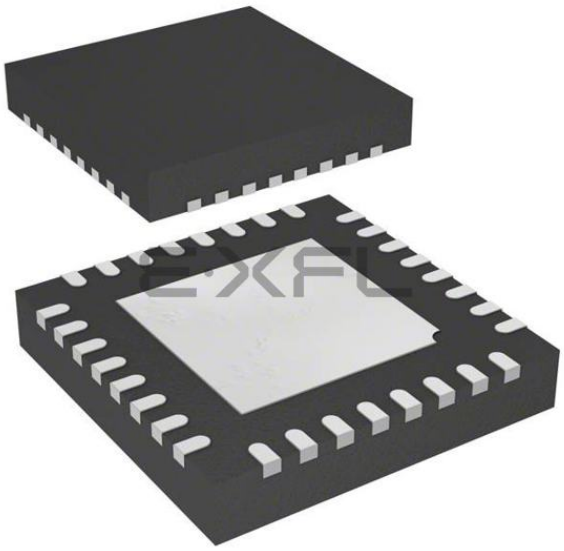

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What is "Embedded - Microcontrollers"?

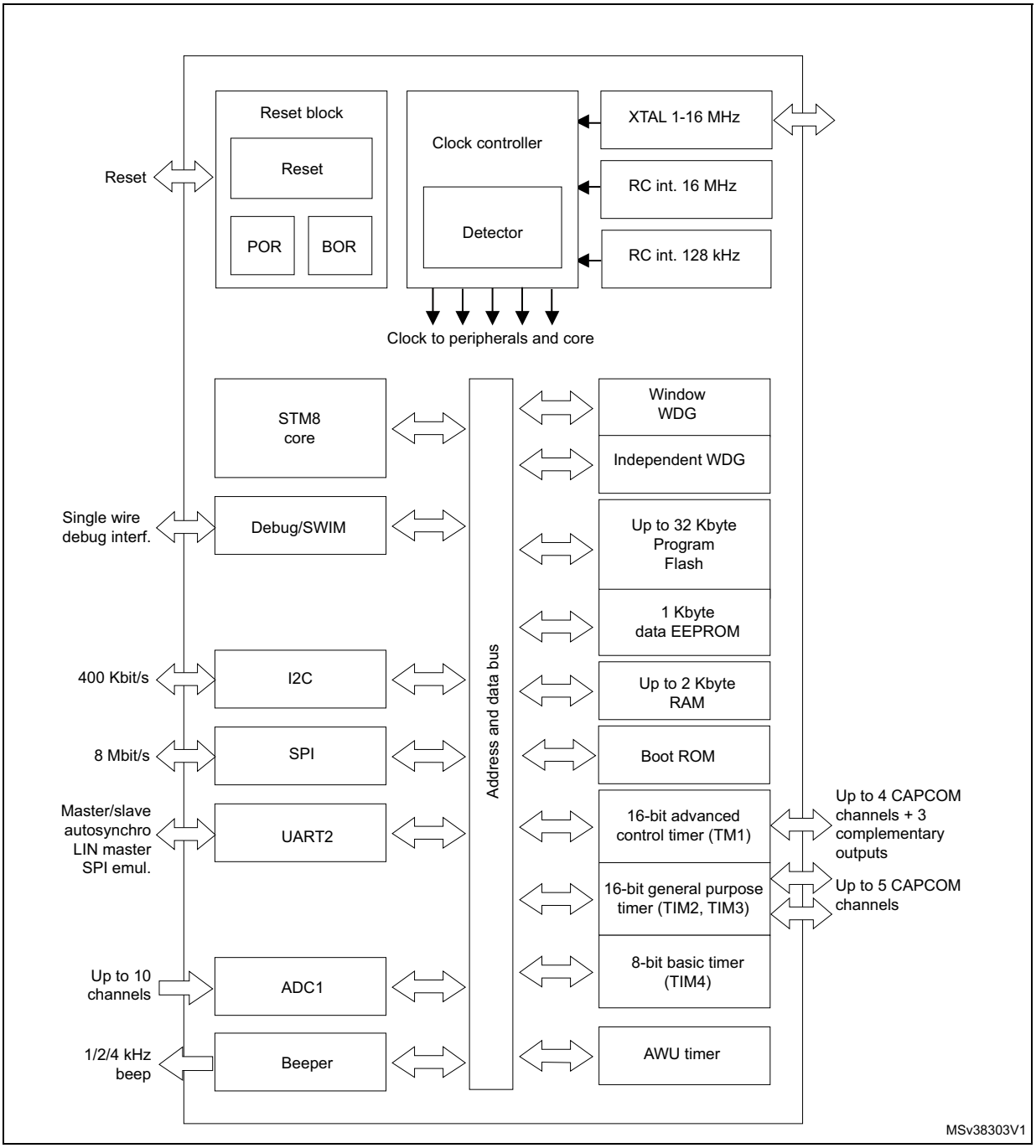
"Embedded - Microcontrollers" refer to small, integrated circuits designed to perform specific tasks within larger systems. These microcontrollers are essentially compact computers on a single chip, containing a processor core, memory, and programmable input/output peripherals. They are called "embedded" because they are embedded within electronic devices to control various functions, rather than serving as standalone computers. Microcontrollers are crucial in modern electronics, providing the intelligence and control needed for a wide range of applications.

