

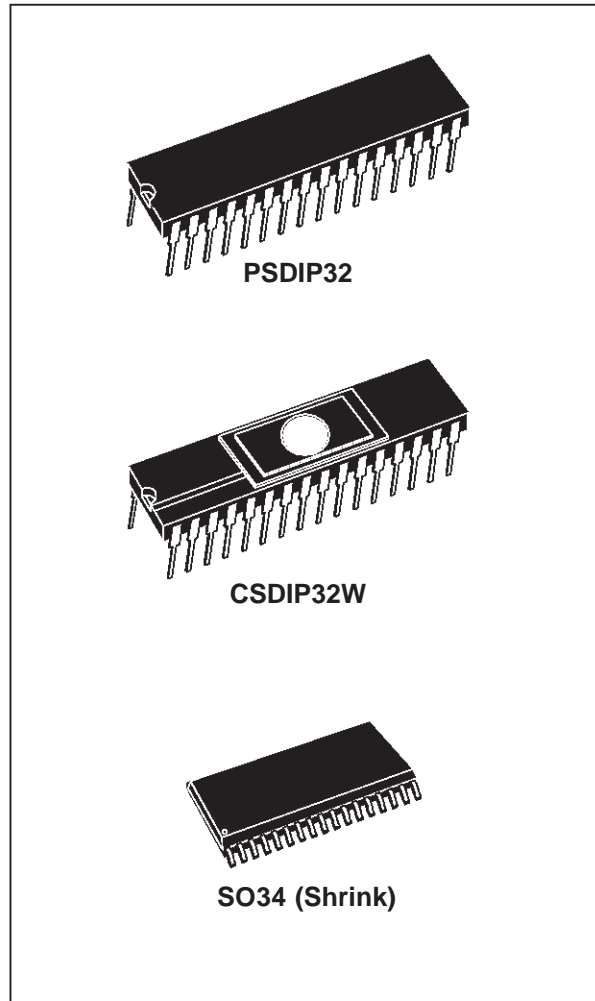


# ST7263

## LOW SPEED USB 8-BIT MCU FAMILY with up to 16K MEMORY, up to 512 BYTES RAM, 8-BIT ADC, WDG, TIMER, SCI & I<sup>2</sup>C

PRODUCT PREVIEW

- User program memory: up to 16Kbytes
- Data RAM: up to 512 bytes with 64 bytes stack
- 8 MHz Internal Clock Frequency
- Run, Wait and Halt CPU modes
- RAM retention mode
- USB (Universal Serial Bus) Interface with DMA for low speed applications compliant with USB 1.5 Mbs specification (version 1.1) and USB HID specifications (version 1.0):
  - Integrated 3.3V voltage regulator and transceivers
  - Suspend and Resume operations
  - 3 end points with programmable in/out configuration
- 19 programmable I/O lines with:
  - 8 high current I/Os (10mA at 1.3v)
  - 2 very high current pure Open Drain I/Os (25mA at 1.5v)
  - 8 lines individually programmable as interrupt inputs
- 16-bit Timer with 2 Input Captures, 2 Output Compares, with PWM Generation capabilities, External Clock input
- 8-bit Analog to Digital Converter with 8 channels
- Asynchronous Serial Communications Interface (8K and 16K memory versions only)
- I<sup>2</sup>C Multi Master Interface up to 400 KHz (16K ROM version only)
- Low Voltage Reset
- Programmable Watchdog for system reliability
- 32-pin Shrink Dual In line plastic/ceramic package or Shrink 34-pin SO plastic package
- Fully static operation
- 0 to + 70°C operating temperature range
- 4V to 6V supply operating range
- 24 MHz Oscillator using quartz crystal or ceramic resonator
- 63 basic instructions, 17 main addressing modes
- 8x8 unsigned multiply instruction
- True bit manipulation



- Versatile Development Tools (under Windows) including assembler, linker, C-compiler, archiver, source level debugger, software library, hardware emulator, programming boards and gang programmers

