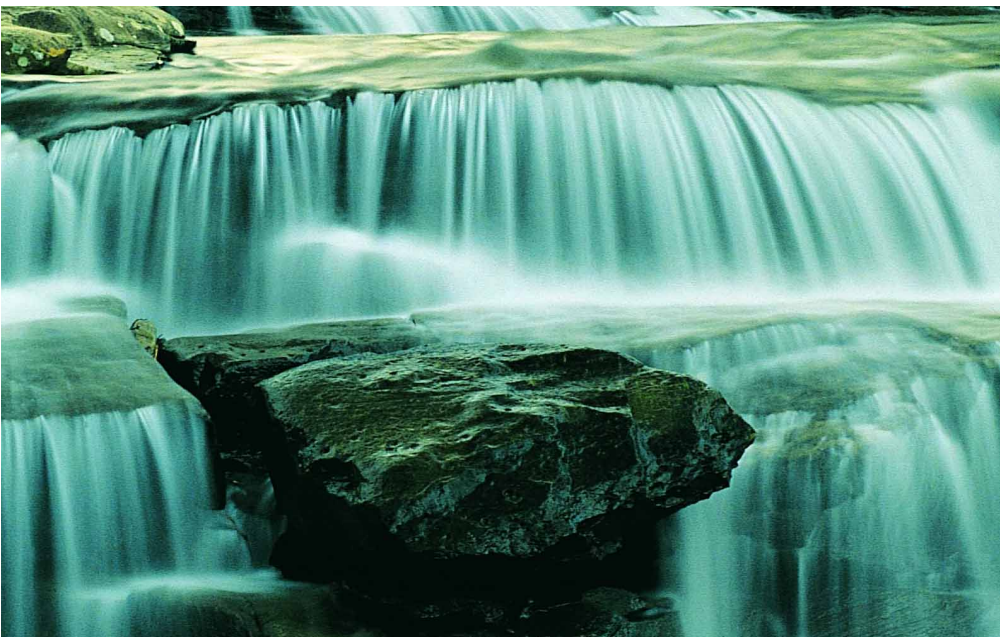


8 and 16-bit standard microcontrollers and 32-bit microprocessors

Product tool and selection guide



Current 8 and 16-bit standard microcontroller families

Part number	Program memory type					Prog. (bytes)	RAM (bytes)	Data E ² PROM (bytes)	A/D inputs	Timer functions			Serial interface	LVD levels	I/Os high current ⁵	Package	Supply voltage	Auto-motive ³	Special features	
	Flash	OTP	Fast ROM ¹	ROM	EP ROM					16-bit (IC/OC/PWM)	8-bit (IC/OC/PWM)	Others								
ST5 8-bit: turning your innovation needs into cost-effective solutions																				
T400 basic																				
20-28 pins	ST52400F2	●	●	●	●	4K	256				2x8-bit	WDG			13	DIP20/SO20	2.7 - 5.5V		Triac/PWM timer, POR, BOD, NMI, divider, multiplier	
	ST52400G2	●	●	●	●	4K	256				2x8-bit	WDG			21	DIP28/SO28	2.7 - 5.5V		Triac/PWM timer, POR, BOD, NMI, divider, multiplier	
	ST52400F3	●	●	●	●	8K	256				2x8-bit	WDG			13	DIP20/SO20	2.7 - 5.5V		Triac/PWM timer, POR, BOD, NMI, divider, multiplier	
	ST52400G3	●	●	●	●	8K	256				2x8-bit	WDG			21	DIP28/SO28	2.7 - 5.5V		Triac/PWM timer, POR, BOD, NMI, divider, multiplier	
T410 basic super PWM																				
20-28 pins	ST52410G1	●	●	●	●	2K	128				3x8-bit	WDG			19	DIP28/SO28	2.7 - 5.5V		Reset, timer/PWMs, NMI, divider, multiplier	
	ST52410G2	●	●	●	●	4K	128				3x8-bit	WDG			19	DIP28/SO28	2.7 - 5.5V		Reset, timer/PWMs, NMI, divider, multiplier	
T420 8-bit ADC																				
20-28 pins	ST52420G1	●	●	●	●	2K	128		8x8-bit		3x8-bit	WDG			19	DIP28/SO28	2.7 - 5.5V		Reset, timer/PWMs, NMI, divider, multiplier	
	ST52420G2	●	●	●	●	4K	128		8x8-bit		3x8-bit	WDG			19	DIP28/SO28/CDIP28	2.7 - 5.5V		Reset, timer/PWMs, NMI, divider, multiplier	
T430 8-bit ADC and SCI																				
32-34 pins	ST52430K2	●	●	●	●	4K	256		8x8-bit		3x8-bit	WDG	SCI		23	SDIP32/SO34/TQFP32	2.7 - 5.5V		Reset, timer/PWMs, NMI, divider, multiplier	
	ST52430K3	●	●	●	●	8K	256		8x8-bit		3x8-bit	WDG	SCI		23	SDIP32/SO34/TQFP32	2.7 - 5.5V		Reset, timer/PWMs, NMI, divider, multiplier	
T440 analog comparator																				
20-28 pins	ST52440F2	●	●	●	●	4K	256				2x8-bit	WDG			13	DIP20/SO20	4.5 - 5.5V		4ch AC with 16-bit timer, Triac/PWM timer, POR, BOD, NMI, divider, multiplier	
	ST52440G2	●	●	●	●	4K	256				2x8-bit	WDG			21	DIP28/SO28	4.5 - 5.5V		6ch AC with 1-bit timer, Triac/PWM timer, POR, BOD, NMI, divider, multiplier	
	ST52440F3	●	●	●	●	8K	256				2x8-bit	WDG			13	DIP20/SO20/CDIP20	4.5 - 5.5V		4ch AC with 16-bit timer, Triac/PWM timer, POR, BOD, NMI, divider, multiplier	
	ST52440G3	●	●	●	●	8K	256				2x8-bit	WDG			21	PDIP28/SO28/CDIP28	4.5 - 5.5V		6ch AC with 16-bit timer, Triac/PWM timer, POR, BOD, NMI, divider, multiplier	
ST6 8-bit: general purpose control applications (up to 4KB address space)																				
16 pins	ST6200C	●	●	● ²	●	1K	64			4x8-bit	1(0/0/0)	WDG			1	9(3)	DIP16/SO16	3.0 - 6V	● RC oscillator, OSG, ROP	
	ST6203C	●	●	● ²	●	1K	64			4x8-bit	1(0/0/0)	WDG			1	9(3)	DIP16/SO16	3.0 - 6V	● RC oscillator, OSG, ROP	
	ST6201C	●	●	● ²	●	2K	64			4x8-bit	1(0/0/0)	WDG			1	9(3)	DIP16/SO16	3.0 - 6V	● RC oscillator, OSG, ROP	
	ST6210C	●	●	● ²	●	2K	64			8x8-bit	1(0/0/0)	WDG			1	12(4)	DIP20/SO20	3.0 - 6V	● RC oscillator, OSG, ROP	
	ST6220C	●	●	● ²	●	4K	64			8x8-bit	1(0/0/0)	WDG			1	12(4)	DIP20/SO20	3.0 - 6V	● RC oscillator, OSG, ROP	
	ST6225C	●	●	● ²	●	4K	64			16x8-bit	1(0/0/0)	WDG			1	20(4)	DIP28/SO28	3.0 - 6V	● RC oscillator, OSG, ROP	
16 pins	ST6252C	●	●	● ²	●	2K	128			4x8-bit	1+1(1/1/1)	WDG			1	9(5)	DIP16/SO16	3.0 - 6V	● RC oscillator, OSG, ART, ROP, IC/OC	
	ST6262C	●	●	● ²	●	2K	128	64		4x8-bit	1+1(1/1/1)	WDG			1	9(5)	DIP16/SO16	3.0 - 6V	● RC oscillator, OSG, ART, ROP, IC/OC	
20 pins	ST6260C	●	●	●	●	4K	128	128		7x8-bit	1+1(1/1/1)	WDG	SPI		1	13(6)	DIP20/SO20	3.0 - 6V	● RC oscillator, OSG, ART, ROP, IC/OC	
28-42 pins	ST6265C	●	●	●	●	4K	128	128		13x8-bit	1+1(1/1/1)	WDG	SPI		1	21(8)	DIP28/SO28	3.0 - 6V	● RC oscillator, OSG, ART, ROP, IC/OC	
ST7 8-bit: industry standard, fast core architecture with innovative peripherals (up to 64KB address space)																				
ST7 lite																				
16-20 pins	ST7LITE05	● ⁷	●	●	●	1.5K	128			5x8-bit	2(1/1/1) ⁹	WDG RTC	SPI		3	13(6)	DIP16/SO16	2.4 - 5.5V	● ADC with op-amp, PLL, ROP, ICP, IAP, 1% RC oscillator	
	ST7LITE09	● ⁷	●	●	●	1.5K	128	128		5x8-bit	2(1/1/1) ⁹	WDG RTC	SPI		3	13(6)	DIP16/SO16	2.4 - 5.5V	● ADC with op-amp, PLL, ROP, ICP, IAP, 1% RC oscillator	
28-32 pins	ST72260G1	● ⁷	●	●	●	4K	256			2(4/4/2)	WDG		SPI		3	22(8)	SDIP32/SO28	2.4 - 5.5V	● ROP, ICP, IAP, clock security system, PLL, nested interrupts	
	ST72262G1	● ⁷	●	●	●	4K	256			6x10-bit	2(4/4/2)	WDG	SPI		3	22(8)	SDIP32/SO28	2.4 - 5.5V	● ROP, ICP, IAP, clock security system, PLL, nested interrupts	
	ST72264G1	● ⁷	●	●	●	4K	256			6x10-bit	2(4/4/2)	WDG	SPVSCI/PC		3	22(8)	SDIP32/SO28	2.4 - 5.5V	● ROP, ICP, IAP, clock security system, PLL, nested interrupts	