Applications of "Embedded - Microcontrollers"

Details	
Product Status	Active
Core Processor	STM8A
Core Size	8-Bit
Speed	16MHz
Connectivity	I²C, IrDA, LINbus, SPI, UART/USART
Peripherals	Brown-out Detect/Reset, POR, PWM, WDT
Number of I/O	25
Program Memory Size	16KB (16K x 8)
Program Memory Type	FLASH
EEPROM Size	1K x 8
RAM Size	2K x 8
Voltage - Supply (Vcc/Vdd)	2.95V ~ 5.5V
Data Converters	A/D 7x10b
Oscillator Type	Internal
Operating Temperature	-40°C ~ 125°C (TA)
Mounting Type	Surface Mount
Package / Case	32-UFQFN Exposed Pad
Supplier Device Package	32-UFQFPN (5x5)
Purchase URL	https://www.e-xfl.com/product-detail/stmicroelectronics/stm8s105k4u3a

3 Block diagram

Figure 1. STM8S105x4/6 block diagram



The IWDG time base spans from 60 µs to 1 s.

4.8 Auto wakeup counter

- Used for auto wakeup from active halt mode,
- Clock source: Internal 128 kHz internal low frequency RC oscillator or external clock,
- LSI clock can be internally connected to TIM1 input capture channel 1 for calibration.

4.9 Beeper

The beeper function outputs a signal on the BEEP pin for sound generation. The signal is in the range of 1, 2 or 4 kHz.

The beeper output port is only available through the alternate function remap option bit AFR7.

4.10 TIM1 - 16-bit advanced control timer

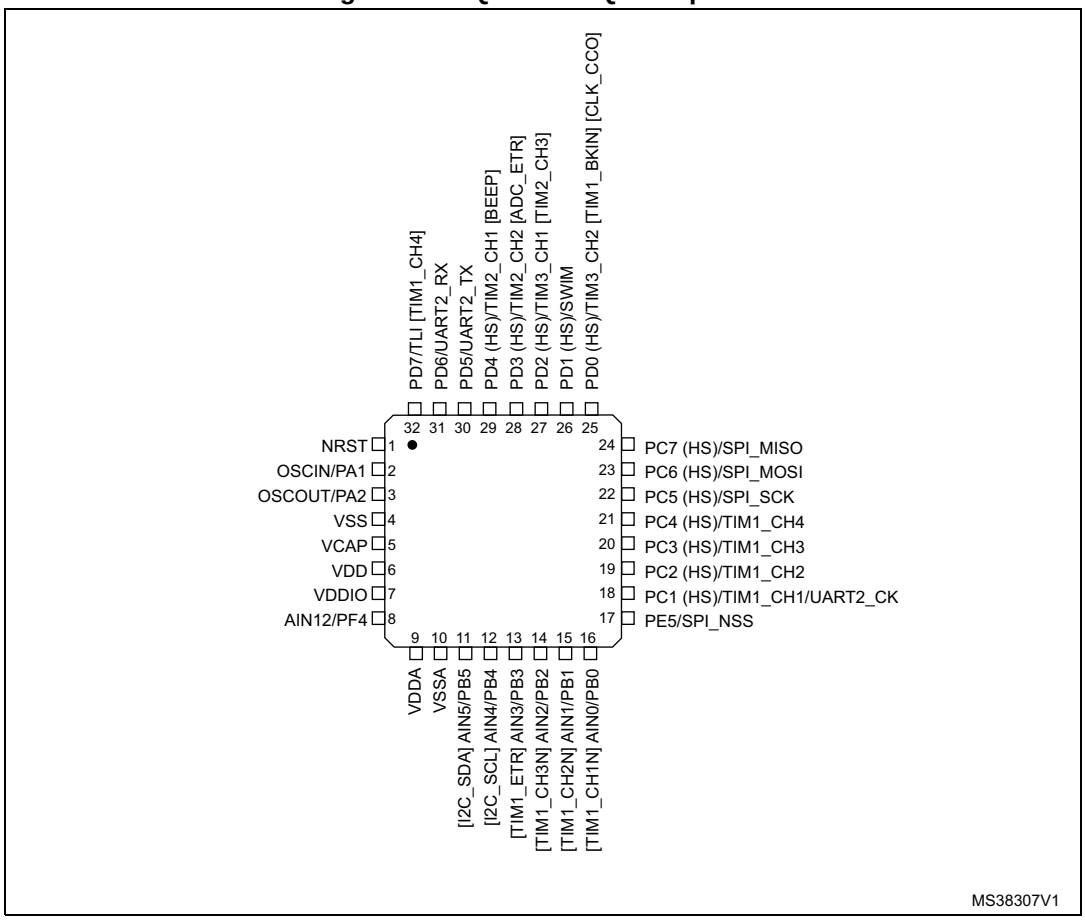
This is a high-end timer designed for a wide range of control applications. With its complementary outputs, dead-time control and center-aligned PWM capability, the field of applications is extended to motor control, lighting and half-bridge driver

- 16-bit up, down and up/down autoreload counter with 16-bit prescaler
- Four independent capture/compare channels (CAPCOM) configurable as input capture, output compare, PWM generation (edge and center aligned mode) and single pulse mode output
- Synchronization module to control the timer with external signals
- Break input to force the timer outputs into a defined state
- Three complementary outputs with adjustable dead time
- Encoder mode
- Interrupt sources: 3 x input capture/output compare, 1 x overflow/update, 1 x break

4.11 TIM2, TIM3 - 16-bit general purpose timers

- 16-bit auto reload (AR) up-counter
- 15-bit prescaler adjustable to fixed power of 2 ratios 1…32768
- Timers with 3 or 2 individually configurable capture/compare channels
- PWM mode
- Interrupt sources: 2 or 3 x input capture/output compare, 1 x overflow/update

Figure 5. UFQFPN32/LQFP32 pinout



1. (HS) high sink capability.
2. [ ] alternate function remapping option (if the same alternate function is shown twice, it indicates an exclusive choice not a duplication of the function).

