	Address inputs reserved for future extensions
SRI_N	Tri-state	Ring Indicator output to host
INPACK_N	Output	Input Acknowledge to host
SPKRO_N	Output	Digital audio output
Back End Interface Signals		
CISOE_N	Output	CIS Output Enable
CISWE_N	Output	CIS Write Enable
CISCS_N	Output	CIS Chip Select
D7-0	In/Out	Data bus
RESETO_N	Output	Reset output to all other devices on the PC Card
MODEM_PWR DWN	Output	Power Down Mode select for fax/modem
MODEMCS_N	Output	Chip Select from fax/modem chipset
BUF_DIR	Output	Transceiver Control
MODEM_RING	Input	Ring indication from DAA#
SPKRINP	Input	Speaker input from fax/modem
MODEM_INT	Input	Interrupt from fax/modem chipset

Verification Methods

The macro has been fully tested for compatibility with all major applications and Card Services. It has been used in many production fax/modem cards. It has recently been upgraded to use the latest Xilinx unified library elements.

Recommended Design Experience

Designers should be familiar with the PCMCIA specification, ViewLogic schematic entry and Xilinx design flows.

Available Support Products

Support products available fromMobile Media Research (further details provided in this product description):

• Xilinx-based PCMCIA Fax/Modem Macro (SW-XM201)
• PCMCIA Prototyping Card (SW-007)
• PCMCIA Card Debugger/Exerciser software
• CIS Generator 1.2 software

Figure 2. PCMCIA Card Using the Fax/Modem Macro

X7946
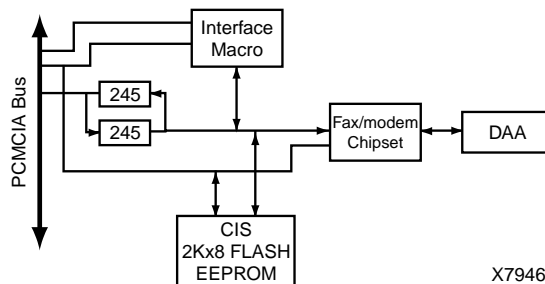
Ordering Information

To purchase or make further inquiries about this or other MMRI products, contact your local Mobile Media Research sales representative.

Related Information

Personal Computer Memory Card International Association

The PCMCIA publishes PC-Card specifications and related documents. For information contact:

> PCMCIA Headquarters
> 2635 North First Street, Suite 209
> San Jose, CA 95134 USA
> Phone: +1 408-433-CARD (2273)
> Fax: +1 408-433-9558
> BBS: +1 408-433-2270
> E-mail: office@pcmcia.org
> URL: www.pc-card.com
>
> PCMCIA European Chapter
> Avenue Marcel Thirty 204
> B-1200 Brussels, Belgium
> Phone: +32 2-774-9620
> Fax: +32 2-774-9690

Xilinx Programmable Logic

For information on Xilinx programmable logic or development system software, contact your local Xilinx sales office, or:

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> 2100 Logic Drive
> San Jose, CA 95124
> Phone: +1 408-559-7778
> Fax: +1 408-559-7114
> URL: www.xilinx.com

For general Xilinx literature, contact:

> Phone: +1 800-231-3386 (inside the US)
> +1 408-879-5017 (outside the US)
> E-mail: literature@xilinx.com

For AllianceCORE[TM] specific information, contact:

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> URL: www.xilinx.com/products/logicore/alliance/
> tblpart.htm