	ST72262G2	● ⁷	●	●	●	8K	256			6x10-bit	2(4/4/2)	WDG	SPI		3	22(8)	SDIP32/SO28	2.4 - 5.5V	● ROP, ICP, IAP, clock security system, PLL, nested interrupts	
	ST72264G2	● ⁷	●	●	●	8K	256			6x10-bit	2(4/4/2)	WDG	SPVSCI/PC		3	22(8)	SDIP32/SO28/BGA6x6	2.4 - 5.5V	● ROP, ICP, IAP, clock security system, PLL, nested interrupts	
	ST7 mid-range																			
32 pins	ST72324K2	● ⁶	●	●	●	8K	384			8x10-bit	2(3/3/1) ¹⁰	WDG RTC	SPVSCI		3	24(10)	SDIP32/TQFP32	3.8 - 5.5V ⁸	● ICP, IAP, nested interrupts, TLU, clock security system, ROP, beep ⁴	
	ST72324K4	● ⁶	●	●	●	16K	512			8x10-bit	2(3/3/1) ¹⁰	WDG RTC	SPVSCI		3	24(10)	SDIP32/TQFP32	3.8 - 5.5V ⁸	● ICP, IAP, nested interrupts, TLU, clock security system, ROP, beep ⁴	
	ST72324K6	● ⁶	●	●	●	32K	1K			8x10-bit	2(3/3/1) ¹⁰	WDG RTC	SPVSCI		3	24(10)	SDIP32/TQFP32	3.8 - 5.5V ⁸	● ICP, IAP, nested interrupts, TLU, clock security system, ROP, beep ⁴	
44 pins	ST72324J2	● ⁶	●	●	●	8K	384			12x10-bit	2(3/3/1) ¹⁰	WDG RTC	SPVSCI		3	32(12)	SDIP42/TQFP44	3.8 - 5.5V ⁸	● ICP, IAP, nested interrupts, TLU, clock security system, ROP, beep ⁴	
	ST72324J4	● ⁶	●	●	●	16K	512			12x10-bit	2(3/3/1) ¹⁰	WDG RTC	SPVSCI		3	32(12)	SDIP42/TQFP44	3.8 - 5.5V ⁸	● ICP, IAP, nested interrupts, TLU, clock security system, ROP, beep ⁴	
	ST72324J6	● ⁶	●	●	●	32K	1K			12x10-bit	2(3/3/1) ¹⁰	WDG RTC	SPVSCI		3	32(12)	SDIP42/TQFP44	3.8 - 5.5V ⁸	● ICP, IAP, nested interrupts, TLU, clock security system, ROP, beep ⁴	
	ST72321J7	● ⁶	●	●	●	48K	1.5K			12x10-bit	2(3/3/2)	1(0/4/4)	WDG RTC	SPVSCI/PC		3	32(12)	TQFP44	3.8 - 5.5V	● ICP, IAP, nested interrupts, TLU, clock security system, ROP, beep ⁴
	ST72321J9	● ⁶	●	●	●	60K	2K			12x10-bit	2(3/3/2)	1(0/4/4)	WDG RTC	SPVSCI/PC		3	32(12)	TQFP44	3.8 - 5.5V	● ICP, IAP, nested interrupts, TLU, clock security system, ROP, beep ⁴
64 pins	ST72321AR6	● ⁶	●	●	●	32K	1K			16x10-bit	2(4/4/2)	1(2/4/4)	WDG RTC	SPVSCI/PC		3	48(16)	TQFP64 (10x10)	3.8 - 5.5V ⁸	● ICP, IAP, nested interrupts, TLU, clock security system, ROP, beep ⁴
	ST72321R6	● ⁶	●	●	●	32K	1K			16x10-bit	2(4/4/2)	1(2/4/4)	WDG RTC	SPVSCI/PC		3	48(16)	TQFP64 (14x14)	3.8 - 5.5V ⁸	● ICP, IAP, nested interrupts, TLU, clock security system, ROP, beep ⁴
	ST72321AR7	● ⁶	●	●	●	48K	1.5K			16x10-bit	2(4/4/2)	1(2/4/4)	WDG RTC	SPVSCI/PC		3	48(16)	TQFP64 (10x10)	3.8 - 5.5V ⁸	● ICP, IAP, nested interrupts, TLU, clock security system, ROP, beep ⁴
	ST72321R7	● ⁶	●	●	●	48K	1.5K			16x10-bit	2(4/4/2)	1(2/4/4)	WDG RTC	SPVSCI/PC		3	48(16)	TQFP64 (14x14)	3.8 - 5.5V ⁸	● ICP, IAP, nested interrupts, TLU, clock security system, ROP, beep ⁴
	ST72321AR9	● ⁶	●	●	●	60K	2K			16x10-bit	2(4/4/2)	1(2/4/4)	WDG RTC	SPVSCI/PC		3	48(16)	TQFP64 (10x10)	3.8 - 5.5V ⁸	● ICP, IAP, nested interrupts, TLU, clock security system, ROP, beep ⁴
	ST72321R9	● ⁶	●	●	●	60K	2K			16x10-bit	2(4/4/2)	1(2/4/4)	WDG RTC	SPVSCI/PC		3	48(16)	TQFP64 (14x14)	3.8 - 5.5V ⁸	● ICP, IAP, nested interrupts, TLU, clock security system, ROP, beep ⁴
	ST7 application specific																			
CAN	ST72521AR6	● ⁶	●	●	●	32K	1K			16x10-bit	2(4/4/2)	1(2/4/4)	WDG RTC	SPVSCI/PC/CAN		3	48(16)	TQFP64 (10x10)	3.8 - 5.5V ⁸	● Nested interrupts, TLU, clock security system, ROP, beep ⁴ , CAN (2.0B passive)
	ST72521R6	● ⁶	●	●	●	32K	1K			16x10-bit	2(4/4/2)	1(2/4/4)	WDG RTC	SPVSCI/PC/CAN		3	48(16)	TQFP64 (14x14)	3.8 - 5.5V ⁸	● Nested interrupts, TLU, clock security system, ROP, beep ⁴ , CAN (2.0B passive)
	ST72521AR9	● ⁶	●	●	●	60K	2K			16x10-bit	2(4/4/2)	1(2/4/4)	WDG RTC	SPVSCI/PC/CAN		3	48(16)	TQFP64 (10x10)	3.8 - 5.5V ⁸	● Nested interrupts, TLU, clock security system, ROP, beep ⁴ , CAN (2.0B passive)
	ST72521M9	● ⁶	●	●	●	60K	2K			16x10-bit	2(4/4/2)	1(2/4/4)	WDG RTC	SPVSCI/PC/CAN		3	64(16)	TQFP80	3.8 - 5.5V ⁸	● Nested interrupts, TLU, clock security system, ROP, beep ⁴ , CAN (2.0B passive)
	ST72521R9	● ⁶	●	●	●	60K	2K			16x10-bit	2(4/4/2)	1(2/4/4)	WDG RTC	SPVSCI/PC/CAN		3	48(16)	TQFP64 (14x14)	3.8 - 5.5V ⁸	● Nested interrupts, TLU, clock security system, ROP, beep ⁴ , CAN (2.0B passive)
MC	ST72141K2	●	●	●	●	8K	256			8x8-bit	2(4/4/2)	WDG	SPI		1	26(3)	SDIP32/SO34	4.0 - 5.5V	● Sensorless brushless permanent magnet DC motor controller	
SCR	ST7SCR1E4	● ⁶	●	●	●	16K	768				1(0/0/0)	WDG	USB/ISO7816		1	4	SO24	4.0 - 5.5V	● Smartcard power supply unit, ISO7816, 7 full-speed USB endpoints, ICP/IAP, 4 LED outputs	
	ST7SCR1R4	● ⁶	●	●	●	16K	768				1(0/0/0)	WDG	USB/ISO7816		1	35	TQFP64	4.0 - 5.5V	● Smartcard power supply unit, ISO7816, 7 full-speed USB endpoints, ICP/IAP, 4 LED outputs	
USB	ST72611F1	● ⁶	●	●	●	4K	256				1(0/0/0)	WDG	USB		1	11(8)	SO20/DIP20	3.0 - 5.5V	● 3 low-speed USB endpoints, ICP, IAP, ROP	
	ST72633K1	●	●	●	●	4K	256			8x8-bit	1(2/2/1)	WDG	USB		1	19(10)	SDIP32/SO34	4.0 - 5.5V	● 3 low-speed USB endpoints	
	ST72638K1	● ⁶	●	●	●	4K	384			8x8-bit	1(2/2/1)	WDG	USB		1	19(10)	SDIP32/SO34	4.0 - 5.5V	● 3 low-speed USB endpoints, ICP, IAP, ROP	
	ST72621J2	● ⁶	●	●	●	8K	384			8x10-bit	2(2/2/2)	WDG	USB/SPVSCI	</						