6.2.2 General hardware register map

Table 8. General hardware register map

Address	Block	Register label	Register name	Reset status
0x00 5050 to 0x00 5059	Reserved area (10 byte)			
0x00 505A	Flash	FLASH_CR1	Flash control register 1	0x00
0x00 505B		FLASH_CR2	Flash control register 2	0x00
0x00 505C		FLASH_NCR2	Flash complementary control register 2	0xFF
0x00 505D		FLASH _FPR	Flash protection register	0x00
0x00 505E		FLASH _NFPR	Flash complementary protection register	0xFF
0x00 505F		FLASH _IAPSR	Flash in-application programming status register	0x00
0x00 5060 to 0x00 5061	Reserved area (2 byte)			
0x00 5062	Flash	FLASH _PUKR	Flash program memory unprotection register	0x00
0x00 5063	Reserved area (1 byte)			
0x00 5064	Flash	FLASH _DUKR	Data EEPROM unprotection register	0x00
0x00 5065 to 0x00 509F	Reserved area (59 byte)			
0x00 50A0	ITC	EXTI_CR1	External interrupt control register 1	0x00
0x00 50A1		EXTI_CR2	External interrupt control register 2	0x00
0x00 50A2 to 0x00 50B2	Reserved area (17 byte)			
0x00 50B3	RST	RST_SR	Reset status register	0xXX(1)
0x00 50B4 to 0x00 50BF	Reserved area (12 byte)			
0x00 50C0	CLK	CLK_ICKR	Internal clock control register	0x01
0x00 50C1		CLK_ECKR	External clock control register	0x00
0x00 50C2	Reserved area (1 byte)			

Table 19. Operating conditions at power-up/power-down (continued)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{IT+}	Power-on reset threshold	-	2.65	2.8	2.95	V
V_{IT-}	Brown-out reset threshold	-	2.58	2.65	2.88	
$V_{HYS(BOR)}$	Brown-out reset hysteresis	-	-	70	-	mV

1. Guaranteed by design, not tested in production.

Table 21. Total current consumption with code execution in run mode at V_{DD} = 3.3 V

Symbol	Parameter	Conditions		Typ	Max(1)	Unit
$I_{DD(RUN)}$	Supply current in Run mode, code executed from RAM	$f_{CPU} = f_{MASTER}$ = 16 MHz	HSE crystal osc. (16 MHz)	2.8	-	mA
			HSE user ext. clock (16 MHz)	2.6	3.2	
			HSI RC osc. (16 MHz)	2.5	3.2	
		$f_{CPU} = f_{MASTER}$ /128 = 125 kHz	HSE user ext. clock (16 MHz)	1.6	2.2	
			HSI RC osc. (16 MHz)	1.3	2.0	
		$f_{CPU} = f_{MASTER}$ /128 = 15.625 kHz	HSI RC osc. (16 MHz/8)	0.75	-	
		$f_{CPU} = f_{MASTER}$ = 128 kHz	LSI RC osc. (128 kHz)	0.55	-	
$I_{DD(RUN)}$	Supply current in Run mode, code executed from Flash	$f_{CPU} = f_{MASTER}$ = 16 MHz	HSE crystal osc. (16 MHz)	7.3	-	mA
			HSE user ext. clock (16 MHz)	7.0	8.0	
			HSI RC osc. (16 MHz)	7.0	8.0	
		$f_{CPU} = f_{MASTER}$ = 2 MHz	HSI RC osc. (16 MHz/8)(2)	1.5	-	
		$f_{CPU} = f_{MASTER}$ /128 = 125 kHz	HSI RC osc. (16 MHz)	1.35	2.0	
		$f_{CPU} = f_{MASTER}$ /128 = 15.625 kHz	HSI RC osc. (16 MHz/8)	0.75	-	
		$f_{CPU} = f_{MASTER}$ = 128 kHz	LSI RC osc. (128 kHz)	0.6	-	

1. Data based on characterization results, not tested in production.
2. Default clock configuration measured with all peripherals off.

Total current consumption in wait mode

Table 22. Total current consumption in wait mode at V_{DD} = 5 V

Symbol	Parameter	Conditions		Typ	Max(1)	Unit
$I_{DD(WFI)}$	Supply current in wait mode	$f_{CPU} = f_{MASTER}$ = 16 MHz	HSE crystal osc. (16 MHz)	2.15	-	mA
			HSE user ext. clock (16 MHz)	1.55	2.0	
			HSI RC osc. (16 MHz)	1.5	1.9	
		$f_{CPU} = f_{MASTER}$ /128 = 125 kHz	HSI RC osc. (16 MHz)	1.3	-	
		$f_{CPU} = f_{MASTER}$ /s128 = 15.625 kHz	HSI RC osc. (16 MHz/8)(2)	0.7	-	
		$f_{CPU} = f_{MASTER}$ = 128 kHz	LSI RC osc. (128 kHz)	0.5	-	

1. Data based on characterization results, not tested in production.
2. Default clock configuration measured with all peripherals off.

Table 25. Total current consumption in active halt mode at V_{DD} = 3.3 V

Symbol	Parameter	Conditions			Typ	Max at 85 °C(1)	Max at 85 °C(1)	Unit
		Main voltage regulator (MVR)(2)	Flash mode(3)	Clock source				
$I_{DD(AH)}$	Supply current in active halt mode	On	Operating mode	HSE crystal osc. (16 MHz)	680	-	-	µA
			Operating mode	LSI RC osc. (128 kHz)	200	320	400	
			Power down mode	HSE crystal osc. (16 MHz)	630	-	-	
			Power down mode	LSI RC osc. (128 kHz)	140	270	350	
		Off	Operating mode	LSI RC osc. (128 kHz)	66	120	220	
			Power down mode	LSI RC osc. (128 kHz)	10	60	150	

1. Data based on characterization results, not tested in production.
2. Configured by the REGAH bit in the CLK_ICKR register.
3. Configured by the AHALT bit in the FLASH_CR1 register.

