SIEMENS

SAB 8xC166 General Purpose High-Performance Microcontrollers

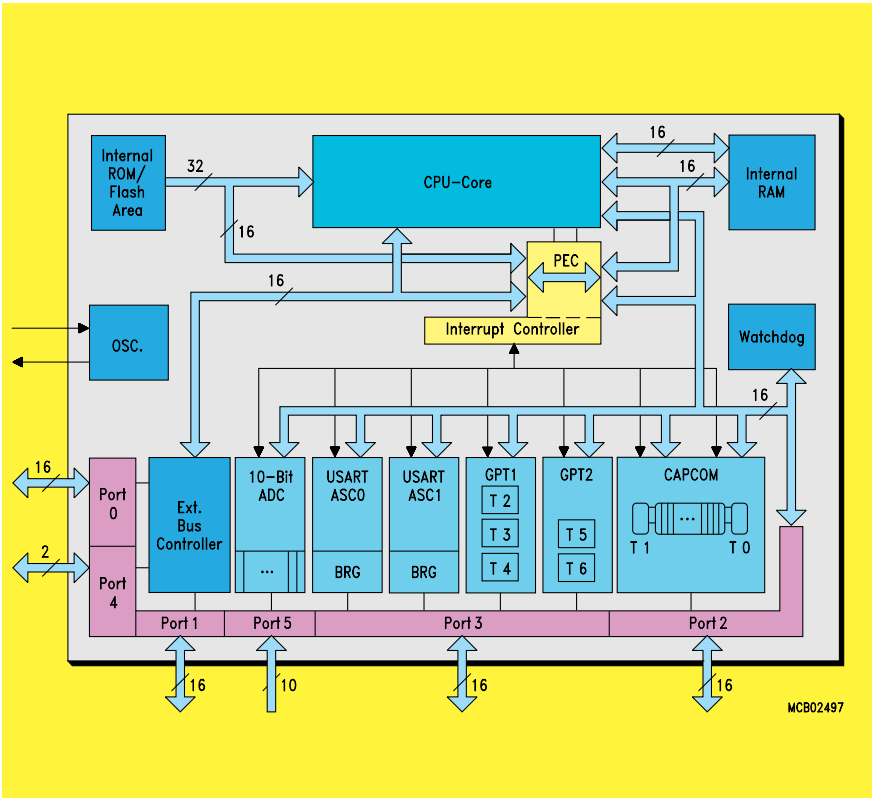
The SAB 80C166, SAB 83C166 and SAB 88C166 are the basic members of the Siemens C166-family of 16-bit microcontrollers. They were designed to meet the requirements of realtime embedded-control applications like automotive electronics or industrial control. Two different types of memory; mask-programmable ROM or Flash-EPROM, are implemented on-chip. The versions without oscillator prescaler allow the use of low-cost fundamental mode crystals. Intelligent peripheral subsystems are implemented to reduce the CPU load to a minimum.

The C166-versions at a glance:

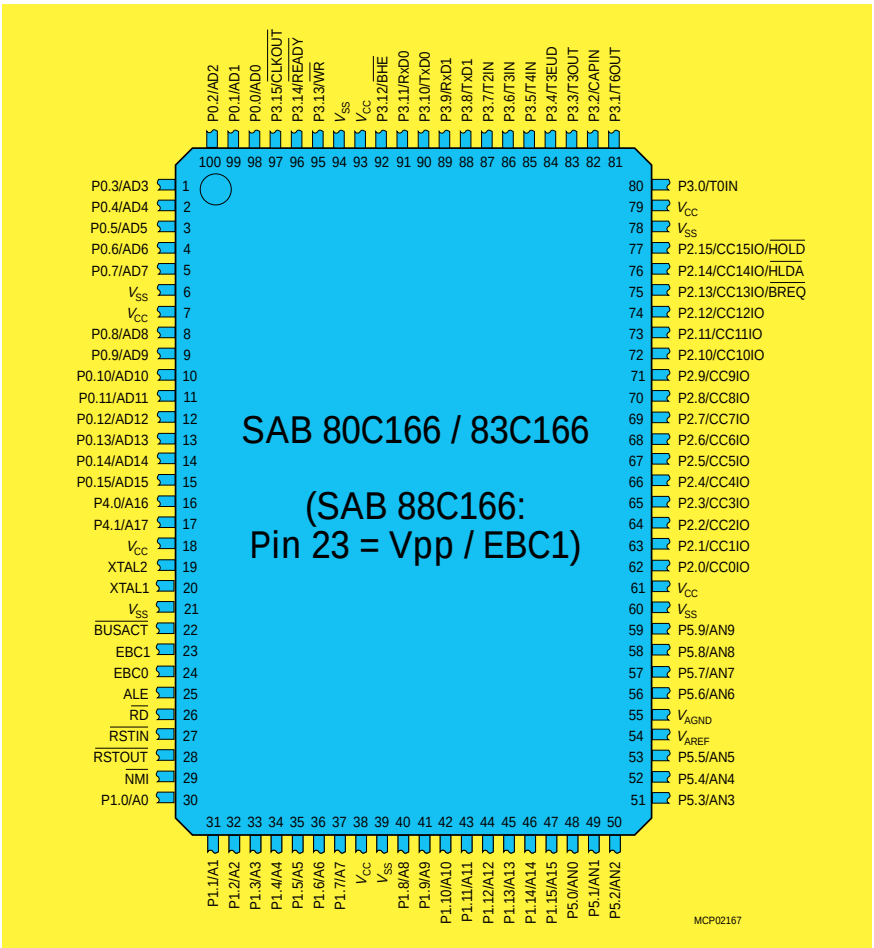
Device	RAM	ROM	Flash	Oscillator Prescaler (divides ext. clock by 2)
SAB 80C166	1 KB	–	–	✓
SAB 83C166	1 KB	32 KB	–	✓
SAB 88C166	1 KB	–	32 KB	✓
SAB 8xC166W	1 KB	(depending on derivative)		–

- High Performance 16-bit CPU with 4-stage pipeline
- 100 ns Instruction Cycle Time at 20 MHz CPU Clock
- 500 ns Multiplication (16 x 16 bit) 1 µs Division (32 / 16 bit)
- Enhanced Boolean Bit Manipulation Facilities
- Register-Based Design with Multiple Variable Register Banks
- Single-Cycle Context Switching Support
- Up to 256 KBytes Linear Address Space for Code and Data
- 16-Priority-Level Interrupt System
- 1 KB On-Chip RAM
- Versions with 32 KBytes On-Chip ROM (SAB 83C166) or Flash-EPROM (SAB 88C166) available
- Programmable External Bus Characteristics for Different Address Ranges
- 8-bit or 16-bit External Data Bus
- Multiplexed or Demultiplexed External Address / Data Buses
- Hold- and Hold-Acknowledge Bus Arbitration Support
- 512 Bytes On-Chip Special Function Register Area
- Idle and Power Down Modes
- 8-Channel Interrupt-Driven Single-Cycle Data Transfer Facilities via Peripheral Event Controller (PEC)
- 10-Channel 10-bit A/D Converter with 9.7 µs Conversion Time
- 16-Channel Capture/Compare Unit
- Two Multi-Functional General Purpose Timer Units with five 16-bit Timers
- Two Serial Channels (USARTs)
- Programmable Watchdog Timer
- Up to 76 General Purpose I/O Lines
- Supported by a large Range of Development Tools
- On-Chip Bootstrap Loader
- 100-Pin Plastic MQFP-Package (EIAJ)

SAB 8xC166
Block Diagram



SAB 8xC166
Pin Configuration



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