Mature 8 and 16-bit standard microcontroller families

Part number	Program memory type					Prog. (bytes)	RAM (bytes)	Data EPROM (bytes)	A/D inputs	Timer functions			Serial interface	LVD levels	I/Os high current ³	Package	Supply voltage	Auto-motive ²	Special features	
	Flash	OTP	Fast ROM ¹	ROM	EP ROM					16-bit (IC/OC/PWM)	8-bit (IC/OC/PWM)	Others								
ST6 8-bit: general purpose control applications (up to 8KB address space)																				
20 pins	ST6253C		●	●	● ²	●	2K	128		7x8-bit		1+1(1/1/1)	WDG	SPI	1	13(6)	DIP20/SO20	3.0 - 6V	●	RC oscillator, OSG, ART, ROP, IC/OC
	ST6263C		●	●	● ²	●	2K	128	64	7x8-bit		1+1(1/1/1)	WDG	SPI	1	13(6)	DIP20/SO20	3.0 - 6V		RC oscillator, OSG, ART, ROP, IC/OC
28-42 pins	ST6218C		●	●	● ²	●	8K	192		7x8-bit		1+1(1/1/1)	WDG	UART	1	12(8)	DIP20/SO20	3.0 - 6V		RC oscillator, OSG, ART, ROP
	ST6228C		●	●	●	●	8K	192		12x8-bit		1+1(1/1/1)	WDG	SPI/UART	1	20(8)	DIP28/SO28	3.0 - 6V		RC oscillator, OSG, ROP, ART
LCD	ST6230B		●	●	●	●	8K	192	128	16x8-bit	1 (2/2/2)	1(0/0/0)	WDG	SPI/UART		20(4)	DIP28/SO28	3.0 - 6V		ART, ROP, IC/OC
	ST6232B		●	●	●	●	8K	192	128	21x8-bit	1 (2/2/2)	1(0/0/0)	WDG	SPI/UART		30(9)	SDIP42/PQFP52	3.0 - 6V		ART, ROP, IC/OC
	ST6240B		●	●	●	●	8K	216	128	12x8-bit		2(0/0/0)	WDG	SPI		24(4)	PQFP80	3.0 - 6V		45x4 segment LCD, ROP
	ST6280B		●	●	●	●	8K	320	128	12x8-bit		1+1(1/1/1)	WDG	SPI/UART		22(10)	PQFP100	3.0 - 6V		48x16 dot matrix LCD, ROP
ST7 8-bit: industry standard, fast core architecture with innovative peripherals (up to 64KB address space)																				
ST7 baseline																				
28-32 pins	ST72104G1		●	●	●		4K	256			1(2/2/1)		WDG	SPI	3	22(8)	SDIP32/SO28	3.2 - 5.5V	●	RC oscillator, clock security system, ISP, ROP
	ST72216G1		●	●	●		4K	256		6x8-bit	1(2/2/1)		WDG	SPI	3	22(8)	SDIP32/SO28	3.2 - 5.5V	●	RC oscillator, clock security system, ISP, ROP
	ST72254G1		●	●	●		4K	256		6x8-bit	2(4/4/2)		WDG	SPI/FC	3	22(8)	SDIP32/SO28	3.2 - 5.5V	●	RC oscillator, clock security system, ISP, ROP
	ST72104G2		●	●	●		8K	256			1(2/2/1)		WDG	SPI	3	22(8)	SDIP32/SO28	3.2 - 5.5V	●	RC oscillator, clock security system, ISP, ROP
	ST72215G2		●	●	●		8K	256		6x8-bit	2(4/4/2)		WDG	SPI	3	22(8)	SDIP32/SO28	3.2 - 5.5V	●	RC oscillator, clock security system, ISP, ROP
42-44 pins	ST72254G2		●	●	●		8K	256		6x8-bit	2(4/4/2)		WDG	SPI/FC	3	22(8)	SDIP32/SO28	3.2 - 5.5V	●	RC oscillator, clock security system, ISP, ROP
	ST72124J2		●	●	●		8K	384			2(3/3/2)		WDG	SPI/SCI	3	32(4)	SDIP42/TQFP44	3.2 - 5.5V	●	RC oscillator, clock security system, ISP, ROP, beep ⁴
	ST72314J2		●	●	●		8K	384		6x8-bit	2(3/3/2)		WDG	SPI/SCI	3	32(4)	SDIP42/TQFP44	3.2 - 5.5V	●	RC oscillator, clock security system, ISP, ROP, beep ⁴
	ST72334J2		●	●	●		8K	384	256	6x8-bit	2(3/3/2)		WDG	SPVSCI	3	32(4)	SDIP42/TQFP44	3.2 - 5.5V	●	RC oscillator, clock security system, ISP, ROP, beep ⁴
56-64 pins	ST72314J4		●	●	●		16K	512		6x8-bit	2(3/3/2)		WDG	SPI/SCI	3	32(4)	SDIP42/TQFP44	3.2 - 5.5V	●	RC oscillator, clock security system, ISP, ROP, beep ⁴
	ST72334J4		●	●	●		16K	512	256	6x8-bit	2(3/3/2)		WDG	SPI/SCI	3	32(4)	SDIP42/TQFP44	3.2 - 5.5V	●	RC oscillator, clock security system, ISP, ROP, beep ⁴
	ST72314N4		●	●	●		16K	512		8x8-bit	2(3/3/2)		WDG	SPVSCI	3	44(8)	SDIP56/TQFP64	3.2 - 5.5V	●	RC oscillator, clock security system, ISP, ROP, beep ⁴
	ST72334N4		●	●	●		16K	512	256	8x8-bit	2(3/3/2)		WDG	SPVSCI	3	44(8)	SDIP56/TQFP64	3.2 - 5.5V	●	RC oscillator, clock security system, ISP, ROP, beep ⁴
	ST72311R6		●	●	●		32K	1K		8x8-bit	2(3/3/2)	1(0/4/4)	WDG	SPI/SCI	1	48(12)	TQFP64	3.0 - 5.5V	●	Nested interrupts, TLI, clock security system, ROP, beep ⁴
CAN	ST72311R7		●	●	●		48K	1.5K		8x8-bit	2(3/3/2)	1(0/4/4)	WDG	SPI/SCI	1	48(12)	TQFP64	3.0 - 5.5V	●	Nested interrupts, TLI, clock security system, ROP, beep ⁴
	ST72311R9		●	●	●		60K	2K		8x8-bit	2(3/3/2)	1(0/4/4)	WDG	SPI/SCI	1	48(12)	TQFP64	3.0 - 5.5V	●	Nested interrupts, TLI, clock security system, ROP, beep ⁴
LCD	ST72511R6		●	●			32K	1K		8x8-bit	2(4/4/2)	1(0/4/4)	WDG	SPVSCI/CAN	1	48(12)	TQFP64	3.0 - 5.5V	●	Nested interrupts, TLI, clock security system, ROP, beep ⁴ , CAN (2.0B passive)
	ST72511R7		●	●			48K	1.5K		8x8-bit	2(4/4/2)	1(0/4/4)	WDG	SPVSCI/CAN	1	48(12)	TQFP64	3.0 - 5.5V	●	Nested interrupts, TLI, clock security system, ROP, beep ⁴ , CAN (2.0B passive)
USB	ST72511R9		●	●			60K	2K		8x8-bit	2(4/4/2)	1(0/4/4)	WDG	SPVSCI/CAN	1	48(12)	TQFP64	3.0 - 5.5V	●	Nested interrupts, TLI, clock security system, ROP, beep ⁴ , CAN (2.0B passive)
	ST72389BW4		●	●			16K	512		5x8-bit	2(4/4/2)		WDG	SPI/SCI		31	PQFP128	4.5 - 5.5V	●	Nested interrupts, TLI, beep ⁴ , 60x8 dot matrix LCD, CAN (ST72589 only)
	ST72589BW5		●	●			24K	1K		5x8-bit	2(4/4/2) (0/0/4)	10-bit	WDG	SPVSCI/FC/CAN		31	PQFP128	4.5 - 5.5V	●	Nested interrupts, TLI, beep ⁴ , 60x8 dot matrix LCD, CAN (ST72589 only)
ST9 8-bit: 8/16-bit high performance core for fast real-time management (up to 4MB address space)																				
80 pins	ST90135M6				●	●	32K	1K		8x8-bit	3(4/4/5)		WDG	SPI/SCI		67	TQFP80	2.7 - 5.5V		PLL clock
	ST90158M9		●		●	●	64K	2K		8x8-bit	4(6/6/7)		WDG	SPV2xSCI		67	TQFP80	2.7 - 5.5V		PLL clock
MC	ST90R158						None	2K		8x8-bit	4(6/6/7)		WDG	SPV2xSCI		51	TQFP80	2.7 - 5.5V		ROMless, PLL clock
	ST92141K4		●	●		●	16K	512		6x8-bit	2(2/2/2)		WDG	SPI		15(4)	SDIP32/SO34	4.0 - 5.5V		Asynchronous 3-phase motor controller, PLL clock
USB	ST92163R4		●	●	●	●	20K	2K		6x8-bit	1(2/2/2)		WDG	FC/SCI/USB	1	44(8)	TQFP64	3.0 - 5.5V		16 full-speed USB endpoints, PLL clock
ST10 16-bit: fast core with advanced interrupt management (up to 10MB address space)																				
CAN	ST10F168S0x	●					256K	8K		16x10-bit	5		WDG	USART/SSC/CAN		111	PQFP144	4.5 - 5.5V		ROMless, PEC, CAN, PWM, CAPCOM

Abbreviations

- ADC : Analog to digital converter
- ART : Auto-reload timer
- BLPD : Byte level protocol decoder
- CAN : Controller area network
- CAPCOM : Capture compare
- DALI : Digital addressable lighting interface
- DSC : Dual supply control
- DTC : Data transfer co-processor
- IAP : In-application programming
- IC/OC : Input capture/output compare
- ICP : In-circuit programming
- ISP : In-situ programming
- ISC : Inter-integrated circuit
- LCD : Liquid crystal display
- LIN : Local interconnect network
- LVD : Low-voltage detection
- MC : Motor control
- MFT : Multifunction timer

- OSG : Oscillator safeguard
- PEC : Peripheral event controller
- PLL : Phase locked loop
- PVR : Programmable voltage regulator
- PWM : Pulse width modulation
- ROP : Readout protection
- RTC : Real-time clock timer
- SC : Smart card
- SCI : Serial communication interface (UART)
- SPI : Serial peripheral interface
- SSC : Single-cycle switching support
- SSP : Synchronous serial port
- TBU : Time base unit
- UART : Universal asynchronous receiver transmitter
- USB : Universal serial bus
- WDG : Watchdog timer
- WWDG : Windows watchdog timer

Packages

- DIP : Dual in line
- PQFP : Plastic quad flat pack
- SDIP : Shrink dual in line
- SO : Small outline
- TQFP : Thin quad flat pack

