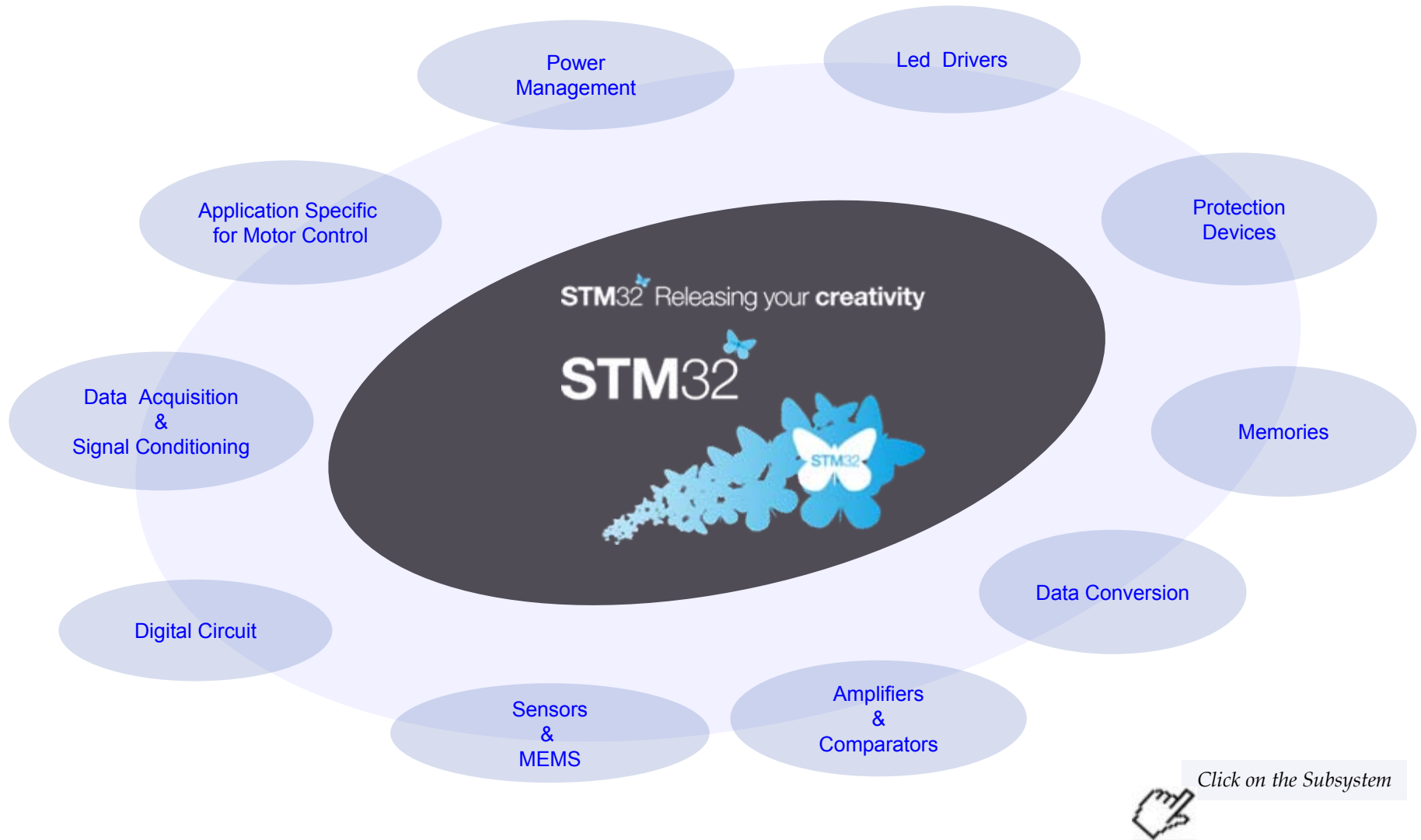


STM32 associated products



STM32 (ARM CORTEX-M3) associated products



Power Management (1/4)

The voltage regulator is probably the device that is used with the majority of applications. The STM32 ARM® Cortex™-M3 requires a 2.0-3.6V operating voltage supply (VDD), with a total current up to 150mA (included the I/O current). Depending on the application requirements, it is possible to use either a linear or a switching voltage regulator. The following are just a few of the many voltage regulators ST offers:

