Intel® 440EX AGPset

Design Guide

August 1998

Order Number: 290637-002

Contents

Revision History

Date of Revision	Revision	Description
April 1998	001	Initial Release
August 1998	002	Reclassified registers from “Reserved/Default” to allow easier migration from Intel® 440LX AGPset to Intel® 440EX AGPset. Added strapping requirement for Memory Configuration #2.

Introduction 1

This information is being provided to Intel customers designing with the Intel® 440EX AGPset. The Intel® 440EX AGPset is a Basic PC solution for the Pentium® II processor platform.

The guidelines in this document are provided in conjunction with the *Intel® 440LX AGPset Design Guide and Design Guide Update*. The documents should be followed in all areas except those listed in this document.

The 82443EX is a full featured 82443LX with the following exceptions:

- 1.0.1 Maximum of 2 DIMM sockets
- 1.0.2 Maximum of 3 PCI slots (4-PCI masters including PIIX4)
- 1.0.3 NO ECC
- 1.0.4 Single processor with no support for IOAPIC
- 1.0.5 Nand Tree Test Mode not supported

1.1 Reference Documents

- Intel® 440EX AGPset datasheet
  (www: order number 290616)
- Intel® 440LX AGPset Design Guide and Design Guide Update
  (http://developer.intel.com/design/pcisets/designex)
- Intel® 440LX AGPset Application Notes and Specification Updates
  (www.intel.com)

1.2 82443EX/82443LX Pin Differences

Pin differences between the 82443LX and 82443EX are as follows:

Ball Number	82443LX Name	82443LX Type of Pin	82443EX Name	Relationship to Reduced Feature
AF13	SRAS2#	O	NC	1.0.1
AF10	SCAS2#	O	NC	1.0.1
AC19	RCSA4#	O	NC	1.0.1
AB17	RCSA5#	O	NC	1.0.1
AF9	WE2#		NC	1.0.1
AC12	WE3#		NC	1.0.1
AD14	MAB0	O	NC	1.0.1
AF14	MAB1	O	NC	1.0.1
AE14	RCSA6#/MAB2	O	NC	1.0.1
AB14	RCSA7#/MAB3	O	NC	1.0.1
AE15	SCAS3#/MAB4	O	NC	1.0.1
AF15	SRAS3#/MAB5	O	NC	1.0.1
AA19	RCSB0#/MAB6	O	NC	1.0.1
AF16	RCSB1#/MAB7	O	NC	1.0.1
AB19	RCSB2#/MAB8	O	NC	1.0.1
AE16	RCSB3#/MAB9	O	NC	1.0.1
AF18	RCSB4#/MAB10	O	NC	1.0.1
AD18	RCSB5#/MAB11	O	NC	1.0.1
AB18	RCSB6#/MAB12	O	NC	1.0.1
AD17	RCSB7#/MAB13	O	NC	1.0.1
AF12	CDQB1#	O	NC	1.0.1
AE12	CDQB5#	O	NC	1.0.1
B12	GNT3#	O	NC	1.0.2
D12	GNT4#	O	NC	1.0.2
B13	REQ3#	I	TM1 (PU)	1.0.2
D13	REQ4#	I	TM2 (PU)	1.0.2, 1.0.5
U23	ECCERR#	O	NC	1.0.3
AD8	MECC0		NC	1.0.3
AE8	MECC1		NC	1.0.3
AF22	MECC2		NC	1.0.3
AB21	MECC3		NC	1.0.3
AC8	MECC4		NC	1.0.3
AB9	MECC5		NC	1.0.3
AE22	MECC6		NC	1.0.3
AD22	MECC7		NC	1.0.3
V24	WSC#	O	NC	1.0.4

NOTES:
1. All pins labeled NC are NO CONNECTS and should not be connected on the motherboard
2. All pins labeled (PU) should be connected to a 4.7K to 10K ohm pull-up resistor to 3.3V on the motherboard.

1.3 Memory Configuration Strapping

The Intel® 440EX AGPset based system must be configured for “Memory Configuration #2” by ensuring that there are no external pull-up resistors on the CKE pin of the 82443EX device. This will configure the PAC for the “Small DRAM array”.

1.4 82443EX/82443LX Register Differences

Register setting differences between the 82443LX and 82443EX are shown below. These specific register/bit combinations should be set as indicated to support the Intel 440EX AGPset. Refer to the *Intel® 440EX AGPset* datasheet for more detail.

Register Name	Address Offset	Change To
PACCFG - PAC Configuration Register (Device 0)	50-51h	Bit 15 - Note 1 Bit 11 - Note 2 Bit 8:7 - Note 3 Bit 6 - Note 3
MBSC - Memory Buffer Strength Control Register (Device 0)	6C-6Fh	Bit 23:22 - N/A Bit 13:12 - N/A Bit 11:10 - N/A Bit 5:4 - N/A Bit 3:2 - N/A Bit 1:0 - N/A
ERRCMD - Error Command Register (Device 0)	90h	Bit 1 - Note 4 Bit 0 - Note 4
ERRSTS0 - Error Status Register 0 (Device 0)	91h	Bit 7:0 - N/A

N/A (not applicable)
Note 1: This bit will be set to “1” as a result of the system configuration being single processor/no IOAPIC.
Note 2: This bit will be set to “0” as a result of the system configuration for Memory Configuration #2.
Note 3: This bit will be set to “0” as a result of the system configuration using non-ECC DRAM.
Note 4: This bit should be set to “0” since ECC error reporting via SERR# is not needed.

1.5 Additional Information

All Intel® 440LX AGPset Applications Notes and Specification Updates apply to the Intel® 440EX AGPset. These documents are available on the WEB or through Intel Field Representatives.

http://developer.intel.com/pcisets

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