Notes

- 1 Under development
- 2 Factory advanced service technique ROM
- 3 Recommended for automotive applications
- 4 Number of high-current pins included in the number of I/O pins
- 4 Audio square wave generator

Future 8 and 16-bit standard microcontroller families

Part number	Program memory type					Prog. (bytes)	RAM (bytes)	Data E ² PROM (bytes)	A/D Inputs	Timer functions			Serial interface	LVD levels	I/Os high current	Package	Supply voltage	Auto-motive	Special features
	Flash	OTP	Fast ROM ¹	ROM	EP ROM					16-bit (IC/OC/PWM)	8-bit (IC/OC/PWM)	Others							

ST5 8-bit: turning your innovation needs into cost-effective solutions

F500 Flash basic																			
16-28 pins	ST52500F2	●	●			4K	512				2x16-bit		WDG	SPI/2C	3	14	DIP20/SO20	2.4 - 5.5 V	POR, 1% internal oscillator, ISP, IAP, timer/PWMs, NMI, divider, multiplier
	ST52500G2	●	●			4K	512				2x16-bit		WDG	SPI/PC	3	22	DIP28/SO28	2.4 - 5.5 V	POR, 1% internal oscillator, ISP, IAP, timer/PWMs, NMI, divider, multiplier
	ST52500Y2	●	●			4K	512				2x16-bit		WDG	PC	3	10	SO16	2.4 - 5.5 V	POR, 1% internal oscillator, ISP, IAP, timer/PWMs, NMI, divider, multiplier
	ST52500F3	●	●			8K	512				2x16-bit		WDG	SPI/PC	3	14	DIP20/SO20	2.4 - 5.5 V	POR, 1% internal oscillator, ISP, IAP, timer/PWMs, NMI, divider, multiplier
	ST52500G3	●	●			8K	512				2x16-bit		WDG	SPI/PC	3	22	DIP28/SO28	2.4 - 5.5 V	POR, 1% internal oscillator, ISP, IAP, timer/PWMs, NMI, divider, multiplier
	ST52500Y3	●	●			8K	512				2x16-bit		WDG	PC	3	10	SO16	2.4 - 5.5 V	POR, 1% internal oscillator, ISP, IAP, timer/PWMs, NMI, divider, multiplier
F503 Flash data EEPROM																			
16-28 pins	ST52503F2	●	●			4K	512	256			2x16-bit		WDG	SPI/2C	3	14	DIP20/SO20	2.4 - 5.5 V	POR, 1% internal oscillator, ISP, IAP, timer/PWMs, NMI, divider, multiplier
	ST52503G2	●	●			4K	512	256			2x16-bit		WDG	SPI/PC	3	22	DIP28/SO28	2.4 - 5.5 V	POR, 1% internal oscillator, ISP, IAP, timer/PWMs, NMI, divider, multiplier
	ST52503Y2	●	●			4K	512	256			2x16-bit		WDG	PC	3	10	SO16	2.4 - 5.5 V	POR, 1% internal oscillator, ISP, IAP, timer/PWMs, NMI, divider, multiplier
	ST52503F3	●	●			8K	512	256			2x16-bit		WDG	SPI/PC	3	14	DIP20/SO20	2.4 - 5.5 V	POR, 1% internal oscillator, ISP, IAP, timer/PWMs, NMI, divider, multiplier
	ST52503G3	●	●			8K	512	256			2x16-bit		WDG	SPI/PC	3	22	DIP28/SO28	2.4 - 5.5 V	POR, 1% internal oscillator, ISP, IAP, timer/PWMs, NMI, divider, multiplier
	ST52503Y3	●	●			8K	512	256			2x16-bit		WDG	PC	3	10	SO16	2.4 - 5.5 V	POR, 1% internal oscillator, ISP, IAP, timer/PWMs, NMI, divider, multiplier
F510 Flash 10-bit ADC/SCI																			
16-28 pins	ST52510F2	●	●			4K	512		6x10-bit	2x16-bit		WDG	SCI/2C	3	14	DIP20/SO20	2.4 - 5.5 V	POR, 1% internal oscillator, ISP, IAP, timer/PWMs, NMI, divider, multiplier	
	ST52510G2	●	●			4K	512		8x10-bit	2x16-bit		WDG	SCI/SPI/PC	3	22	DIP28/SO28	2.4 - 5.5 V	POR, 1% internal oscillator, ISP, IAP, timer/PWMs, NMI, divider, multiplier	
	ST52510Y2	●	●			4K	512		2x10-bit	2x16-bit		WDG	SCI/PC	3	10	SO16	2.4 - 5.5 V	POR, 1% internal oscillator, ISP, IAP, timer/PWMs, NMI, divider, multiplier	
	ST52510F3	●	●			8K	512		6x10-bit	2x16-bit		WDG	SCI/PC	3	14	DIP20/SO20	2.4 - 5.5 V	POR, 1% internal oscillator, ISP, IAP, timer/PWMs, NMI, divider, multiplier	
	ST52510G3	●	●			8K	512		8x10-bit	2x16-bit		WDG	SCI/SPI/PC	3	22	DIP28/SO28	2.4 - 5.5 V	POR, 1% internal oscillator, ISP, IAP, timer/PWMs, NMI, divider, multiplier	
	ST52510Y3	●	●			8K	512		2x10-bit	2x16-bit		WDG	SCI/PC	3	10	SO16	2.4 - 5.5 V	POR, 1% internal oscillator, ISP, IAP, timer/PWMs, NMI, divider, multiplier	
F513 Flash data EEPROM 10-bit ADC/SCI																			
16-28 pins	ST52513F2	●	●			4K	512	256	6x10-bit	2x16-bit		WDG	SCI/PC	3	14	DIP20/SO20	2.4 - 5.5 V	POR, 1% internal oscillator, ISP, IAP, timer/PWMs, NMI, divider, multiplier	
	ST52513G2	●	●			4K	512	256	8x10-bit	2x16-bit		WDG	SCI/SPI/PC	3	22	DIP28/SO28	2.4 - 5.5 V	POR, 1% internal oscillator, ISP, IAP, timer/PWMs, NMI, divider, multiplier	
	ST52513Y2	●	●			4K	512	256	2x10-bit	2x16-bit		WDG	SCI/PC	3	10	SO16	2.4 - 5.5 V	POR, 1% internal oscillator, ISP, IAP, timer/PWMs, NMI, divider, multiplier	
	ST52513F3	●	●			8K	512	256	6x10-bit	2x16-bit		WDG	SCI/PC	3	14	DIP20/SO20	2.4 - 5.5 V	POR, 1% internal oscillator, ISP, IAP, timer/PWMs, NMI, divider, multiplier	
	ST52513G3	●	●			8K	512	256	8x10-bit	2x16-bit		WDG	SCI/SPI/PC	3	22	DIP28/SO28	2.4 - 5.5 V	POR, 1% internal oscillator, ISP, IAP, timer/PWMs, NMI, divider, multiplier	
	ST52513Y3	●	●			8K	512	256	2x10-bit	2x16-bit		WDG	SCI/PC	3	10	SO16	2.4 - 5.5 V	POR, 1% internal oscillator, ISP, IAP, timer/PWMs, NMI, divider, multiplier	
F514 super storage 10-bit ADC/SCI																			
16-28 pins	ST52514F1	●	●			4K	512	1024	2x10-bit	2x16-bit		WDG	SCI/PC	3	14	DIP20/SO20	2.4 - 5.5 V	POR, 1% internal oscillator, ISP, IAP, timer/PWMs, NMI, divider, multiplier	
	ST52514F3	●	●			4K	512	4096	2x10-bit	2x16-bit		WDG	SCI/PC	3	14	DIP20/SO20	2.4 - 5.5 V	POR, 1% internal oscillator, ISP, IAP, timer/PWMs, NMI, divider, multiplier	
	ST52514G1	●	●			4K	512	1024	2x10-bit	2x16-bit		WDG	SCI/SPI/PC	3	22	DIP28/SO28	2.4 - 5.5 V	POR, 1% internal oscillator, ISP, IAP, timer/PWMs, NMI, divider, multiplier	
	ST52514G3	●	●			4K	512	4096	2x10-bit	2x16-bit		WDG	SCI/SPI/PC	3	22	DIP28/SO28	2.4 - 5.5 V	POR, 1% internal oscillator, ISP, IAP, timer/PWMs, NMI, divider, multiplier	
	ST52514Y1	●	●			4K	512	1024	2x10-bit	2x16-bit		WDG	SCI/PC	3	10	SO16	2.4 - 5.5 V	POR, 1% internal oscillator, ISP, IAP, timer/PWMs, NMI, divider, multiplier	
	ST52514Y3	●	●			4K	512	4096	2x10-bit	2x16-bit		WDG	SCI/PC	3	10	SO16	2.4 - 5.5 V	POR, 1% internal oscillator, ISP, IAP, timer/PWMs, NMI, divider, multiplier	

ST7 8-bit: industry standard, fast core architecture with innovative peripherals (up to 64KB address space)

