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Description

The µPD70136 (V33™) is a high-speed CMOS 16-bit microprocessor that is object and source code compatible with the µPD70116 (V30®). Performance is four times that of the 10 MHz V30 due to a number of architectural features, such as hard wired data path control and dedicated high-speed logic. The address space is extended to 16M bytes, using an internal address translation table.

The µPD70136 offers a powerful instruction set including bit processing, bit field insertion and extraction, and BCD string arithmetic. Using a modified Booth's algorithm, the 16-MHz device can execute a 16-bit multiply in 750 ns.

The µPD70136 has separate 16-bit data and 24-bit address buses. Bus control is synchronous. The nominal bus cycle is 2 clock periods. Dynamic bus sizing is supported for devices that require an 8-bit data path. This allows the µPD70136 to be used in either 16- or 8-bit systems.

The µPD70136 offers an undefined instruction trap that allows instructions that are not part of the V-Series instruction set (such as commands for proprietary MMUs) to be emulated. The µPD72291, a high-speed CMOS floating point co-processor, capable of 500K floating point operations per second at 16 MHz, is offered.

Features

- 125 ns minimum instruction execution time at 16 MHz

V30 is a registered trademark of NEC Corporation
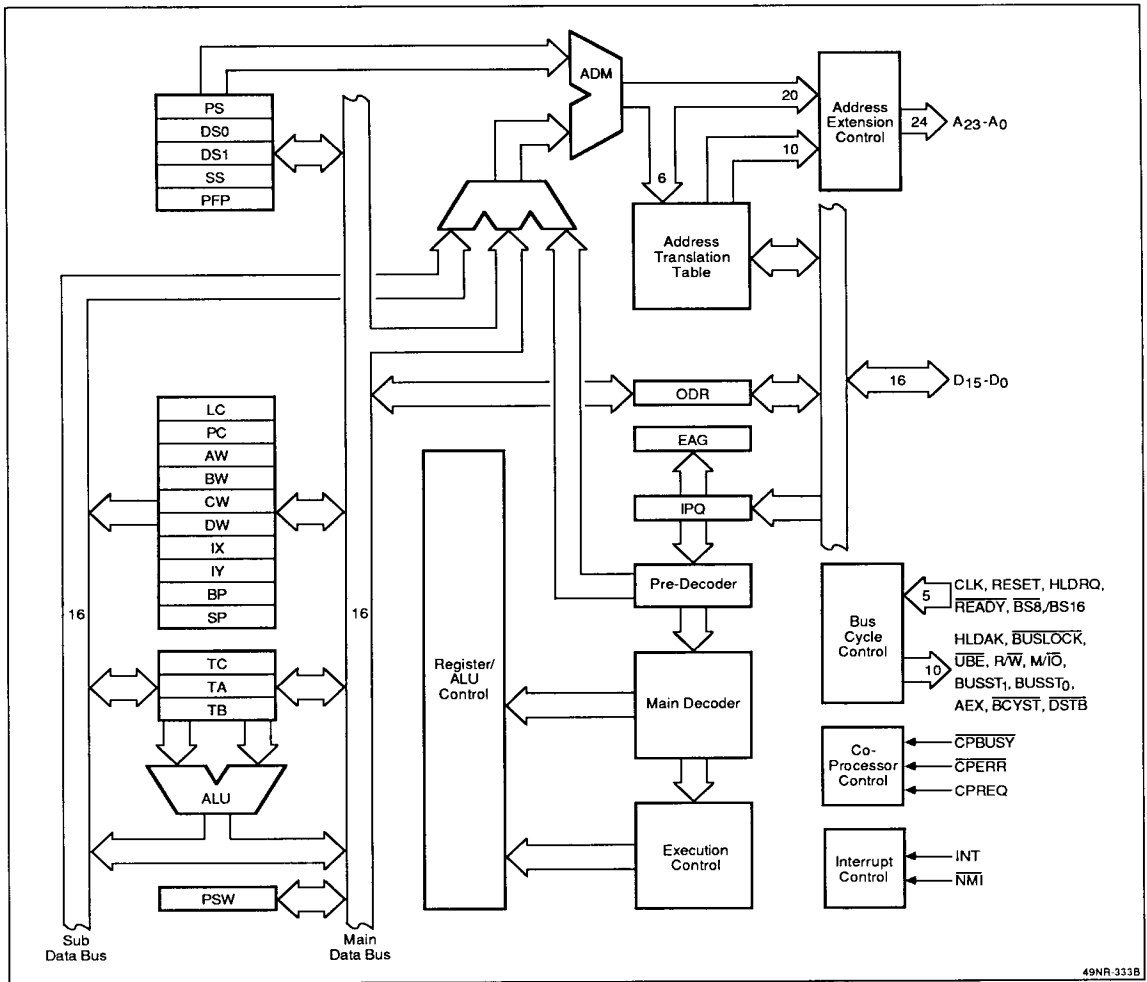V33 is a trademark of NEC Corporation.

- Extended address space:
  - 24-bit addressing to 16 M-bytes
  - LIM 4.0 compatible
- No microcode; better performance with hard wired data path control
- Dynamic bus sizing for both memory and I/O
- Fully µPD70116 software compatible
- Undefined instruction trap
- High speed multiplication: 16-bit multiply in 12 clocks (0.75 µs at 16 MHz)
- High-speed division: 16-bit divide in 19 clocks (1.19 µs at 16 MHz)
- µPD72291 floating point co-processor executes 500K floating-point operations per second
- BCD string arithmetic instructions
- CMOS with low-power standby mode
- 12.5-MHz or 16-MHz clock
- Single power supply

Ordering Information

Part Number	Package	Maximum Clock Speed
µPD70136R-12	68-pin PGA	12.5 MHz
µPD70136R-16	68-pin PGA	16 MHz
µPD70136L-12	68-pin PLCC	12.5 MHz
µPD70136L-16	68-pin PLCC	16 MHz
µPD70136GJ-12	74-pin plastic miniflat	12.5 MHz
µPD70136GJ-16	74-pin plastic miniflat	16 MHz

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Block Diagram

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