Linear Regulators

LD3985 :150mA, En, SOT23-5L, TSOT23-5L,CSP

LD2985 :150mA ,En, SOT23-5L

LD59015*: 150mA,Low Noise, Low Iq, High PSRR, En, SOT323-5L

LDLN015*: 150mA Ultra Low Noise, High PSRR, En, DFN2x2-6L

LD39015: 150mA, low Iq, En, SOT666, SOT23-5L,CSP

LD39115J/SJ: 150mA, low Iq, En, Low noise, 0.8x0.8 CSP

STLQ015*: 150mA, Very low Iq, En,SOT666

LK112S: 200mA, SOT23-5L, En

LDS3985:300mA, En, DFN3x3-6L, SOT23-5L

LD39030SJ*: 300mA, low Iq, En, Low noise, 0.8x0.8mm CSP

LD39050: 500mA, low Iq, En, PG, DFN3x3-6L

LD39080: 800mA,En, PPAK, DFN8

LD39100: 1A, low Iq, En, PG, DFN3x3-6L

ST1L05: 1.3A, En, PG, DFN3x3-6L

Step-Down Converters

ST1S12: 700mA, Synchronous, TSOT23-5L

L5980: 700mA, VFQFPN8

L6928: 800mA, MSOP8

ST1S03: 1.5A, DFN3x3-6L

ST1S06: 1.5A,Synchronous, DFN3x3-6L

ST1S09: 2A,Synchronous, DFN3x3-6L

ST1S10: 3A Synchronous, DFN8

ST2S06A33: Double Output, 500mA, 3.3V + ADJ

Step-Up Converters

L6920DB: 150mA, MSOP8

Multifunction Regulators

STBB1: 1A synchronous, DFN3x3-10L

STBB2: 800mA, 3MHz, synchronous, CSP

En=Enable Pin, PG=Power Good pin

* Product under development. Contact Division

STM32 Home page



Power Management (2/4)

The STM32 ARM Cortex has an embedded reset but some applications need to be independent on micro hardware to ensure more robustness and reliability to the system. Moreover a tighter accuracy on voltage reference than the one offered by the STM32 can be required (+/-5% accuracy). ST offers a comprehensive family of reset, voltage detectors and supervisors.

Microprocessor Supervisor & Reset ICs

[STM1061](#) : low power voltage detectors +/-2% accuracy

[STM809/10/11/12](#) : Push-Pull Reset with Manual Reset Input

[STM1001](#) : Active Low open drain Reset

[STM181x](#) : Reset with open drain, push-pull output and Manual Reset Input

[STM63xx/68xx](#), [STM70x](#), [STM69x](#), [STM8xx](#) : Supervisor with Reset Output, Watchdog, Switch Over and PFI/PFO

Voltage Reference, Low Power Shunt

An external low power voltage reference can be used to maintain ADC accuracy independent of Vcc variation such as in battery-powered applications.

[TS431](#): adjustable shunt reference from 1.24V to 6V, SOT23-5, TO-92

[TS432](#): adjustable shunt reference from 1.24 to 10V, SOT23-3

[*STM32 Home page*](#)



Power Management (3/4)

Battery Management

[L6924D](#): Battery Charger System for Li-Ion / Li-Polymer, VFQFPN16

[STBC08](#): 800mA Standalone linear Li-Ion Battery charger with thermal regulation, DFN6

[STC4054](#): 800mA Standalone linear Li-Ion Battery charger with thermal regulation, TSOT23-5L

ST4078* – Dual input linear battery charger (USB and wall adapter), DFN3x3-10L

External battery management circuits can be used to charge and monitor a Li-Ion battery in portable applications.

These devices are driven by a standard I²C link:

[STw4102](#): Dual USB/wall adapter Li-ion battery charger with gas gauge

[STC3100](#): Battery monitor IC with Coulomb counter/gas gauge

* Product under development. Contact Division

STM32 Home page



Power Management (4/4)

Multifunction Linear Regulator

STCS1: Linear Single channel constant current LED driver

STLD20: 4 white LED boost power supply

STLA02*: 6 white/blue LED boost power supply

STLD40: 10 white LED boost power supply

STLD41*: 40 white LED boost power supply

Multifunction Regulators

STOD1812: PMOLED (Passive Matrix OLED) display power supply

STOD2540: PMOLED (Passive Matrix OLED) display power supply

STOD1412: AMOLED (Active Matrix OLED) display power supply

STOD02: AMOLED (Active Matrix OLED) 2.5"- 3" display power supply

STOD03*: AMOLED (Active Matrix OLED) 3"- 4" display power supply

STOD04*: AMOLED (Active Matrix OLED) 7" display power supply

* Product under development. Contact division.