ST7 LITE																		
16-20 pins	ST7SUPERLITE	●	●			1K	128			5x8-bit		WDG RTC		1	11(6)	DIP16/SO16	2.4 - 5.5 V	ADC, ROP, ICP, IAP
	ST7LITE15	●	●			4K	256			7x10-bit	2(2/1/4)	WDG RTC	SPI	3	15(6)	DIP20/SO20	2.4 - 5.5 V	ADC with op-amp, PLL, ROP, ICP, IAP, 1% RC oscillator
	ST7LITE19	●	●			4K	256	128		7x10-bit	2(2/1/4)	WDG RTC	SPI	3	15(6)	DIP20/SO20	2.4 - 5.5 V	ADC with op-amp, PLL, ROP, ICP, IAP, 1% RC oscillator
	ST7DALI	●	●			8K	384	256		7x10-bit	2(2/1/4)	WDG RTC	SPI/DALI	3	15(6)	SO20	2.4 - 5.5 V	ADC with op-amp, PLL, ROP, ICP, IAP, 1% RC oscillator
	ST7LITE20	●	●			8K	384	256		7x10-bit	2(2/1/4)	WDG RTC	SPI/DALI	3	15(6)	DIP20/SO20	2.4 - 5.5 V	ADC with op-amp, PLL, ROP, ICP, IAP, 1% RC oscillator
	ST7LITE25	●	●			8K	384	256		7x10-bit	2(2/1/4)	WDG RTC	SPI/DALI	3	15(6)	DIP20/SO20	2.4 - 5.5 V	ADC with op-amp, PLL, ROP, ICP, IAP, 1% RC oscillator
	ST7LITE29	●	●			8K	384	256		7x10-bit	2(2/1/4)	WDG RTC	SPI/DALI	3	15(6)	DIP20/SO20	2.4 - 5.5 V	ADC with op-amp, PLL, ROP, ICP, IAP, 1% RC oscillator

Future 8 and 16-bit standard microcontroller families

Part number	Program memory type					Prog. (bytes)	RAM (bytes)	Data E ² PROM (bytes)	A/D Inputs	Timer functions			Serial interface	LVD levels	I/Os high current	Package	Supply voltage	Auto-motive	Special features	
	Flash	OTP	Fast ROM ¹	ROM	EP ROM					16-bit (IC/OC/PWM)	8-bit (IC/OC/PWM)	Others								
ST7 8-bit: industry standard, fast core architecture with innovative peripherals (up to 64KB address space)																				
ST7 application specific																				
Active CAN	ST72F561J6	●		●	●		32K	1K		11x10-bit	1(2/2/1)	2(2/1/5)	WWDG RTC	SPI/2xSCI/CAN	1	34(6)	TQFP44	4.5 - 5.5V	●	Nested interrupts, TLI, clock security system, ROP, SCIs with LIN features (LINSCI) CAN2.0B active, window watchdog, AWU
	ST72F561K6	●		●	●		32K	1K		6x10-bit	1(2/2/1)	2(1/1/3)	WWDG RTC	SPI/2xSCI/CAN	1	24(5)	TQFP32	4.5 - 5.5V	●	Nested interrupts, TLI, clock security system, ROP, SCIs with LIN features (LINSCI) CAN2.0B active, window watchdog, AWU
	ST72F561R6	●		●	●		32K	1K		16x10-bit	1(2/2/1)	2(4/2/5)	WWDG RTC	SPI/2xSCI/CAN	1	48(6)	TQFP64 (14x14)	4.5 - 5.5V	●	Nested interrupts, TLI, clock security system, ROP, SCIs with LIN features (LINSCI) CAN2.0B active, window watchdog, AWU
	ST72F561J9	●		●	●		60K	2K		11x10-bit	1(2/2/1)	2(2/1/5)	WWDG RTC	SPI/2xSCI/CAN	1	34(6)	TQFP44	4.5 - 5.5V	●	Nested interrupts, TLI, clock security system, ROP, SCIs with LIN features (LINSCI) CAN2.0B active, window watchdog, AWU
	ST72F561K9	●		●	●		60K	2K		6x10-bit	1(2/2/1)	2(1/1/3)	WWDG RTC	SPI/2xSCI/CAN	1	24(5)	TQFP32	4.5 - 5.5V	●	Nested interrupts, TLI, clock security system, ROP, SCIs with LIN features (LINSCI) CAN2.0B active, window watchdog, AWU
	ST72F561R9	●		●	●		60K	2K		16x10-bit	1(2/2/1)	2(4/2/5)	WWDG RTC	SPI/2xSCI/CAN	1	48 (6)	TQFP64 (14x14)	4.5 - 5.5V	●	Nested interrupts, TLI, clock security system, ROP, SCIs with LIN features (LINSCI) CAN2.0B active, window watchdog, AWU
USB	ST72652L4				●		16K	512					WDG	USB/DTC	1	17(4)	SO34	4.0 - 5.5V		PVR, ROP, 5 full-speed USB endpoints
	ST72652Z4				●		16K	512					WDG	USB/DTC	1	31(3)	TQFP48 (7x7)	4.0 - 5.5V		PVR, ROP, 5 full-speed USB endpoints
	ST7HUBAR4				●		16K	768		16x10-bit		1(0/2/2)	WDG	USB/SPI	1	35(7)	TQFP64 (10x10)	4.0 - 5.25V		7 full-speed USB endpoints, 2 HUB downstreams, ICP, IAP, ROP
	ST7XGAML4				●		16K	768		10x10-bit		1(0/2/2)	WDG	USB	1	13(3)	SO34	4.0 - 5.25V		7 full-speed USB endpoints, ROP
	ST7XGAMS4				●		16K	768		14x10-bit		1(0/2/2)	WDG	USB	1	32(6)	TQFP44	4.0 - 5.25V		7 full-speed USB endpoints, ROP
ST10: fast core with advanced interrupt management (up to 10MB address space)																				
CAN	ST10F26921T6	●					128	12K		16x10-bit	5		WDG	USART/SSCI/2xCANs		111	TQFP1444	4.5 - 5.5V		PEC, CAN, PWM, CAPCOM, MAC

Current 32-bit standard microprocessor families

Part number	CPU			Mem ctl	Bus types			EIDE	Ins width	Voltage	PWR @ f _{max}	PWR-DWN modes	DSP mult	FPU	Cache	Timers	Serial parallel	Others	Package
	Core	Freq	Interrupts		Mem bus	PCI bus	Other bus												
SH-4 ST40 32-bit: data-intensive and high performance applications in consumer, telecom, industrial and automotive																			
ST40RA150XHA	SH4	150MHz	17 internal 4 external + NMI	64-bit wide SDRAM/DDR with support for up to 256Mbit devices	64-bit 100MHz DDR SDRAM	66MHz 3.3V	32-bit MPX	N	16	1.8V core/ 3.3V IO	0.980 W	3 modes	64-bit FPU with vector operator	IEEE-754 single/double precision	16K data + 8K instruction	3x32-bit	2 UART, 24 GPIOs	5 channel DMA, RTC, Jtag + real-time trace	PBGA 372
ST40RA166	SH4	166MHz	17 internal 4 external + NMI	64-bit wide SDRAM/DDR with support for up to 256Mbit devices	64-bit 100MHz DDR SDRAM	66MHz 3.3V	32-bit MPX	N	16	1.8V core/ 3.3V IO	0.980 W	3 modes	64-bit FPU with vector operator	IEEE-754 single/double precision with vector operations	16K data + 8K instruction	3x32-bit	2 UART, 24 GPIOs	5 channel DMA, RTC, Jtag + real-time trace	PBGA 372
X86 32-bit: appliances and terminals with CRT or TFT LCD																			
Atlas (STPC12)	486	133MHz	Standard X86 interrupt architecture with routing facility	64-bit wide SDRAM with support for up to 128Mbit devices	64-bit 100MHz SDRAM	33MHz 3.3V or 5V	16-bit	Y	32	2.5V core/ 3.3V IO	4W Typ.	3 modes		IEEE-754 single/double precision	8K unified	PC compatible timer and interrupt structure	2 UART 1 parallel 16GPIOs	Video input port, video pipeline, TFT controller, keyboard, mouse, PCMCIA controller, JTAG, 2D graphics accelerator, alpha font, and line drawing engine, USB, host HUB	PBGA 516
X86 32-bit: for appliances with TV or monitor as display and video capability																			
Consumer-II (STPCS5)	486	133MHz	Standard X86 interrupt architecture	64-bit wide SDRAM with support for up to 128Mbit devices	64-bit 100MHz SDRAM	33MHz 3.3V or 5V	16-bit	Y	32	2.5V core/ 3.3V IO	2.5W Typ.	3 modes		IEEE-754 single/double precision	8K unified	PC compatible timer and interrupt structure		Video input port, video pipeline (video upscaler, video colour space converter, chroma/colour key support), TV output (3 line flicker filter, UTI-R 601/656 support, PAL/NTSC support), JTAG, 2D graphics accelerator	PBGA 388
X86 32-bit: low-cost applications																			
Elite (STPCE1)	486	133MHz	Standard X86 interrupt architecture	64-bit wide SDRAM with support for up to 128Mbit devices	64-bit 100MHz SDRAM	33MHz 3.3V or 5V	16-bit	Y	32	2.5V core/ 3.3V IO	1.5W Typ.	3 modes		IEEE-754 single/double precision	8K unified	PC compatible timer and interrupt structure		16 GPIOs, JTAG	PBGA 388

Future 32-bit standard microprocessor families

Part number	CPU			Mem ctl	Bus types			EIDE	Ins width	Voltage	PWR @ f _{max}	PWR-DWN modes	DSP mult	FPU	Cache	Timers	Serial parallel	Others	Package
	Core	Frequency	Interrupts		Mem bus	PCI bus	Other bus												
SH-4 ST40 32-bit: data-intensive and high-performance applications in consumer, telecom, industrial and automotive																			
ST40RA200	SH-4	200MHz	17 internal 4 external + NMI	64-bit wide SDRAM/DDR with support for up to 256Mbit devices	64-bit 100MHz DDR SDRAM	66MHz	32-bit MPX	No	16	1.8V core/ 3.3V IO	0.980 W	3 modes	64-bit FPU with vector operations	IEEE-754 single/ double precision with vector operations	16K data + 8K Instruction	3x32-bit	2 UART, 24 GPIOs	5 channel DMA, RTC, Jtag + real-time trace	PBGA 372
X86 32-bit: high CPU performance SOC with Ethernet and USB																			
Vega STPCV1	Pentium- II Class	High- performance	Standard X86 interrupt architecture	64-bit wide SDRAM with support for up to 256Mbit devices	64-bit 100MHz SDRAM	33MHz	16-bit	UIDE	32	1.8V core/ 3.3V IO	1.85 W	3 modes	3 issue MMX for multimedia DSP codec functions, FPU	Pipeline FPU	8K data + 8K Instruction	PC compatible timer and interrupt structure	1 UART, 8 GPIOs	JTAG, USB, ethernet MAC, host USB	PBGA 388

