Bluetooth Line Card

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Bluetooth Low Energy Modules

Modules not actual size.

	Lyra Series	BL5340 Series	BL654 Series (includes USB adapter)	BL654PA Series	BL653/ BL653µ Series	BL652 Series	BL651 Series
Chipset	SILICON LABS — Silicon Labs EF32BG22 SoC	NORDIC SEMICONDUCTOR — Nordic nRF5340 SoC	NORDIC SEMICONDUCTOR — Nordic nRF52840	NORDIC SEMICONDUCTOR — Nordic nRF52840 + Skyworks PA SKY66112-11	NORDIC SEMICONDUCTOR — Nordic nRF52833	NORDIC SEMICONDUCTOR — Nordic nRF52832	NORDIC SEMICONDUCTOR — Nordic nRF52810
Wireless Standards	BT 5.x LE	BT 5.x LE + NFC + Thread	BT 5.x LE + NFC + Thread	BT 5.x LE + NFC + Thread	BT 5.x LE + NFC + Thread	BT 5.x LE + NFC	BT 5.x LE
Type (Flash/RAM)	SMT with onboard MCU (ARM Cortex-M33, 512 KB flash, 32 KB RAM)	SMT w/ dual Cortex M33 (App processor 1MB/512KB. Network processor 256KB/64KB)	SMT with onboard MCU (ARM Cortex M4F, 1MB/256k)	SMT with onboard MCU (ARM Cortex M4F, 1MB/256k)	SMT with onboard MCU (ARM Cortex M4F, 512KB/128KB)	SMT with onboard MCU (ARM Cortex M4F, 512k/64k)	SMT with onboard MCU (ARM Cortex M4, 192k/24k)
Size (mm)	6 x 6 x 1.1 (SiP) 12.9 x 15 x 2.2 (PCB)	15 x 10 x 2.2	15 x 10 x 2.2 (module) 18.4 x 50.7 x 11 (USB)	22 x 10 x 2.2	15 x 10 x 2.2 (BL653) 6.3 x 5.6 x 1.6 (BL653µ / trace pad) 6.3 x 8.6 x 1.6 (BL653µ / int. antenna)	14 x 10 x 2.1	14 x 10 x 2.1
Antenna Options	Integrated (PCB), Integrated or external (SiP)	Internal Antenna OR External via trace pin	Internal Antenna OR External via IPEX MHF4	Internal Antenna OR External via IPEX MHF4	Internal Antenna OR External via trace pin	Internal Antenna OR External via IPEX MHF4	Internal Antenna OR External via IPEX MHF4
Data/Control	UART, I2C, SPI, ADC, GPIO, PWM, PDM, Counter, Timer, Watchdog, PRS	USB, UART, QSPI, GPIO, ADC, PWM, PDM, QDEC, FREQ output, I²S, I²C, SPI, Comparator, Low Power Comparator	USB, UART, GPIO, ADC, PWM, PDM, FREQ output, I²S, I²C, SPI	UART, GPIO, ADC, PWM, PDM, FREQ output, I2S, I2C, SPI, QSPI	UART, GPIO, ADC, PWM, PDM, FREQ output, I2C, I2S, SPI, NFC, USB	UART, GPIO, ADC, PWM, FREQ output, I²C, SPI	UART, GPIO, I2C, SPI, ADC, PWM
Tx Power (dBm)	Up to +8 dBm (PCB) Up to +6 dBm (SiP)	Up to +5 dBm	Up to +8 dBm	Up to +18 dBm	Up to +8 dBm	Up to +4 dBm	-Up to +4 dBm
Rx Sensitivity (dBm)	Up to -98.9 dBm (PCB) Up to -98.6 dBm (SiP)	Up to -98 dBm	Up to -103 dBm	Up to -107 dBm	Up to -103 dBm (BL653) Up to -103 dBm (BL653µ)	Up to -96 dBm typ.	Up to -96 dBm
Temp Range	-40°C to +105°C	-40°C to +105°C	-40°C to +85°C	-40° to +85° C	-40°C to +105°C	-40°C to +85°C	-40°C to +85°C
Software/ Firmware	AT Command Set, Wireless Xpress, or full C Code	Zephyr RTOS, Nordic nRF Connect	AT Command Set, smartBASIC OR use Nordic SDK, Zephyr	AT Command Set, smartBASIC OR use Nordic SDK, Zephyr	AT Command Set, smartBASIC OR use Nordic SDK, Zephyr	AT Command Set, smartBASIC OR use Nordic SDK, Zephyr	Nordic SDK or Zephyr RTOS
Profiles / Services Supported	AT Commands, or any supported via Wireless Xpress / Silicon Labs SDK	Any services available via Nordic/Zephyr	Any available via smartBASIC/Nordic SDK/Zephyr	Any available via smartBASIC/Nordic SDK/Zephyr	Any available via smartBASIC/Nordic SDK/Zephyr	Any available via smartBASIC/Nordic SDK/Zephyr	Any services available via Nordic SDK/Zephyr
Additional Features	Intelligent power schemes, deep sleep mode, secure boot, ARM TrustZone, HW cryptographic accelerator	BLE Mesh, AoA/AoD, LE Audio / Isochronous Channels, LE Coded (Long Range)	BLE Mesh Packaged USB Adapters	BLE Mesh Ultra Long Range	BLE Mesh Extended Temp Range	NFC	ANT and proprietary 2.4 GHz
Certifications	FCC, ISED, ETSI, UKCA, MIC, KC, RCM, and Bluetooth SIG	FCC, ISED, ETSI, RCM, MIC, Bluetooth SIG	FCC, ISED, ETSI, MIC, RCM, Bluetooth SIG	FCC, ISED, RCM, KCC, Bluetooth SIG	FCC, ISED, ETSI, MIC, RCM, Bluetooth SIG	FCC, ISED, ETSI, MIC, KCC, RCM, Bluetooth SIG	FCC, ISED, ETSI, MIC, RCM, Bluetooth SIG