STM32 Home page

LED Drivers (1/2)

LED driver

If a great amount of external LEDs have to be driven then:

24 bit:

[STP24DP05](#): 24-bit constant current (5-80mA) LED driver with outputs error detection

16 bit:

[STP16CP05](#): 16-bit constant current (5-100mA) LED driver

[STP16CPS05](#): 16-bit constant current (5-100mA) LED driver with auto power saving

[STP16DP05](#): 16-bit constant current (5-100mA) LED driver with outputs error detection

[STP16DPS05](#): 16-bit constant current (5-100mA) LED driver with outputs error detection and auto power saving

[STP16CPC05](#): 16-bit constant current (5-100mA) LED driver with balanced outputs

[STP16CPP05](#): 16-bit constant current (3-40mA) LED driver

[STP16CPPS05](#): 16-bit constant current (3-40mA) LED driver with auto power saving

[STP16DPP05](#): 16-bit constant current (3-40mA) LED driver with outputs error detection

[STP16DPPS05](#): 16-bit constant current (3-40mA) LED driver with outputs error detection and auto power saving

8 Bit:

[STP08CP05](#): 8-bit constant current (5-100mA) LED driver

[STP08DP05](#): 8-bit constant current (5-100mA) LED driver with outputs error detection

[STPIC6C595](#): 8-bit LED Driver with over-voltage protection

[STPIC6D595](#): 8-bit LED Driver

4 bit:

[STP04CM05](#): 4-bit constant current (80-400mA) power LED driver

STM32 Home page



LED Drivers (2/2)

VFD/LED Front Panel Controllers

[STLED316S](#): 6-digit LED controller with key scan

[STFPC311](#): VFD controller/Driver, 12 seg/16 Dig to 20 Seg/8 Dig, SPI protocol

[STFPC320](#): VFD controller/Driver, 12 seg/16 Dig to 20 Seg/8 Dig, I2C protocol

[STM86312](#): VFD controller/Driver, 11 Seg/11 Dig to 16 seg/4 Dig, SPI protocol



STM32 Home page



Protection Devices

EMI Filtering & Signal Conditioning

[USBLC6-2](#): Very low capacitance ESD protection for USB2.0.

[USBUF01P6](#): EMI filter and line termination for USB upstream ports (low and full speed)

[ESDA25B1](#): Transil™ array for bidirectional ESD protection, 25V breakdown, RS232

[ESDA25-4BP6](#): Transil™ array for bidirectional ESD protection, 25V breakdown, RS232

[ESDA14V2BP6](#): Transil™ array for bidirectional ESD protection, 14.2V breakdown, RS485