Abbreviations:
IDE: Integrated drive electronics
EIDE: Enhanced IDE
UIDE: Ultra DMA-66 IDE
FPU: Floating point unit

Package:
PBGA: Plastic ball grid array

Microcontroller development tools guide

This Reference Guide describes ST's microcontroller tools for all ST5, ST6, ST7, ST9, ST10, ST40 and STPC microcontrollers that are in production. Additional descriptions of tools are available at mcu.st.com

The microcontroller tools listed in this guide are used in the evaluation, development and production phases:

Evaluation

Evaluation boards

- Prototype target board with basic features for evaluating sample devices
- Can be used with hardware development tools
- External analog comparator and A/D converter

Starter kits

- Everything you need to start
- Immediate evaluation with demonstration examples
- In-circuit simulation allows debug code using the actual input and output of the target system during simulation
- Programming capability

Development

Hardware

In-circuit debuggers for Flash devices

- Real-time, in-circuit emulation
- In-circuit debugging (standard chip used, no bondouts, 100% electrical characteristics guaranteed)
- Separate target application or evaluation board needed
- Programming capability

Development kits

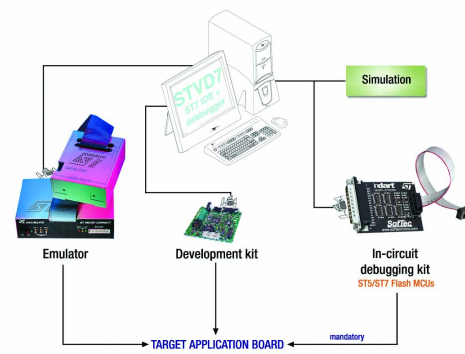
- Real-time, in-circuit emulation with trace up to 1K records
- Limited emulation of analog behavior
- Programming capability (on-board socket, in-circuit programming)

Emulators

- Real-time, in-circuit emulation
- Complex trace triggering
- Logic analyzer capabilities
- Full emulation of analog behavior
- Programming capability according to model

Software

- Assembly language is free of charge for ST5, ST6, ST7 and ST9, and can be downloaded from mcu.st.com or third-parties
- ST and third-party vendors also supply C-compilers for ST MCUs



Four solutions for developing with ST7

Programming

Single programmers

These tools can be used to program one device at a time. They can be controlled by software or they can work in standalone mode

In-circuit programmers for Flash devices

These tools can be used to program a device that is already soldered on the final board through an in-situ programming or in-circuit communication connector (depending on the device)

GANG programmers

They are used to program several devices at a time. For a micro-by-micro updated listing of third parties, please go to mcu.st.com

Automatic programmers

Fully automated solutions for programming ST microcontrollers are available from third-parties

Visual FIVE IDE	Visual FIVE IDE offers you a user-friendly way to program ST5 ICUs, allowing you to design your project flow chart through an easy interface allowing graphical peripheral configuration. A powerful debugger and simulator with external stimulus generator, automatic program generation and digital analyzer plot are included, together with the device programmer. The tool can be downloaded free of charge at mcu.st.com
RIDE for ST5	<p>STMicroelectronics partnered with Raisonance to develop the established RIDE tool chain on ST5:</p> <ul style="list-style-type: none"> Free software toolchain: complete development suite (RIDE) including assembler, linker, debugger, simulator and limited C compiler downloadable from www.raisonance.com Full-license C compiler package: Previous package + ANSI C compiler RIDE code compressor: saves 10% to 30% of your code size and more depending on your application
ST FIVE inDART	<p>STMicroelectronics has partnered with SofTec Microsystems to provide the ST5 community with low-cost tools with powerful capabilities for developing an application. This kit provides you with everything you need to write, download and in-circuit debug user code for all Flash-based ST5 microcontrollers. It is driven by Visual FIVE or RIDE. Two packages are available:</p> <ul style="list-style-type: none"> inDART interface: universal communication board for ST5 and ST7, and the software for developing and communicating with the ST microcontrollers ST Visual Five, RIDE for ST5, STVD7 for ST7, Datablaze programming software from SofTec, the USB connection to PC and the cable to the application board inDART: includes the inDART interface and an ST52 F5xx evaluation board dedicated to various ST5 devices and an ST5 sample
ST programming tools	<p>Includes a programming board, ST Visual FIVE for developing and programming and sample(s) Two versions are available:</p> <ul style="list-style-type: none"> Low-cost kit composed of a basic programming board and one sample Professional programming board composed of a high-performance programmer and 3 samples

Part number	Starter kit In-circuit simulator	Emulator In-circuit debugger	Software development tool IDE, assembler, linker, C compiler, debugger, simulator	Programming tool		
				ST programming board		3rd party programmer
				Low-cost kit	Professional kit	
ST5 T4x0						
T400 basic	ST52HE440/EMU1 ¹		Graphical Tool: Visual FIVE	ST52X440LC/KIT	ST52X440/KIT	BP Microsystems www.bpmicro.com SofTec Microsystems www.softecmicro.com
T410 basic super PWM	ST52HE420/EMU1 ¹			ST52X420LC/KIT	ST52X420/KIT	
T420 8-bit ADC				ST52X430LC/KIT	ST52X430/KIT	
T430 8-bit ADC and SCI	ST52HE440/EMU1 ¹			ST52X440LC/KIT	ST52X440/KIT	
T440 analog comparator	ST52HE440/EMU1 ¹					
ST5 TF5xx						
F500 Flash basic		ST5F5XX-IND/USB ¹	RIDE from Raisonance			BP Microsystems www.bpmicro.com SofTec Microsystems www.softecmicro.com
F503 Flash data EEPROM		STXF-INDART/USB ¹	www.raisonance.com			
F510 Flash 10-bit ADC and SCI			Graphical Tool: Visual FIVE			
F513 Flash data EEPROM 10-bit ADC/SCI						
F514 super storage 10-bit ADC/SCI						

Abbreviations:
 ADC: Analog to digital converter
 SCI: Serial communication interface (UART)

Notes:
 1. Also available from SofTec www.softecmicro.com

ST6 software development tools

Free software toolchain	<ul style="list-style-type: none"> Complete development suite (RIDE) including assembler, linker, debugger, simulator and limited C compiler downloadable from www.raisonance.com Windows EEPROMer for programming with EPBs, starter kits and gang programmers, downloadable at mcu.st.com
Full-license C compiler package	<ul style="list-style-type: none"> Complete development suite (RIDE) including assembler, linker, simulator and C compiler available from Raisonance
Specific tools	<ul style="list-style-type: none"> Visual Micro Lab (VMLAB) from Advanced Micro Tools (www.amtools.net) enables you to build a virtual prototype of your application and true hardware/software co-simulation REALIZER graphics-oriented tool that allows users to create applications for ST6 without having to learn or write a single line of assembly code <ul style="list-style-type: none"> STREALIZER-II is available from ST only ACTUM REALIZER: enhanced versions with end-user support can be purchased from Actum Solutions (www.actum.com)

ST6 hardware development tools

Part number	Evaluation board	Starter kit	Emulator	Dedication board	Single programmer
ST6200C		ST622XC-KIT ¹	ST62GP-EMU ² ₆	ST62GP-DBE	ST62E2XC-EPB ³
ST6201C		ST622XC-KIT ¹	ST62GP-EMU ² ₆	ST62GP-DBE	ST62E2XC-EPB ³
ST6203C		ST622XC-KIT ¹	ST62GP-EMU ² ₆	ST62GP-DBE	ST62E2XC-EPB ³
ST6252C		ST626XC-KIT ²	ST62GP-EMU ² ₆	ST62GP-DBE	ST62E6XC-EPB ²
ST6262C		ST626XC-KIT ²	ST62GP-EMU ² ₆	ST62GP-DBE	ST62E6XC-EPB ²
ST6210C		ST622XC-KIT ¹	ST62GP-EMU ² ₆	ST62GP-DBE	ST62E2XC-EPB ³
ST6220C		ST622XC-KIT ¹	ST62GP-EMU ² ₆	ST62GP-DBE	ST62E2XC-EPB ³
ST6253C		ST626XC-KIT ²	ST62GP-EMU ² ₆	ST62GP-DBE	ST62E6XC-EPB ²
ST6260C		ST626XC-KIT ²	ST62GP-EMU ² ₆	ST62GP-DBE	ST62E6XC-EPB ²
ST6263C		ST626XC-KIT ²	ST62GP-EMU ² ₆	ST62GP-DBE	ST62E6XC-EPB ²
ST6225C	ST62-DEMOSAFE ^{1 4}	ST622XC-KIT ¹	ST62GP-EMU ² ₆	ST62GP-DBE	ST62E2XC-EPB ³
ST6265C	ST626X-EVAL	ST626XC-KIT ²	ST62GP-EMU ² ₆	ST62GP-DBE	ST62E6XC-EPB ²
ST6230B	ST62-DEMOSAFE ^{1 4}	ST623X-KIT ¹	ST62GP-EMU ² ₆	ST62GP-DBE	ST62E3X-EPB ³
ST6232B		ST623X-KIT ¹	ST62GP-EMU ² ₆	ST62GP-DBE	ST62E3X-EPB ³
ST6240B		ST624XB-KIT ¹	ST6240B-EMU ² ₆	ST624XB-DBE	ST62E4XB-EPB ²
ST6280B			ST6280-EMU ² ₆	ST628X-DBE	ST62E8X-EPB ³

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2. Add suffix /EU, /US or /UK for the power supply for your region

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4. Board for demonstrating the robustness of the ST6 in a noisy environment

