S2, SPIRIT, BlueNRG, STM, ST, STS1, BAL, BALF, MLPF, STW, STuW, B-UWB
Технические характеристики

Wireless Connectivity

Overview

STMicroelectronics is committed to offering reliable and cost-effective **wireless connectivity** solutions:

- To connect smart objects to the internet and the cloud, or, in a broader sense, to the Internet of Things (IoT).
- To remotely monitor, configure and control appliances and devices.
- To replace cables & connectors with wireless communications.

Wireless Connectivity: multiple protocols for a large diversity of applications

The wireless technology behind every network features a specific communication range, power efficiency, latency, bandwidth, and networking topology. These are some of the most important parameters defined by the **many standard communication protocols** available as of today.

With the growing importance of **wireless sensor networks** and even more broadly the Internet of Things related devices, **there is virtually no electronic system that does not require wireless connectivity.** Typical use cases go from consumer to industrial applications such as for wearable devices, smart-building and home-automation, asset-tracking solutions, or medical devices.

Products & devices covering the widest range of wireless connectivity technologies

ST's portfolio offers an extensive variety of RF solutions covering most of the key protocols and standards as well as proprietary radio solutions.

Short Range

BLE Application Processors	BLE Network Co-Processors	Thread	Zigbee	Ultra Wideband	60 GHz Contactless

matter

Long Range

LoRaWAN	Sigfox	Wireless M-Bus	KNX-RF	Wi-Sun	6LoWPAN	Proprietary Sub-1GHz

Narrowband-IoT (NB-IoT)
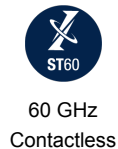
From ultra-low-power RF transceivers to network processors ICs and a comprehensive family of Wireless System-on-Chip, including pre-certified wireless modules to simplify quick adoption of those technologies. The ST wireless portfolio covers the widest range of connectivity technologies including:

- Sub-1GHz long-range networking devices (enabling Wireless M-Bus, Sigfox and LoRaWAN® connectivity)
- 60 GHz short range millimetre-wave RF
- Bluetooth® Low Energy (BLE)
- Zigbee 3.0
- OpenThread
- Narrowband IoT (NB-IoT) with global navigation satellite system (GNSS).

To speed up your time to market, reference designs and RF modules are available as well as a complete development ecosystem and framework with software packages, tools, protocol stacks, example applications, evaluation boards and quick start tutorials. This represents an all-in-one solution for a smarter and more connected world with the most sustainable wireless technologies.

Long Range

Overview

A standard-compliant wireless technology, optimized to fit long range connectivity, power efficiency and bandwidth requirements, is behind every network - regardless of its nature or purpose. With the growing importance of wireless sensor networks and the IoT, most electronic systems require wireless connectivity.

ST's portfolio includes a variety of RF transceivers, wireless microcontrollers, network processors ICs and fully certified modules for key wireless connectivity technologies including Sub-1GHz, LoRaWAN, Sigfox, Wireless M-Bus (wM-Bus), LTE Cat-NB2 narrow band Internet-of-Things (NB-IoT) certified with GNSS, WiSUN and 6LowPAN.

Product	Product	Product
LoRaWAN products	**Sigfox products**	**Wireless M-Bus products**
LoRa® is a wireless communication technology developed to create the low-power, wide-area networks (LPWANs) required for machine-to-machine (M2M) and Internet of Things (IoT) applications.	With a global network able to listen to billions of devices broadcasting data, Sigfox is the world's leading provider of connectivity for the Internet of Things (IoT).	The Wireless M-Bus – or Wireless Meter Bus – is an open standard developed for very power-efficient smart metering and Advanced Metering Infrastructure (AMI) applications and it is quickly spreading in Europe for automatic electricity, gas, water and heat meter reading applications.

Product	Product	Product
KNX-RF products	**Wi-Sun products**	**6LoWPAN products**
An open standard for residential and commercial building automation, the KNX communication protocol offers both wired and wireless node topologies ensuring high interoperability between devices and systems without the need for a central gateway.	Wi-SUN® specifications bring Smart Ubiquitous Networks to service providers, utilities, municipalities/local government and other enterprises, by enabling interoperable, multi-service and secure wireless mesh networks.	Designed to break down the barriers to using IPv6 in low-power, processing-limited embedded devices over low-bandwidth wireless networks, 6LoWPAN is ideal for energy-sensitive applications that need to connect to the Cloud.

Product	Product
Proprietary Sub-1 GHz products	**NB-IoT products**
Our portfolio of sub-1 GHz solutions includes transmitters, transceivers, modules and Systems-on-Chip supporting a host of different applications in home and building automation (Smart Home and Smart City) as well as industrial process control (Smart Factory) and automated metering infrastructures (Smart Grid) or, more broadly, for the Internet of Things (IoT).	ST's narrow band Internet-of-Things (NB-IoT) module is a high-performance, ultra compact, low-power, LTE Cat-NB2 certified and GNSS industrial module series offering worldwide band coverage and advanced features.

Wireless Connectivity / Long Range/6LoWPAN Products

Part Number	General Description	Package	Grade	Operating Temperature (°C) min	Operating Temperature (°C) max	Operating Voltage (V) min	Operating Voltage (V) max	Standby Current (µA) typ	RX current (mA) typ	TX current (mA) (@ Max Output Power) max	RX sensitivity (dBm) typ	Output Power (dBm) min	Output Power (dBm) max	Data Rate (kbps) min	Data Rate (kbps) max
S2-LP	Ultra-low power, high performance, sub-1GHz transceiver	QFN-24L	Industrial	-40	105	1.8	3.6	0.3	7	10	-130	-30	16	0.1	500
SPIRIT1	Low data rate, low power Sub 1GHz transceiver	VFQFPN 20 4x4x1.0	Industrial	-40	85	1.8	3.6	0.6	9	54	-120	-30	16	1	500

Wireless Connectivity / Long Range/KNX-RF Products

Part Number	General Description	Package	Grade	Operating Temperature (°C) min	Operating Temperature (°C) max	Operating Voltage (V) min	Operating Voltage (V) max	Standby Current (µA) typ	RX current (mA) typ	TX current (mA) (@ Max Output Power) max	RX sensitivity (dBm) typ	Output Power (dBm) min	Output Power (dBm) max	Data Rate (kbps) min	Data Rate (kbps) max
BlueNRG-2	Programmable Bluetooth LE 5.3 Wireless SoC	VFQFPN 32 5x5x1.0 mm,VFQFPN 48 6x6x0.9,VFQFPN 5X5X1.0 32L WET FLK,VFQFPN 6X6X0.85 48L P0.4 WF,WLCSP MSL1	Industrial	-40	105	1.7	3.6	0.9	7.7	15.1	-88	-16.5	8	-	-
S2-LP	Ultra-low power, high performance, sub-1GHz transceiver	QFN-24L	Industrial	-40	105	1.8	3.6	0.3	7	10	-130	-30	16	0.1	500

