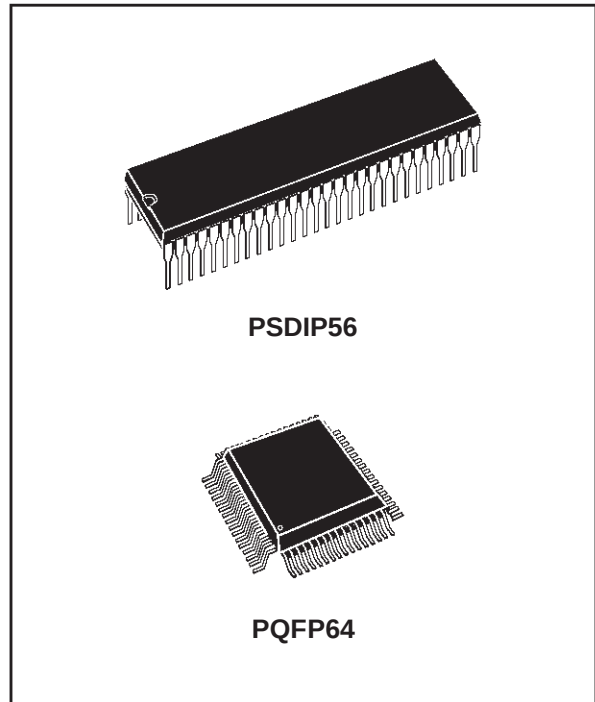


8/16-BIT HIGH SPEED USB MCUs WITH 16K ROM, 2K RAM, 8 USB FUNCTIONS, I²C, SCI, MFT & WDT TIMER,

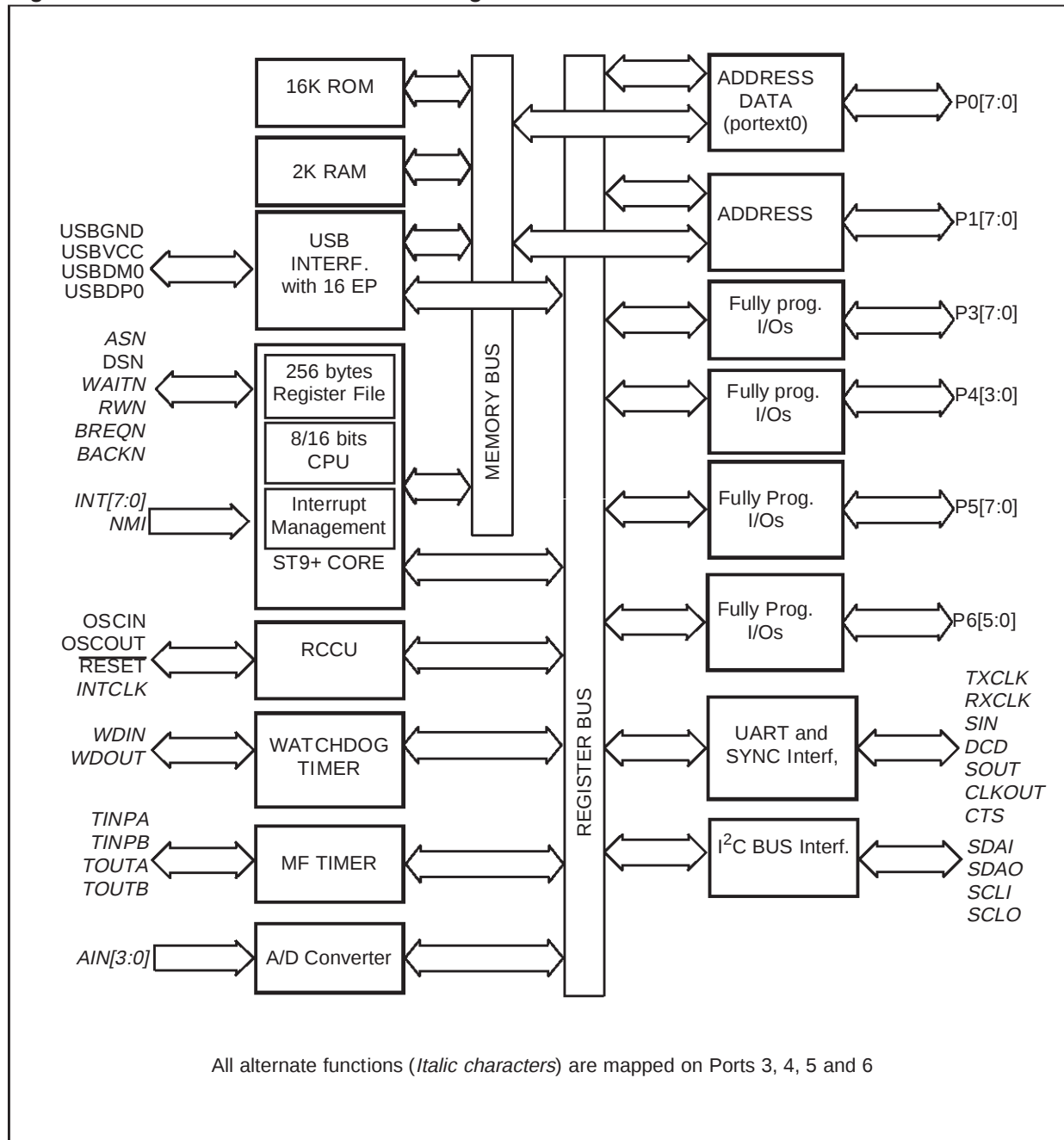
BRIEF DATA

- USB interface compliant with USB specifications version 1.0 having the following capabilities:
 - USB Embedded Functions having up to 8 internal functions (including 1 for virtual HUB operations when multiple functions are required) sharing a maximum of 16 fully configurable endpoints with programmable buffer sizes and supporting all types of USB data types (Isochronous included)
 - On-chip USB Transceivers and 3.3 voltage regulator.
- Master-Slave I²C-bus serial interface up to 400KHz
- UART with DMA capability up to 315 Kb/s supporting IRDA 115.2 kb/s specifications
- Synchronous serial interface with DMA capabilities up to 2 MHz
- External memory interface with DMA capability from the SIE
- 7 external interrupts
- 16-bit Multi-Function Timer (13 operating modes) with DMA capabilities
- Watchdog timer
