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Cyrix CX-83D87
FasMath CX

Cyrix CX-83D87 FasMath CX Installation Guide

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Cyrix CX-83D87 FasMath CX

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About This Manual

This document describes how to install the CX-83D87 in an 80386-based computer. Although this is a relatively simple procedure for someone experienced in working inside computers, Cyrix recommends that you have your authorized dealer install this component. If you choose to install the CX-83D87 yourself, Cyrix recommends the use of an Augat Socket# PGM068- IA 1133-L to help prevent accidental pin breakage during the installation process.

Before continuing with the installation process, please write the 6 digit lot code which is printed to the left of the USA insignia on your FasMath processor below (See Figure 2).

You will need this number to complete your warranty registration card.

To install the CX-83D87 you will be required to remove the cover from your computer, possibly remove circuit boards and cables, insert the CX-83D87 in the correct position, reinstall any boards or cables you removed and replace the cover on your computer. If you do not follow all the directions completely damage could result to the CX-83D87, or your computer, or you could possibly injure yourself.

If you are unsure about performing the necessary steps to install your CX-83D87, let your dealer install the component. Your dealer has worked inside many computers and understands completely how to properly install the CX-83D87.

If you decide to complete the installation yourself follow all directions in Chapter 3 exactly.

Cyrix can provide you with additional technical documentation regarding the CX-83D87 if you are planning to design hardware or software which utilizes it. Contact the Cyrix literature department at the following number to order technical literature: (214) 234-838 7.

CAUTION:

STATIC ELECTRICITY CAN DESTROY YOUR COPROCESSOR OR OTHER CIRCUITS IN YOUR COMPUTER. DO NOT REMOVE YOUR COPROCESSOR FROM ITS PROTECTIVE CASE OR HANDLE CIRCUIT BOARDS IN YOUR COMPUTER UNTIL YOU HAVE READ THE INSTALLATION INSTRUCTIONS AND DISCHARGED YOURSELF.

CAUTION:

IF YOU ARE UNFAMILIAR WITH INSTALLING INTEGRATED CIRCUITS, LET YOUR DEALER INSTALL YOUR CX-83D87. INCORRECT INSTALLATION COULD RESULT IN DAMAGE TO YOUR CX-83D87, YOUR COMPUTER, OR POSSIBLY INJURY TO YOURSELF.

WARNING:

SHOCK HAZARD: UNPLUG THE POWER CORD TO YOUR COMPUTER AND ANY DEVICES WHICH ARE ATTACHED TO YOUR COMPUTER.

WARNING:

FAILURE TO COMPLY WITH THE INSTALLATION INSTRUCTIONS IN SECTION 3 OF THIS MANUAL VOIDS PRODUCT WARRANTY.

Cyrix FasMath Product Line

The CX-83D87 is a CMOS VLSI integrated circuit which is pin compatible and software compatible with the Intel 80387 math coprocessor yet offers substantially improved performance.

Any programs that take advantage of a math coprocessor will run faster with the CX-83D87. The more floating point operations, the greater the performance increase will be. Even applications that are currently running with the Intel 80387 will see a significant performance increase. In addition, the power dissipation will be reduced with respect to the Intel 80387.

Contact Cyrix customer support at the following number for more detailed information on the performance characteristics of your CX-83D87: **214-234-8387**.

How To Install Your Cyrix 83D87

This chapter lists the sequence of steps which should be followed when installing your CX-83D87. Follow all steps in order to insure proper installation.

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Preparation

Assemble your toois.

The only tools required are a screwdriver to remove the cover on your computer and possibly a pin-straightening device or needle-nosed pliers. If you will be replacing a currently installed coprocessor with the CX-83D87. you will

also need a PGA extractor tool.

Your computer, as well as the CX-83D87, may be damaged by static discharge. It is very important to ground yourself by touching the metal back or side panel on your computer. An illustration of this is seen in Figure I. You can remain grounded during the installation by using a ground strap. If you are not using a ground strap, care should be taken to avoid moving around during installation. Shuffling your feet, especially on carpet, will generate static electricity. Each time you move, discharge yourself by touching the bare metal back or side panel on your computer.