Wireless Connectivity / Long Range/LoRaWAN Products

Part Number	General Description	Package	Operating Temperature (°C) min	Operating Temperature (°C) max	Standby Current (µA) typ	RX current (mA) typ	RX sensitivity (dBm) typ	Output Power (dBm) min	Output Power (dBm) max
STM32WL54CC	Sub-GHz Wireless Microcontrollers. Dual-core Arm Cortex-M4/M0+ @48 MHz with 256 Kbytes of Flash memory, 64 Kbytes of SRAM. (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFQFPN 48 7x7x0.55 mm	-40	105,85	0.071	4.82	-148	-16	22
STM32WL54JC	Sub-GHz Wireless Microcontrollers. Dual-core Arm Cortex-M4/M0+ @48 MHz with 256 Kbytes of Flash memory, 64 Kbytes of SRAM. (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFBGA 73 5x5x0.6 P 0.5 mm	-40	105,85	0.071	4.82	-148	-16	22
STM32WL55CC	Sub-GHz Wireless Microcontrollers. Dual-core Arm Cortex-M4/M0+ @48 MHz with 256 Kbytes of Flash memory, 64 Kbytes of SRAM. LoRa, (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFQFPN 48 7x7x0.55 mm	-40	105,85	0.071	4.82	-148	-16	22
STM32WL55JC	Sub-GHz Wireless Microcontrollers. Dual-core Arm Cortex-M4/M0+ @48 MHz with 256 Kbytes of Flash memory, 64 Kbytes of SRAM. LoRa, (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFBGA 73 5x5x0.6 P 0.5 mm	-40	105,85	0.071	4.82	-148	-16	22
STM32WLE4CC	Sub-GHz Wireless Microcontrollers. Arm Cortex-M4 @48 MHz with 256 Kbytes of Flash memory, 64 Kbytes of SRAM. (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFQFPN 48 7x7x0.55 mm	-40	105,85	0.071	4.82	-148	-16	22
STM32WLE4JC	Sub-GHz Wireless Microcontrollers. Arm Cortex-M4 @48 MHz with 256 Kbytes of Flash memory, 64 Kbytes of SRAM. (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFBGA 73 5x5x0.6 P 0.5 mm	-40	105,85	0.071	4.82	-148	-16	22
STM32WLE5C8	Sub-GHz Wireless Microcontrollers. Arm Cortex-M4 @48 MHz with 64 Kbytes of Flash memory, 20 Kbytes of SRAM. LoRa, (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFQFPN 48 7x7x0.55 mm	-40	85	0.071	4.82	-148	-16	22
STM32WLE5CB	Sub-GHz Wireless Microcontrollers. Arm Cortex-M4 @48 MHz with 128 Kbytes of Flash memory, 48 Kbytes of SRAM. LoRa, (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFQFPN 48 7x7x0.55 mm	-40	85	0.071	4.82	-148	-16	22
STM32WLE5CC	Sub-GHz Wireless Microcontrollers. Arm Cortex-M4 @48 MHz with 256 Kbytes of Flash memory, 64 Kbytes of SRAM. LoRa, (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFQFPN 48 7x7x0.55 mm	-40	105,85	0.071	4.82	-148	-16	22
STM32WLE5J8	Sub-GHz Wireless Microcontrollers. Arm Cortex-M4 @48 MHz with 64 Kbytes of Flash memory, 20 Kbytes of SRAM. LoRa, (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFBGA 73 5x5x0.6 P 0.5 mm	-40	85	0.071	4.82	-148	-16	22
STM32WLE5JB	Sub-GHz Wireless Microcontrollers. Arm Cortex-M4 @48 MHz with 128 Kbytes of Flash memory, 48 Kbytes of SRAM. LoRa, (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFBGA 73 5x5x0.6 P 0.5 mm	-40	85	0.071	4.82	-148	-16	22
STM32WLE5JC	Sub-GHz Wireless Microcontrollers. Arm Cortex-M4 @48 MHz with 256 Kbytes of Flash memory, 64 Kbytes of SRAM. LoRa, (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFBGA 73 5x5x0.6 P 0.5 mm	-40	105,85	0.071	4.82	-148	-16	22

Wireless Connectivity / Long Range/NB-IoT Products

Part Number	General Description	Package	Grade	Operating Temperature (°C) min	Operating Temperature (°C) max	Output Power (dBm) max	Data Rate (kbps) max	Other Features
ST87M01	Ultra-compact, low-power narrowband (NB-IoT) industrial module series with GNSS capability	SMD MODULE	Industrial	-40	85	23	159	LTE Cat-NB2, GNSS capability

Wireless Connectivity / Long Range/Proprietary Sub-1 GHz Products

Part Number	General Description	Package	Grade	Operating Temperature (°C) min	Operating Temperature (°C) max	Operating Voltage (V) min	Operating Voltage (V) max	Standby Current (µA) typ	RX current (mA) typ	TX current (mA) (@ Max Output Power) max	RX sensitivity (dBm) typ	Output Power (dBm) min	Output Power (dBm) max	Data Rate (kbps) min	Data Rate (kbps) max
S2-LP	Ultra-low power, high performance, sub-1GHz transceiver	QFN-24L	Industrial	-40	105	1.8	3.6	0.3	7	10	-130	-30	16	0.1	500
S2-LPTX	Ultra-Low power, High performance Sub-1GHz transmitter	QFN-24L	Industrial	-40	105	1.8	3.6	0.3	-	10	-	-30	16	0.1	500
SPIRIT1	Low data rate, low power Sub 1GHz transceiver	VFQFPN 20 4x4x1.0	Industrial	-40	85	1.8	3.6	0.6	9	54	-120	-30	16	1	500
STM32WL54CC	Sub-GHz Wireless Microcontrollers. Dual-core Arm Cortex-M4/M0+ @48 MHz with 256 Kbytes of Flash memory, 64 Kbytes of SRAM. (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFQFPN 48 7x7x0.55 mm	Industrial	-40	105,85	1.8	3.6	0.071	4.82	-	-148	-16	22	-	-
STM32WL54JC	Sub-GHz Wireless Microcontrollers. Dual-core Arm Cortex-M4/M0+ @48 MHz with 256 Kbytes of Flash memory, 64 Kbytes of SRAM. (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFBGA 73 5x5x0.6 P 0.5 mm	Industrial	-40	105,85	1.8	3.6	0.071	4.82	-	-148	-16	22	-	-
STM32WL55CC	Sub-GHz Wireless Microcontrollers. Dual-core Arm Cortex-M4/M0+ @48 MHz with 256 Kbytes of Flash memory, 64 Kbytes of SRAM. LoRa, (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFQFPN 48 7x7x0.55 mm	Industrial	-40	105,85	1.8	3.6	0.071	4.82	-	-148	-16	22	-	-
STM32WL55JC	Sub-GHz Wireless Microcontrollers. Dual-core Arm Cortex-M4/M0+ @48 MHz with 256 Kbytes of Flash memory, 64 Kbytes of SRAM. LoRa, (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFBGA 73 5x5x0.6 P 0.5 mm	Industrial	-40	105,85	1.8	3.6	0.071	4.82	-	-148	-16	22	-	-
STM32WLE4C8	Sub-GHz Wireless Microcontrollers. Arm Cortex-M4 @48 MHz with 64 Kbytes of Flash memory, 20 Kbytes of SRAM. G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFQFPN 48 7x7x0.55 mm	Industrial	-40	85	1.8	3.6	0.071	4.82	-	-148	-16	22	-	-
STM32WLE4CB	Sub-GHz Wireless Microcontrollers. Arm Cortex-M4 @48 MHz with 128 Kbytes of Flash memory, 48 Kbytes of SRAM. (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFQFPN 48 7x7x0.55 mm	Industrial	-40	85	1.8	3.6	0.071	4.82	-	-148	-16	22	-	-
STM32WLE4CC	Sub-GHz Wireless Microcontrollers. Arm Cortex-M4 @48 MHz with 256 Kbytes of Flash memory, 64 Kbytes of SRAM. (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFQFPN 48 7x7x0.55 mm	Industrial	-40	105,85	1.8	3.6	0.071	4.82	-	-148	-16	22	-	-
STM32WLE4J8	Sub-GHz Wireless Microcontrollers. Arm Cortex-M4 @48 MHz with 64 Kbytes of Flash memory, 20 Kbytes of SRAM. (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFBGA 73 5x5x0.6 P 0.5 mm	Industrial	-40	85	1.8	3.6	0.071	4.82	-	-148	-16	22	-	-
STM32WLE4JB	Sub-GHz Wireless Microcontrollers. Arm Cortex-M4 @48 MHz with 128 Kbytes of Flash memory, 48 Kbytes of SRAM. (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFBGA 73 5x5x0.6 P 0.5 mm	Industrial	-40	85	1.8	3.6	0.071	4.82	-	-148	-16	22	-	-
STM32WLE4JC	Sub-GHz Wireless Microcontrollers. Arm Cortex-M4 @48 MHz with 256 Kbytes of Flash memory, 64 Kbytes of SRAM. (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFBGA 73 5x5x0.6 P 0.5 mm	Industrial	-40	105,85	1.8	3.6	0.071	4.82	-	-148	-16	22	-	-
STM32WLE5C8	Sub-GHz Wireless Microcontrollers. Arm Cortex-M4 @48 MHz with 64 Kbytes of Flash memory, 20 Kbytes of SRAM. LoRa, (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFQFPN 48 7x7x0.55 mm	Industrial	-40	85	1.8	3.6	0.071	4.82	-	-148	-16	22	-	-
STM32WLE5CB	Sub-GHz Wireless Microcontrollers. Arm Cortex-M4 @48 MHz with 128 Kbytes of Flash memory, 48 Kbytes of SRAM. LoRa, (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFQFPN 48 7x7x0.55 mm	Industrial	-40	85	1.8	3.6	0.071	4.82	-	-148	-16	22	-	-
STM32WLE5CC	Sub-GHz Wireless Microcontrollers. Arm Cortex-M4 @48 MHz with 256 Kbytes of Flash memory, 64 Kbytes of SRAM. LoRa, (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFQFPN 48 7x7x0.55 mm	Industrial	-40	105,85	1.8	3.6	0.071	4.82	-	-148	-16	22	-	-
STM32WLE5J8	Sub-GHz Wireless Microcontrollers. Arm Cortex-M4 @48 MHz with 64 Kbytes of Flash memory, 20 Kbytes of SRAM. LoRa, (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFBGA 73 5x5x0.6 P 0.5 mm	Industrial	-40	85	1.8	3.6	0.071	4.82	-	-148	-16	22	-	-
STM32WLE5JB	Sub-GHz Wireless Microcontrollers. Arm Cortex-M4 @48 MHz with 128 Kbytes of Flash memory, 48 Kbytes of SRAM. LoRa, (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFBGA 73 5x5x0.6 P 0.5 mm	Industrial	-40	85	1.8	3.6	0.071	4.82	-	-148	-16	22	-	-
STM32WLE5JC	Sub-GHz Wireless Microcontrollers. Arm Cortex-M4 @48 MHz with 256 Kbytes of Flash memory, 64 Kbytes of SRAM. LoRa, (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFBGA 73 5x5x0.6 P 0.5 mm	Industrial	-40	105,85	1.8	3.6	0.071	4.82	-	-148	-16	22	-	-
STS1TX	Low data rate, low power sub-1GHz transmitter	VFQFPN 20 4x4x1.0	Industrial	-40	85	1.8	3.6	0.6	-	54	-	-30	16	1	500