5. Validation and training board with LEDs and push buttons

6. Emulators interface with Raisonance's IDE (RIDE)

7. The DBE can be changed to convert an emulator from one ST6 subfamily

to another. Select the right DBE from the table below:

Third-party development and programming tools

Part number	Assembler - linker C compiler - debugger	Graphical tool	Specific tool	Emulator	Programmer ¹
ST6200C	Raisonance (RIDE) www.raisonance.com	Actum www.actum.com	Advanced Micro Tool www.amtools.net	Ceibo ² www.ceibo.com SofTec ² www.softecmicro.com	Advantech Equipment www.aec.com.tw BP Microsystems www.bpmicro.com Conitec www.conitec.net Data I/O www.data-io.com Dataman www.dataman.com EE Tools www.eetools.com Elnec www.elnec.com Hi-Lo Systems www.hilosystems.com.tw Ice Technology www.icetech.com Leap www.leap.com.tw Lloyd Research www.lloyd-research.com Logical Devices www.chipprogrammers.com MQP Electronics www.mqp.com Needham's Electronics www.needhams.com Phytion www.phytion.com RK-system www.rk-system.com.pl SofTec Microsystems www.softecmicro.com STAG Programmers www.stag.co.uk System General Corp www.sg.com.tw Tribal Microsystems www.tribalmicro.com Xeltek www.xeltek.com
ST6201C					
ST6203C					
ST6252C					
ST6262C					
ST6210C					
ST6220C					
ST6253C					
ST6260C					
ST6263C					
ST6225C					
ST6265C					
ST6230B					
ST6232B					
ST6240B					
ST6280B					

1. Updated list of supported ST MCUs is available at mcu.st.com

2. Emulators interface with Raisonance's IDE (RIDE)

Evaluation

- ST7MDTX-TRAIN/XX
Validation and training board with LEDs and push buttons
- ST7FOPTIONS-EVAL
Demonstrates security and cost-saving features of ST72264
- ST7CAN-DEMO
Allows development of a CAN driver to act as a node in the network. Delivered with VisualCAN software
- ST7MDTULS-EVAL
To develop low-speed USB HID class applications. Includes a Windows 98 applet and USB firmware libraries
- ST7KNDx-KIT2 starter kit
Based on in-circuit simulation with application builder and programming features
- Kanda BLDC motor controller starter kit
Comprehensive BLDC motor controller starter kit makes controlling motors easy. These kits are also available from Kanda (www.kanda.com)

Development

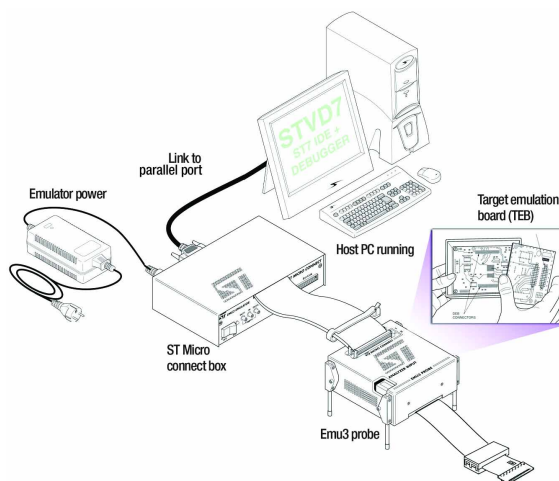
- A development tool to match all budgets and development needs:
- The in-circuit debugging kit for ST7 Flash devices allows low-cost, real-time debugging and programming capabilities. A separate target application board is needed
 - The ST development kit for all ST7 devices is a low-cost emulator with programming capabilities
 - The ST emulator offers full-emulation features. Unless otherwise specified, it is delivered with everything required (probes, TEBs, adapters, etc.). The same emulator can be used for different ST7 part numbers. The target emulation board (TEB) for EMU3 or active probe for EMU2B are interchangeable boards dedicated to the microcontroller

Software

- Free package: this package is available at mcu.st.com
 - STVD7 (ST7 visual debug): Free software toolchain including IDE, ST7 assembler and linker. It fully interfaces with 3rd party C compilers and is downloadable from mcu.st.com
 - STVP7 (ST7 visual programmer)
- Graphical tool: REALIZER is a graphics-oriented tool that allows users to create applications for ST7 without having to learn or write a single line of assembly code
 - STREALIZER-II is orderable from ST only, supporting both ST6 and ST7
 - ACTUM REALIZER: enhanced versions with end-user support can be purchased from Actum Solutions (www.actum.com)
- CAN, OSEK and LIN software: Vector Informatik GmbH provides the CAN drivers for pCAN and beCAN. ST7 OSEK software is available for most automotive OEMs. The LIN driver supports the standard ST7 SCI and LINSICI (www.vector-informatik.de)

Programming

- Single EPB programmers for ST7 are available from ST. Gang programmers for production quantities are provided by third-party vendors.
- The Flasher is a programming tool that can be used for in-circuit programming. In this case, the target board has to be designed to support this mode of operation. It works in standalone mode. SEGGER Microcontroller Systeme GmbH (www.segger.com)



ST7 emulator (EMU3)

Current and future ST7 development and programming tools

Part number	Application		In-circuit debugger	Emulator			
	Evaluation board			Development kit (DVP)	Target emulation board (TEB) for DVP	Emulator EMU	Active probe and TEB
ST7 lite							
ST7LITE0		ST7FLITE0-INDART ⁴					
ST7LITE2		4					
ST72260	ST7MDT1-TRAIN ¹	ST72F264-INDART ⁴			ST7MDT10-EMU3	ST7MDT10-TEB	
ST72262	ST7FOPTIONS-EVAL						
ST72264							
ST7DALI	ST7FDALI-EVAL						
ST7 mid-range							
ST72321K		4		ST7MDT20-T32/DVP	ST7MDT20J-EMU3	ST7MDT20J-TEB	
ST72321J				ST7MDT20-T44/DVP			
ST72321R	ST7MDT20-EVC ¹		ST7MDT20-DVP3	ST7MDT20-T64/DVP ³	ST7MDT20M-EMU3	ST7MDT20M-TEB	Hitex www.hitex.com
ST72321AR	ST7MDT20-EVY ¹						iSystem www.isystem.com
ST72324				ST7MDT20-T32/DVP	ST7MDT20J-EMU3	ST7MDT20J-TEB	
ST7 CAN							
ST72521	SST7MDT20-EVC ¹				ST7MDT20M-EMU3	ST7MDT20M-TEB	Hitex www.hitex.com
	ST7MDT20-EVY ¹						iSystem www.isystem.com
ST72561	Phytec www.phytec.com						
ST7 MC							
ST72141			ST7MTC2 ¹		ST7MDT5-EMU2B		iSystem www.isystem.com
ST7 USB							
ST7261x	ST7USB-EVAL/232	4			ST7MDTU2-EMU2B	ST7MDTU2-DBE2B	
ST7262x	ST7MDTULS-EVAL						
ST7263B	ST7MDTULS-EVAL	4			ST7MDTU3-EMU2B	ST7MDTU3-DBE2B	
ST7265x	ST7265X-EVAL/PFD	4			ST7MDTU5-EMU2B		
	ST7265X-EVAL/MS						
	ST7265X-DVT/MS						
ST7HUB					ST7MDTH1-EMU3		
ST7SCR					ST7MDTS1-EMU2B		

Part number	Software development tool			Programming tool	
	IDE, assembler, linker, C compiler, debugger, simulator		Other software tools	EPB/STICK	3rd party programmer
ST7 lite					
ST7LITE0	STVD7		Development assistant for C: RistanCase GmbH www.ristancase.ch	ST7MDT10-EPB ²	BP Microsystems www.bpmicro.com
ST7LITE2	Cosmic www.cosmic-software.com		Rhapsody® in MicroC from I-Logix www.ilogix.com	ST7-STICK ¹	Data I/O www.data.io.com
ST72260	Metrowerks www.metrowerks.com		OS: embOS® from Segger www.segger.com		HI-LO www.hilosystems.com.tw
ST72262					
ST72264	Graphical Tool: Realizer from Actum www.actum.com				
ST7DALI					
ST7 mid-range					
ST72321K			Development assistant for C: RistanCase GmbH www.ristancase.ch	ST7MDT20J-EPB ²	Leap www.leap.com.tw
ST72321J	Cosmic www.cosmic-software.com		Rhapsody® in MicroC from I-Logix www.ilogix.com	ST7-STICK ¹	
ST72321R	Metrowerks www.metrowerks.com		OS: embOS® from Segger www.segger.com	ST7MDT20M-EPB ²	RK-System www.rk-system.com.pl
ST72321AR				ST7-STICK ¹	
ST72324				ST7MDT20J-EPB ²	Segger www.segger.com
				ST7-STICK ¹	
ST7 CAN					
ST72521	STVD7		Development assistant for C: RistanCase GmbH www.ristancase.ch	ST7MDT20M-EPB ²	SoftTec Microsystems www.softecmicro.com
	Cosmic www.cosmic-software.com		Rhapsody® in MicroC from I-Logix www.ilogix.com	ST7-STICK ¹	Systems General www.sg.com
ST72561	Metrowerks www.metrowerks.com		OS: embOS® from Segger www.segger.com	ST7MDT25-EPB ²	Tribal www.tribalmicro.com
				ST7-STICK ¹	
ST7 MC					
ST72141	STVD7			ST7MDT5-EPB	Xeltek www.xeltek.com
	Cosmic www.cosmic-software.com				
	Metrowerks www.metrowerks.com				
ST7 USB					
ST7261x	STVD7		Development assistant for C: RistanCase GmbH www.ristancase.ch	ST7MDTU2-EPB ²	
ST7262x			Rhapsody® in MicroC from I-Logix www.ilogix.com	ST7MDTU3-EPB ²	
ST7263B			OS: embOS® from Segger www.segger.com	ST7MDTU5-EPB ²	
ST7265x	Cosmic www.cosmic-software.com			ST7MDTH1-EPB ²	
ST7HUB	Metrowerks www.metrowerks.com			ST7MDTS1-EPB ²	
ST7SCR					

