

## 32-bit Single Chip Microcontroller

- High-speed 32-bit RISC Core
- Multiply Accumulation
- Built-in LCD Controller
- 10-bit ADC
- Built-in ROM and RAM
- Twin-clock Oscillator

### ■ DESCRIPTIONS

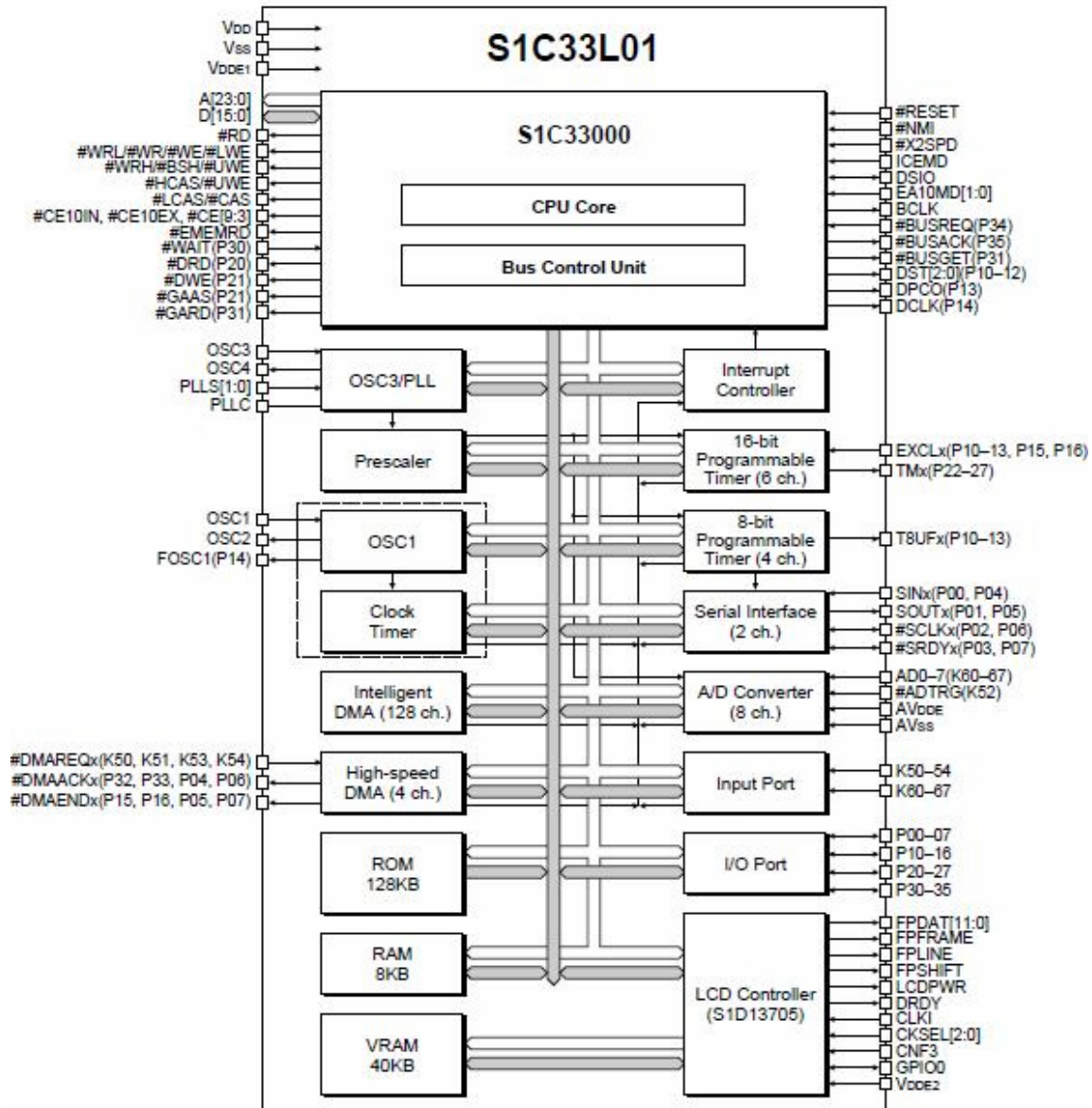
The S1C33L01 is a CMOS 32-bit microcontroller composed of a CMOS 32-bit RISC core, ROM, RAM, DMA, timers, SIO, PLL, LCDC and other circuits. The S1C33L01 can be operated with high speed and spend little current. With the ADC, PWM and the MAC function, the S1C33L01 is suitable for voice applications and 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 ROM size 128K bytes
- Internal RAM size Data RAM : 8K bytes  
VRAM : 40K bytes
- LCD controller 4/8-bit monochrome/color LCD interface  
Active-matrix TFT/D-TFD interface  
1, 2 or 4 bits/pixel; 2, 4, or 16-level gray-scale display  
1, 2, 4 or 8 bits/pixel; 2, 4, 16 or 256 color display
- Clock timer 1 channel
- Programmable timer 8 bits × 4 channels and 16 bits × 6 channels
- PWM timer Realized with a 16-bit programmable timer
- Watchdog timer Realized with a 16-bit programmable timer
- Serial interface 2 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  
Pins are shared with the inputs and outputs of built-in peripheral circuits.
- Interrupt controller External interrupts : 6 types  
Internal interrupts : 29 types
- External bus interface 24-bit address bus, 16-bit data bus, 7 chip enable pins  
DRAM and burst ROM may be connected directly.
- Shipping form QFP21-176pin or chip
- Supply voltage Core voltage : 1.8 to 3.6V  
I/O voltage : 1.8 to 5.5V
- Current consumption SLEEP state : 10 $\mu$ A (3.3V, 32.768kHz, clock timer run state, Typ.)  
: 2.5 $\mu$ A (2.0V, 32.768kHz, clock timer run state, Typ.)  
RUN state : 60mA (3.3V, 50MHz Typ.)

# S1C33L01

## ■ Block Diagram



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