Wireless Connectivity / Long Range/Sigfox Products

Part Number	General Description	Package	Operating Temperature (°C) min	Operating Temperature (°C) max	Standby Current (µA) typ	RX current (mA) typ	RX sensitivity (dBm) typ	Output Power (dBm) min	Output Power (dBm) max
S2-LP	Ultra-low power, high performance, sub-1GHz transceiver	QFN-24L	-40	105	0.3	7	-130	-30	16
S2-LPTX	Ultra-Low power, High performance Sub-1GHz transmitter	QFN-24L	-40	105	0.3	-	-	-30	16
STM32WL54CC	Sub-GHz Wireless Microcontrollers. Dual-core Arm Cortex-M4/M0+ @48 MHz with 256 Kbytes of Flash memory, 64 Kbytes of SRAM. (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFQFPN 48 7x7x0.55 mm	-40	105,85	0.071	4.82	-148	-16	22
STM32WL54JC	Sub-GHz Wireless Microcontrollers. Dual-core Arm Cortex-M4/M0+ @48 MHz with 256 Kbytes of Flash memory, 64 Kbytes of SRAM. (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFBGA 73 5x5x0.6 P 0.5 mm	-40	105,85	0.071	4.82	-148	-16	22
STM32WL55CC	Sub-GHz Wireless Microcontrollers. Dual-core Arm Cortex-M4/M0+ @48 MHz with 256 Kbytes of Flash memory, 64 Kbytes of SRAM. LoRa, (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFQFPN 48 7x7x0.55 mm	-40	105,85	0.071	4.82	-148	-16	22
STM32WL55JC	Sub-GHz Wireless Microcontrollers. Dual-core Arm Cortex-M4/M0+ @48 MHz with 256 Kbytes of Flash memory, 64 Kbytes of SRAM. LoRa, (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFBGA 73 5x5x0.6 P 0.5 mm	-40	105,85	0.071	4.82	-148	-16	22
STM32WLE4CC	Sub-GHz Wireless Microcontrollers. Arm Cortex-M4 @48 MHz with 256 Kbytes of Flash memory, 64 Kbytes of SRAM. (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFQFPN 48 7x7x0.55 mm	-40	105,85	0.071	4.82	-148	-16	22
STM32WLE4JC	Sub-GHz Wireless Microcontrollers. Arm Cortex-M4 @48 MHz with 256 Kbytes of Flash memory, 64 Kbytes of SRAM. (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFBGA 73 5x5x0.6 P 0.5 mm	-40	105,85	0.071	4.82	-148	-16	22
STM32WLE5C8	Sub-GHz Wireless Microcontrollers. Arm Cortex-M4 @48 MHz with 64 Kbytes of Flash memory, 20 Kbytes of SRAM. LoRa, (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFQFPN 48 7x7x0.55 mm	-40	85	0.071	4.82	-148	-16	22
STM32WLE5CB	Sub-GHz Wireless Microcontrollers. Arm Cortex-M4 @48 MHz with 128 Kbytes of Flash memory, 48 Kbytes of SRAM. LoRa, (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFQFPN 48 7x7x0.55 mm	-40	85	0.071	4.82	-148	-16	22
STM32WLE5CC	Sub-GHz Wireless Microcontrollers. Arm Cortex-M4 @48 MHz with 256 Kbytes of Flash memory, 64 Kbytes of SRAM. LoRa, (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFQFPN 48 7x7x0.55 mm	-40	105,85	0.071	4.82	-148	-16	22
STM32WLE5J8	Sub-GHz Wireless Microcontrollers. Arm Cortex-M4 @48 MHz with 64 Kbytes of Flash memory, 20 Kbytes of SRAM. LoRa, (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFBGA 73 5x5x0.6 P 0.5 mm	-40	85	0.071	4.82	-148	-16	22
STM32WLE5JB	Sub-GHz Wireless Microcontrollers. Arm Cortex-M4 @48 MHz with 128 Kbytes of Flash memory, 48 Kbytes of SRAM. LoRa, (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFBGA 73 5x5x0.6 P 0.5 mm	-40	85	0.071	4.82	-148	-16	22
STM32WLE5JC	Sub-GHz Wireless Microcontrollers. Arm Cortex-M4 @48 MHz with 256 Kbytes of Flash memory, 64 Kbytes of SRAM. LoRa, (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFBGA 73 5x5x0.6 P 0.5 mm	-40	105,85	0.071	4.82	-148	-16	22

Wireless Connectivity / Long Range/Wi-Sun Products

Part Number	General Description	Package	Grade	Operating Temperature (°C) min	Operating Temperature (°C) max	Operating Voltage (V) min	Operating Voltage (V) max	Standby Current (µA) typ	RX current (mA) typ	TX current (mA) (@ Max Output Power) max	RX sensitivity (dBm) typ	Output Power (dBm) min	Output Power (dBm) max	Data Rate (kbps) min	Data Rate (kbps) max
S2-LP	Ultra-low power, high performance, sub-1GHz transceiver	QFN-24L	Industrial	-40	105	1.8	3.6	0.3	7	10	-130	-30	16	0.1	500