Figure 1. Grounding Yourself on Rear Panel of Computer
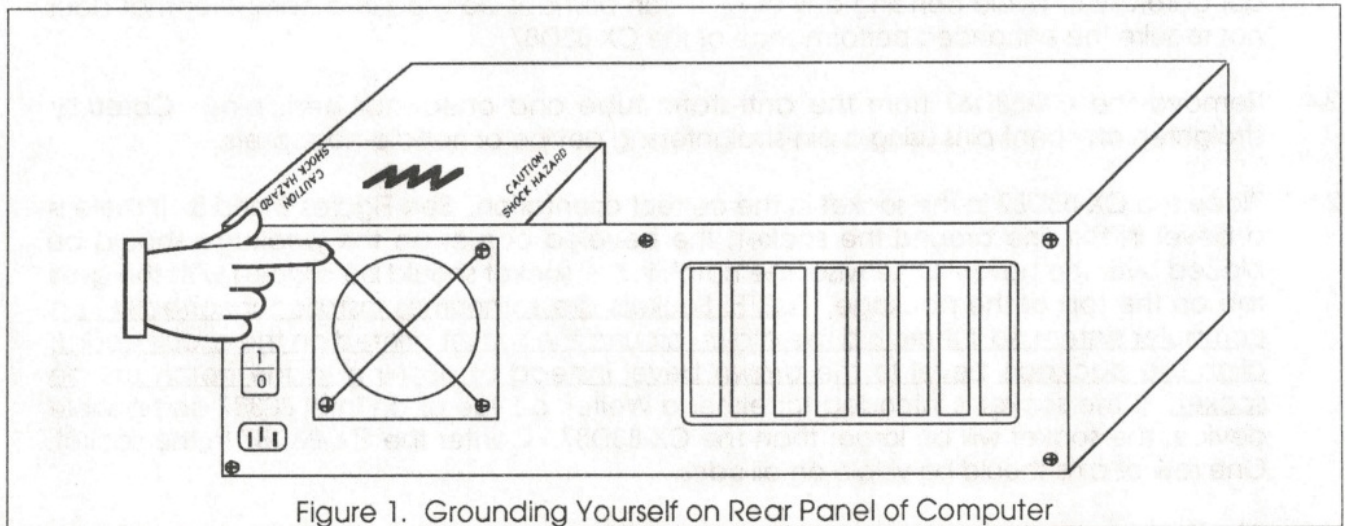
- Turn off the power switch on your computer and unplug the power cord from the wall outlet. Disconnect all cords and cables from your computer. Remove the cover from your computer. Instructions for removing the cover can be found in your computer's manual.
- In some computers, switches must be set or jumpers must be installed to ensure proper recognition of the coprocessor. Switch settings and locations can be found in your computer's manual. Some computers also contain this information on the metal plate covering the disk drives. If you are replacing an Intel 80387 with the CX-83D87 the switches or jumpers will already be in the proper configuration. If you are installing a coprocessor in this computer for the first time, set any switches or install jumpers as required.
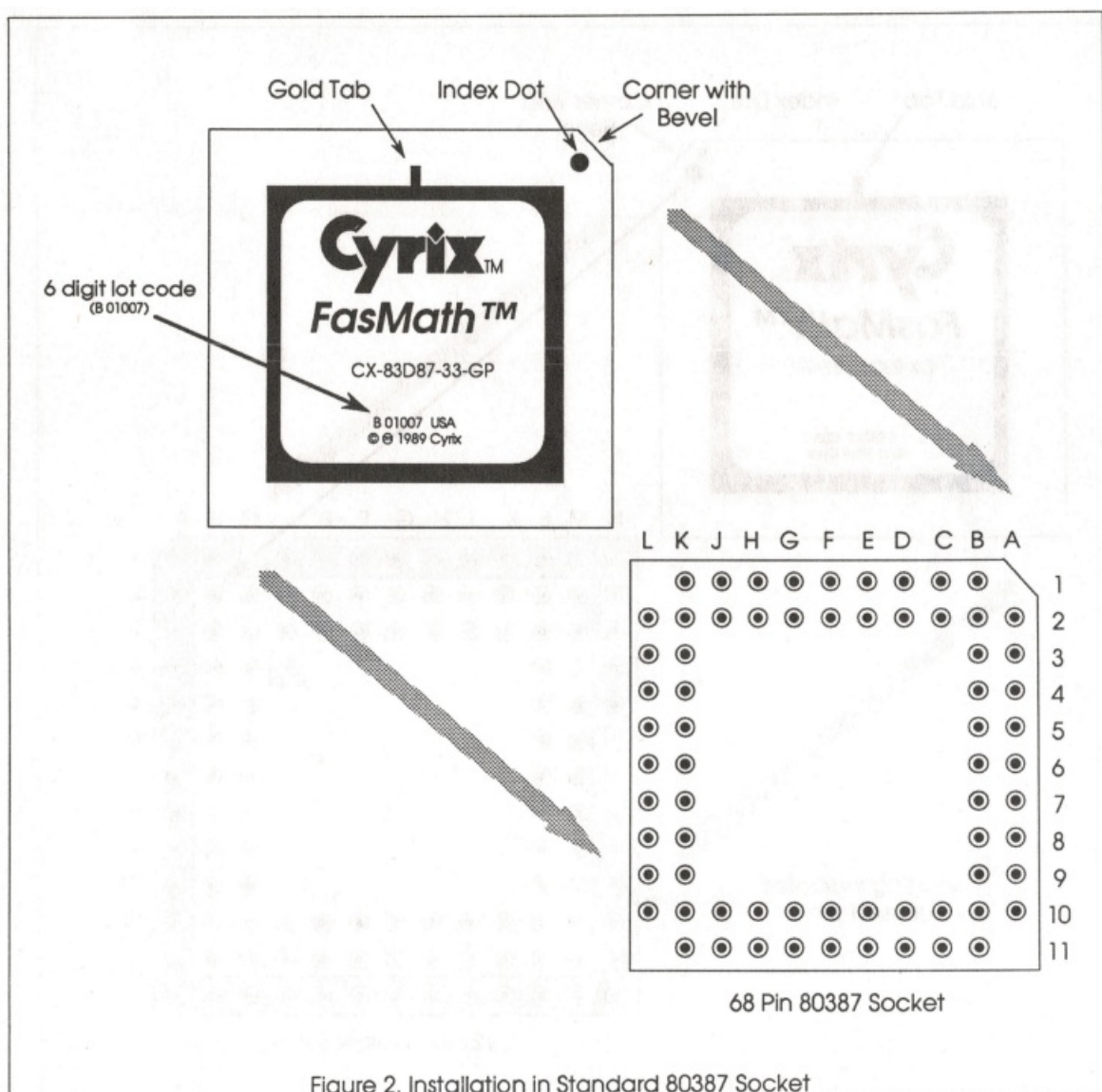
Installation

