

FEATURES

- 12 × 12-Bit Parallel Multiplication**
- 65ns Multiply Time**
- 200mW Power Dissipation with TTL-Compatible CMOS Technology**
- Twos-Complement, Unsigned-Magnitude, and Mixed-Mode Data Formats**
- Available in Hermetically-Sealed 64-Pin DIP, Hermetically-Sealed 68-Pin PGA, or Plastic 64-Pin DIP**
- Available Specified from -55°C to +125°C Ambient Pin-Compatible with ADSP-1012 and MPY012HJ1**

APPLICATIONS

- Digital Signal Processing**
- Digital Filtering**
- Fourier Transformations**
- Correlations**
- Image Processing**

GENERAL DESCRIPTION

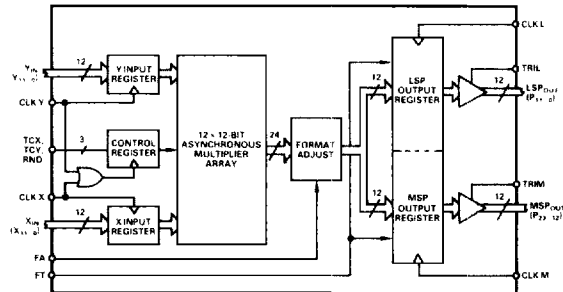
The ADSP-1012A is a high-speed, low-power 12 × 12-bit parallel multiplier fabricated in 1.5 micron CMOS.

The ADSP-1012A has two 12-bit input ports, a 12-bit Most Significant Product (MSP) port, and a 12-bit Least Significant Product (LSP) port. Input data is interpreted in twos-complement format. The ADSP-1012A produces a 24-bit result whose twos-complement MSP can be rounded with a control which causes 1 to be added to the Most Significant Bit (MSB) of the LSP.

All input pins are diode-protected. The input and output registers are all D-type positive-edge-triggered flip-flops. The input registers are controlled by independent clock lines. Both of the product registers have their own independent clock lines and their own independent three-state output controls. Three-state outputs and independently clocked inputs allow the ADSP-1012A to be connected directly to a single 12-bit bus.

The ADSP-1012A is a pin-for-pin replacement for Analog Devices' ADSP-1012 and is also pin-for-pin compatible in a DIP package with TRW's MPY012HJ1. The ADSP-1012A's multiply time is less than half that of the TRW device.

ADSP-1012A FUNCTIONAL BLOCK DIAGRAM



The power consumption of the ADSP-1012A is 200mW maximum, 10% of the power required by equivalent bipolar devices. The differential between the ADSP-1012A's junction temperature and the ambient temperature stays small because of this low power dissipation. Thus, the ADSP-1012A can be safely specified for operation in environmental temperatures over its extended temperature range (-55°C to +125°C ambient).

The ADSP-1012A is available for both commercial and military temperature ranges. Extended temperature range parts are available with high-reliability processing ("PLUS" parts). MIL-grade parts are available processed fully to MIL-STD-883, Class B. Additionally, the ADSP-1012A is available in either a 64-pin hermetically sealed ceramic DIP, a hermetically sealed ceramic 68-pin grid array, or a plastic 64-pin DIP.