SIEMENS

C504
Your Best Choice for
AC/DC Motor Control

The C504 extends the midrange of the C500 family of 8-Bit-micro-controllers.

Its enhanced functionality and performance as well as a re-programmable version provides highest integration to the customer at the best overall system cost.
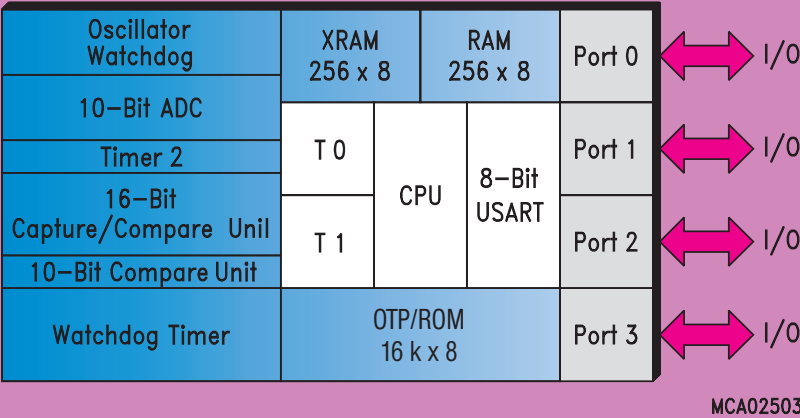
The powerful 6-Channel Capture/ Compare Unit allows to use the C504 in dedicated AC/DC Motor Control Applications. Noise generation, RFI behaviour and power consumption is minimized by 10-Bit/20 KHz PWM Signals and a programmable deadtime. An external trap signal for quick output switch-off provides a high level of system security.

- Enhanced 8 Bit C500-CPU – Fully Software/Toolset Compatible to Standard 80C51/80C52 Microcontrollers
- 300 ns Instruction Cycle Time at 40 MHz Clock Frequency
- 12 Interrupt Vectors with 2 Priority Levels selectable
- 16K Byte On-Chip ROM/OTP. ROM protection available
- 256 Byte On-Chip Internal RAM (IRAM)
- 256 Byte On-Chip Extended RAM (XRAM)
- Supports external Address Range up to 64K Byte Program and Data Memory
- Three 16-bit Timer/Counters

- 3/6 Channel 16-Bit Capture/ Compare Unit dedicated for AC/DC Motor Control Applications
- 1 Channel 10-Bit Compare Unit
- 8-Channel 10-Bit A/D Converter. A/D Converter Inputs can be used as Digital Input/Output
- Full Duplex Serial Interface with Asynchronous and Synchronous Modes and Programmable Baudrate Generator
- 32 Multifunctional Input/Output Pins
- Extended Power Saving Modes with Wake-up from Power-Down via External Interrupt.

- Enhanced Fail Safe Mechanisms with Programmable Watchdog Timer and Oscillator Watchdog
- Fast Power-On Reset
- P-MQFP-44 – Pin-Compatible to C501, and C511/C513-Family
- Temperature ranges:
  Standard   0°C to 70°C
  Extended   −40°C to +85°C
                       −40°C to +125°C
                       (maximum 24 MHz)

Starter Kits are also available and can be ordered by referencing the following number: B158-H7007-X-X-7600

C504
Block Diagram

MCA02503

C504
Pin Configuration

Top pins (left to right): 44, 43, 42, 41, 40, 39, 38, 37, 36, 35, 34

- P1.4 / CC1
- P1.3 / AN3 / COUT0
- P1.2 / AN2 / CC0
- P1.1 / AN1 / T2EX
- P1.0 / AN0 / T2
- V_{GND}
- V_{AREF}
- P0.0 / AD0
- P0.1 / AD1
- P0.2 / AD2
- P0.3 / AD3

Left pins:
- P1.5 / COUT1 — 1
- P1.6 / CC2 — 2
- P1.7 / COUT2 — 3
- RESET — 4
- P3.0 / RxD — 5
- CTRAP — 6
- P3.1 / TxD — 7
- P3.2 / AN4 / INT0 — 8
- P3.3 / AN5 / INT1 — 9
- P3.4 / AN6 / T0 — 10
- P3.5 / AN7 / T1 — 11

Center label:
SAB-C504-LM
SAB-C504-2RM
SAB-C504-2EM

Right pins:
- 33 — P0.4 / AD4
- 32 — P0.5 / AD5
- 31 — P0.6 / AD6
- 30 — P0.7 / AD7
- 29 — EA
- 28 — COUT3
- 27 — ALE
- 26 — PSEN
- 25 — P2.7 / A15
- 24 — P2.6 / A14
- 23 — P2.5 / A13

Bottom pins (left to right): 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22

- P3.6 / WR / INT2
- P3.7 / RD
- XTAL2
- XTAL1
- V_{SS}
- V_{CC}
- P2.0 / A8
- P2.1 / A9
- P2.2 / A10
- P2.3 / A11
- P2.4 / A12

MCP02532