Total current consumption in halt mode

Table 26. Total current consumption in halt mode at V_{DD} = 5 V

Symbol	Parameter	Conditions	Typ	Max at 85 °C(1)	Max at 85 °C(1)	Unit
$I_{DD(H)}$	Supply current in halt mode	Flash in operating mode, HSI clock after wakeup	62	90	150	µA
		Flash in power-down mode, HSI clock after wakeup	6.5	25	80	

1. Data based on characterization results, not tested in production.

Table 27. Total current consumption in halt mode at V_{DD} = 3.3 V

Symbol	Parameter	Conditions	Typ	Max at 85 °C(1)	Max at 85 °C(1)	Unit
$I_{DD(H)}$	Supply current in halt mode	Flash in operating mode, HSI clock after wakeup	60	90	150	µA
		Flash in power-down mode, HSI clock after wakeup	4.5	20	80	

1. Data based on characterization results, not tested in production.

Figure 24. Typical V_{IL} and V_{IH} vs V_{DD} @ 4 temperatures

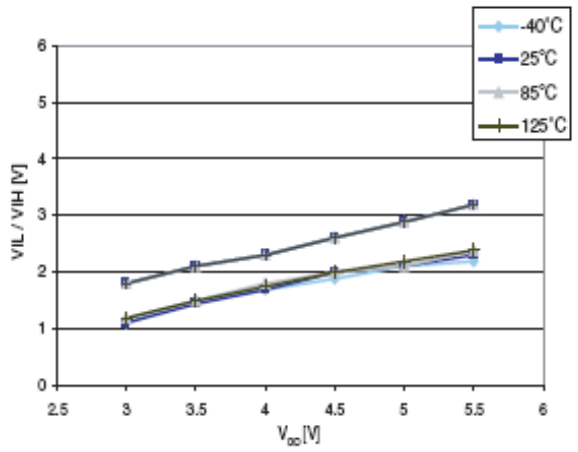


Figure 25. Typical pull-up current vs V_{DD} @ 4 temperatures

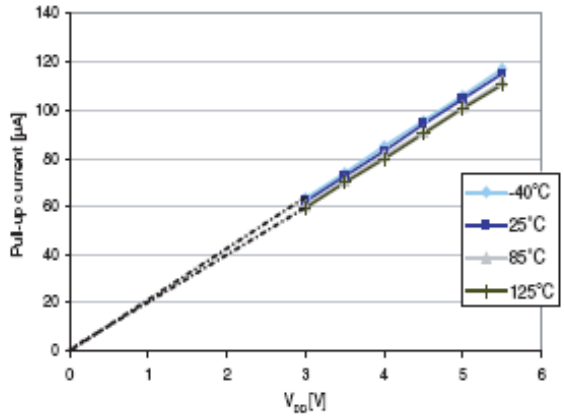


Figure 26. Typical pull-up resistance vs VDD @ 4 temperatures

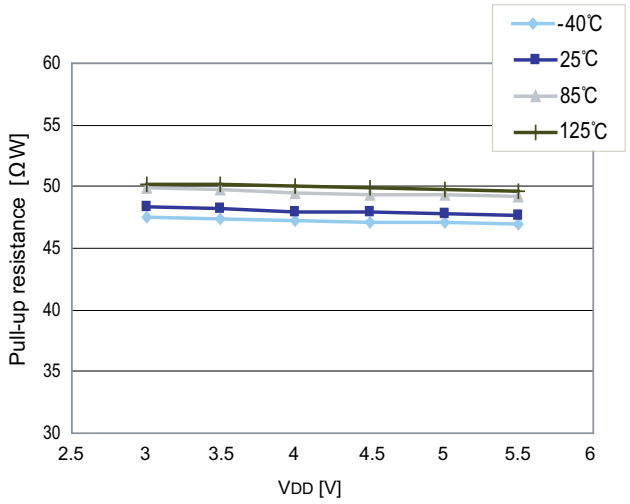


Table 38. Output driving current (standard ports)

Symbol	Parameter	Conditions	Min	Max	Unit
V_{OL}	Output low level with 8 pins sunk	I_{IO}= 10 mA, V_{DD} = 5 V	-	2.0	V
	Output low level with 4 pins sunk	I_{IO}= 4 mA, V_{DD} = 3.3 V	-	1.0(1)	
V_{OH}	Output high level with 8 pins sourced	I_{IO}= 10 mA, V_{DD} = 5 V	2.4	-	
	Output high level with 4 pins sourced	I_{IO}= 4 mA, V_{DD} = 3.3 V	2.0(1)	-	

1. Data based on characterization results, not tested in production

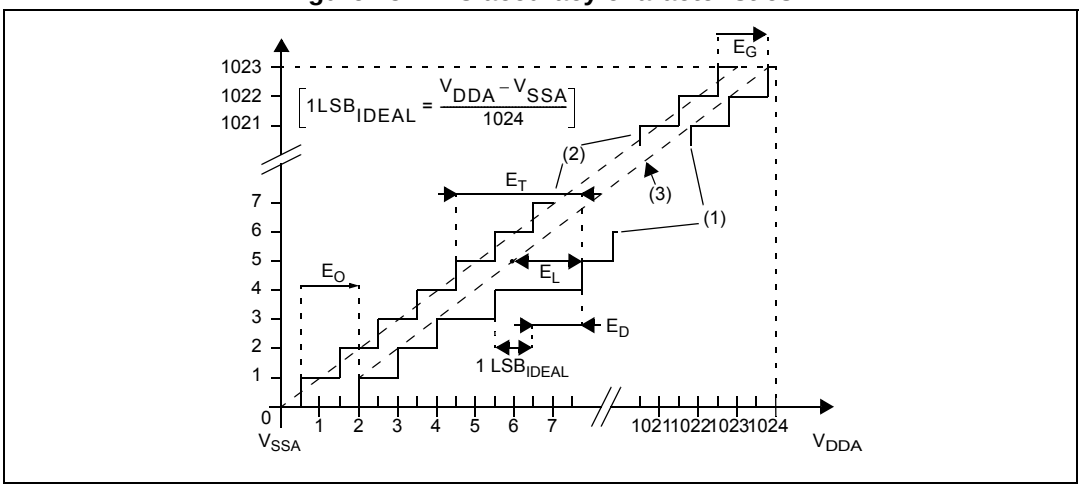
Table 42. SPI characteristics (continued)