Wireless Connectivity / Long Range/Wireless M-BUS Products

Part Number	General Description	Package	Operating Temperature (°C) min	Operating Temperature (°C) max	Standby Current (µA) typ	RX current (mA) typ	RX sensitivity (dBm) typ	Output Power (dBm) min	Output Power (dBm) max
S2-LP	Ultra-low power, high performance, sub-1GHz transceiver	QFN-24L	-40	105	0.3	7	-130	-30	16
SPIRIT1	Low data rate, low power Sub 1GHz transceiver	VFQFPN 20 4x4x1.0	-40	85	0.6	9	-120	-30	16
STM32WL54CC	Sub-GHz Wireless Microcontrollers. Dual-core Arm Cortex-M4/M0+ @48 MHz with 256 Kbytes of Flash memory, 64 Kbytes of SRAM. (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFQFPN 48 7x7x0.55 mm	-40	105,85	0.071	4.82	-148	-16	22
STM32WL54JC	Sub-GHz Wireless Microcontrollers. Dual-core Arm Cortex-M4/M0+ @48 MHz with 256 Kbytes of Flash memory, 64 Kbytes of SRAM. (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFBGA 73 5x5x0.6 P 0.5 mm	-40	105,85	0.071	4.82	-148	-16	22
STM32WL55CC	Sub-GHz Wireless Microcontrollers. Dual-core Arm Cortex-M4/M0+ @48 MHz with 256 Kbytes of Flash memory, 64 Kbytes of SRAM. LoRa, (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFQFPN 48 7x7x0.55 mm	-40	105,85	0.071	4.82	-148	-16	22
STM32WL55JC	Sub-GHz Wireless Microcontrollers. Dual-core Arm Cortex-M4/M0+ @48 MHz with 256 Kbytes of Flash memory, 64 Kbytes of SRAM. LoRa, (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFBGA 73 5x5x0.6 P 0.5 mm	-40	105,85	0.071	4.82	-148	-16	22
STM32WLE4CC	Sub-GHz Wireless Microcontrollers. Arm Cortex-M4 @48 MHz with 256 Kbytes of Flash memory, 64 Kbytes of SRAM. (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFQFPN 48 7x7x0.55 mm	-40	105,85	0.071	4.82	-148	-16	22
STM32WLE4JC	Sub-GHz Wireless Microcontrollers. Arm Cortex-M4 @48 MHz with 256 Kbytes of Flash memory, 64 Kbytes of SRAM. (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFBGA 73 5x5x0.6 P 0.5 mm	-40	105,85	0.071	4.82	-148	-16	22
STM32WLE5C8	Sub-GHz Wireless Microcontrollers. Arm Cortex-M4 @48 MHz with 64 Kbytes of Flash memory, 20 Kbytes of SRAM. LoRa, (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFQFPN 48 7x7x0.55 mm	-40	85	0.071	4.82	-148	-16	22
STM32WLE5CB	Sub-GHz Wireless Microcontrollers. Arm Cortex-M4 @48 MHz with 128 Kbytes of Flash memory, 48 Kbytes of SRAM. LoRa, (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFQFPN 48 7x7x0.55 mm	-40	85	0.071	4.82	-148	-16	22
STM32WLE5CC	Sub-GHz Wireless Microcontrollers. Arm Cortex-M4 @48 MHz with 256 Kbytes of Flash memory, 64 Kbytes of SRAM. LoRa, (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFQFPN 48 7x7x0.55 mm	-40	105,85	0.071	4.82	-148	-16	22
STM32WLE5J8	Sub-GHz Wireless Microcontrollers. Arm Cortex-M4 @48 MHz with 64 Kbytes of Flash memory, 20 Kbytes of SRAM. LoRa, (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFBGA 73 5x5x0.6 P 0.5 mm	-40	85	0.071	4.82	-148	-16	22
STM32WLE5JB	Sub-GHz Wireless Microcontrollers. Arm Cortex-M4 @48 MHz with 128 Kbytes of Flash memory, 48 Kbytes of SRAM. LoRa, (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFBGA 73 5x5x0.6 P 0.5 mm	-40	85	0.071	4.82	-148	-16	22
STM32WLE5JC	Sub-GHz Wireless Microcontrollers. Arm Cortex-M4 @48 MHz with 256 Kbytes of Flash memory, 64 Kbytes of SRAM. LoRa, (G)FSK, (G)MSK, BPSK modulations. AES 256-bit. Multiprotocol System-on-Chip.	UFBGA 73 5x5x0.6 P 0.5 mm	-40	105,85	0.071	4.82	-148	-16	22

RF Front-end

Overview

The RF integrated passive device (RF IPD) uses a high-resistivity substrate to integrate quality factor components such as capacitors and indictors. Many functions like impedance matching networks, harmonic filters, couplers, baluns, and power combiners/splitters can be designed using IPD technology. ST's IPDs are manufactured using thick film and HiRes Si or glass wafer manufacturing technology and photolithography processing.

Integrated passive device (IPD)

ST's IPD process can integrate **high-quality passive elements** (resistors, inductors, and capacitors) on glass and **high resistivity** silicon substrates in various design configurations.

Advanced design system (ADS)

ADS covers a broad spectrum and power needs of **new wireless applications**.

The **complete ADS suite** includes layouts and effective EM simulation support. Partners can now take advantage of STMicroelectronics superior IPD process and design tools offered by ST's RF IPD foundry service.

High quality-factor RF integrated passive process

ST's high quality-factor RF integrated passive process is ideal for passive devices like matching networks, filters, matched baluns, couplers, power combiners, multiplexers, and hybrid networks.

They are used in different types of RF applications with **cost sensitivity** and **high efficiency requirements**.

Matched balun

Baluns help **balance unbalanced signals**. They use ST's RF IPD process to integrate high-quality passive RF components in a single glass substrate. In addition to symmetric/asymmetric transformations, matching networks can also be integrated into footprints less than 1 mm^2 for full functionality.
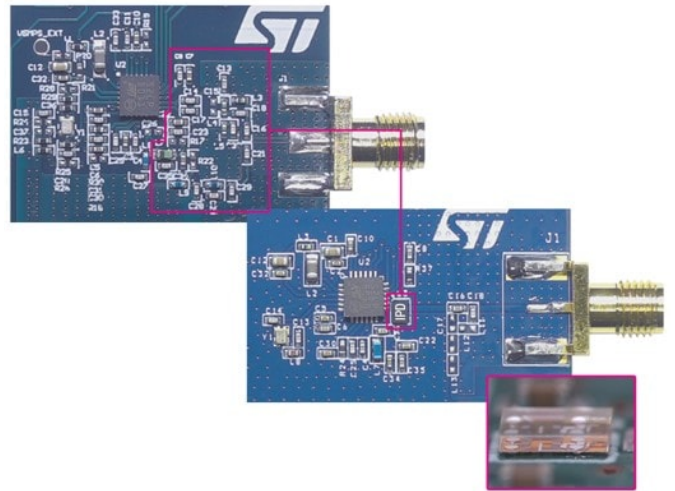
RF filters

RF Filters are **used for functions** like **band-pass filters** and **low-pass** or **high-pass filters in RF front ends**. RF filters can easily be integrated into front-end modules thanks to ST's thin-film RF IPD process for integrating high-quality passive RF components into a single glass or high-resistivity silicon substrate.

