ST7263B and ST7260 USB low-speed microcontroller families

Get connected to the host

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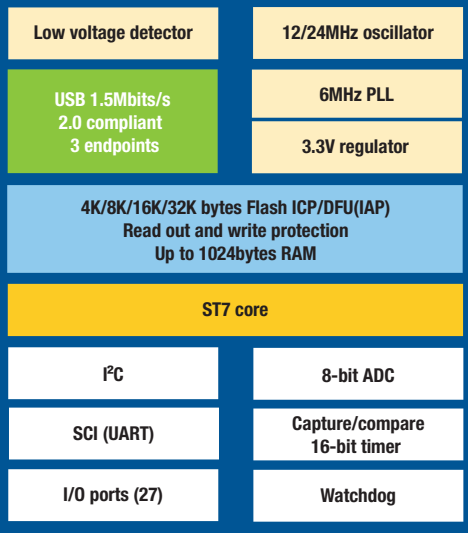
The ST7263B and ST7260 series of microcontrollers from **STMicroelectronics** are dedicated to applications with a USB device function such as game pads, keyboards, mice, UPS, and other industrial, computer and consumer devices. The USB interface supports the USB low-speed protocol. ST7263B and ST7260 MCUs feature 4 to 32Kbytes of program memory (Flash or ROM) and offer a wide range of products in 24 to 48-pin packages. A new competitively-priced and space-saving MicroLeadFrame QFN package (40 leads 6x6mm) has been recently introduced, and targets USB applications where space and cost are prime factors.

These features, along with analog and supervisor functions, coupled with a free and well-documented software package (firmware, USB libraries, PC software demo, application notes) make this family an ideal solution for a wide variety of applications that need to exchange short messages with the host computer.

Application areas



- USB-to serial interface converters
- UPS
- USB e-token/e-Key
- PC accessories (keyboards, mice, game pads and joysticks)
- Industrial equipment
- Medical applications

Competitive advantages

- USB 2.0 compliant (1.5Mbits/s) Flash microcontroller solution with fast conversion time 8-bit A-to-D converter
- Portfolio granularity: large choice of memory sizes available (4K/8K/16K/32K bytes)
- ST USB library and low power consumption: Plug-tested by the USB IF (implementers Forum)
- Device Firmware Update (DFU) capability: communication layers on PC and firmware side available for free
- Human Interface Device (HID) protocol compliant device
- Robust design for EMC-critical environments

State-of-the-art USB application development tools platform

- Specific application notes:
  - Example; ST7 universal serial bus microcontroller (AN 1017), designing a USB Mouse (AN1148), handling suspend mode on a USB mouse (AN 1149), implementing a USB game pad (1180), monitoring the V_{bus} signal for USB self-powered devices (AN1040), USB low-speed library V4.2x (AN1325), DFU implementation (AN1633 + AN 1577)
- Reference design: USB-to-serial bridge evaluation board with firmware and PC software
- Specific ST7263B evaluation board
- USB low-speed library
- USB low-speed DFU demo
- Programmer
- Emulator

