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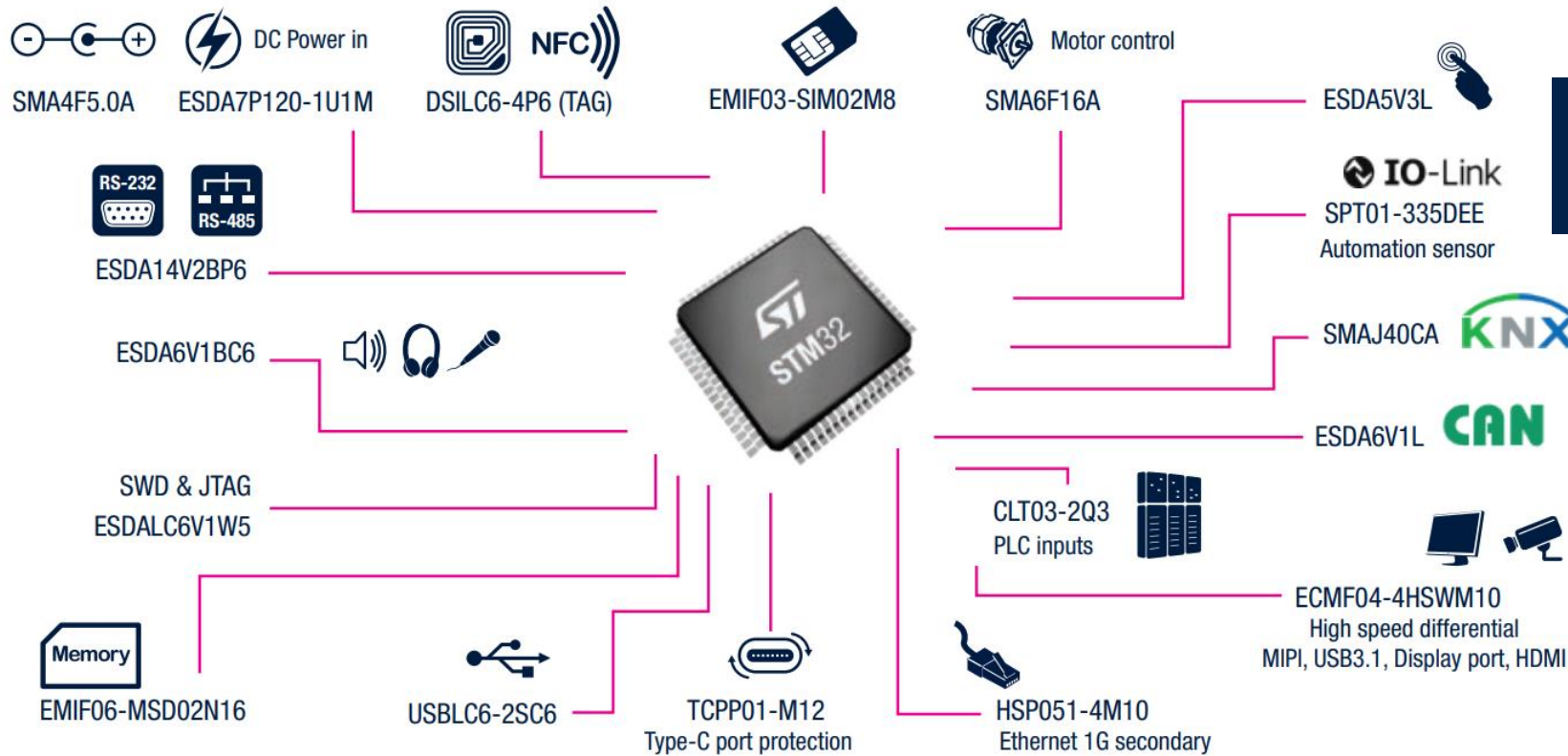
Protection and Filters





Pick the right ESD protection for MCU interfaces

ESD protection IEC61000-4-2 Level 4: $\pm 8\text{kV}$ contact discharge



Access the full portfolio on ST.COM:

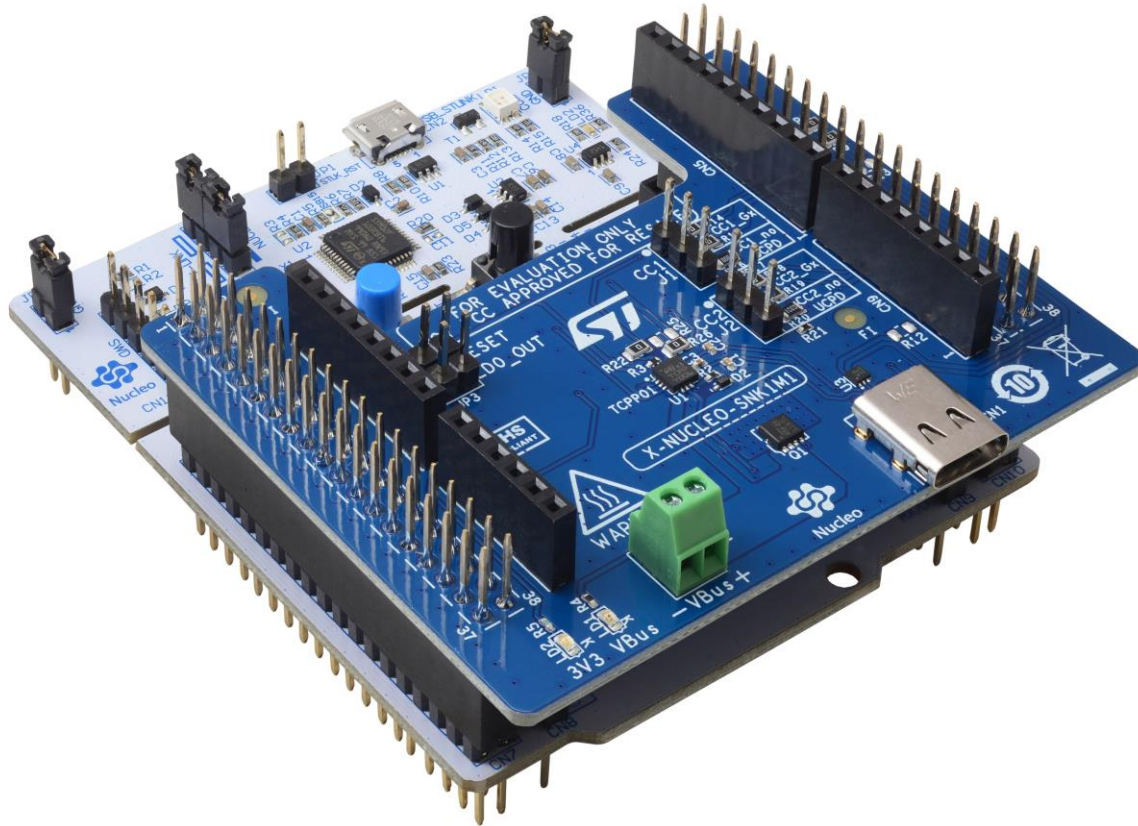




USB-C sink protection up to 100W with STM32

X-NUCLEO-SNK1M1

Expansion board adding USB-C to any STM32 NUCLEO-64



Featuring TCPP01-M12 protection for sink:

- VBUS overvoltage protection
- CC lines short-to-VBUS protection
- Industrial operating range: -40°C to 125°C

