

## 32-bit Single Chip Microcontroller

- High-speed 32-bit RISC Core
- Multiply Accumulation
- Built-in 8K-byte RAM
- 10-bit ADC
- 4-ch. SIO
- High-speed DMA, Intelligent DMA

### ■ DESCRIPTIONS

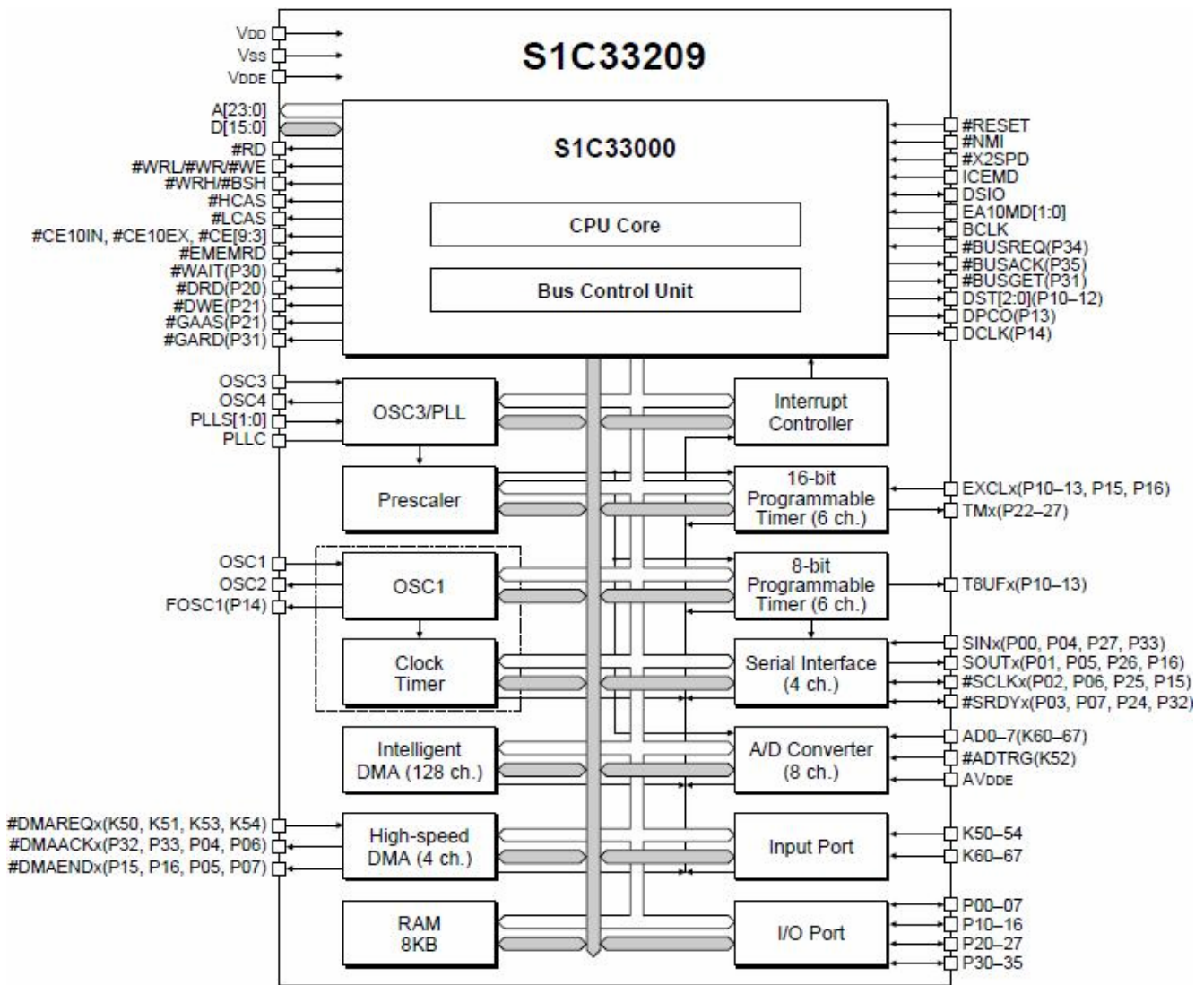
The S1C33209 is a CMOS 32-bit microcomputer composed of a CMOS 32-bit RISC core, 8K-byte RAM, 4-channel SIO, A/D converter, timers, PLL and other circuits. The S1C33209 features high-speed operation and low current consumption. It is suitable for various portable equipment and multimedia control systems. The S1C33209 also provides a DSP function using the internal MAC (multiplication and accumulation) operation function with the A/D converter, this makes it possible to achieve speech recognition and voice synthesis systems.

### ■ FEATURES

- CMOS LSI 32-bit parallel processing S1C33000 RISC core
- Main clock 60MHz (Max., up to 15MHz 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
- Clock timer 1 channel
- Programmable timer 8 bits × 6 channels and 16 bits × 6 channels
- Watchdog 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 : 69 bits
- Interrupt controller External interrupts : 13 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 QFP15-128pin
- 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 : 65mA (3.3V, 50MHz Typ.)

# S1C33209

## ■ Block Diagram



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