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Bluetooth Dual-Mode Modules

Modules not actual size.

	BT850/BT860 Series	BT851 USB Adapter	BT900 Series (includes USB adapter)
Chipset	Infineon CYW20704 A2	Infineon CYW20704 A2	Qualcomm QCA CSR8811
Wireless Standards	Dual-Mode BT5	Dual-Mode BT5	Dual-Mode BT v4.0
Type (Flash/RAM)	SMT with HCI Interface	USB HCI Adapter	SMT with onboard MCU (ARM Cortex M3)
Size (mm)	8.5 x 12.9 x 2.2	50.7 x 18.4 x 11	12.5 x 19 x 2.5 (module) 50.7 x 18.4 x 11 (USB)
Antenna Options	Internal Antenna OR External via trace pad	Internal Antenna	Internal Antenna OR External via U.FL
Data/Control	USB, HCI (BT850) UART, HCI (BT860)	USB, HCI	UART, GPIO, SPI, I²C, ADC
Tx Power (dBm)	Up to +8 dBm	Up to +8 dBm	Up to +8 dBm
Rx Sensitivity (dBm)	-94 dBm	-94 dBm	-90 dBm typ.
Temp Range	-30°C to +85°C	-30°C to +85°C	-40°C to +85°C
Software/Firmware	Any external BT software stack via HCI	Any external BT software stack via HCI	Hosted or hostless with *smart*BASIC
Profiles / Services Supported	Any supported by chosen BT stack	Any supported by chosen BT stack	SPP. HID, any custom BLE Service via *smart*BASIC
Additional Features	Support for Searan Dotstack.	Support for Searan Dotstack.	Simultaneous BT and BLE connections. Packaged USB Adapters
Certifications	FCC, ISED, ETSI, Giteki, KCC (BT850 only), MIC (BT850/860), RCM, Bluetooth SIG	FCC, ISED, ETSI, Giteki, RCM, Bluetooth SIG	FCC, ISED, ETSI, Giteki, Bluetooth SIG

Bluetooth Classic Modules

	BT730 Series	BT740 Series	BTM4xx
Chipset	Qualcomm CSR BC04	Qualcomm CSR BC04	Qualcomm CSR BC04
Wireless Standards	Bluetooth 2.0	Bluetooth 2.1	Bluetooth 2.0 / 2.1 + EDR
Type (Flash/RAM)	SMT PCB	SMT PCB	SMT PCB
Size (mm)	28.71 x 15.29 x 3	28.71 x 15.29 x 3	12.5 x 22 x 3.4 (BTM411/431/441/443)
Antenna Options	Integrated or external via U.FL	Integrated or external via U.FL	Integrated Antenna
Data/Control	UART, GPIO, ADC	UART, GPIO, ADC	UART (host interface) GPIO (user interface)
Tx Power (dBm)	Up to +18 dBm	Up to +18 dBm	Up to +4 dBm
Rx Sensitivity (dBm)	-87 dBm	-87 dBm	Better than -84 dBm
Temp Range	-40°C to +85°C	-40°C to +85°C	-40°C to +85°C
Software/Firmware	AT Command Set, Multipoint Protocol API	AT Command Set, Multipoint Protocol API	AT Command Set, Multipoint Protocol API
Profiles / Services Supported	SPP, DUN, FTP Client, HFP, Partial HSP	SPP, HID, HDP	On-module support for SPP, HID, HDP
Additional Features	Firmware support for multi-point applications (up to 3 bidirectional simultaneous connections). Up to 1km range.	Firmware support for multi-point applications (up to 7 bidirectional simultaneous connections) Up to 1km range.	Bluetooth 2.1 + EDR includes support for secure simple pairing
Certifications	FCC, ISED, EU, UKCA	FCC, ISED, EU, UKCA	FCC, ISED, EU, UKCA

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