Software example code:
X-CUBE-TCPP



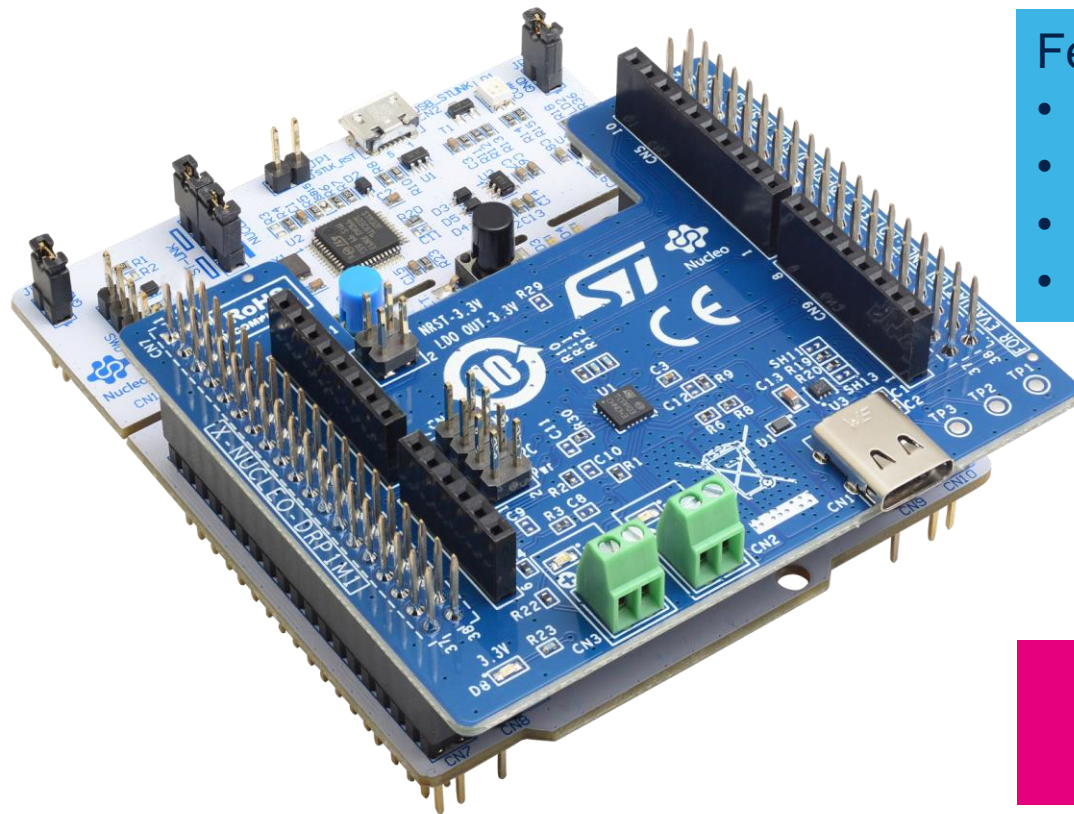
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USB-C Dual Role protection up to 100W for STM32

X-NUCLEO-DRP1M1

Dual Role expansion board for USB-C Power Delivery STM32



Featuring **TCPP03-M20** protection for dual role:

- VBUS, CC, VCONN overvoltage protection for sink and source
- VBUS, VCONN overcurrent protection for sink and source
- CC lines short-to-VBUS protection
- Industrial operating range: -40°C to 125°C

Software example code:
X-CUBE-TCPP



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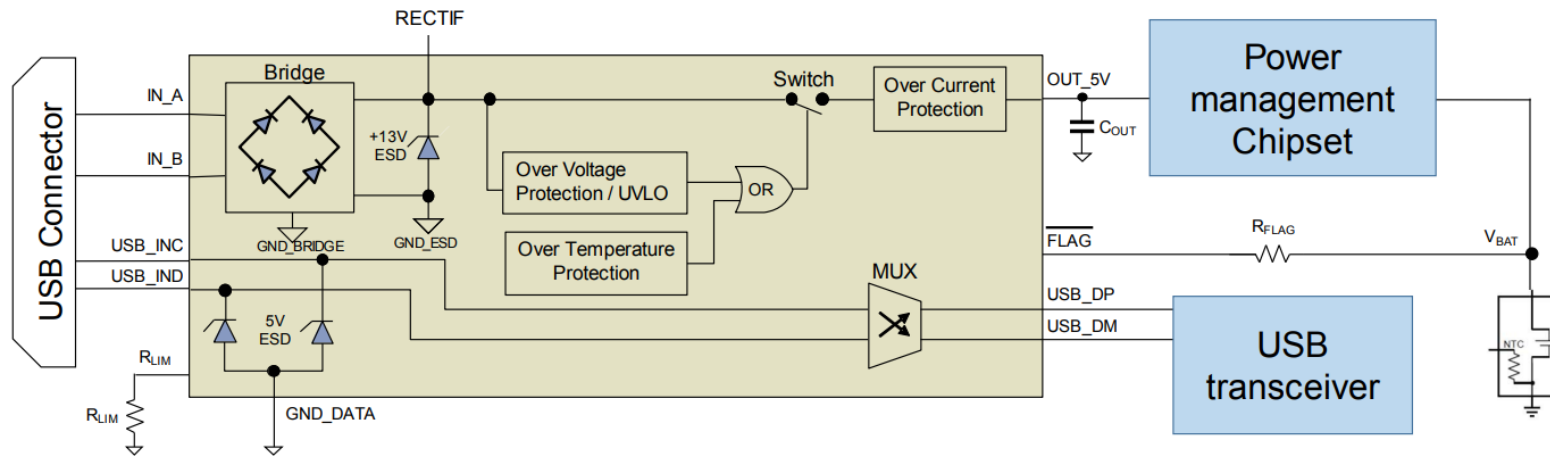
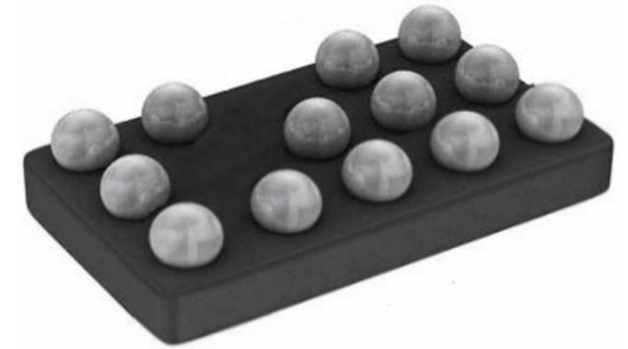