- 4 channels 8-bit Analog to Digital Converter
- 43 Fully programmable I/Os with 4 high current pads (10 mA @ 1 V)
- Programmable PLL clock generator (RCCU) using a low frequency external quartz (8 MHz)
- Internal Memories: 16 Kbytes ROM, 2 Kbytes RAM
- Register oriented 8/16 bit CORE with RUN, WFI, SLOW, HALT and STOP modes
- Rich Instruction Set with 14 Addressing Modes
- 0 - 24 MHz Cpu clock Operation, 4 - 5.5 Volt voltage range
- Minimum instruction cycle time: 167 ns (@24 MHz CPU frequency)
- Division-by-zero trap generation
- 0 °C to 70 °C temperature range



- 224 general purpose registers available as RAM, accumulators or index pointers (register file)
- 56-pin Shrink Dual In-Line plastic package or 64-pin Quad Flat Pack plastic package
- Low EMI design supporting single sided PCB
- Versatile Development Tools, including assembler, linker, C-compiler, archiver, source level debugger and hardware emulators, and Real Time Operating System

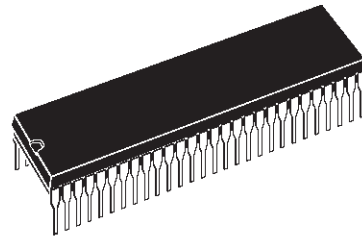
Figure 1 ST92163 Architectural Block Diagram