Rev. 1.1

# 1 GENERAL DESCRIPTION

## 1.1 INTRODUCTION

The ST7263 Microcontrollers form a sub family of the ST7 dedicated to USB applications. The devices are based on an industry-standard 8-bit core and feature an enhanced instruction set. They operate at an 24MHz oscillator frequency. Under software control, the ST7263 MCUs may be placed in either Wait or Halt modes, thus reducing power consumption. The enhanced instruction set and addressing modes afford real programming potential. In addition to standard 8-bit data management, the ST7263 MCUs feature true bit manipulation, 8x8 unsigned multiplication and indirect addressing modes. The devices include an ST7 Core, up to 16K program memory, up to 512 bytes RAM, 19 I/O lines and the following on-chip peripherals:

- USB low speed interface with 3 end points with programmable in/out configuration using the DMA architecture with embedded 3.3V voltage regulator and transceivers (no external components are needed).
- 8-bit Analog-to-Digital converter (ADC) with 8 multiplexed analog inputs

- industry standard asynchronous SCI serial interface (not on all products - see device summary below)
- digital Watchdog
- 16-bit Timer featuring an External clock input, 2 Input Captures, 2 Output Compares with Pulse Generator capabilities
- fast I2C Multi Master interface (not on all products - see device summary below)
- Low voltage reset ensuring proper power-on or power-off of the device

The ST72E63 is the EPROM version of the ST7263 in CSDIP32 windowed packages.

The ST72T63x are the One Time Programmable (OTP) versions in SO34/PSDIP32 packages.

The ST7263x are the ROM versions in SO34/PSDIP32 packages.

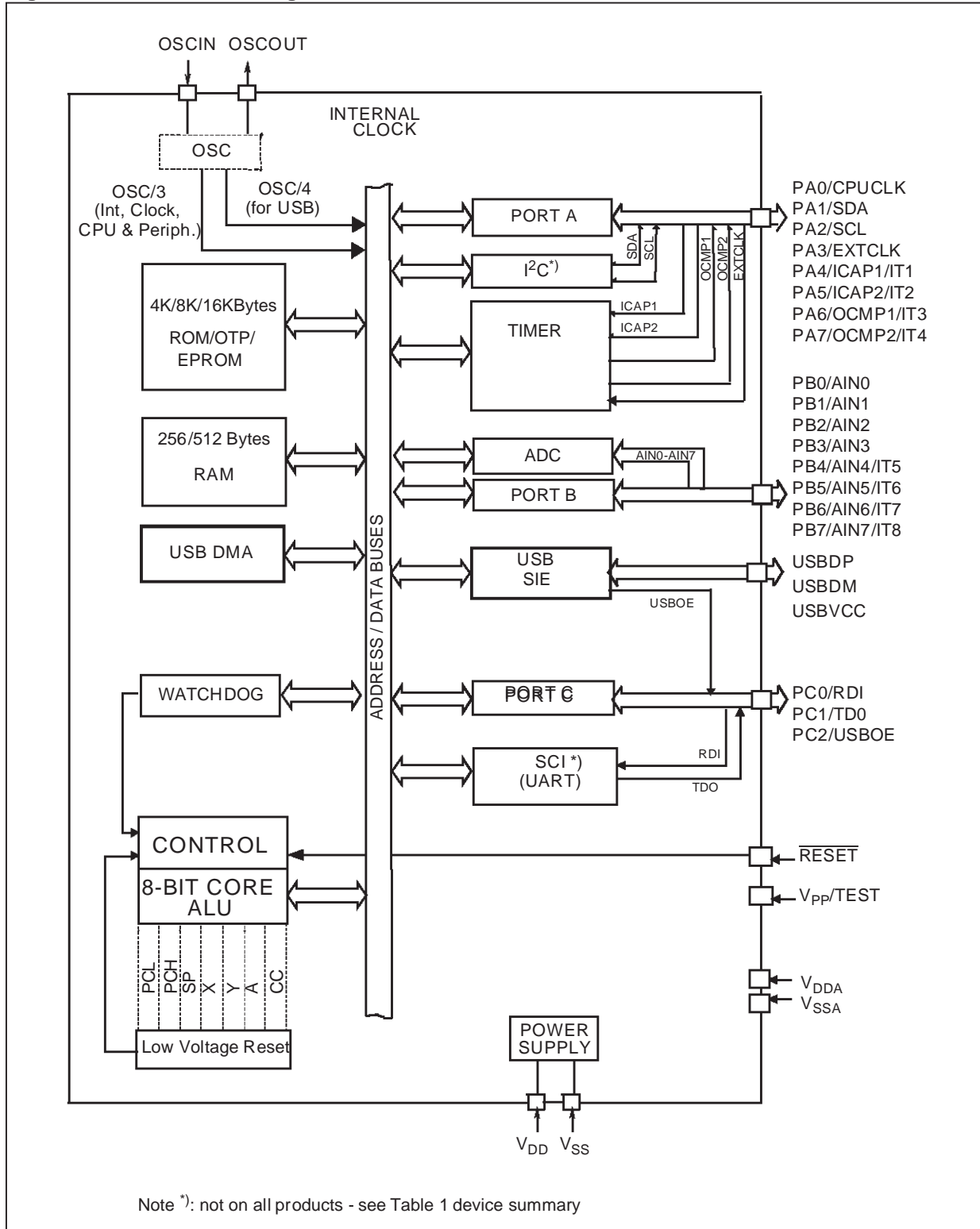
A specific mode is available to allow programming of the EPROM user memory array. This is set by a specific voltage source applied to the V<sub>PP</sub>/TEST pin.