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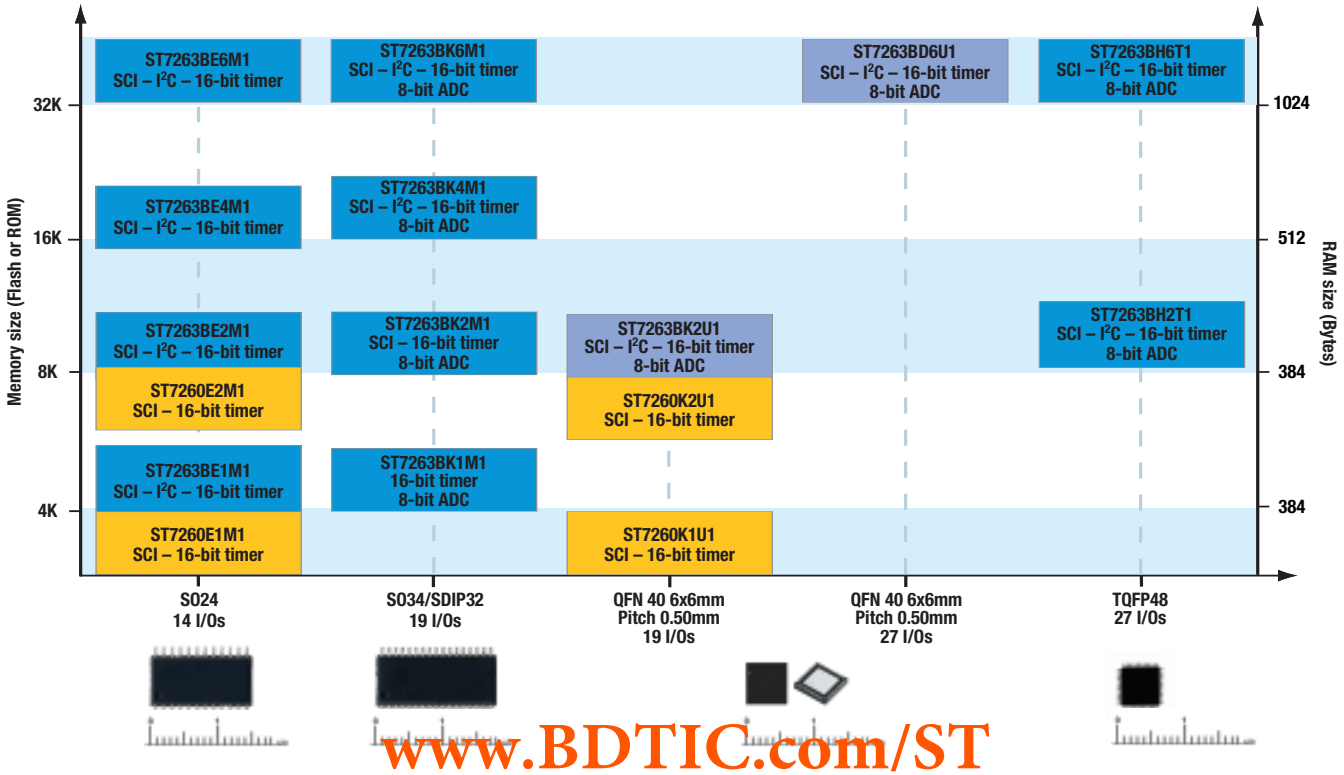
Features and benefits

Features	Benefits
USB interface compliant with 1.5Mbs (2.0) and HID specification (1.0): • Internal 3.3V voltage regulator and USB transceivers • Suspend and resume operations • Three endpoints with programmable in/out configuration • USB libraries, firmware, DFU class routine and PC software available	• Allow various applications to easily interface to a USB host • Minimize the need of external components • Low power mode supported • Reduce application development time
High-density Flash – up to 32K bytes with ICP/IAP capability ROM program memory available Up to 1024 bytes of RAM	Fast programming and robust data retention Cost-effective and fast ramp-up for high volume projects
Built-in reset and low voltage detector/4 power saving modes	No external components needed to insure proper power ON/OFF
8-bit A/D converter with up-to 12 channels	Fast (6µs) and accurate conversion
Industry standard asynchronous serial interface (UART/SCI) Fast I^2C multi-master interface	Enable bridging of USB to various types of devices
16-bit timer featuring an external clock input (two input captures, two output compares with pulse generator capabilities)	Cost-effective timer to ease application development
Broad range of packages (SO24, SDIP32, SO34, QFN40, LQFP48) and die form	Scalable solution for various applications
Robust design	Suitable for EMC/EMI critical environments