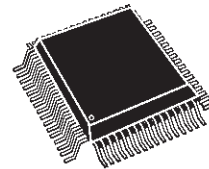
8/16-BIT HIGH SPEED USB MCUs WITH 16K EPROM/OTP, 2K RAM, 8 USB FUNCTIONS, $\dot{I}^2C$, SCI, MFT & WDT TIMER,

PRODUCT PREVIEW

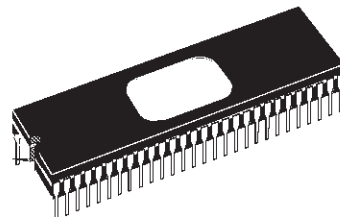
- USB interface compliant with USB specifications version 1.0 having the following capabilities:
 - USB Embedded Functions having up to 8 internal functions (including 1 for virtual HUB operations when multiple functions are required) sharing a maximum of 16 fully configurable endpoints with programmable buffer sizes and supporting all types of USB data types (Isochronous included)
 - On-chip USB Transceivers and 3.3 voltage regulator.
- Master-Slave $\dot{I}^2C$ -bus serial interface up to 400KHz
- UART with DMA capability up to 315 Kb/s supporting IRDA 115.2 kb/s specifications
- Synchronous serial interface with DMA capabilities up to 2 MHz
- External memory interface with DMA capability from the SIE
- 7 external interrupts
- 16-bit Multi-Function Timer (13 operating modes) with DMA capabilities
- Watchdog timer
- 4 channels 8-bit Analog to Digital Converter
- 43 Fully programmable I/Os with 4 high current pads (10 mA @ 1 V)
- Programmable PLL clock generator (RCCU) using a low frequency external quartz (8 MHz)
- Internal Memories: 16 Kbytes EPROM/OTP, 2 Kbytes RAM
- Register oriented 8/16 bit CORE with RUN, WFI, SLOW, HALT and STOP modes
- Rich Instruction Set with 14 Addressing Modes
- 0 - 24 MHz Cpu clock Operation, 4 - 5.5 Volt voltage range
- Minimum instruction cycle time: 167 ns (@24 MHz CPU frequency)
- Division-by-zero trap generation
- 0 °C to 70 °C temperature range
- 224 general purpose registers available as RAM, accumulators or index pointers (register file)



