

## 32-bit Single Chip Microcontroller

- High-speed 32-bit RISC Core
- Built-in LCD Controller
- Built-in SDRAM Controller
- Multiply Accumulation
- 10-bit ADC
- Built-in 8K-byte RAM

### ■ DESCRIPTIONS

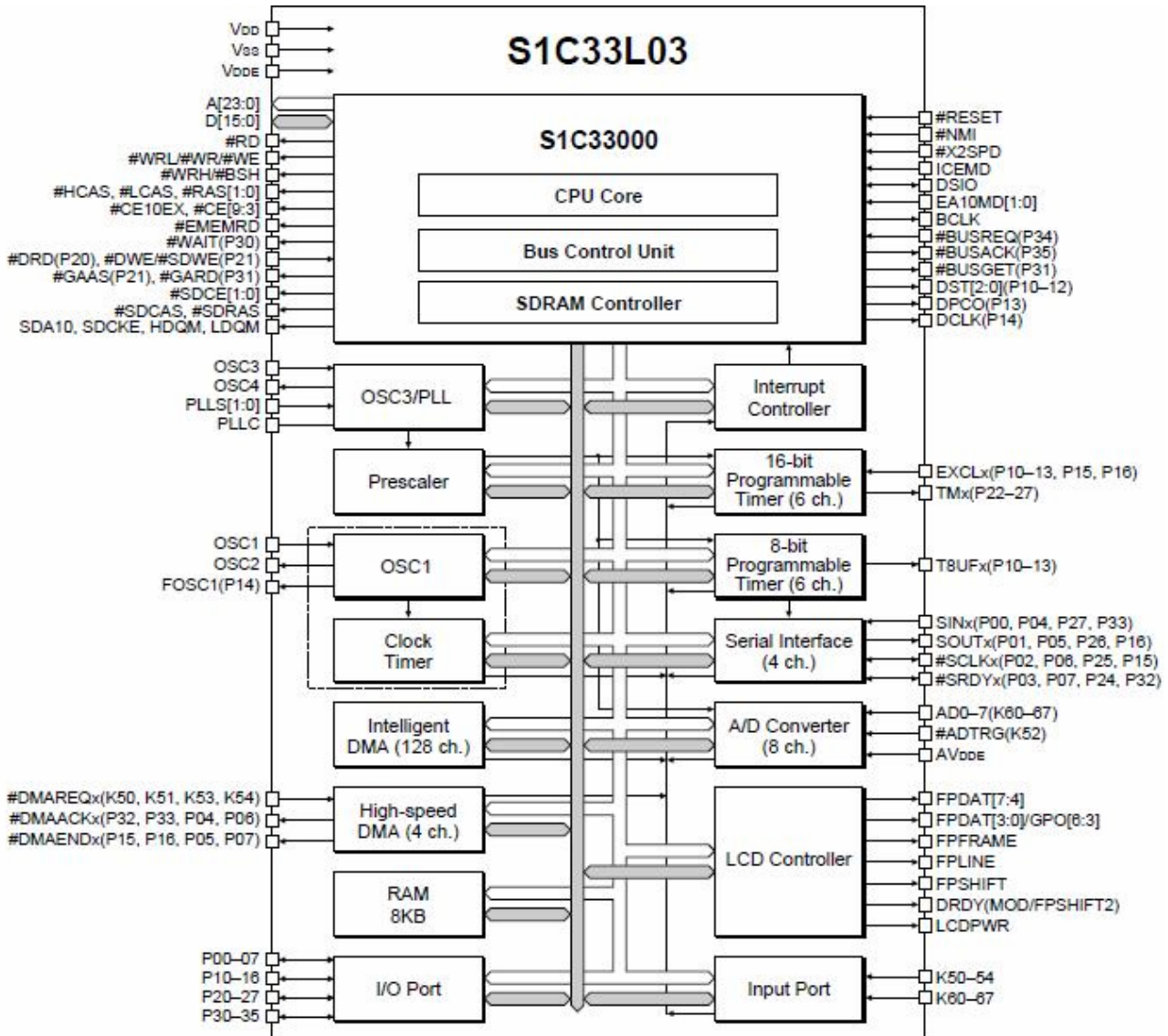
The S1C33L03 is a CMOS 32-bit microcontroller composed of a CMOS 32-bit RISC core, RAM, DMA, timers, SIO, PLL, LCD controller, SDRAM controller and other circuits. The S1C33L03 can be operated with high speed and spend little current. With the ADC, PWM and the MAC function, the S1C33L03 is suitable for voice applications and PDAs.

### ■ FEATURES

- CMOS LSI 32-bit parallel processing S1C33000 RISC core
- Main clock 50MHz (Max., up to 12.5MHz external clock input)
- Sub clock 32.768kHz (Typ., crystal)
- Instruction set 16-bit fixed length, 105 instructions  
(MAC instruction is included, 2 cycles)
- Internal RAM size 8,192 bytes
- LCD controller DMA type  
4/8-bit monochrome LCD interface  
1, 2 or 4 bits/pixel; 2, 4, or 16-level gray-scale display
- SDRAM controller Supports 1M × 16-bit to 16M × 16-bit SDRAMs  
Capable of access either in 8 or 16 bits  
Capable of burst reads and single writes
- Clock timer 1 channel
- Programmable timer 8 bits × 6 channels and 16 bits × 6 channels
- Watchdog timer Realized with a 16-bit programmable timer
- PWM timer Realized with a 16-bit programmable timer
- Serial interface 4 channels  
Clock synchronization type and asynchronization type are selectable.  
Usable as an infrared ray (IrDA) interface.
- 10-bit A/D converter Successive approximation type, 8 input channels
- High-speed DMA 4 channels
- Intelligent DMA 128 channels
- I/O port Input port : 13 bits  
I/O port : 29 bits
- Interrupt controller External interrupts : 10 types  
Internal interrupts: 29 types
- External bus interface 24-bit address bus, 16-bit data bus, 7 chip enable pins  
DRAM, SDRAM and burst ROM may be connected directly.
- Shipping form QFP20-144pin
- Supply voltage Core voltage : 1.8 to 3.6V  
I/O voltage : 1.8 to 5.5V
- Current consumption HALT state : 100mW (3.3V, 50MHz Typ.)  
RUN state : 200mW (3.3V, 50MHz Typ.)

# S1C33L03

## ■ Block Diagram



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