



3C87SX

ADVANCED MATH CoPROCESSOR

PRODUCT OVERVIEW

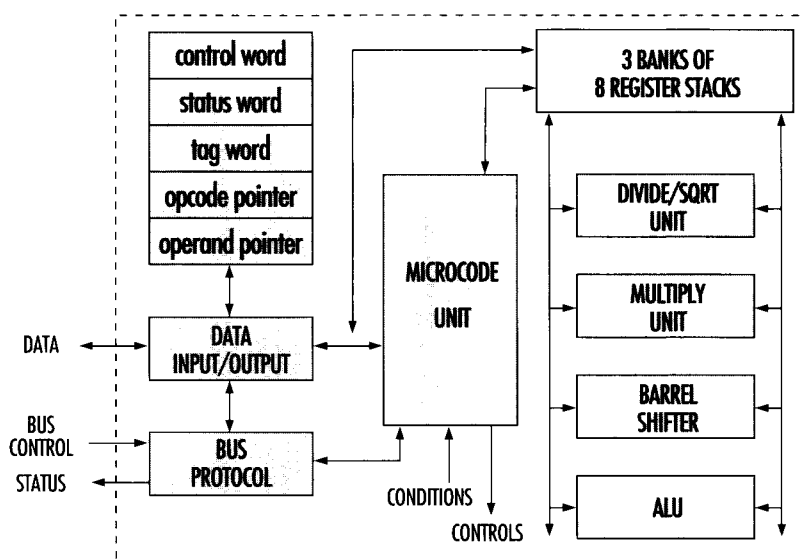
The 3C87SX Advanced Math CoProcessor from Integrated Information Technology is a high-performance numeric coprocessor for 386SX-based systems. In addition to 100% compatibility with industry standards, the 3C87SX provides the most advanced features available for speed, reliability and power savings.

The device's unique architecture can execute numeric operations in far fewer clock cycles than competing devices. The 3C87SX also features an innovative hard-

wired 4x4™ matrix transformation function which can speed graphics operations and CAD/CAE applications by two to five times.

IIT's 3C87SX provides these advanced features and performance in a low-power CMOS implementation which consumes 25% less power than competing devices, with a corresponding improvement in reliability. Moreover, all IIT coprocessors are backed by excellent customer service, a dedicated technical support team, and a warranty for the lifetime of the system.

- Guaranteed 100% compatibility with 386SX systems and software
- High performance 80-bit internal architecture
- State-of-the-art CMOS implementation consumes 25% less power than other devices
- Built-in instruction speeds 4x4 matrix transformations by 3x
- 24 data registers, 80-bit wide, user accessible as 3 banks of 8 register stacks
- Backward software-compatible with all 8087 and 80287 object code
- Full support for the ANSI/IEEE standard for binary floating point arithmetic
- Full range of transcendental operations for sine, cosine, arctangent and logarithm
- Available in 16 MHz, 20 MHz and 25 MHz clock rates
- Provided in PLCC package
- Warranted for the lifetime of the system



3C87SX Block Diagram

APPLICATIONS

The 3C87SX Advanced Math CoProcessor from IIT for is ideal for accelerating:

- Windows operations
- Spreadsheet functions
- CAD/CAE applications

- Graphics generation and manipulation
- Any computation-intensive functions

Also, the 3C87SX consumes only 0.7 Watts in typical operation, making it very suitable for portable and other low-power systems.

ENHANCED PERFORMANCE

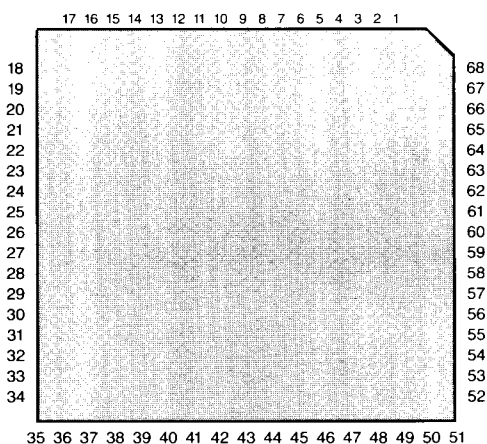
The 3C87SX Advanced Math CoProcessor from IIT is available in the highest and widest range of speed grades in the industry: 16 MHz, 20 MHz and 25 MHz. And because the core processing engine executes instructions in fewer clock cycles than competing devices, the 3C87SX can operate up to 50% faster in the same application. The table at right compares the range of clock cycles required to perform typical floating point operations.

INSTRUCTION	CLOCK CYCLES REQUIRED		SPEED IMPROVEMENT
	IIT 3C87	INTEL 80387	
ADD	11	31	2.8x
MPY	16	57	3.6x
DIV	46	88	1.9x
SQRT	48	125	2.6x
REM	54	155	2.9x
TAN	456	726	1.6x

4x4 MATRIX TRANSFORMATION

The 3C87SX features embedded microcode to perform a 4x4 matrix transformation in a single-instruction. Without IIT's unique 4x4 transformation, this operation would require multiple instructions; with it, software applications can realize a speed improvement of 2x to 5x.

The 4x4 matrix transformation is a common numerical operation used to perform functions such as high speed point translation (bit blt), curve generation and coloring by location. It is applicable in most operations that involve projecting, translating, rotating, moving or coloring an image.



3C87SX PIN CROSS REFERENCE

1-n.c.	15-D13	29-D10	43-V _{CC}	56-PREQ
2-D07	16-D12	30-D11	44-NPS1 #	57-READYO #
3-D06	17-n.c.	31-V _{CC}	45-NPS2	58-V _{CC}
4-V _{CC}	18-n.c.	32-V _{SS}	46-V _{CC}	59-CKM
5-V _{SS}	19-D00	33-V _{CC}	47-ADS #	60-V _{SS}
6-D05	20-D01	34-V _{SS}	48-CMD0 #	61-V _{SS}
7-D04	21-V _{SS}	35-ERROR #	49-READY #	62-V _{CC}
8-D03	22-V _{CC}	36-BUSY #	50-V _{CC}	63-V _{SS}
9-V _{CC}	23-D02	37-V _{CC}	51-RESETIN	64-V _{CC}
10-n.c.	24-D08	38-V _{SS}	52-n.c.	65-n.c.
11-D15	25-V _{SS}	39-V _{CC}	53-NUMCLK2	66-V _{SS}
12-D14	26-V _{CC}	40-STEN	54-CPUCLK2	67-n.c.
13-V _{CC}	27-V _{SS}	41-W/R #	55-V _{SS}	68-n.c.
14-V _{SS}	28-D09	42-V _{SS}		

n.c.—The corresponding pins of the 3C87SX are left unconnected.

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