ESD Suppressor

[ESDA5V3SC](#): Quad Transil™ array for ESD protection, 5.3V breakdown

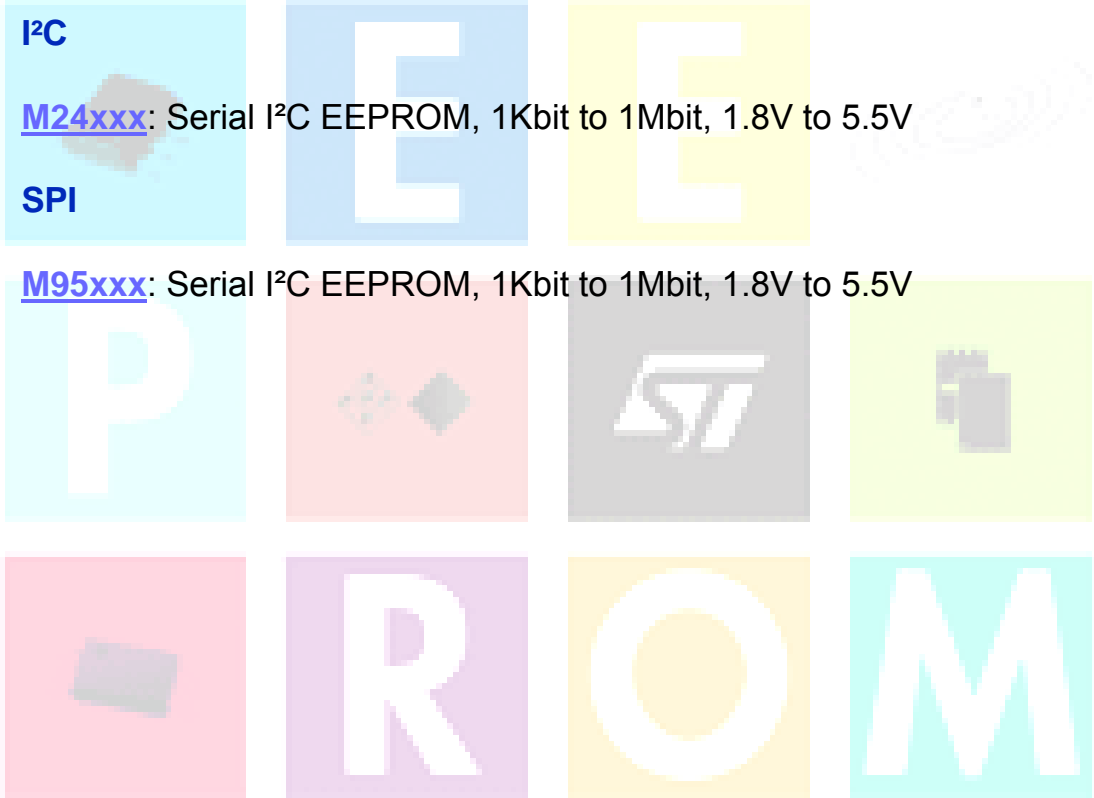
Memories

I²C

M24xxx: Serial I²C EEPROM, 1Kbit to 1Mbit, 1.8V to 5.5V

SPI

M95xxx: Serial I²C EEPROM, 1Kbit to 1Mbit, 1.8V to 5.5V



Data Conversion (1/2)

RS232 interfaces @ 3V

The STM32 ARM® Cortex™-M3 handles the RS232 protocol, but it needs an external interface to set the correct signal electrical levels:

[ST3222Exx](#): 2 Drivers & 2 Receivers, ±15KV ESD protection

[ST3232Exx](#): 2 Drivers & 2 Receivers, ±15KV ESD protection

[ST3243Exx](#): 3 Drivers & 5 Receivers, ±15KV ESD protection

RS485 interfaces @ 3V

The STM32 ARM® Cortex™-M3 handles the RS485 protocol, but it is needs an external interface to set the signal electrical levels:

[ST3485E](#): 1 Transceiver, ±15KV ESD protection

[ST1480A](#): 1 Transceiver, ±15KV ESD protection

Smart card interface

[ST8004](#): Analog interface for asynchronous 3V and 5V smart cards.

[ST8024](#): Analog interface for asynchronous 3V and 5V smart cards

Camera Module Interface

The STM32 ARM® Cortex™-M3 can be interfaced with serial camera modules by using a deserializer chip:

[STSMIA832](#): 1.8 V / 2.8 V high speed dual differential line receivers, (SMIA) decoder deserializer.