Our IPD technology covers all RF applications with a frequency range from 168MHz and above, such as:

Sub-1GHz · UWB · Zigbee · Bluetooth · WiFi · WiMAX · 4G · 5G

Key benefits of ST RF front-end:

- superior process control over discrete solutions
- competitive cost structure (lower cost than GaAs and discrete solutions)
- small form factor:
    - smaller area than discrete solutions
    - thinner than LTCC
- reduced power losses
- comprehensive design kit
- efficient design services
- fast foundry shuttle service

ST's IPDs available as standalone products such as baluns and filters as well as foundry services. They are compatible with different assembly modes, including CSP, microbumping, and wire bonding, for mounting on the main printed wiring board (PWB) or in a complete RF module.

Wireless Connectivity / RF Front-end/Baluns

Part Number	General Description	Package	Insertion loss (dB) max	Operating Frequency (GHz) min	Operating Frequency (GHz) max
BAL-CC1101-01D3	50Ω nominal input / conjugate match balun to CC1101, with integrated harmonic filter	Chip Scale Package 0.4mm pitch	1.9	0.779	0.928
BAL-NRF01D3	50Ω nominal input / conjugate match balun to nRF24LE1 & nRF51822-QFAA, with integrated harmonic filter	Chip Scale Package 0.4mm pitch	1.3	2.4	2.54
BAL-NRF02D3	50Ω nominal input / conjugate match balun to nRF51822-CEAA, with integrated harmonic filter	Chip Scale Package 0.4mm pitch	1.9	2.4	2.54
BAL-UWB-01E3	50Ω to 100Ω balun for UWB 3GHz to 8GHz	FLIP CHIP BUMPLESS CSPG	1	3	8
BAL-WILC10-01D3	50 Ω / Conjugate match to WILC1000 Transformer Balun	Chip Scale Package 0.4mm pitch	0.7	2.4	2.5
BALF-112X-01D3	50Ω / conjugate match to CC1120, CC1125 868MHz & 915MHz Balun Transformer & Integrated Filtering	Chip Scale Package 0.4mm pitch	2.2	0.868	0.915
BALF-ATM-01E3	50 ohms / matched to ATSAMR21E18 balun transformer, with integrated harmonic filter	FLIP CHIP BUMPLESS CSPG	1.3	2.45	2.45
BALF-CC26-05D3	50 Ω / conjugate match to CC2610, CC2620, CC2630, CC2640 and CC2650	Chip Scale Package 0.4mm pitch	1.2	2.4	2.5
BALF-NRF01D3	50 Ω nominal input / conjugate match balun to nRF51822-QFAAG0,\rnRF51822-QFAB0, nRF51422-QFAAE0 / integrated harmonic filter	Chip Scale Package 0.4mm pitch	2	2.4	2.54
BALF-NRF01E3	50Ω nominal input / conjugate match balun to nRF51x22-QFAA, nRF51x22-QFAC, nRF51822-QFABBx and nRF51422-QFABAx with integrated filter	FLIP CHIP BUMPLESS CSPG	2	2.4	2.54
BALF-NRG-01D3	50Ω nominal input / conjugate match balun to BlueNRG transceiver, with integrated harmonic filter	Chip Scale Package 0.4mm pitch	1.1	2.4	2.5
BALF-NRG-02D3	50Ω / conjugate match balun to BlueNRG transceiver, with integrated harmonic filter	Chip Scale Package 0.4mm pitch	1.85	2.4	2.5
BALF-NRG-02J5	50 Ω ultra thin balun with integrated harmonic filter / conjugate match balun to ST BLUENRG134	CSP P 0.2 mm	1.65	2.4	2.5
BALF-SPI-01D3	50Ω nominal input / conjugate match balun to SPIRIT1, with integrated harmonic filter	Chip Scale Package 0.4mm pitch	2	0.868	0.915
BALF-SPI-02D3	50Ω / Conjugate match to SPIRIT1 433MHz Balun Transformer & Integrated Filtering	Chip Scale Package 0.4mm pitch	3	0.39	0.47
BALF-SPI2-01D3	50 Ω nominal input / conjugate match balun to S2-LP,868 - 930 MHz with integrated harmonic filter	Chip Scale Package 0.4mm pitch	1.9	0.868	0.927
BALF-SPI2-02D3	50 Ω nominal input / conjugate match balun to S2-LP, 433 - 470 MHz with integrated harmonic filter	Chip Scale Package 0.4mm pitch	2.2	0.433	0.47
BALFHB-WL-01D3	Integrated filter matched balun to BGA STM32WL in high power mode, 862-928 MHz, using 4 layer PCB	Chip Scale Package 0.4mm pitch	1.45	928	862
BALFHB-WL-02D3	Integrated filter matched balun to QFN STM32WL in high power mode, 862-928 MHz, using 4 layer PCB	Chip Scale Package 0.4mm pitch	1.35	928	862

BALFHB-WL-03D3	Integrated filter matched balun to QFN STM32WL in high power mode, 862-928 MHz, using 2 layer PCB	Chip Scale Package 0.4mm pitch	1.4	928	862
BALFHB-WL-04D3	Integrated filter matched balun to BGA STM32WL in low power mode, 862-928 MHz, using 4 layer PCB	Chip Scale Package 0.4mm pitch	1.5	928	862
BALFHB-WL-05D3	Integrated filter matched balun to QFN STM32WL in low power mode, 862-928 MHz, using 4 layer PCB	Chip Scale Package 0.4mm pitch	1.4	928	862
BALFHB-WL-06D3	Integrated filter matched balun to QFN STM32WL in low power mode, 862-928 MHz, using 2 layer PCB	Chip Scale Package 0.4mm pitch	1.4	928	862
BALFLB-WL-07D3	balun,filtering and matching of STM32WL 17dbm 490Mhz , BGA package 4 layers pcb	Chip Scale Package 0.4mm pitch	-	0.47	0.51
BALFLB-WL-08D3	balun,filtering and matching of STM32WL 17dbm 490Mhz , QFN package 4 layers pcb	Chip Scale Package 0.4mm pitch	-	0.47	0.51
BALFLB-WL-09D3	balun,filtering and matching of STM32WL 17dbm 490Mhz , QFN package 2 layers pcb	Chip Scale Package 0.4mm pitch	-	0.47	0.51
BALF-CC25-02D3	50Ω / conjugate match to CC2541	Chip Scale Package 0.4mm pitch	1.8	2.379	2.507
BALF-NRF01J5	50 Ω ultra thin balun with integrated harmonic filter	CSP P 0.2 mm	2.4	2.4	2.54

Wireless Connectivity / RF Front-end/Filters

Part Number	General Description	Package
MLPF-NRG-01D3	2.4 GHz Low Pass Filter matched to BLUENRG-LP-LPS (BLUENRG-3x5Vx, BLUENRG-3x5Ax, BLUENRG-332xx) in QFN & CSP packages	Chip Scale Package 0.4mm pitch
MLPF-WB-01D3	Harmonics Low Pass Filter with integrated matching for STM32WB series	Chip Scale Package 0.4mm pitch
MLPF-WB-01E3	2.4 GHz Matched filter companion chip for STM32WB55Cx, STM32WB55Rx, STM32WB35xxx, STM32WB50xxx and STM32WB30xxx	FLIP CHIP BUMPLESS CSPG
MLPF-WB-02D3	2.4 GHz Low Pass Filter matched to STM32WB5x and STM32WB1x in WLCSP and UFBGA packages	Chip Scale Package 0.4mm pitch
MLPF-WB55-01E3	2.4 GHz Matched filter companion chip for STM32WB55Cx and STM32WB55Rx	FLIP CHIP BUMPLESS CSPG
MLPF-WB55-02E3	2.4 GHz Matched filter companion chip for STM32WB55Vx	FLIP CHIP BUMPLESS CSPG

RF Solutions

Overview

ST offers wideband and multiband RF solutions for wireless communication infrastructure and RF equipment including GSM/3G/LTE base stations, microwave links, cable modems, satellite, broadcasting, instrumentation, security, defense and test equipment.