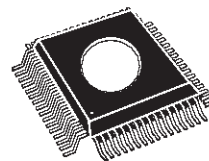
PSDIP56



PQFP64



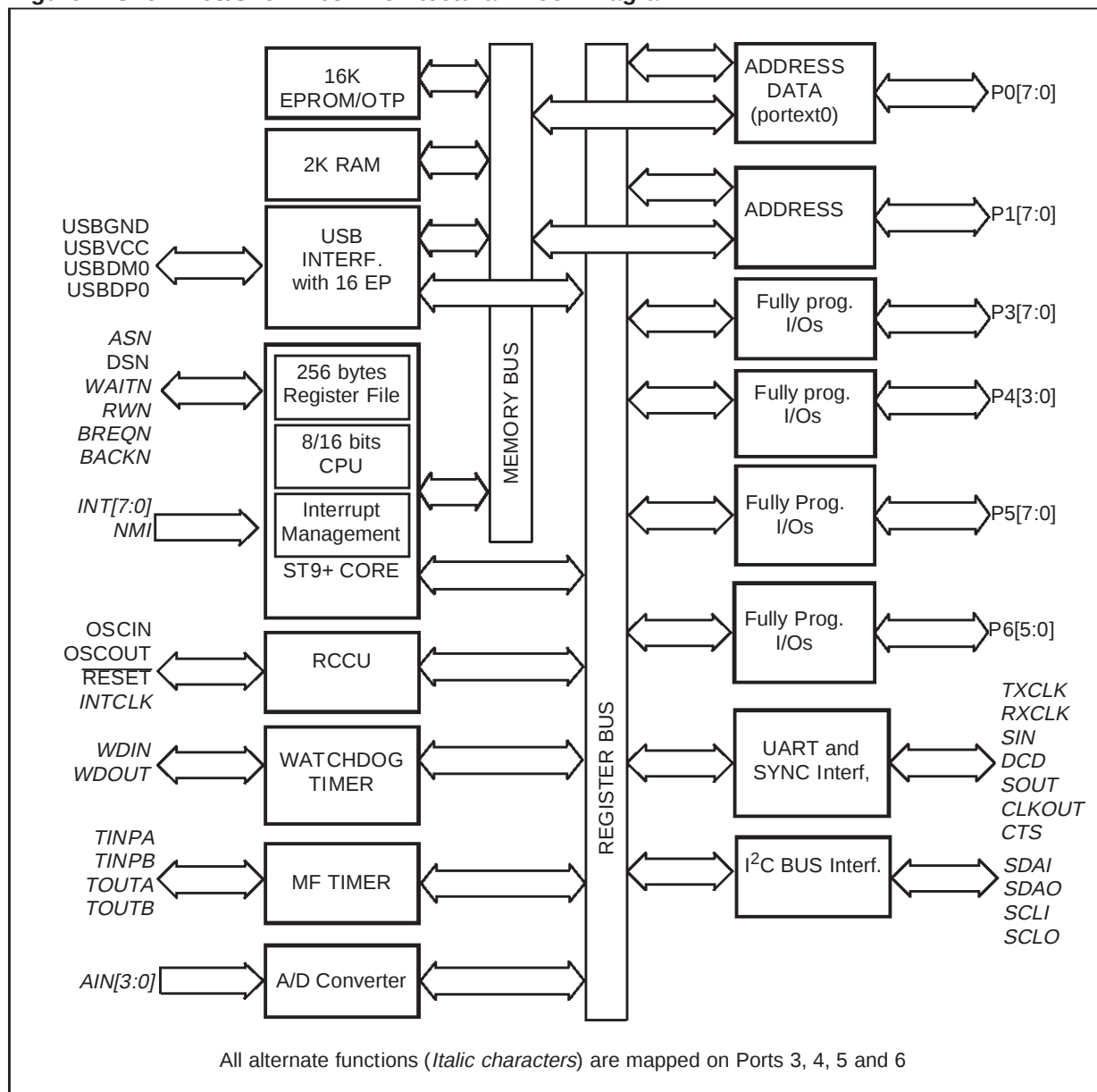
CSDIP56



CQFP64

- 56-pin Shrink Dual In-Line plastic/ceramic package or 64-pin Quad Flat Pack plastic/ceramic package
- Low EMI design supporting single sided PCB
- Versatile Development Tools, including assembler, linker, C-compiler, archiver, source level debugger and hardware emulators, programmers and Real Time Operating System

Figure 2. ST92E163/ST92T163 Architectural Block Diagram



Information furnished is believed to be accurate and reliable. However, SGS-THOMSON Microelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of SGS-THOMSON Microelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. SGS-THOMSON Microelectronics products are not authorized for use as critical components in life support devices or systems without the express written approval of SGS-THOMSON Microelectronics.

©1997 SGS-THOMSON Microelectronics - All Rights Reserved.

Purchase of I²C Components by SGS-THOMSON Microelectronics conveys a license under the Philips I²C Patent. Rights to use these components in an I²C system is granted provided that the system conforms to the I²C Standard Specification as defined by Philips.

SGS-THOMSON Microelectronics GROUP OF COMPANIES

Australia - Brazil - Canada - China - France - Germany - Italy - Japan - Korea - Malaysia - Malta - Morocco - The Netherlands - Singapore - Spain - Sweden - Switzerland - Taiwan - Thailand - United Kingdom - U.S.A.