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3. TQFP64 14*14

4. InDART USB port: please contact ST or SoftTec for order code. www.softecmicro.com

Mature ST7 development and programming tools

Part number	Application evaluation board	Starter kit		Emulator				Software development tool		Programming tool	
		In-circuit simulator	In-circuit debugger	Target emulation board (TEB) for DVP	Emulator EMU	Active probe	3rd party emulator	IDE, assembler, linker, C compiler, debugger, simulator	Other software tools	EPB/STICK	3rd party programmer
Mature devices											
ST72104 ST72215 ST72216 ST72254	ST7MDT1-TRAIN ¹	ST7KND1-KIT2 ^{1 3}	ST7C254-IINDART	ST7MDT1-DVP2 ¹	ST7MDT1-EMU2B	ST7MDT1-DBE2B	iSystem	STVD7 Cosmic Metrowerks Graphical IDE: Realizer [®] from Actium	Development assistant or C: RistanCase GmbH Rhapsody [®] in MicroC from I-Logix OS: embOS [®] from Segger	ST7MDT1-EPB2 ²	BP Microsystems www.bpmicro.com Data I/O www.data.io.com HI-LO www.hilosystems.com.tw
ST72311 ST72124 ST72314 ST72334	ST7MDT20-EVC ¹ ST7MDT20-EVY ¹	ST7KND2-KIT2 ^{1 3}	ST7C334-INDART	ST7MDT2-DVP2 ¹ Add Adaptor for TQFP44: ST7MDT2-PB/TQ44	ST7MDT1-EMU2B Add Adaptor for TQFP44: ST7MDT2-DV/TQ44	ST7MDT2-DBE2B	Hitex iSystem	STVD7 Cosmic Metrowerks Graphical IDE: Realizer [®] from Actium	Development assistant or C: RistanCase GmbH Rhapsody [®] in MicroC from I-Logix OS: embOS [®] from Segger	ST7MDT2-EPB2 ²	Leap www.leap.com.tw RK-System www.rk-system.com.pl Segger www.segger.com
ST72511	ST7MDT20-EVC ¹ ST7MDT20-EVY ¹ ST7CAN-DEMO			ST7MDT2-DVP2 ¹	ST7MDT2-EMU2B		Hitex iSystem		Development assistant or C: RistanCase GmbH Rhapsody [®] in MicroC from I-Logix OS: embOS [®] from Segger	ST7MDT2-EPB2 ²	Softec Microsystems www.softemicro.com
ST72389 ST72589					ST72589-EMU2			STVD7 Cosmic www.cosmic-software.com		ST72E589-EPB/EU	Systems General www.sg.com
ST72171	ST7MDT6-EVAL ¹	ST7KND1-KIT2 ^{1 3}			ST7MDT6-EMU2B			Metrowerks www.metrowerks.com		ST7MDT6-EPB2 ²	Tribal www.tribalmicro.com Xeltek www.xeltek.com

1. Add suffix /EU, /US or /UK for the power supply for your region
2. Add suffix /EU or /US for the power supply for your region
3. Available from ST or from Kanda, www.kanda.com

ST9 family

ST9 development and programming tools

Free software toolchain	<p>This package is available at mcu.st.com</p> <ul style="list-style-type: none"> ■ STVD9 (ST9 visual debug) IDE, assembler, linker, debugger and C compiler ■ STVP9 (ST9 visual programmer)
Programming	<p>Single EPB programmers for ST9 are available from ST. These tools feature in-system programming capability for ST9 Flash devices. Gang programmers for production quantities are provided by third-party vendors</p> <ul style="list-style-type: none"> ■ The Flasher is a programming tool that can be used for in-circuit programming, and in this case the target board has to be designed to support this mode of operation. It works in stand-alone mode. This tool supports ST9 Flash devices SEGGER Microcontroller Systeme GmbH (www.segger.com)

ST9 hardware development and programming tools

Part number	Evaluation board	Emulator	Dedication board	Single programmer	Operating system	3rd party programmer ⁴
ST90135	ST9GP-EVAL	ST90158-EMU2B		ST90E158-EPB2 ¹	3SOFT (OSEK OS) - ST92F150 only www.3soft.de	BP Microsystems www.bpmicro.com Data I/O www.data-io.com Leap www.leap.com.tw Segger www.segger.com
ST90158	ST9GP-EVAL	ST90158-EMU2B		ST90E158-EPB2 ¹	Vector (OSEK software) - ST92F150 only www.vector-informatik.de	
ST92F124/150/250	ST92F150-EVAL	ST92F150-EMU2	ST92F150-DBE ³	ST92F150-EPB ¹		
ST92141	ST92163-DEMO	ST92141-EMU2		ST92E141-EPB ¹	CMX (real-time kernel) www.cmx.com	
ST92163	ST92163-DEMO/MS ²	ST92163-EMU2		ST92E163-EPB ¹		

1. An updated list of supported ST MCUs is available at mcu.st.com
2. Supports USB Mass Storage Class applications, and includes seamless integration with the STA015 MP3 decoder demo board

3. This board is used to convert a ST92F120-EMU2 to ST92F150-EMU2
4. An updated list of supported ST MCUs is available at mcu.st.com

ST10 family

ST10 hardware and software development and programming tools

Part number	Software	Evaluation board	Emulator	Programmer
ST10R172 ST10R272 ST10R167 ST10F168 ST10F269	<p>C Toolchain</p> <ul style="list-style-type: none"> Keil Software www.keil.com Tasking www.tasking.com <p>Real-time kernel</p> <ul style="list-style-type: none"> CMX www.cmx.com Windriver www.windriver.com <p>OSEK</p> <ul style="list-style-type: none"> Vector www.vector-informatik.de 3SOFT www.3soft.de 	<p>Phytec www.phytec.com Rigel www.rigelcorp.com FS Forth-Systeme www.fsforth.de</p>	<p>Hitex www.hitex.com Lauterbach www.lauterbach.com Nohau www.nohau.com</p>	<p>BP Microsystems www.bpmicro.com</p>

ST40 family

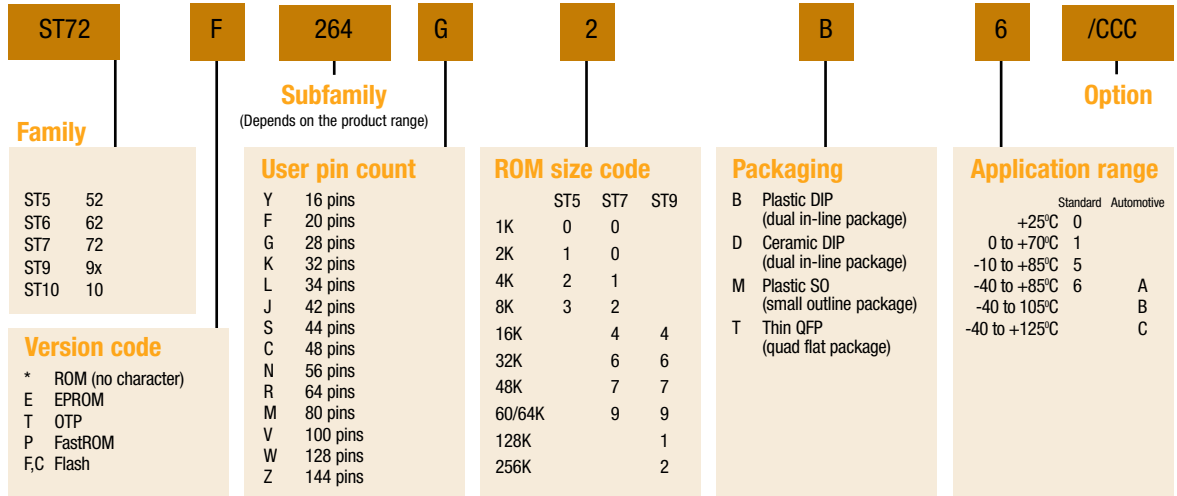
ST40 hardware and software development and programming tools

Part number		Description	Product	Vendor	
Hardware	Software				
ST40-toolset		ST40 toolset. C/C++-toolchain based on GNU tools, and cross-development environment with debugger and simulator	WinCE.Net	Microsoft	www.microsoft.com
OS21		Royalty-free, small-footprint, real-time kernel with task management, memory management interrupt management, timers, semaphores and message queues	VxWorks, Tornado	WindRiver	www.windriver.com
	ST40-Connect	Host-target interface allowing connection between an Ethernet, parallel port or USB based host to an ST40 development board	CodeWarrior	MetroWerks	www.metrowerks.com
	ST40RA-Eval	ST40 evaluation board	Linux OS, HardHat version	Open source	www.sourceforge.com
	ST40STB1-ODrive	ST40 overdrive board for set-top box applications with ST40RA166			

STPC development tools

Part number	Evaluation board part number	Software kit	Description	Web site	BIOS	Operating system
STPC Atlas	AtlasSABD	GDK1.4	Graphic development kit: source code library for graphic accelerator and bootloader code for Linux and WIN CE.net	mcu.st.com	AMI: www.ami.com Pheonix: www.phoenix.com General Software: www.gensw.com	Microsoft Embedded www.microsoft.com/windows/embedded/default.asp <ul style="list-style-type: none"> • Linux : www.lineo.com www.tuxia.com www.mvista.com • QNX • Windriver
STPC Elite	ELITEBD	STPCDK1.0	Bootloader source code for Linux and WIN CE.net			
STPC ConsumerII	CONSUMER-II BD	GDK1.4	Graphic development kit: source code library for graphic accelerator and bootloader code for Linux and WIN CE.net			
STPC VEGA	VEGABD	STPCDK1.0	Bootloader source code for Linux and WIN CE.net. Library tools for LAN and I ² C			

MCU - Typical designations and part-n⁰ suffixes



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