1. Locate the coprocessor socket in your computer. It should be a large square socket on your computer's system board. If you do not currently have a coprocessor installed, it will be empty. If you are replacing an existing coprocessor, that coprocessor will be seated in the coprocessor socket. Diagrams of the socket location can be found in your computer's manual. Some computers also contain a diagram on the metal plate covering the disk drives. Some computers will contain two empty square sockets: one for a Weitek coprocessor and one for an Intel 80387 compatible coprocessor. The CX-83D87 fits into the socket for the Intel 80387 compatible coprocessor. This socket is smaller then the Weitek socket.

2. In some computers, the coprocessor socket is not readily available and circuit boards and/or cables must be removed to gain access to this socket. Discharge yourself from static electricity before removing any boards or cables. Remember how to replace these boards and cables and put them in a safe place while completing the installation of the coprocessor.

3. If you are replacing an existing coprocessor, you must first remove it from the socket. A PGA extractor tool is recommended for removing the existing coprocessor. Lift the device out carefully to avoid bending any pins. It
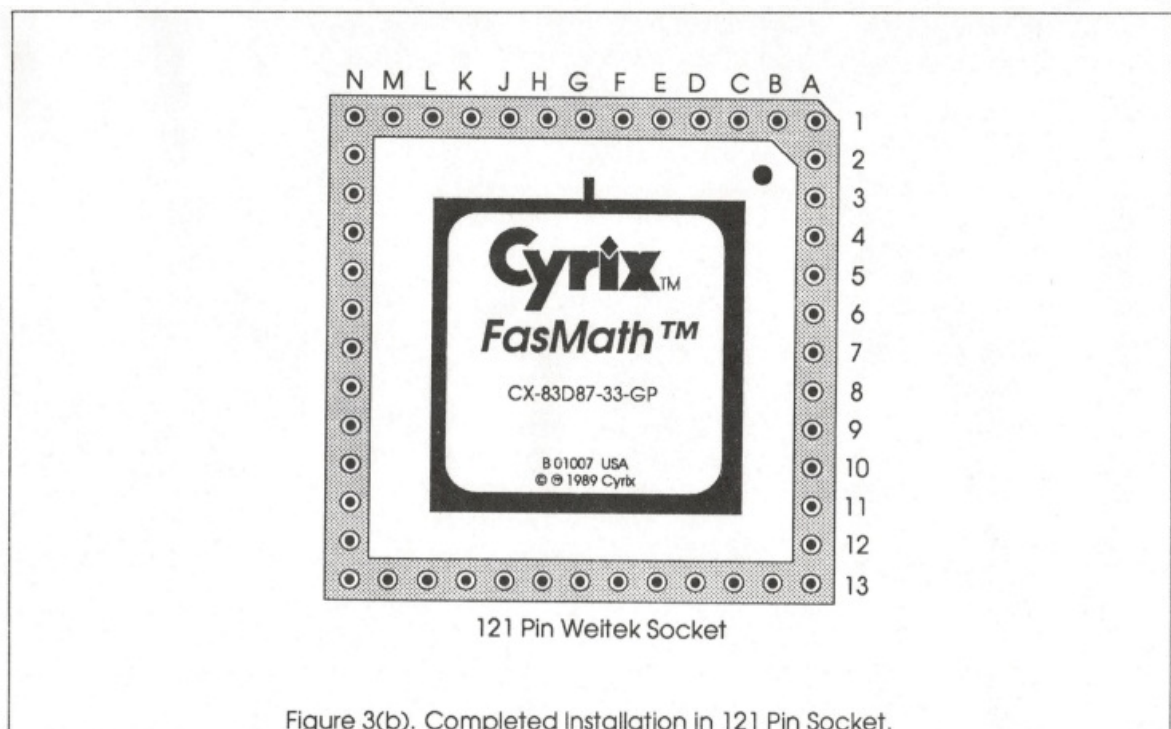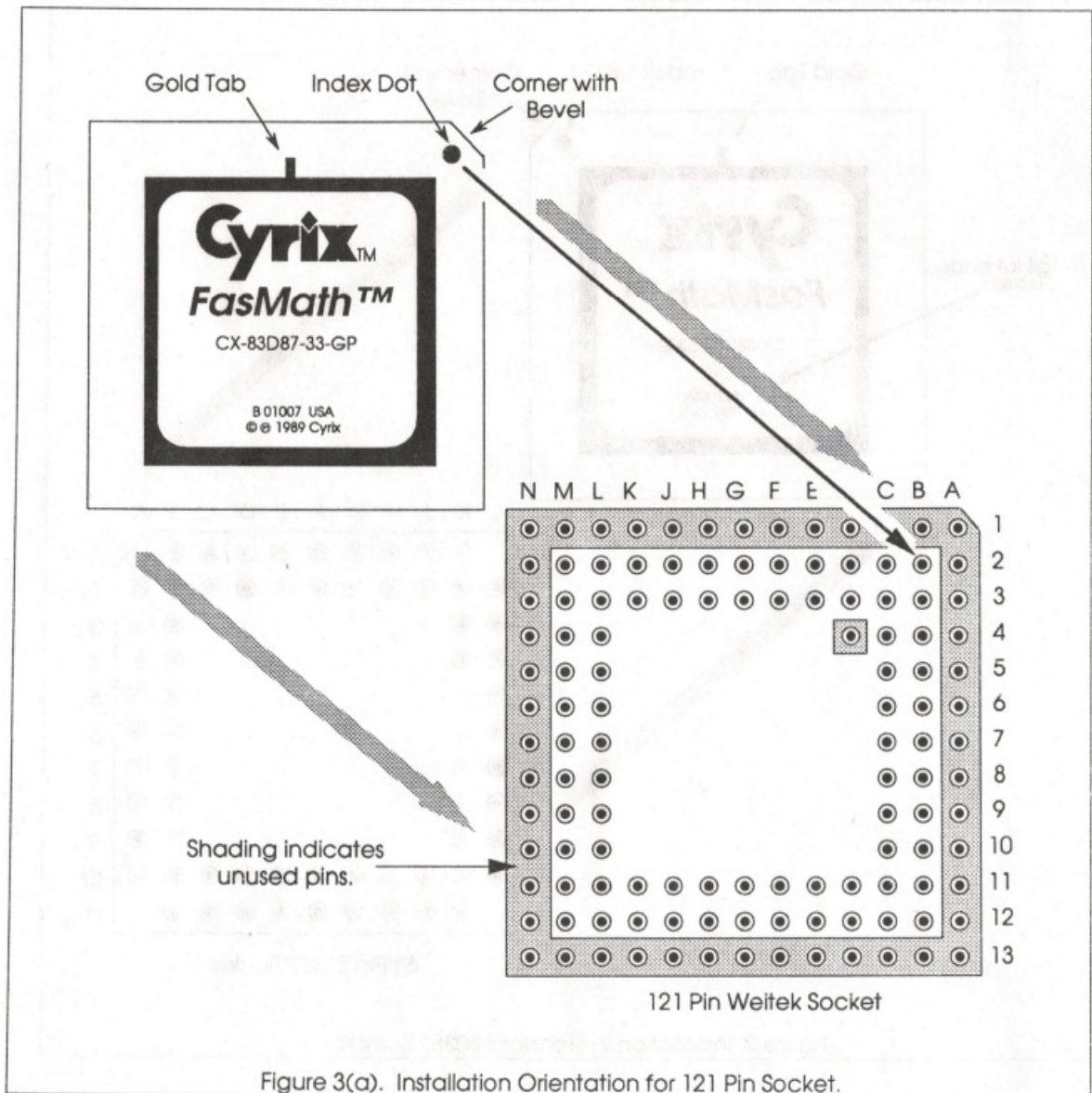
can perhaps be used in a computer that does not require the enhanced performance of the CX-83D87.