**Table 1. Device Summary**

| Features                            |          | ST72631    | ST72T631        | ST72632         | ST72T632        | ST72633    | ST72T633 | ST72E631 <sup>1)</sup> |
|-------------------------------------|----------|------------|-----------------|-----------------|-----------------|------------|----------|------------------------|
| Program memory (bytes)<br>ROM - OTP |          | 16K ROM    | 16K OTP         | 8K ROM          | 8K OTP          | 4K ROM     | 4K OTP   | 16K EPROM              |
| RAM (stack) - bytes                 |          | 512 (64)   |                 | 256 (64)        |                 | 256 (64)   |          | 512 (64)               |
| USB end points                      |          | 3          |                 | 3               |                 | 3          |          | 3                      |
| I <sup>2</sup> C Multimaster        |          | 1          |                 | -               |                 | -          |          | 1                      |
| SCI                                 |          | 1          |                 | 1               |                 | -          |          | 1                      |
| 16-bit Timer                        |          | 1          |                 | 1               |                 | 1          |          | 1                      |
| Watchdog                            |          | yes        |                 | yes             |                 | yes        |          | yes                    |
| 8-bit ADC                           |          | 8 channels |                 | 8 channels      |                 | 8 channels |          | 8 channels             |
| Low Voltage Reset                   |          | yes        |                 | yes             |                 | yes        |          | yes                    |
| I/O lines                           |          | 19         |                 | 19              |                 | 19         |          | 19                     |
| External Interrupts                 |          | 8          |                 | 8               |                 | 8          |          | 8                      |
| Sales types                         | SO34     | ROM        | ST72631L4M1/xxx | ST72632L2M1/xxx | ST72633L1M1/xxx | -          |          | -                      |
|                                     |          | OTP        | ST72T631L4M1    | ST72T632L2M1    | ST72T633L1M1    | -          |          | -                      |
|                                     | PSDIP32  | ROM        | ST72631K4B1/xxx | ST72632K2B1/xxx | ST72633K1B1/xxx | -          |          | -                      |
|                                     |          | OTP        | ST72T631K4B1    | ST72T632K2B1    | ST72T633K1B1    | -          |          | -                      |
|                                     | CSDIP32W | EPROM      | -               | -               | -               | -          |          | ST72E631K4D1           |

Note 1. EPROM version for development only.

Figure 1. ST7263 Block Diagram



**Notes:**

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