Symbol	Parameter	Conditions[1]	Min	Max	Unit
$t_{r(SCK)}$ $t_{f(SCK)}$	SPI clock rise and fall time	Capacitive load: C = 30 pF	-	25	ns
$t_{su(NSS)}$[2]	NSS setup time	Slave mode	4 * t_{MASTER}	-	
$t_{h(NSS)}$[2]	NSS hold time	Slave mode	70	-	
$t_{w(SCKH)}$[2] $t_{w(SCKL)}$[2]	SCK high and low time	Master mode	$t_{SCK}/2$ - 15	$t_{SCK}/2$ + 15	
$t_{su(MI)}$[2] $t_{su(SI)}$[2]	Data input setup time	Master mode	5	-	
		Slave mode	5	-	
$t_{h(MI)}$[2] $t_{h(SI)}$[2]	Data input hold time	Master mode	7	-	
		Slave mode	10	-	
$t_{a(SO)}$[2][3]	Data output access time	Slave mode	-	3* t_{MASTER}	
$t_{dis(SO)}$[2][4]	Data output disable time	Slave mode	25	-	
$t_{v(SO)}$[2]	Data output valid time	Slave mode (after enable edge)	-	73	
$t_{v(MO)}$[2]	Data output valid time	Master mode (after enable edge)	-	36	
$t_{h(SO)}$[2]	Data output hold time	Slave mode (after enable edge)	28	-	
$t_{h(MO)}$[2]		Master mode (after enable edge)	12	-	

1. Parameters are given by selecting 10 MHz I/O output frequency.
2. Values based on design simulation and/or characterization results, and not tested in production.
3. Min time is for the minimum time to drive the output and the max time is for the maximum time to validate the data.
4. Min time is for the minimum time to invalidate the output and the max time is for the maximum time to put the data in Hi-Z.

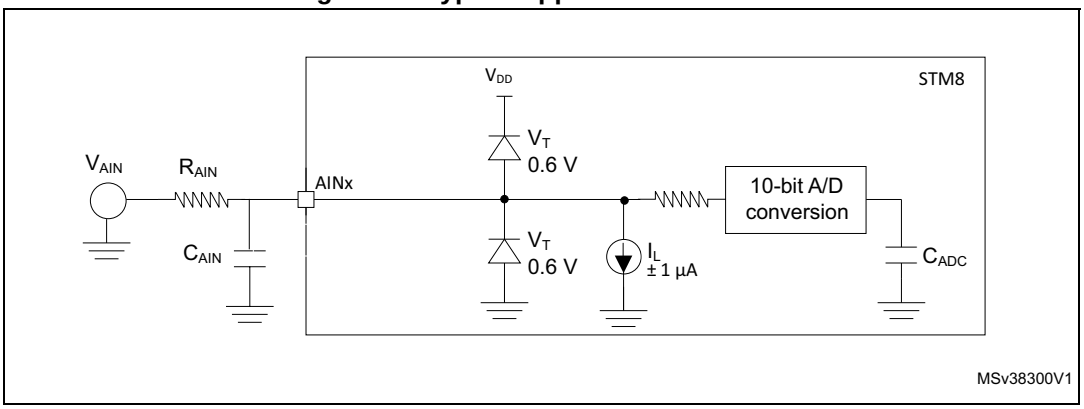
2. ADC accuracy vs. negative injection current: Injecting negative current on any of the analog input pins should be avoided as this significantly reduces the accuracy of the conversion being performed on another analog input. It is recommended to add a Schottky diode (pin to ground) to standard analog pins which may potentially inject negative current. Any positive injection current within the limits specified for $I_{INJ(PIN)}$ and $\Sigma I_{INJ(PIN)}$ in *Section 10.3.6* does not affect the ADC accuracy.

Figure 45. ADC accuracy characteristics



1. Example of an actual transfer curve
2. The ideal transfer curve
3. End point correlation line
   E_T = Total unadjusted error: maximum deviation between the actual and the ideal transfer curves.
   E_O = Offset error: deviation between the first actual transition and the first ideal one.
   E_G = Gain error: deviation between the last ideal transition and the last actual one.
   E_D = Differential linearity error: maximum deviation between actual steps and the ideal one.
   E_L = Integral linearity error: maximum deviation between any actual transition and the end point correlation line.

Figure 46. Typical application with ADC



1. Legend: R_{AIN} = external resistance, C_{AIN} = capacitors, C_{samp} = internal sample and hold capacitor.

Static latch-up

Two complementary static tests are required on 10 parts to assess the latch-up performance.

- A supply overvoltage (applied to each power supply pin), and
- A current injection (applied to each input, output and configurable I/O pin) are performed on each sample.

This test conforms to the EIA/JESD 78 IC latch-up standard. For more details, refer to the application note AN1181.