4. Remove the CX-83D87 from the anti-static tube and check for bent pins. Carefully straighten any bent pins using a pin-straightening device or needle-nose pliers.

5. Place the CX-83D87 in the socket in the correct orientation. See Figures 2 and 3. If there is a bevel in the line around the socket, the beveled corner on the package should be placed over the bevel. Otherwise, the notch in the socket should be aligned with the gold tab on the top of the package. NOTE: Sockets are sometimes installed incorrectly in a computer system so if there is a line drawn around the socket printed on the circuit board, alion the packaoe bevel to the drawn bevel instead of alionino to the notch on the If the socket is intended for either a Weitek device or an Intel 80387 compatible device, the socket will be larger than the CX-83D87. Center the CX-83D87 in the socket. One row of pins should be visible on all sides.

If in doubt as to the placement of the CX-83D87, refer to your computer's manual for for further details. Remember the CX-83D87 should be installed in exactly the same manner as the Intel 80387. If you are still unsure, call the customer support number at Cyrix listed in Chapter 5 or contact your dealer for installation.

Figure 2. Installation in Standard 80387 Socket

Gold Tab   Index Dot   Corner with Bevel

N M L K J H G F E C B A

121 Pin Weitek Socket

Shading indicates unused pins.

Figure 3(a). Installation Orientation for 121 Pin Socket.

N M L K J H G F E D C B A

121 Pin Weitek Socket

Figure 3(b). Completed Installation in 121 Pin Socket.

6. Examine package from all sides to be sure all pins are going in correctly. If there are any bent pins, remove the CX-83D87 and straighten the pins before going on.

7. Press firmly and evenly with your thumb on the center of the package. Even when the component is fully inserted, the package will not be flush with the sockeJ". The pins will be barely visible.

Finishing Up

1. Replace any circuit boards and/or cables that were removed in order to gain access to the coprocessor socket.
2. Replace the cover and reconnect all cables and cords to your computer. Plug the power cord into the wall outlet.
3. Turn on your computer.
4. Most computers require that a setup or configuration program be run to ensure recognition of the coprocessor. Your computer's manual should tell you if this is required. If required, run the setup or configuration program as
5. directed in your computer's manual.
6. If you are having problems with your computer, turn to CHAPTER 5 for troubleshooting advice.