As well as standard RF ICs, ST also offers customized products with complete development, prototyping and manufacturing capability, at high volumes and competitive cost, based on proprietary RF-CMOS and BiCMOS (SiGe) technologies.

RF down-converters

ST's **RF down-converters** are designed to comply with the high performance requirements of cellular base stations, and are flexible, highly-integrated and cost-effective one-chip alternatives to discrete solutions.

The **STw8210xB family** is available in four frequency variants covering the most common wireless standards, in a spectrum from 700 MHz to 2.7 GHz.

RF PLL frequency synthesizers

Combining high performance, high integration, wideband and **multi-band capabilities**, ST's **RF synthesizers** represent a robust and effective alternative to discrete, expensive and bulky PLL and VCO solutions. Reducing RF BOM and footprint by up to 60% while increasing reliability, these synthesizers are a perfect fit for high-performance applications such as GSM/3G/LTE base stations, microwave links, cable modems, satellite, broadcasting, instrumentation, security, defense and test equipment.

Wireless Connectivity / RF Solutions/RF PLL Synthesizers

Part Number	General Description	Frequency Range	PLL type	Integrated VCOs nom	VCO phase noise (dBc/Hz) (@ 1MHz) typ	Package
STW81200	Wide Band Frac-Integer-N Integrated Synthesizer	46.875 to 6000 MHz	Fractionary+Integer-N	3	-135	VFQFPN 36 6x6x1.0 mm
STuW81300	Wide Band Microwave Frac-Integer-N Integrated Synthesizer	1.925 GHz - 16 GHz	Fractionary+Integer-N	4	-135	VFQFPN 36 6x6x1.0 mm

Short Range

Overview

A standard-compliant wireless technology, optimized to fit short range connectivity, energy per bit and bandwidth requirements, is behind every network - regardless of its nature or purpose. With the growing importance of wireless sensor networks and the IoT, most electronic systems require wireless connectivity.

ST's portfolio includes a variety of RF transceivers, wireless application processors, network co-processors and fully certified modules for key wireless connectivity technologies including Bluetooth LE ®, Thread and Zigbee for point-to-point device connection, ultra-wideband for precise positioning and 60GHz for contactless connectivity.

Product

Bluetooth Low Energy Application Processors

Featuring a Bluetooth 5.2 connectivity stack, our wide Bluetooth Low Energy application processors portfolio includes optimized network and application processors as well as an all-in-one solution combining both in a single die product.

Product

Bluetooth Low Energy Network Co-Processors

ST's Bluetooth Low Energy network co-processors portfolio ensures hardware scalability and software design flexibility with the Bluetooth Host Controller Interface (HCI).

Product

Thread products

OpenThread protocol implements all Thread networking layers (IPv6, 6LoWPAN, IEEE 802.15.4 with MAC security, Mesh Link Establishment, Mesh Routing) and device roles, as well as Border Router support.

Product

ZigBee products

Build Mesh solutions based on the STM32WB ultra-low-power 2.4 GHz wireless SoC and its market-proven solution.

Product

Ultra-WideBand products

Ultra-wideband (UWB) is a short-range RF communication technology which enables indoor positioning using a real-time location system with centimeter accuracy.

Product

60-GHz Contactless products

Unlicensed 60 GHz RF millimeter-wave band usage opens new opportunities for short-range contactless connectivity by enabling unprecedented multi-Gigabit data rates.

Product

Matter

Matter is an open-source standard made for smart home and smart building, ensuring interoperability and data privacy.

Wireless Connectivity / Short Range/60 GHz Contactless Products

Part Number	General Description	Package
ST60A2G0	60 GHz RF Transceiver A2 family	VFBGA25
ST60A3G1	60 GHz RF Transceiver A3 family with AiP	VFBGA AIP 2.95X4.070 23 P.4 B.18