Charger Detection Ics

[STUSBCD01](#): USB charger detection interface, CSP

STM32 Home page



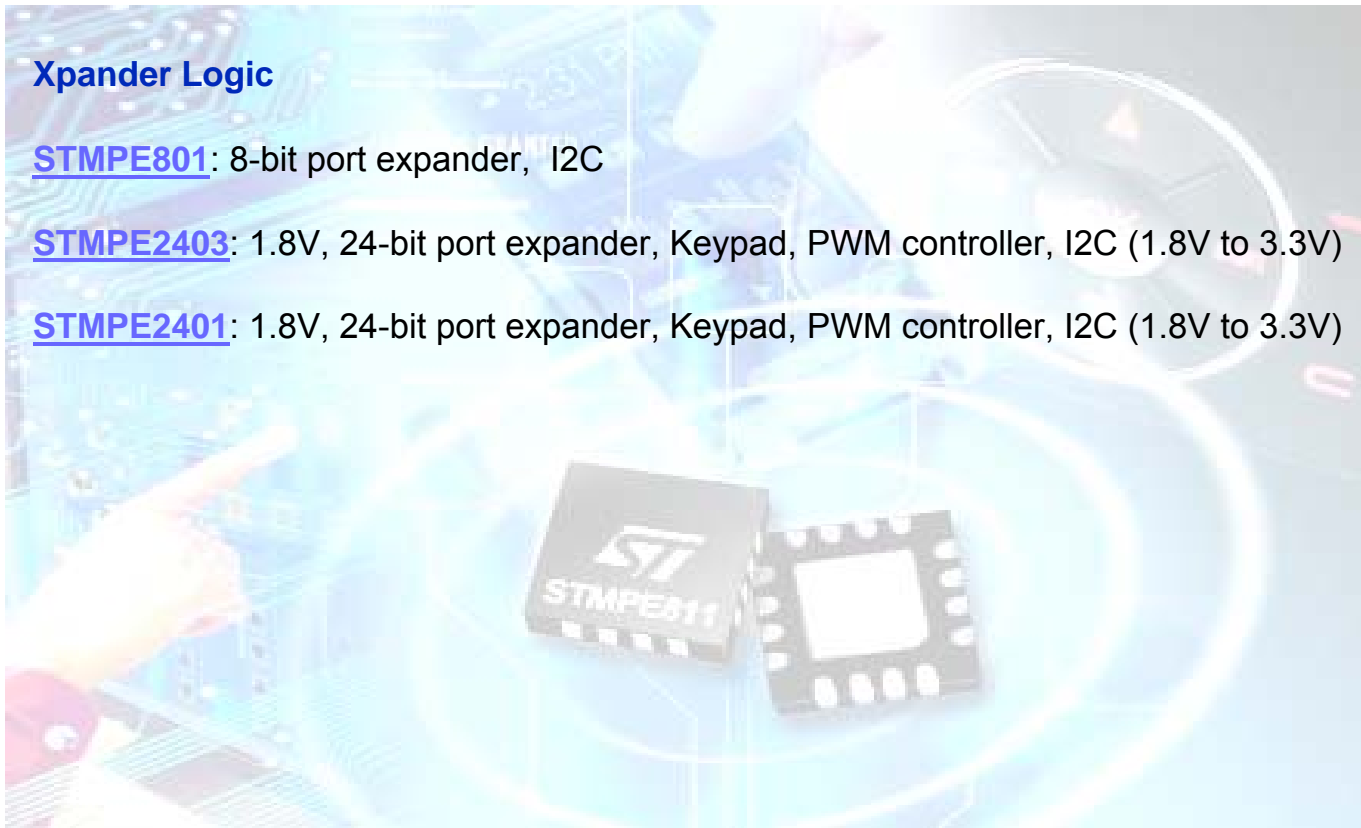
Data Conversion (2/2)

Xpander Logic

[STMPE801](#): 8-bit port expander, I2C

[STMPE2403](#): 1.8V, 24-bit port expander, Keypad, PWM controller, I2C (1.8V to 3.3V)

[STMPE2401](#): 1.8V, 24-bit port expander, Keypad, PWM controller, I2C (1.8V to 3.3V)



Amplifiers and Comparators (1/3)

Offering low power consumption, high bandwidth and good accuracy, the [TSV6xx](#) families serve applications such as portable medical equipment, instrumentation, signal-conditioning systems, sensor interfaces, and active filtering.

Operating with same range of power supplies than the STM32, they can easily be used as signal conditioner to drive the ADC of the STM32.

Operational Amplifiers

[TSV611/2](#): Rail-to-rail micro-power op-amps: $10\mu\text{A}$ – 120kHz, $V_{io} = 1\text{mV}$ max

[TSV62x](#): Rail-to-rail micro-power op-amps with standby version: $29\mu\text{A}$ – 420kHz, $V_{io} = 0.8\text{mV}$ max

[TSV63x](#): Rail-to-rail micro-power op-amps with standby version: $60\mu\text{A}$ – 880kHz, $V_{io} = 0.5 / 0.8\text{mV}$ max

[TSV629x*](#): Rail-to-rail micro-power op-amps with standby version: $29\mu\text{A}$ – 1.2MHz, $G \geq +4$

[TSV639x*](#): Rail-to-rail micro-power op-amps with standby version: $60\mu\text{A}$ – 2.5MHz, $G \geq +4$

ST MICROELECTRONICS Micropower Rail to Rail Operational Amplifiers

[STM32 Home page](#)

* Product under development. Contact Division



Amplifiers and Comparators (2/3)

Audio Amplifiers

The STM32 ARM® Cortex™-M3 can be used to generate an audio signal in PWM format, but the device doesn't have the capability to drive directly a speaker (power limitation). Using an external audio amplifier it is possible to filter the signal and add enough power to drive a speaker up to 1.2W.

