SIEMENS

C515
Your Best Choice for a
Multipurpose Microcontroller

8 Bit Microcontrollers

The C 515 is a new derivative of the C 500 family of 8-Bit-microcontrollers. It is fully compatible to the standard 80 C 515/535 family and upgrades it with a slow-down mode, a ROM-Protection and the Enhanced Hooks Emulation Technology™ by keeping it fully compatible.
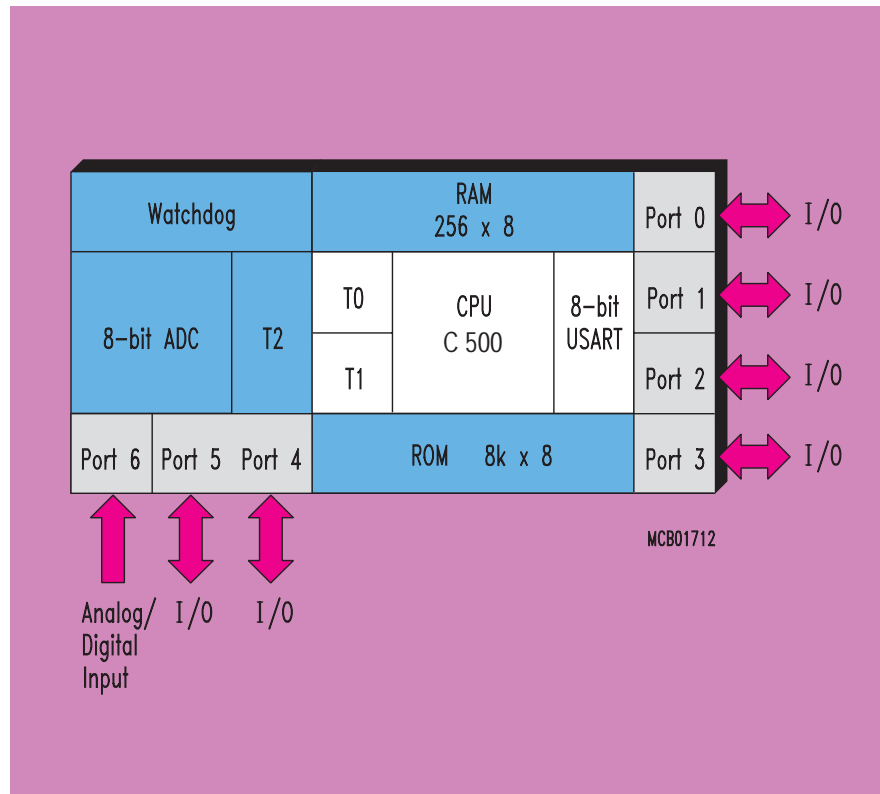
The C 515 features a highly flexible 4 Channel PWM, a 8-Channel 8-Bit A/D-Converter, a programmable Watchdog Timer and 6 multifunctional I/O-Ports.

These features in cooporation with its Enhanced EMC/RFI Improvements and the attractive price performance ratio makes the C 515 suitable for a broad range of applications in the industrial, automotive, consumer and telecom segment.

- Enhanced 8-Bit C500-CPU – Fully Software/Toolset Compatible to Standard 80C51 Microcontrollers
- Fully Compatible with SAB 80C515 and SAB 80C535
- 600 ns Instruction Cycle Time at 20 MHz oscillator frequency
- 12 Interrupt Vectors with 4 Priority Levels selectable
- 8 KBytes On-Chip ROM with ROM-Protection available (C515-1RM)
- 256 Byte On-Chip Internal RAM (IRAM)
- Supports external Address Range up to 64 KByte Program and 64 KBytes Data Memory

- Three 16-Bit Timer/Counters
- 4 Channel highly flexible Capture/Compare Unit for PWM Generation
- 8-Channel 8-bit A/D Converter with programmable internal reference voltage. A/D Converter Inputs can be used as Digital Inputs
- Full Duplex Serial Interface with Asynchronous and Synchronous Modes and Programmable Baudrate Generator
- 48 Multifunctional input/output Pins
- Extended Power-Down Features

- Enhanced EMC/RFI Improvements through latest design optimizations
- Fail Safe Mechanism with Programmable Watchdog Timer
- Support of Enhanced Hook Emulation Technology™
- P-MQFP-80 Package – Pin-Compatible to SAB 80C515-M and SAB 80C515A-M
- Temperature ranges:
  Standard   0 °C to + 70 °C
  Extended   -40 °C to + 85 °C

C515
Block Diagram

| | | RAM 256 x 8 | Port 0 | ⬌ I/O |
| Watchdog | | | | |

CPU C 500 — 8-bit USART

8-bit ADC — T2 — T0 / T1

Port 6 — Port 5 — Port 4 — ROM 8k x 8 — Port 3

Analog/Digital Input — I/O — I/O

MCB01712

C515
Pin Configuration

SAB-C515-LM
SAB-C515-1RM

P-MQFP-80
Package

Top pins (80 → 61): P4.7, P4.6, P4.5, P4.4, P4.3, $\overline{PE}$, P4.2, P4.1, P4.0, N.C., N.C., V_{CC}, N.C., P5.0, P5.1, P5.2, P5.3, P5.4, P5.5, P5.6

Left pins (1 → 20): $\overline{RESET}$, N.C., V_{AREF}, V_{AGND}, P6.7 / AIN7, P6.6 / AIN6, P6.5 / AIN5, P6.4 / AIN4, P6.3 / AIN3, P6.2 / AIN2, P6.1 / AIN1, P6.0 / AIN0, N.C., N.C., P3.0 / RxD, P3.1 / TxD, P3.2 / $\overline{INT0}$, P3.3 / $\overline{INT1}$, P3.4 / T0, P3.5 / T1

Right pins (60 → 41): P5.7, P0.7 / AD7, P0.6 / AD6, P0.5 / AD5, P0.4 / AD4, P0.3 / AD3, P0.2 / AD2, P0.1 / AD1, P0.0 / AD0, N.C., N.C., $\overline{EA}$, ALE, $\overline{PSEN}$, N.C., P2.7 / A15, P2.6 / A14, P2.5 / A13, P2.4 / A12, P2.3 / A11

Bottom pins (21 → 40): P3.6 / $\overline{WR}$, P3.7 / $\overline{RD}$, N.C., P1.7 / T2, P1.6 / CLKOUT, P1.5 / T2EX, P1.4 / $\overline{INT2}$, P1.3 / INT6 / CC3, P1.2 / INT5 / CC2, P1.1 / INT4 / CC1, P1.0 / $\overline{INT3}$ / CC0, N.C., V_{CC}, V_{SS}, N.C., XTAL2, XTAL1, P2.0 / A8, P2.1 / A9, P2.2 / A10

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