# Intel® 440EX AGPset

## Design Guide

***April 1998***

Order Number: 290637-001

# Contents

# Revision History

| Date of Revision | Revision | Description |
|---|---|---|
| April 1998 | 001 | Initial Release |

# Introduction 1

This information is being provided to Intel customers designing with the Intel® 440EX AGPset. The Intel® 440EX AGPset is the 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*. The *Intel® 440LX AGPset Design Guide* 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
  (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 82443EX/82443LX Register Differences

Register changes between the 82443LX and 82443EX are shown below. These specific register/bit combinations are now Reserved and should be set to their default state 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 - Set to "1"<br>Bit 14 - Reserved/Default<br>Bit 13:11 - Reserved/Default<br>Bit 8:7 - Reserved/Default<br>Bit 6 - Reserved/Default<br>Bit 4:3 - Reserved/Default<br>Bit 2 - Reserved<br>Bit 1:0 - Reserved/Default |
| MBSC - Memory Buffer Strength Control Register (Device 0) | 6C-6Fh | Bit 23:22 - Reserved/Default<br>Bit 13:12 - Reserved/Default<br>Bit 11:10 - Reserved/Default<br>Bit 5:4 - Reserved/Default<br>Bit 3:2 - Reserved/Default<br>Bit 1:0 - Reserved/Default |
| ERRCMD - Error Command Register (Device 0) | 90h | Bit 1 - Reserved/Default<br>Bit 0 - Reserved/Default |
| ERRSTS0 - Error Status Register 0 (Device 0) | 91h | Bit 7:0 - Reserved/Default |

## 1.4 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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