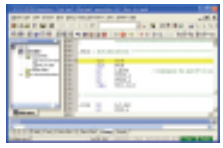
Device summary

Part number	Program memory type			Prog. (bytes)	RAM (bytes)	A/D inputs	Timer functions		Serial interface	LVD levels	I/Os (high current[2])	Package	Supply voltage	Special features
	Flash	FAST ROM	ROM[1]				12 or 16-bit (IC/OC/PWM)	Others						
ST7260E1	•	◦	◦	4K	384		1x16-bit (2/1/1)	WDG	USB/SCI	1	14(6)	S024	4.0 to 5.5V	Three low-speed USB endpoints, ICP, IAP, ROP
ST7260K1	•	◦	◦	4K	384		1x16-bit (2/2/1)	WDG	USB/SCI	1	19(10)	QFN40	4.0 to 5.5V	
ST7263BE1	•	◦	◦	4K	384		1x16-bit (2/1/1)	WDG	USB/SCI/I²C	1	14(6)	S024	4.0 to 5.5V	
ST7263BK1	•	◦	•	4K	384	8x8-bit	1x16-bit (2/2/1)	WDG	USB	1	19(10)	SDIP32/S034	4.0 to 5.5V	
ST7260E2	•	◦	◦	8K	384		1x16-bit (2/1/1)	WDG	USB/SCI	1	14(6)	S024	4.0 to 5.5V	
ST7260K2	•	◦	◦	8K	384		1x16-bit (2/2/1)	WDG	USB/SCI	1	19(10)	QFN40	4.0 to 5.5V	
ST7263BE2	•	◦	◦	8K	384		1x16-bit (2/1/1)	WDG	USB/SCI/I²C	1	14(6)	S024	4.0 to 5.5V	
ST7263BH2	•	◦	◦	8K	384	12x8-bit	1x16-bit (2/2/1)	WDG	USB/SCI/I²C	1	27(10)	LQFP48 (7x7)	4.0 to 5.5V	
ST7263BK2	•	◦	•	8K	384	8x8-bit		WDG	USB/SCI	1	19(10)	SDIP32/S034/QFN40	4.0 to 5.5V	
ST7263BE4	•	◦	◦	16K	512		1x16-bit (2/1/1)	WDG	USB/SCI/I²C	1	14(6)	S024	4.0 to 5.5V	
ST7263BK4	•	◦	◦	16K	512	8x8-bit	1x16-bit (2/2/1)	WDG	USB/SCI/I²C	1	19(10)	SDIP32/S034	4.0 to 5.5V	
ST7263BD6	•	◦	◦	32K	1K	12x8-bit		WDG	USB/SCI/I²C	1	27(10)	QFN40	4.0 to 5.5V	
ST7263BE6	•	◦	◦	32K	1K		1x16-bit (2/1/1)	WDG	USB/SCI/I²C	1	14(6)	S024	4.0 to 5.5V	
ST7263BH6	•	◦	◦	32K	1K	12x8-bit	1x16-bit (2/2/1)	WDG	USB/SCI/I²C	1	27(10)	LQFP48 (7x7)	4.0 to 5.5V	
ST7263BK6	•	◦	◦	32K	1K	8x8-bit		WDG	USB/SCI/I²C	1	19(10)	SDIP32/S034	4.0 to 5.5V	

◦ Under development 1. Factory advanced service technique ROM 2. Number of high current pins included in the number of I/O pins

Versatile development tools

Product	Description	Supplier
	Evaluation tools	
ST7MDTULS-EVAL	ST7 low-speed evaluation board: This kit can be used to develop USB class applications: • In-application programming (IAP) hardware support (DFU device firmware upgrade) • HID (human interface device) application demonstrator (LEDs, buttons, trimmer) • Wrapping area • A Windows 98 applet is supplied as well as USB firmware libraries for running the peripheral device	STMicroelectronics www.st.com/mcu
STEVAL-PCC002V1	ST7 low-speed USB to serial bridge: This reference design kit provides all necessary hardware and software materials to upgrade a legacy serial device (RS232) to a USB connection	
	Software tools	
STVD7	ST7 Visual Develop, the powerful, easy-to-use IDE supports a full range of state-of-the-art debugging and programming tools, as well as C compilers from Cosmic and Metrowerks. In addition to its debug features, it offers advanced build and program features	STMicroelectronics www.st.com/mcu
STVP7	ST7 Visual Programmer is a common programming interface used for ST7 programming hardware (EPB, DVP, EMU, ST7-STICK). The tool allows users to read, program, verify and check ST7 Flash memory	
C Compilers	ANSI C compilers, for ST7 family, free 16kbyte code size limited version is available	Cosmic www.cosmicsoftware.com
ST7LIB	ST7 library is a free software package consisting of devices drivers for all standard ST7 peripherals. Each device driver has a set of functions covering the functionality of the peripheral. The source code is developed in 'C' and fully documented	STMicroelectronics www.st.com/mcu
USB Libraries	ST7 USB certified low-speed libraries, compatible with Cosmic compilers. Fully DFU compliant. Kernel architecture and API in C language (user-friendly interface for easy update)	
	Debugging tools	
ST7MDTU3-EMU3	Third generation high-end emulator "ST7-EMU3 series", offers a flexible and modular debugging and programming solution, giving users start-to finish control of the application	STMicroelectronics www.st.com/mcu
STX-RLINK	Low cost in circuit debugger/programmer tool, for ST7 microcontroller family, with USB interface to PC. From Raisonance	
ST7263B-SK/RAIS	Low cost in-circuit debugging/programming tool, USB powered with main evaluation board, RLink interface and USB communication to the PC	
	Programming tools	
ST7MDTU3-EPB	Single-position programming board, connected to PC via parallel port. Add suffix/US/UK or /EU for power supply of your region	STMicroelectronics www.st.com/mcu



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