Overvoltage/overcurrent protection with polarity detection

OCVPB21-13F6

Small-size protection: WLCSP 13 bumps 2.1 mm x 1.332 mm

- Exceeds IEC61000-4-2 Level 4: $\pm 15\text{kv}$ contact on bridge inputs
- Polarity detection: 13V input rectification bridge
- Integrated overvoltage protection: up to 13V
- Integrated overcurrent protection: adjustable from 0.1A to 0.5A

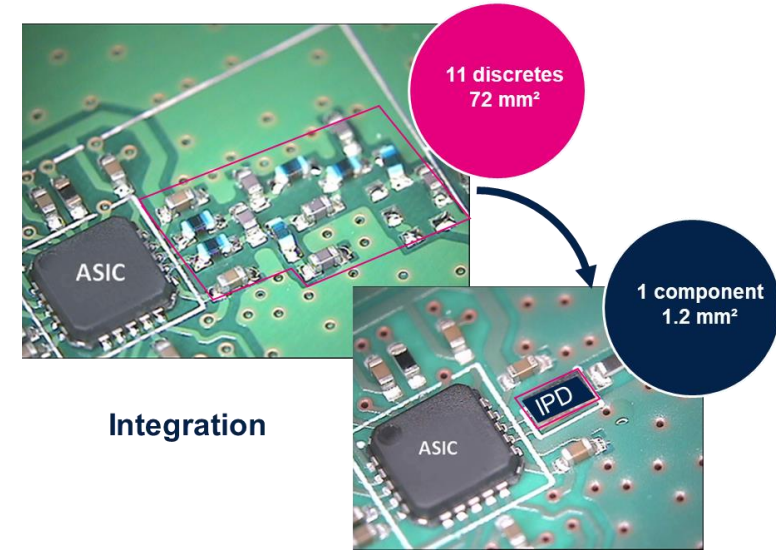


RF IPD Baluns Companion chips

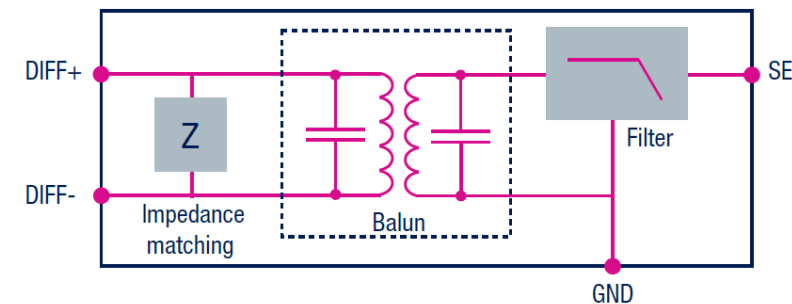
Associated RF Transceiver	Matched Balun Companion chip	Frequency (MHz)
SPIRIT 1	BALF-SPI-01D3	915-868
	BALF-SPI-02D3	433
SPL-2	BALF-SPI01-2D3	915-868
	BALF-SPI02-2D3	433
BlueNRG-MS	BALF-NRG-01D3	2400

Associated RF Microcontroller	Matched Low Pass Filter Companion Chip	Frequency (MHz)
STM32WB	MLPF-WB01-55E3	2400-2500

Associated GNSS receiver	Band Pass Filter Companion Chip	Bandwidth (MHz)
STA8089xx - STA8090xx	BPF01-8089SC6	1559-1610



Integration



* LTCC assy-like

Designed for various transceivers

Significantly help reduce RF complexity

Provide an optimized link budget



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