

**54AC/74AC1017 • 54ACT/74ACT1017****16 × 16 Parallel Multiplier**

T-4507

**Description**

The 'AC/'ACT1017 is a high-speed, low power 16 × 16-bit parallel multiplier that is ideally suited for real-time digital signal processing applications. Fabricated using advanced FACT technology, the 'AC/'ACT1017 offers a very low power alternative and exceptional performance.

The 'AC/'ACT1017 is a pin and functional replacement for AMD's Am29517; the 'AC/'ACT1017 operates from a single Vcc supply and is compatible with standard TTL logic levels.

The 'AC/'ACT1017 performs the same mathematical functions as the 'AC/'ACT1016 but has a single clock, CLK, and three register enables making it ideal for microcoded applications.

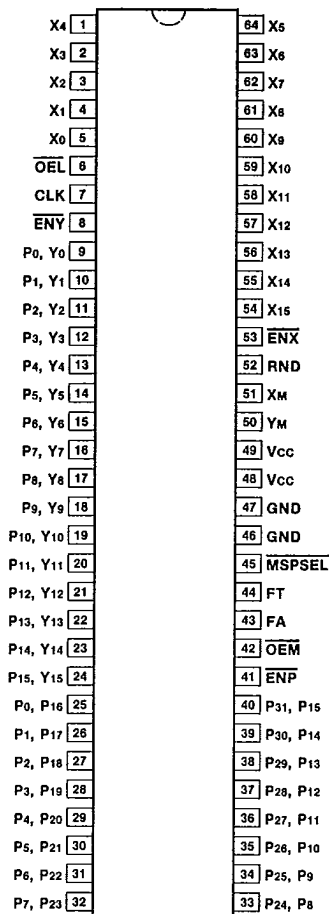
The architecture of the 'AC/'ACT1017 features one 16-bit port dedicated to the X input registers (enabled by  $\overline{\text{ENX}}$ ), one 16-bit I/O port used to load the Y input registers (controlled by  $\overline{\text{ENY}}$ ) and for displaying the Least Significant Product (LSP), and one 16-bit output port multiplexed between displaying the Least Significant Product (LSP) and the Most Significant Product (MSP).

The I/O port direction is controlled by  $\overline{\text{OEL}}$  and the output port 3-state control is controlled by  $\overline{\text{OEM}}$ .

The result is registered if FT is LOW (all 32 register bits enabled by  $\overline{\text{ENP}}$ ) and unregistered if FT is held HIGH.

Two's complement, unsigned magnitude and mixed mode multiplications are possible through the two's complement X and Y mode controls,  $X_M$  and  $Y_M$ , respectively. These mode controls are registered, controlled by the input clock (CLK).

Result rounding is controlled by the registered RND signal (controlled by CLK). Selection of one of the two rounding modes is determined by the FA signal.

**Connection Diagram****Pin Assignment  
for DIP**

# AC1017 • ACT1017

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- 16 × 16 Parallel Multiplier
- Selectable Rounding Modes
- Two's Complement, Unsigned Magnitude and Mixed Mode Multiplication
- Pin and Functionally Compatible with Am29517
- ACT1017 Interfaces Directly to TTL
- AC1017 Provides Low Voltage, High-Speed Operation
- Single V<sub>cc</sub> Supply
- ±2000 V ESD Protection
- High Drive 8 mA Outputs
- Single Input Clock

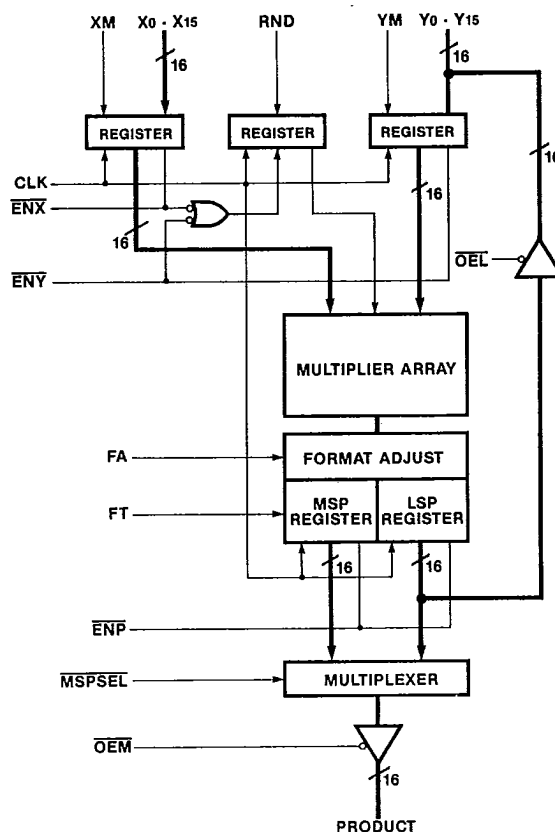
## Pin Names

X <sub>15</sub> - X <sub>0</sub>	Multiplicand Data Inputs
Y <sub>15</sub> - Y <sub>0</sub>	Multiplier Data Inputs
CLK	Input Clock
ENX	Register Enable, X <sub>15</sub> - X <sub>0</sub>
ENY	Register Enable, Y <sub>15</sub> - Y <sub>0</sub>
ENP	Register Enable, MSP and LSP
X <sub>M</sub> , Y <sub>M</sub>	Mode Control Inputs
FA	Format Adjust Control
FT	Format Transparent Control
OEL	3-State Enable, LSP Routing
OEM	3-State Enable, MSP Routing
RND	Round Control, MSP
MSPSEL	MSP Select
P <sub>31</sub> - P <sub>16</sub>	MSP Outputs
P <sub>15</sub> - P <sub>0</sub>	LSP Outputs

Ordering Code: See Section 6

## Logic Diagram

T-45-07



Please note that this diagram is provided only for the understanding of logic operations and should not be used to estimate propagation delays.