Table 50. Electrical sensitivities

Symbol	Parameter	Conditions	Class(1)
LU	Static latch-up class	$T_A = 25$ °C	A
		$T_A = 85$ °C	
		$T_A = 125$ °C	

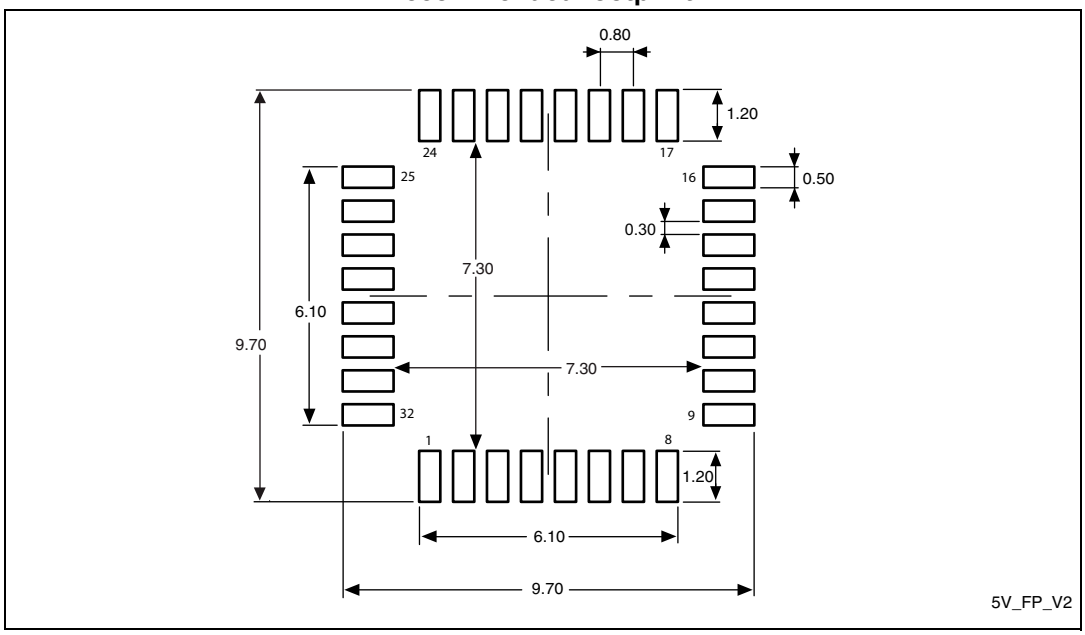
1. Class description: A Class is an STMicroelectronics internal specification. All its limits are higher than the JEDEC specifications, that means when a device belongs to class A it exceeds the JEDEC standard. B class strictly covers all the JEDEC criteria (international standard).

Table 53. LQFP32 - 32-pin, 7 x 7 mm low-profile quad flat package mechanical data

Symbol	millimeters			inches[1]		
	Min	Typ	Max	Min	Typ	Max
A	-	-	1.600	-	-	0.0630
A1	0.050	-	0.150	0.0020	-	0.0059
A2	1.350	1.400	1.450	0.0531	0.0551	0.0571
b	0.300	0.370	0.450	0.0118	0.0146	0.0177
c	0.090	-	0.200	0.0035	-	0.0079
D	8.800	9.000	9.200	0.3465	0.3543	0.3622
D1	6.800	7.000	7.200	0.2677	0.2756	0.2835
D3	-	5.600	-	-	0.2205	-
E	8.800	9.000	9.200	0.3465	0.3543	0.3622
E1	6.800	7.000	7.200	0.2677	0.2756	0.2835
E3	-	5.600	-	-	0.2205	-
e	-	0.800	-	-	0.0315	-
L	0.450	0.600	0.750	0.0177	0.0236	0.0295
L1	-	1.000	-	-	0.0394	-
k	0°	3.5°	7°	0°	3.5°	7°
ccc	-	-	0.100	-	-	0.0039

1. Values in inches are converted from mm and rounded to 4 decimal digits.

Figure 54. LQFP32 - 32-pin, 7 x 7 mm low-profile quad flat package recommended footprint

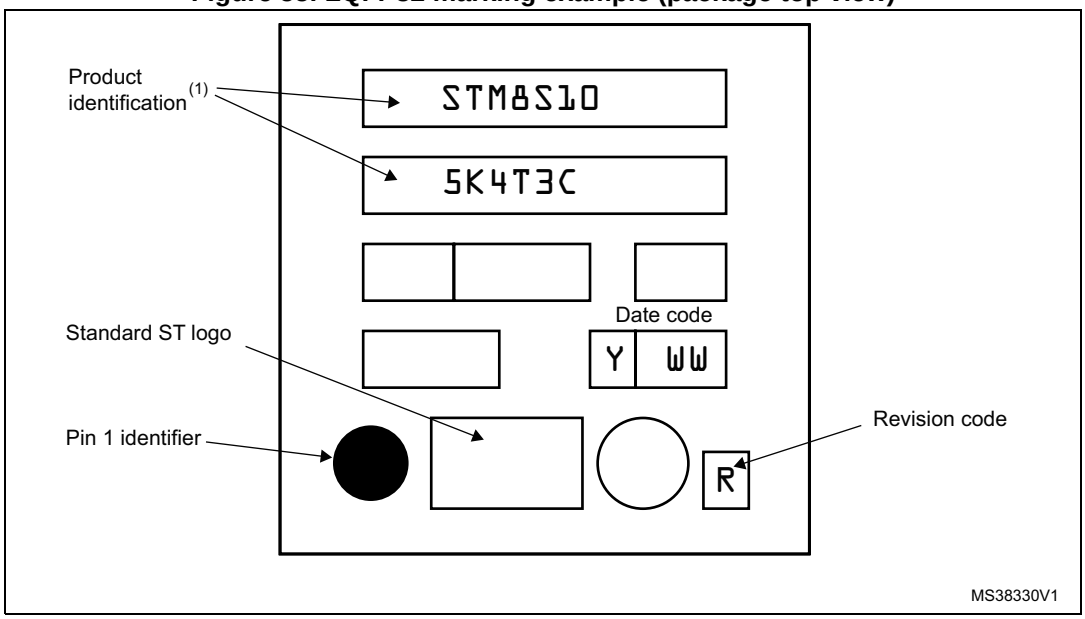


1. Dimensions are expressed in millimeters.

Device marking

The following figure gives an example of topside marking orientation versus pin 1 identifier location.