Wireless Connectivity / Short Range/Bluetooth Low Energy application processors

Part Number	General Description	Package	Operating Voltage (V) min	Operating Voltage (V) max	Internal Flash Size (kByte) nom	Internal RAM size (kByte) nom	Standby Current (µA) typ	RX current (mA) typ	TX current (mA) (@ Max Output Power) max	RX sensitivity (dBm) typ	Output Power (dBm) min	Output Power (dBm) max	Operating Temperature (°C) min	Operating Temperature (°C) max
BlueNRG-1	Programmable Bluetooth® LE 5.2 Wireless SoC	VFQFPN 32 5x5x1.0 mm,VFQFPN 5X5X1.0 32L WET FLK,WLCSP MSL1	1.7	3.6	160	24	0.9	7.7	15.1	-88	-16.5	8	-40	105
BlueNRG-2	Programmable Bluetooth LE 5.3 Wireless SoC	VFQFPN 32 5x5x1.0 mm,VFQFPN 48 6x6x0.9,VFQFPN 5X5X1.0 32L WET FLK,VFQFPN 6X6X0.85 48L P0.4 WF,WLCSP MSL1	1.7	3.6	256	24	0.9	7.7	15.1	-88	-16.5	8	-40	105
BlueNRG-LP	Programmable Bluetooth Low Energy 5.3 Wireless SoC	VFQFPN 32 5x5x1.0 mm,VFQFPN 48 6x6x0.9,WLCSP MSL1	1.7	3.6	256	32,64	1	3.4	4.3	-97	-20	8	-40	105,85
BlueNRG-LPS	Programmable Bluetooth Low Energy 5.3 Wireless SoC	VFQFPN 32 5x5x1.0 mm,WLCSP MSL1	1.7	3.6	192	24	0.8	3.4	4.3	-97	-20	8	-40	105
BlueNRG-M2	Very low power application processor module for Bluetooth® low energy v5.2	BLUENRG-2 MODULE QFN, PCB ANT,BLUENRG-2 MODULE QFN, CHIP ANT	1.7	3.6	256	24	0.9	15,7.55	14.78,33.9	-85	-16.5	5,7	-40	85
STM32WB10CC	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 320 Kbytes of Flash memory, Bluetooth LE 5.4	UFQFPN 48 7x7x0.55 mm	2	3.6	320	48	-	7.7	-	-96	-20	4	-10	85
STM32WB15CC	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 320 Kbytes of Flash memory, Bluetooth LE 5.3, AES-256	UFQFPN 48 7x7x0.55 mm,WLCSP 49 3.3x3.4x0.6 P 0.4 mm	1.71	3.6	320	48	0.6	4.5	-	-96	-20	6	-40	105,85
STM32WB30CE	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 512 Kbytes of Flash memory, Bluetooth LE 5.4, 802.15.4, Zigbee, Thread, Matter, AES-256	UFQFPN 48 7x7x0.55 mm	2	3.6	512	96	0.7	7.9	-	-100	-20	4	-10	85
STM32WB35CC	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 256 Kbytes of Flash memory, Bluetooth LE 5.4, 802.15.4, Zigbee, Thread, Matter, USB, AES-256	UFQFPN 48 7x7x0.55 mm	1.71	3.6	256	96	0.6	4.5	-	-100	-20	6	-40	105,85
STM32WB35CE	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 512 Kbytes of Flash memory, Bluetooth LE 5.4, 802.15.4, Zigbee, Thread, Matter, USB, AES-256	UFQFPN 48 7x7x0.55 mm	1.71	3.6	512	96	0.6	4.5	-	-100	-20	6	-40	85
STM32WB50CG	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 1 Mbyte of Flash memory, Bluetooth LE 5.4, 802.15.4, Zigbee, Thread, Matter, AES 256	UFQFPN 48 7x7x0.55 mm	2	3.6	1024	128	0.7	7.9	-	-100	-20	4	-10	85
STM32WB55CC	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 256 Kbytes of Flash memory, Bluetooth LE 5.4, 802.15.4, Zigbee, Thread, USB, LCD, AES-256	UFQFPN 48 7x7x0.55 mm	1.71	3.6	256	128	0.6	4.5	-	-100	-20	6	-40	105,85
STM32WB55CE	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 512 Kbytes of Flash memory, Bluetooth LE 5.4, 802.15.4, USB, LCD, AES-256	UFQFPN 48 7x7x0.55 mm	1.71	3.6	512	256	0.6	4.5	-	-100	-20	6	-40	105,85
STM32WB55CG	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 1 Mbyte of Flash memory, Bluetooth LE 5.4, 802.15.4, Zigbee, Thread, Matter, USB, LCD, AES-256	UFQFPN 48 7x7x0.55 mm	1.71	3.6	1024	256	0.6	4.5	-	-100	-20	6	-40	105,85
STM32WB55RC	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 256 Kbytes of Flash memory, Bluetooth LE 5.4, 802.15.4, Zigbee, Thread, Matter, USB, LCD, AES-256	VFQFPN 68 8x8x1.0 mm	1.71	3.6	256	128	0.6	4.5	-	-100	-20	6	-40	105,85
STM32WB55RE	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 256 Kbytes of Flash memory, Bluetooth LE 5.4, 802.15.4, Zigbee, Thread, Matter, USB, LCD, AES-256	VFQFPN 68 8x8x1.0 mm	1.71	3.6	512	256	0.6	4.5	-	-100	-20	6	-40	105,85
STM32WB55RG	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 1 Mbyte of Flash memory, Bluetooth LE 5.4, 802.15.4, Zigbee, Thread, Matter, USB, LCD, AES-256	VFQFPN 68 8x8x1.0 mm	1.71	3.6	1024	256	0.6	4.5	-	-100	-20	6	-40	105,85
STM32WB55VC	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 256 Kbytes of Flash memory, Bluetooth LE 5.3, 802.15.4, Zigbee, Thread, Matter, USB, LCD, AES-256	UFBGA 129 7x7x0.6 P 0.5 mm,WLCSP 100 4.4x4.4x0.6 P 0.4 mm	1.71	3.6	256	128	0.6	4.5	-	-100	-20	6	-40	105,85
STM32WB55VE	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 512 Kbytes of Flash memory, Bluetooth LE 5.3, 802.15.4, Zigbee, Thread, Matter, USB, LCD, AES-256	UFBGA 129 7x7x0.6 P 0.5 mm,WLCSP 100 4.4x4.4x0.6 P 0.4 mm	1.71	3.6	512	256	0.6	4.5	-	-100	-20	6	-40	105,85
STM32WB55VG	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 1 Mbyte of Flash memory, Bluetooth LE 5.3, 802.15.4, Zigbee, Thread, Matter, USB, LCD, AES-256	UFBGA 129 7x7x0.6 P 0.5 mm,WLCSP 100 4.4x4.4x0.6 P 0.4 mm	1.71	3.6	1024	256	0.6	4.5	-	-100	-20	6	-40	105,85
STM32WB55VY	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 640 Kbytes of Flash memory, Bluetooth LE 5.3, 802.15.4, Zigbee, Thread, Matter, USB, LCD, AES-256	WLCSP 100 4.4x4.4x0.6 P 0.4 mm	1.71	3.6	1024	256	0.6	4.5	-	-100	-20	6	-40	85
STM32WB5MMG	Ultra-low-power Module - Dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 1 Mbyte of Flash memory, Bluetooth LE 5.4, 802.15.4, Zigbee, Thread, Matter, USB, LCD, AES-256	SIP LGA 86 7.3x11x1.342 mm	1.71	3.6	1024	256	0.25	4.5	-	-100	-20	6	-40	85

Wireless Connectivity / Short Range/Bluetooth Low Energy network co-processors

Part Number	General Description	Package	Operating Voltage (V) min	Operating Voltage (V) max	Standby Current (µA) typ	RX current (mA) typ	TX current (mA) (@ Max Output Power) max	RX sensitivity (dBm) typ	Output Power (dBm) min	Output Power (dBm) max	Operating Temperature (°C) min	Operating Temperature (°C) max
BlueNRG-2N	Bluetooth® LE 5.2 Wireless Network Coprocessor	VFQFPN 32 5x5x1.0 mm,VFQFPN 5X5X1.0 32L WET FLK,WLCSP MSL1	1.7	3.6	0.9	7.7	15.1	-88	-20	8	-40	105
BlueNRG-M0	Very low power network processor module for Bluetooth® low energy v4.2	BLE MODULE WITH QFBLUENRG-MS	1.7	3.6	1.7	16.36,9.36	16.5,27.35	-85	-18	6	-40	85
BlueNRG-MS	Bluetooth Low Energy Network Processor supporting Bluetooth 4.2 core specification	VFQFPN32 5X5X0.9 3.6X3.6EP 0.5P,WLCSP MSL1	1.7	3.6	1.7	7.3	15.1	-88	-18	8	-40	85

Wireless Connectivity / Short Range/Matter Products

Part Number	General Description	Package	Operating Temperature (°C) max	Operating Temperature (°C) min
STM32WB55RG	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 1 Mbyte of Flash memory, Bluetooth LE 5.4, 802.15.4, Zigbee, Thread, Matter, USB, LCD, AES-256	VFQFPN 68 8x8x1.0 mm	105,85	-40
STM32WB5MMG	Ultra-low-power Module - Dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 1 Mbyte of Flash memory, Bluetooth LE 5.4, 802.15.4, Zigbee, Thread, Matter, USB, LCD, AES-256	SIP LGA 86 7.3x11x1.342 mm	85	-40

