SIEMENS

C540U Family Multipurpose Microcontroller with On-Chip USB Module

The C540U family is a new range of derivative based on the C500 8-Bit-microcontroller with new peripherals. It combines the well known functionality of the standard SAB-C511 microcontroller with enhanced features.

The C540U family feature a SPI compatible interface and a USB module which meets the Universal Serial Bus specification.

The high peripheral performance and the USB feature is ideal for telecommunication, computer peripheral and consumer applications. The optimised FIFO memory management units and the ability to work in full and low speed mode makes this microcontroller especially suited for Computer Telephony Integration designs.

Advance Information

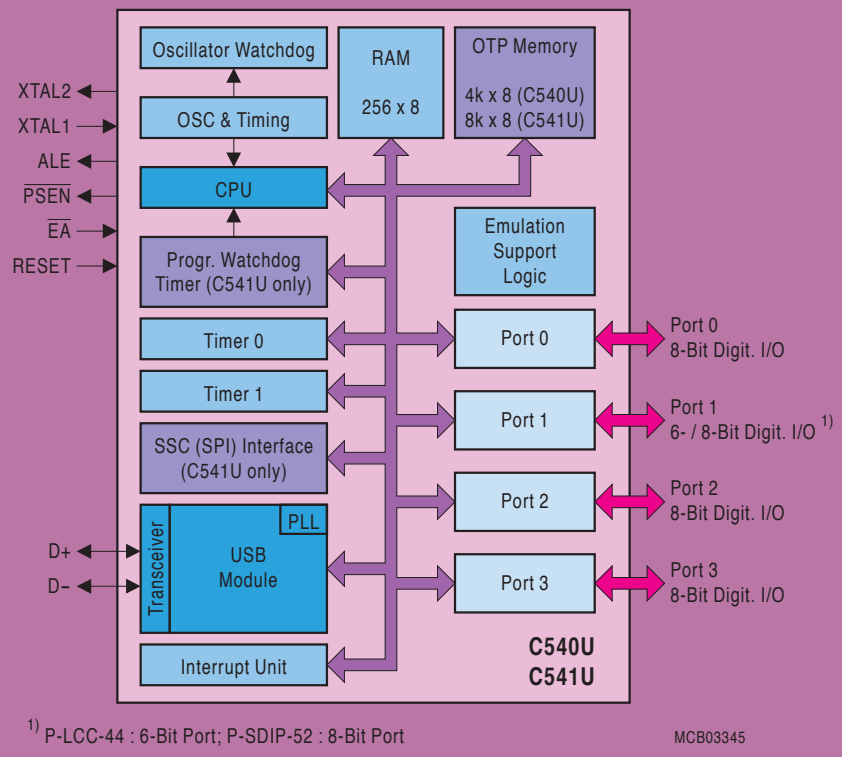
- Enhanced 8-bit C500 CPU
  - Full software/toolset compatible to standard 80C51/ 80C52 microcontrollers
- 12 MHz external operating frequency
  - 500 ns instruction cycle
- Built-in PLL for USB synchronization
- On-chip OTP program memory
  - C540U: 4K byte
  - C541U: 8K byte
  - Alternatively up to 64K byte external program memory
  - Optional memory protection
- On-chip USB module
  - Compliant to USB specification
  - Full speed or low speed operation
  - Five endpoints: one bidirectional control endpoint, four versatile programmable endpoints
  - Registers are located in special function register area
  - On-chip USB transceiver

Features (continued):

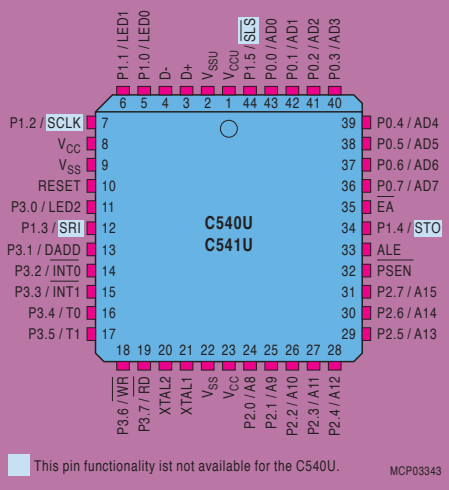
- Up to 64K byte external data memory
- 256 byte on-chip RAM
- Four parallel I/O ports
  - P-LCC-44 package: three 8-bit ports and one 6-bit port
  - P-SDIP-52 package: four 8-bit ports
  - LED current drive capability for 3 pins (10 mA)
- Two 16-bit timer/counters (C501 compatible)
- SSC synchronous serial interface (SPI compatible) (only C541U)
  - Master and slave capable
  - Programmable clock polarity/clock-edge to data phase relation
  - LSB/MSB first selectable
  - 1.5 MBaud transfer rate at 12 MHz operating frequency
- 7 interrupt sources (2 external, 5 internal with 2 USB interrupts) selectable at 2 priority levels
- Enhanced fail safe mechanisms
  - Programmable watchdog timer (only C541U)
  - Oscillator watchdog
- Power saving modes
  - idle mode
  - software power down mode with wake-up capability through $\overline{\text{INT0}}$ pin or USB
- On-chip emulation support logic (Enhanced Hooks Technology™)
- P-LCC-44 and P-SDIP-52 packages
- Power supply voltage range: 4.0V to 5.5V
- Temperature Range:
  SAB-C540U $T_A = 0$ to 70 °C
  SAB-C541U $T_A = 0$ to 70 °C

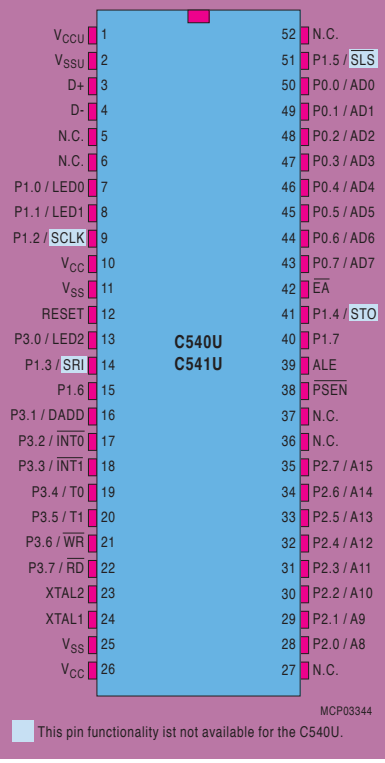
Type	Ordering Code	Package	Description (8-Bit CMOS microcontroller)
SAB-C540U-EN	Q67126-C2042	P-LCC-44-2	8-Bit CMOS microcontroller (12 MHz)
SAB-C540U-EP	Q67120-C2043	P-SDIP-52-1	8-Bit CMOS microcontroller (12 MHz)
SAB-C541U-1EN	Q67126-C2001	P-LCC-44-2	8-Bit CMOS microcontroller (12 MHz)
SAB-C541U-1EP	Q67120-C2021	P-SDIP-52-1	8-Bit CMOS microcontroller (12 MHz)

C540U/C541U
Functional Units



C540U/C541U
Pin Configuration





Published by Semiconductor Group

Siemens Aktiengesellschaft

Global PartnerChip
for Systems on Silicon

Ordering No. B158-H7110-G2-X-7600
Printed in Germany
PS 07975.

21-932