Figure 55. LQFP32 marking example (package top view)



1. Parts marked as “ES”,”E” or accompanied by an Engineering Sample notification letter, are not yet qualified and therefore not yet ready to be used in production and any consequences deriving from such usage will not be at ST charge. In no event, ST will be liable for any customer usage of these engineering samples in production. ST Quality has to be contacted prior to any decision to use these Engineering samples to run qualification activity.

Table 55. SDIP32 package mechanical data (continued)

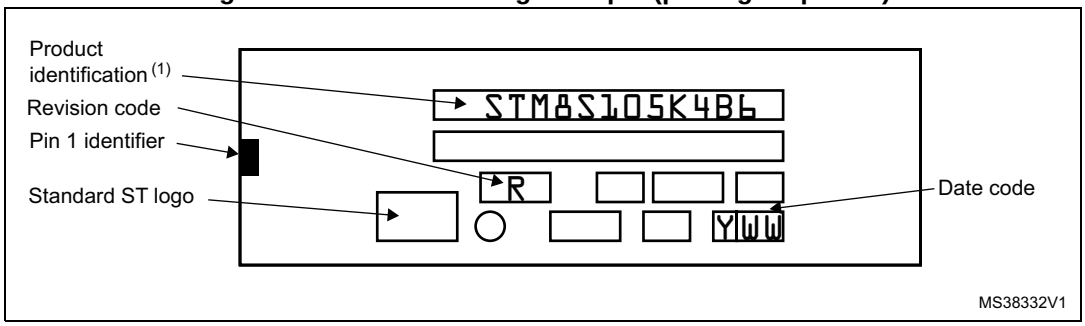
Dim.	mm			inches[1]		
	Min	Typ	Max	Min	Typ	Max
eB	-	-	12.700	-	-	0.5000
L	2.540	3.048	3.810	0.1000	0.1200	0.1500

1. Values in inches are converted from mm and rounded to 4 decimal digits

Device marking

The following figure gives an example of topside marking orientation versus pin 1 identifier location.

Figure 60. SDIP32 marking example (package top view)



1. Parts marked as “ES”,”E” or accompanied by an Engineering Sample notification letter, are not yet qualified and therefore not yet ready to be used in production and any consequences deriving from such usage will not be at ST charge. In no event, ST will be liable for any customer usage of these engineering samples in production. ST Quality has to be contacted prior to any decision to use these Engineering samples to run qualification activity.

13.1 STM8S105 FASTROM microcontroller option list

(last update: September 2010)

Customer	.....
Address	.....
Contact	.....
Phone number	.....
FASTROM code reference(1)	.....

1. The FASTROM code name is assigned by STMicroelectronics.

The preferable format for programing code is .Hex (.s19 is accepted)

If data EEPROM programing is required, a separate file must be sent with the requested data.

Note: See the option byte section in the datasheet for authorized option byte combinations and a detailed explanation.

Device type/memory size/package (check only one option)

FASTROM device	16 Kbyte	32 Kbyte
LQFP32	[ ] STM8S105K4	[ ] STM8S105K6
LQFP44	[ ] STM8S105S4	[ ] STM8S105S6
LQFP48	[ ] STM8S105C4	[ ] STM8S105C6

Conditioning (check only one option)

[ ] Tape and reel or [ ] Tray

Special marking (check only one option)

[ ] No [ ] Yes

Authorized characters are letters, digits, '.', '-', '/' and spaces only. Maximum character counts are:

LQFP32: 2 lines of 7 characters max: “_ _ _ _ _ _ _” and “_ _ _ _ _ _ _”

LQFP44: 2 lines of 7 characters max: “_ _ _ _ _ _ _” and “_ _ _ _ _ _ _”

LQFP48: 2 lines of 8 characters max: “_ _ _ _ _ _ _ _” and “_ _ _ _ _ _ _ _”

Temperature range

[ ] -40°C to +85°C or [ ] -40°C to +125°C

14 STM8 development tools

Development tools for the STM8 microcontrollers include the full-featured STice emulation system supported by a complete software tool package including C compiler, assembler and integrated development environment with high-level language debugger. In addition, the STM8 is to be supported by a complete range of tools including starter kits, evaluation boards and a low-cost in-circuit debugger/programmer.

14.1 Emulation and in-circuit debugging tools

The STice emulation system offers a complete range of emulation and in-circuit debugging features on a platform that is designed for versatility and cost-effectiveness. In addition, STM8 application development is supported by a low-cost in-circuit debugger/programmer.

The STice is the fourth generation of full featured emulators from STMicroelectronics. It offers new advanced debugging capabilities including profiling and coverage to help detect and eliminate bottlenecks in application execution and dead code when fine tuning an application.

In addition, STice offers in-circuit debugging and programming of STM8 microcontrollers via the STM8 single wire interface module (SWIM), which allows non-intrusive debugging of an application while it runs on the target microcontroller.

For improved cost effectiveness, STice is based on a modular design that allows you to order exactly what you need to meet your development requirements and to adapt your emulation system to support existing and future ST microcontrollers.

