





ST companion chips for USB Type-C - Protection

USB Type-C application	Microcontroller	USB-C Power / Data role	Type-C Port Protection (TCPP)	TCPP USB-C features and protections	STM32 Nucleo-64 expansion board	STM32 Nucleo-64 expansion software
USB-C at 15 W maximum (5 V – 3 A max.)	 Any MCU	Sink / Device	TCPP01-M12	V_{BUS} CC OVP ESD protection	X-NUCLEO-SNK1M1 USB-IF TID: 5205	 
		Source / Host	TCPP02-M18	V_{BUS} OCP, CC OVP ESD protection, current sense	X-NUCLEO-SRC1M1	
USB-C Power Delivery* Any PDO up to 100 W (20 V / 5 A) PPS-compliant	STM32 with UCPD** STM32G0, STM32G4, STM32L5, STM32U5	Sink / Device	TCPP01-M12	V_{BUS} CC OVP ESD protection	X-NUCLEO-SNK1M1 USB-IF TID: 5205	Also in 
		Source / Host	TCPP02-M18	V_{BUS} OCP, CC OVP ESD protection, current sense	X-NUCLEO-SRC1M1	
		DRP: Dual Role Power DRD: Dual Role Data	TCPP03-M20	V_{BUS} CC OVP+OCP ESD protection, current sense	X-NUCLEO-DRP1M1 USB-IF TID: 6408	

OVP: Over Voltage Protection
OCP: Over Current Protection

**Compliant with USB Power Delivery 3.1 SPR (Standard Power Range) specification. PPS: Programmable Power Supply.

**UCPD: USB Type-C Power Delivery Controller, embedded in STM32 microcontrollers.

[Click here to access the list of STM32 integrating UCPD.](#)



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ST companion chips for Wireless ICs – RF IPD

Associated RF Transceiver	Matched Balun Companion chip	Frequency (MHz)	Integrated filter	Size	Package
SPIRIT 1	BALF-SPI-01D3	868-915	Yes	1.4 mm x 2.0 mm	CSP
	BALF-SPI-02D3	433	Yes	1.4 mm x 2.0 mm	CSP
S2-LP	BALF-SPI2-01D3	868-915	Yes	2.1 mm x 1.55 mm	CSP
	BALF-SPI2-02D3	433	Yes	2.1 mm x 1.55 mm	CSP
BlueNRG-MS (QFP32 &nd CSP34)	BALF-NRG-01D3	2400	Yes	1.4 mm x 0.85 mm	CSP
BlueNRG-1 (QFP32 and CSP34) BlueNRG-2 (QFN32 and CSP34)	BALF-NRG-02D3 (Height <350µm)	2400	Yes	1.4 mm x 0.85 mm	CSP and Thin CSP

Associated RF Microcontroller	Matched Low Pass Filter Companion Chip	Frequency (MHz)	Integrated filter	Size	Package
STM32WB55Cx/Rx, STM32WB50Cx, STM32WB35Cx, STM32WB30Cx BLE 5.0	MLPF-WB-01E3	2400-2500	Yes	1.5 mm x 1.0 mm	Bumpless CSP (LTCC assy-like)
STM32WB55Vx BLE 5.0	MLPF-WB55-02E3	2400-2500	Yes	1.5 mm x 1.0 mm	Bumpless CSP (LTCC assy-like)