

FEATURES

- 16 × 16-Bit Parallel Multiplication**
- 70ns Multiply Time**
- 300mW Power Dissipation with TTL-Compatible CMOS Technology**
- Two's-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-1016 and MPY016HJ1**

APPLICATIONS

- Digital Signal Processing**
- Digital Filtering**
- Fourier Transformations**
- Correlations**
- Image Processing**
- General Purpose Computing**

GENERAL DESCRIPTION

The ADSP-1016A is a high-speed low-power 16 × 16-bit parallel multiplier fabricated in 1.5 micron CMOS.

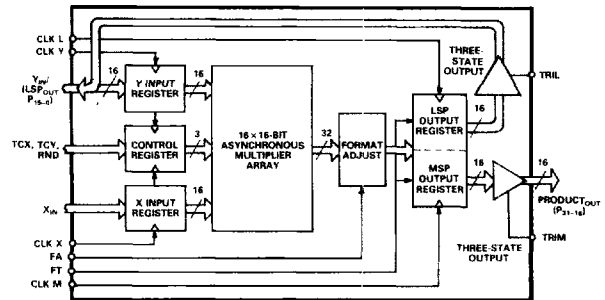
The ADSP-1016A has two 16-bit input ports, a 16-bit Most Significant Product (MSP) port, and a 16-bit Least Significant Product (LSP) port. Input data is interpreted in two's-complement, unsigned-magnitude, or mixed-mode formats. The ADSP-1016A produces a 32-bit result whose MSP can be rounded with a control which causes a 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-1016A to be connected directly to a single 16-bit bus.

The ADSP-1016A is a pin-for-pin replacement for Analog Devices' ADSP-1016 and is also pin-for-pin compatible in a DIP package with TRW's MPY016HJ1. The ADSP-1016A's multiply time is more than twice as fast as the TRW device.

The power consumption of the ADSP-1016A is 300mW maximum, less than 10% of the power required by equivalent bipolar devices. The differential between the ADSP-1016A's junction temperature and the ambient temperature stays small because of this low power dissipation. Thus, the ADSP-1016A can be safely specified for operation at environmental temperatures over its extended temperature range (-55°C to +125°C ambient).

ADSP-1016A FUNCTIONAL BLOCK DIAGRAM



The ADSP-1016A 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-1016A 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.