14.1.1 STice key features

- Occurrence and time profiling and code coverage (new features),
- Advanced breakpoints with up to 4 levels of conditions,
- Data breakpoints,
- Program and data trace recording up to 128 KB records,
- Read/write on the fly of memory during emulation,
- In-circuit debugging/programming via SWIM protocol,
- 8-bit probe analyzer,
- 1 input and 2 output triggers,
- Power supply follower managing application voltages between 1.62 to 5.5 V,
- Modularity that allows you to specify the components you need to meet your development requirements and adapt to future requirements.
- Supported by free software tools that include integrated development environment (IDE), programming software interface and assembler for STM8.

15 Revision history

Table 57. Document revision history

Date	Revision	Changes
05-Jun-2018	1	Initial release.
23-Jun-2018	2	Corrected the number of high sink outputs to 9 in I/Os in *Features*. Updated part numbers in *STM8S105xx access line features*.
12-Aug-2008	3	Updated the part numbers in *STM8S105xx access line features*. USART renamed UART1, LINUART renamed UART2. Added *Table: Pin-to-pin comparison of pin 7 to 12 in 32-pin access line devices.*
17-Sep-2008	4	Removed STM8S102xx and STM8S104xx root part numbers corresponding to devices without data EEPROM. Updated STM8S103 pinout section Added low and medium density Flash memory categories. Added Note 1 in *Section: Current characteristics.* Updated *Section: Option bytes.*
05-Feb-2009	5	Updated STM8S103 pinout. Updated number of High Sink I/Os in the pinout section. TSSOP20 pinout modified (PD4 moved to pin 1 etc.) Added WFQFN20 package Updated *Section: Option bytes.* Added *Section: Memory and register map.*
27-Feb-2009	6	Removed STM8S103x products (separate STM8S103 datasheet created). Updated *Section: Electrical characteristics.*

Table 57. Document revision history (continued)

Date	Revision	Changes
12-May-2009	7	Added SDIP32 silhouette and package to *Features* and *Section: SDIP32 package mechanical data*; updated *Section: Pinout and pin description*. Updated VDD range (2.95 V to 5.5 V) on Features. Amended name of package VQFPN32. Added Table 5 on page 22. Updated *Section: Auto wakeup counter.* Updated pins 25, 30, and 31 in *Section: Pinout and pin description*. Removed Table 7: Pin-to-pin comparison of pin 7 to 12 in 32-pin access line devices. Added *Table: Description of alternate function remapping bits [7:0] of OPT2.* *Section: Electrical characteristics:* Updated VCAP specifications; updated Table 15, Table 18, Table 20, Table 21, Table 22, Table 23, Table 24, Table 25, Table 26, Table 27, Table 29, Table 35, and Table 42; added current consumption curves; removed Figure 20: typical HSE frequency vs fcpu @ 4 temperatures; updated Figure 13, Figure 14, Figure 15, Figure 16 and Figure 17; modified HSI accuracy in Table 33 ; added Figure 44; modified f_{SCK}, $t_{V(SO)}$ and $t_{V(MO)}$ in Table 42; updated figures and tables of High speed internal RC oscillator (HSI); replaced Figure 23, Figure 24, Figure 26, and Figure 39. *Section Package information:* updated *Section: Thermal characteristics* and removed Table 57: Junction temperature range. Updated *Section: STM8S105xx access line ordering information scheme.*
10-Jun-2009	8	Document status changed from “preliminary data” to “datasheet”. Standardized the name of the VFQFPN package. Removed ‘wpu’ from I2C pins Section: Pinout and pin description

Table 57. Document revision history (continued)

Date	Revision	Changes
21-Sep-2010	10	*Table: Legend/Abbreviations for pinout tables:* updated "reset state"; removed "HS", (T), and "[ ]". *Section: Pin description for STM8S105 microcontrollers:* added footnotes to the PF4 and PD1 pins. *Table: I/O port hardware register map:* changed reset status of Px_IDR from 0x00 to 0xXX. *Table: General hardware register map*: Standardized all address and reset state values; updated the reset state values of the RST_SR, CLK_SWCR, CLK_HSITRIMR, CLK_SWIMCCR, IWDG_KR, UART2_DR, and ADC_DRx registers; replaced reserved address "0x00 5248" with the UART2_CR5. *Section: Recommended reset pin protection*: replaced 0.01 µF with 0.1 µF Updated *Figure: Typical application with I2C bus and timing diagram*. Updated *Table: ADC accuracy with RAIN < 10 kohm , VDDA = 5 V* footnote 1 in and Table: ADC accuracy with RAIN < 10 kohm RAIN, VDDA = 3.3 V. *Section: STM8S105 FASTROM microcontroller option list*: removed bits 6 and 7 from OPT1 user boot code area (UBC); added "disable" to 00h and "enable" to 55h of OPTBL bootloader option byte. *Section: VFQFPN Package Mechanical data*: replaced note 1 and added note 2.
04-Apr-2012	11	Removed VFQFPN32 package. Modified *Section: Description*. Remove weak pull-up input for PE1 and PE2 in *Table: Pin description for STM8S105 microcontrollers* Updated *Table: Interrupt mapping* for TIM2 and TIM4. Updated notes related to VCAP in xm-replace_text General operating conditions. Added values of t_R/t_F for 50 pF load capacitance, and updated note in *Section: I/O static characteristics*. Updated typical and maximum values of RPU in *Table: I/O static characteristics* and *Table: RST pin characteristics*. Changed SCK input to SCK output in *Table: SPI serial peripheral interface.* Added Θ_{JA} for UFQFPN32 and SDIP32 in *Table: Thermal characteristics*, and updated *Section: Selecting the product temperature range*
28-Jun-2012	12	Added UFQFPN package thickness in *Figure: STM8S105xx access line ordering information scheme*