TS92x: Rail-to-rail high output current (80mA) operational amplifier series

[TS421](#): 360mW mono audio amplifier with active high/low standby mode

[TS486](#) & [TS487](#): 100mW stereo headphone amplifier with active low/high standby mode

[TS4601](#): High performance stereo headphone amplifier with capless output

[TS4871](#): 1W mono audio power amplifier with standby active high

[TS4990](#): 1.2W mono audio power amplifier with active low standby mode

[TS4985](#): 2x1.2W stereo audio power amplifier with dedicated standby pin

To reach an output power of up to 3W it is possible to use an external Class D audio amplifier such as:

[TS4962M](#): 3W filter-free class D audio power amplifier

[TS2007](#): 3W filter-free Class D audio power amplifier with 6-12dB fixed gain select Microphone preamplifier

[TS2012](#): 3W stereo filter-free class D audio power amplifier

[TS4999](#): 3W stereo filter-free class D audio power amplifier with 3D effect

[TS472](#): Very low noise microphone preamplifier, 2V biased output, active low standby mode

[TS4657](#): Stereo audio line driver with integrated DACs

[*STM32 Home page*](#)



Amplifiers and Comparators (2/3)

Comparators

[TS7211](#): Single BiCMOS rail-to-rail micro-power comparator, push-pull output

[TS7221](#): Single BiCMOS rail-to-rail micro-power comparator, open drain output

[TS86x](#): rail to rail micro-power BiCMOS comparators family (single, dual & quad), push-pull output

[TS3021/2](#): Rail-to-rail 1.8V high-speed comparators (single dual), push-pull output



Sensors & MEMS (1/2)

Capacitive Touch Sensor

[STMPE821](#): 8 channel cap-sensing, I2C

[STMPE1208](#): 12 cap-sensing channel + 12 GPIO, I2C

[STMPE16/24M31](#): 16/24 High Sensitivity cap-sensing channel +16 PWM + 16 GPIO

Resistive and Touch Screen Controller

[STMPE811](#): resistive touch screen controller with 8-bit port expander, 12bit ADC, I2C

Temperature sensor

The STM32 ARM® Cortex™-M3 has an internal temperature sensor, which generate a voltage proportional to the variation in temperature. The conversion range is between $2\text{ V} < V_{DDA} < 3.6\text{ V}$. The temperature sensor is internally connected to the ADC_IN16 input channel, which is used to convert the sensor output voltage into a digital value. However, in all those applications where the temperature sensor has to be remotely placed or tighter accuracy is required a stand-alone sensor must be used.

[STCN75](#): Digital temperature sensor, thermal watchdog, I2C/SMBus, 0.5C accuracy @ 25C, Shut-down mode

[STDS75](#): Digital temperature sensor, thermal watchdog, I2C/SMBus, 0.5C accuracy @ 25C, Shut-down mode

[STLM20](#): Precision analog temperature sensor, ultra small and low power

[STLM75](#): Digital temperature sensor, thermal watchdog, I2C/SMBus, 0.5C accuracy @ 25C, Shut-down mode

[STTS75](#): Digital temperature sensor, thermal watchdog, I2C/SMBus, 0.5C accuracy @ 25C, SMBus Time-out, One-Shot power saving mode

Current Sensing Amplifiers

[TSC101](#): High side current sensing amplifier

[TSC102](#): High side current sensing amplifier + signal conditioning amplifier

[STM32 Home page](#)



Sensors & MEMS (2/2)

Accelerometers

Digital:

[LIS302DL](#): 3-axis accelerometer, $\pm 2g/\pm 8g$, 8-bit resolution, I²C/SPI digital output interface (LGA 3x5x0.9)

[LIS331DL](#): 3-axis accelerometer, $\pm 2g/\pm 8g$, 8-bit resolution, I²C/SPI digital output interface (LGA 3x3x0.9)

[LIS3LV02DL](#): 3-axis accelerometer, $\pm 2g/\pm 6g$, 12-bit resolution, I²C/SPI digital output interface (LGA 7.5x4.4x0.9)

[LIS331DLH](#): 3-axis accelerometer, $\pm 2/4/8g$, 12-bit resolution, low power, I²C/SPI digital output interface (LGA 3x3x0.9)