FasMath Demonstration Disk

Cyrix has included a 5 inch Demonstration Disk to allow you to verify operation and provide a visual demonstration of the power of your new FasMath coprocessor.
To test the operation of your FasMath processor, turn on the computer and boot the DOS operating system. Insert the Demonstration Disk into the computer's floppy disk drive. Direct the computer to use the floppy disk drive as its default drive by typing "A:" or "B:" and then pressing the ENTER key. Now type "FASMATH" and press the ENTER key,(1)
The program on the FasMath Demonstration Disk will test for the presence of the CX-83D87 and test for correct operation,c2, A status screen will be displayed informing you that correct operation was observed. If you fail to see the status screen or the status reports incorrect operation, then immediately turn off your computer and refer to CHAPTER 5 on Troubleshooting.
After verifying correct operation of your FasMath coprocessor you may now run the Demo programs which display the features of the CX-83D87. You may run the Demo programs from the floppy disk just by following the instructions on the status screen menu. However, to see the true performance of the FasMath coprocessor we recommend you copy the Demo programs on to your hard disk or ram disk before running them. Instructions for doing this are included on the Demonstration Disk in the file called "Read Me."

NOTES

1. Some computer systems slow the clock frequency down when running programs from a floppy disk. If the status window of the FasMath demonstration software shows a clock frequency slower than the system is capable of running, Cyrix recommends you copy the demonstration software to your hard-disk.
2. The visual demonstration software is designed to run on standard EGA or
   VGA systems. in the event your system will not run this program, the section of software designed to perform the operation verification can always be run by following these steps:
   1. From a DOS prompt, select the drive which contains the FasMath demonstration software by typing the appropriate drive letter followed by a colon, then press the ENTER key.
   2. Type each of the following lines and press enter:
      CHECKS -N-A FIO.TST
      CHECKS -N-A FARITH.TST
      CHECKS -N-A FTRAN.TST
      CHECKS -N-A FOS.TST
      (Some demonstration disks may contain a batch file called TEST.BAT which will run all of these tests.)
3. Each test should show "O" Fails. If any test shows fails, check to be sure the chip was installed correctly, and

the system has been configured properly. If you are still experiencing problems, contact Cyrix customer support at the following number: (214)234-8387

Troubleshooting

PROBLEM:
The computer doesn't power up or the system prompt doesn't appear on the screen.

POSSIBLE SOLUTIONS

- Check that the power cord is plugged into the wall outlet and into your computer system.
- Check that the monitor cable is connected to the computer. Also check that any other cables and cords have been reconnected.
- If you had to remove any boards or cables inside your computer in order to gain access to the coprocessor socket. be sure that they have been properly reinstalled.
- Confirm that all switches/jumpers (if any) have been configured properly.
- Confirm that the CX-83D87 is properly installed in the socket. Check for correct orientation in the socket, that the device is completely seated in the socket, and that none of the pins are bent. You may have to remove the CX-83D87 to check for bent pins.

PROBLEM:
An error in the setup was detected while booting the system.

POSSIBLE SOLUTION
You may need to run a setup or configuration program that will tell your computer that the coprocessor is installed. Check your computer's manual for details.

PROBLEM:
Your application program doesn't run any faster with the CX-83D87 installed.

POSSIBLE SOLUTIONS

- Check that your program recognized that the coprocessor is installed. This may be shown on a status screen. If the coprocessor is not recognized, you may have to run a setup or configuration program. Check your computer's manual for details. Otherwise, check that the CX-83D87 is properly installed. Check for correct orientation in the socket, that the device is completely seated in the socket, and that none of the pins are bent. You may have to remove the CX- 83D87 to check for bent pins.
- If an application program does not use floating point calculations, it will not see a performance increase. Remember. the more floating point operations, the greater the performance increase will be.

If you still have questions or problems. contact Cyrix customer support at the following number: **214-234-8387**.

P.O. Box 850118, Richardson, TX 75085-0118, **214-234-8387**
Printed in the USA

Documents / Resources

Cyrix CX-83D87 FasMath CX [pdf] Installation Guide
CX-83D87 FasMath CX, CX-83D87, FasMath CX, CX

References

- **User Manual**