Wireless Connectivity / Short Range/Thread Products

Part Number	General Description	Package	Operating Temperature (°C) max	Operating Temperature (°C) min	RX current (mA) typ	Output Power (dBm) min	Output Power (dBm) max
STM32WB30CE	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 512 Kbytes of Flash memory, Bluetooth LE 5.4, 802.15.4, Zigbee, Thread, Matter, AES-256	UFQFPN 48 7x7x0.55 mm	85	-10	7.9	-20	4
STM32WB35CC	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 256 Kbytes of Flash memory, Bluetooth LE 5.4, 802.15.4, Zigbee, Thread, Matter, USB, AES-256	UFQFPN 48 7x7x0.55 mm	105,85	-40	4.5	-20	6
STM32WB35CE	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 512 Kbytes of Flash memory, Bluetooth LE 5.4, 802.15.4, Zigbee, Thread, Matter, USB, AES-256	UFQFPN 48 7x7x0.55 mm	85	-40	4.5	-20	6
STM32WB50CG	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 1 Mbyte of Flash memory, Bluetooth LE 5.4, 802.15.4, Zigbee, Thread, Matter, AES 256	UFQFPN 48 7x7x0.55 mm	85	-10	7.9	-20	4
STM32WB55CC	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 256 Kbytes of Flash memory, Bluetooth LE 5.4, 802.15.4, Zigbee, Thread, USB, LCD, AES-256	UFQFPN 48 7x7x0.55 mm	105,85	-40	4.5	-20	6
STM32WB55CE	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 512 Kbytes of Flash memory, Bluetooth LE 5.4, 802.15.4, USB, LCD, AES-256	UFQFPN 48 7x7x0.55 mm	105,85	-40	4.5	-20	6
STM32WB55CG	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 1 Mbyte of Flash memory, Bluetooth LE 5.4, 802.15.4, Zigbee, Thread, Matter, USB, LCD, AES-256	UFQFPN 48 7x7x0.55 mm	105,85	-40	4.5	-20	6
STM32WB55RC	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 256 Kbytes of Flash memory, Bluetooth LE 5.4, 802.15.4, Zigbee, Thread, Matter, USB, LCD, AES-256	VFQFPN 68 8x8x1.0 mm	105,85	-40	4.5	-20	6
STM32WB55RE	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 256 Kbytes of Flash memory, Bluetooth LE 5.4, 802.15.4, Zigbee, Thread, Matter, USB, LCD, AES-256	VFQFPN 68 8x8x1.0 mm	105,85	-40	4.5	-20	6
STM32WB55RG	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 1 Mbyte of Flash memory, Bluetooth LE 5.4, 802.15.4, Zigbee, Thread, Matter, USB, LCD, AES-256	VFQFPN 68 8x8x1.0 mm	105,85	-40	4.5	-20	6
STM32WB55VC	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 256 Kbytes of Flash memory, Bluetooth LE 5.3, 802.15.4, Zigbee, Thread, Matter, USB, LCD, AES-256	UFBGA 129 7x7x0.6 P 0.5 mm,WLCSP 100 4.4x4.4x0.6 P 0.4 mm	105,85	-40	4.5	-20	6
STM32WB55VE	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 512 Kbytes of Flash memory, Bluetooth LE 5.3, 802.15.4, Zigbee, Thread, Matter, USB, LCD, AES-256	UFBGA 129 7x7x0.6 P 0.5 mm,WLCSP 100 4.4x4.4x0.6 P 0.4 mm	105,85	-40	4.5	-20	6
STM32WB55VG	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 1 Mbyte of Flash memory, Bluetooth LE 5.3, 802.15.4, Zigbee, Thread, Matter, USB, LCD, AES-256	UFBGA 129 7x7x0.6 P 0.5 mm,WLCSP 100 4.4x4.4x0.6 P 0.4 mm	105,85	-40	4.5	-20	6
STM32WB55VY	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 640 Kbytes of Flash memory, Bluetooth LE 5.3, 802.15.4, Zigbee, Thread, Matter, USB, LCD, AES-256	WLCSP 100 4.4x4.4x0.6 P 0.4 mm	85	-40	4.5	-20	6
STM32WB5MMG	Ultra-low-power Module - Dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 1 Mbyte of Flash memory, Bluetooth LE 5.4, 802.15.4, Zigbee, Thread, Matter, USB, LCD, AES-256	SIP LGA 86 7.3x11x1.342 mm	85	-40	4.5	-20	6

Wireless Connectivity / Short Range/Ultra Wideband Products

Part Number	General Description	Operating Temperature (°C) min	Operating Temperature (°C) max	Frequency (GHz) min	Frequency (GHz) max	Number of Channels nom	Core Product	Target Application	Operating Range	Operating Voltage (V) min	Operating Voltage (V) max	RX sensitivity (dBm) max	SPI typ	UART typ
B-UWB-MEK1	Evaluation kit for the B-UWB-MOD1 ultra-wideband module	-10	60	3.25	4.75	4	STM32L476JE	Real-Time Location System (RTLS)	Commercial,Industrial	2.7	5	-118	4	2
B-UWB-MOD1	Ultra-wideband module for high-precision indoor location	-10	60	3.25	4.75	4	STM32L476JE	Real-Time Location System (RTLS)	Commercial,Industrial	2.7	4.2	-118	4	2

Wireless Connectivity / Short Range/ZigBee Products

Part Number	General Description	Package	Operating Temperature (°C) max	Operating Temperature (°C) min	RX current (mA) typ	Output Power (dBm) min	Output Power (dBm) max
STM32WB30CE	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 512 Kbytes of Flash memory, Bluetooth LE 5.4, 802.15.4, Zigbee, Thread, Matter, AES-256	UFQFPN 48 7x7x0.55 mm	85	-10	7.9	-20	4
STM32WB35CC	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 256 Kbytes of Flash memory, Bluetooth LE 5.4, 802.15.4, Zigbee, Thread, Matter, USB, AES-256	UFQFPN 48 7x7x0.55 mm	105,85	-40	4.5	-20	6
STM32WB35CE	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 512 Kbytes of Flash memory, Bluetooth LE 5.4, 802.15.4, Zigbee, Thread, Matter, USB, AES-256	UFQFPN 48 7x7x0.55 mm	85	-40	4.5	-20	6
STM32WB50CG	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 1 Mbyte of Flash memory, Bluetooth LE 5.4, 802.15.4, Zigbee, Thread, Matter, AES 256	UFQFPN 48 7x7x0.55 mm	85	-10	7.9	-20	4
STM32WB55CC	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 256 Kbytes of Flash memory, Bluetooth LE 5.4, 802.15.4, Zigbee, Thread, USB, LCD, AES-256	UFQFPN 48 7x7x0.55 mm	105,85	-40	4.5	-20	6
STM32WB55CE	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 512 Kbytes of Flash memory, Bluetooth LE 5.4, 802.15.4, USB, LCD, AES-256	UFQFPN 48 7x7x0.55 mm	105,85	-40	4.5	-20	6
STM32WB55CG	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 1 Mbyte of Flash memory, Bluetooth LE 5.4, 802.15.4, Zigbee, Thread, Matter, USB, LCD, AES-256	UFQFPN 48 7x7x0.55 mm	105,85	-40	4.5	-20	6
STM32WB55RC	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 256 Kbytes of Flash memory, Bluetooth LE 5.4, 802.15.4, Zigbee, Thread, Matter, USB, LCD, AES-256	VFQFPN 68 8x8x1.0 mm	105,85	-40	4.5	-20	6
STM32WB55RE	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 256 Kbytes of Flash memory, Bluetooth LE 5.4, 802.15.4, Zigbee, Thread, Matter, USB, LCD, AES-256	VFQFPN 68 8x8x1.0 mm	105,85	-40	4.5	-20	6

STM32WB55RG	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 1 Mbyte of Flash memory, Bluetooth LE 5.4, 802.15.4, Zigbee, Thread, Matter, USB, LCD, AES-256	VFQFPN 68 8x8x1.0 mm	105,85	-40	4.5	-20	6
STM32WB55VC	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 256 Kbytes of Flash memory, Bluetooth LE 5.3, 802.15.4, Zigbee, Thread, Matter, USB, LCD, AES-256	UFBGA 129 7x7x0.6 P 0.5 mm,WLCSP 100 4.4x4.4x0.6 P 0.4 mm	105,85	-40	4.5	-20	6
STM32WB55VE	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 512 Kbytes of Flash memory, Bluetooth LE 5.3, 802.15.4, Zigbee, Thread, Matter, USB, LCD, AES-256	UFBGA 129 7x7x0.6 P 0.5 mm,WLCSP 100 4.4x4.4x0.6 P 0.4 mm	105,85	-40	4.5	-20	6
STM32WB55VG	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 1 Mbyte of Flash memory, Bluetooth LE 5.3, 802.15.4, Zigbee, Thread, Matter, USB, LCD, AES-256	UFBGA 129 7x7x0.6 P 0.5 mm,WLCSP 100 4.4x4.4x0.6 P 0.4 mm	105,85	-40	4.5	-20	6
STM32WB55VY	Ultra-low-power dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 640 Kbytes of Flash memory, Bluetooth LE 5.3, 802.15.4, Zigbee, Thread, Matter, USB, LCD, AES-256	WLCSP 100 4.4x4.4x0.6 P 0.4 mm	85	-40	4.5	-20	6
STM32WB5MMG	Ultra-low-power Module - Dual core Arm Cortex-M4 MCU 64 MHz, Cortex-M0+ 32 MHz with 1 Mbyte of Flash memory, Bluetooth LE 5.4, 802.15.4, Zigbee, Thread, Matter, USB, LCD, AES-256	SIP LGA 86 7.3x11x1.342 mm	85	-40	4.5	-20	6