[LIS331DLM](#): 3-axis accelerometer, $\pm 2/4/8g$, 8-bit resolution, low power, I²C/SPI digital output interface (LGA 3x3x0.9)

[LIS331DLF](#): 3-axis accelerometer, $\pm 2/4/8g$, 6-bit resolution, low power, I²C/SPI digital output interface (LGA 3x3x0.9)

Analog:

[LIS344ALH](#): 3-axis accelerometer, $\pm 2g/\pm 6g$, analog output, high resolution (LGA 4x4x1.5)

[LIS344AL](#): 3 axis accelerometer $\pm 3.5g$, analog output (LGA 4x4x1.5)

[LIS332AR](#): 3 axis accelerometer $\pm 2g$, analog output, ultra stability over temperature (LGA 3x3x0.9)

[LIS352AR](#): 3 axis accelerometer $\pm 2g$, analog output, ultra stability over temperature (LGA 3x5x0.9)

[LIS332AX](#): 3 axis accelerometer $\pm 2g$, absolute analog output, ultra stability over temperature (LGA 3x3x0.9)

[LIS352AX](#): 3 axis accelerometer $\pm 2g$, absolute analog output, ultra stability over temperature (LGA 3x5x0.9)

Gyroscope

[LY5xxALH](#): single axis yaw rate analog gyroscope (Full scale from 30dps up to 6000dps) (LGA 5x5x1.5)

[LPY5xxAL](#): two axis pitch and yaw rate analog gyroscope (Full scale from 30dps up to 6000dps) (LGA 5x5x1.5)

[LPR5xxAL](#): two axis pitch and roll rate analog gyroscope (Full scale from 30dps up to 6000dps) (LGA 5x5x1.5)

STM32 Home page



Digital Circuit

The STM32 ARM® Cortex™-M3 logic inputs are 5 volt tolerant, so a level translator is not needed for a 5V input signal. Due to the input thresholds, a level translator is necessary with a 1.8V input signal.

The outputs of the STM32 can be configured as open drain and, depending on the reference voltage of the external pull-up, it is possible to create a level translator, but the output current capability is low. Using a level translator increases the current capability.

Level Translator

1.8V to 5.0V

[ST2329](#): 2-bit Dual Supply Level Translator, 1.8V to 5V

[ST2349](#): 4-bit Dual Supply Level Translator, 1.8V to 5V

[ST2378E](#): 8-bit Dual Supply Level Translator, 1.71V to 5.5V, 15KV ESD protection, no direction pin

3.0V to 5.0V

[74LVXC3245](#): 8-bit dual supply level translator, 2.7V to 5.5V.

1.8V to 3.0V

[74VCX1632245](#): 16-bit dual supply Level Translator 1.8V to 3V.

STM32 Home page

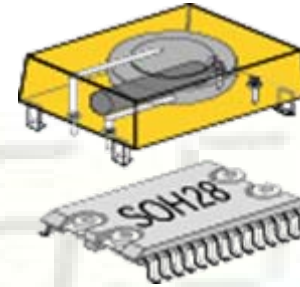


Data Acquisition and Signal Conditioning

The STM32 ARM Cortex has an embedded timer to make a Real Time Clock. A stand-alone RTC embeds the following key features:

- ✓ Time data available in BCD format
- ✓ 32kHz output (a Bluetooth module can be driven)
- ✓ Back-up voltage down to 1V
- ✓ Max. Operating Voltage up to 4.4V or 5.5V (can be directly connected to a rechargeable lithium ion battery)
- ✓ Very low power consumption down to 350nA (ideal for portable applications)
- ✓ Analog Calibration guarantying down to ± 5 ppm after 2 reflows (performed at ST fab for snapat RTC versions)
- ✓ 100th and 10th of seconds time granularity
- ✓ Allows 12.5pF load crystal capacitance (a standard value and the cheapest in the market)
- ✓ Alarm generation capability available in back-up mode on dedicated output
- ✓ Many package options (with and without embedded crystal and battery)

[M41T00S](#), [M41T81S](#), [M41T6x](#), [M41T83/93](#), [M41ST87](#), [M41ST84/85/95](#)



STM32 Home page

Application Specific for Motor control

[L6208](#): DMOS driver for bipolar stepper motor

[L6206](#) : DMOS dual full bridge driver

[L6235](#): DMOS driver for three-phase brushless dc motor

[L638x/L639x](#): HV half-bridge drivers IGBTs/ Power MOSFETs



STM32 Home page

