TCPP01-M12

Single-chip USB Type-C protection solution shrinks BOM cost, safely

Safely migrate to USB Type-C connector with TCPP01-M12, companion chip for STM32 and STM8 microcontrollers.

A single-chip USB Type-C port protection solution that facilitates the migration from USB legacy connectors Type-A or Type-B to USB Type-C connectors, the TCPP01-M12 protects against defective chargers, CC line shorts to VBUS and electrostatic discharges as per IEC 61000-4-2 level 4 ±8kV contact discharge. For 5V applications, the TCPP01-M12 is an effective companion chip for any general-purpose microcontroller (STM32 or STM8). STM32 monitoring and configuration software tool available for USB-C and Power Delivery 3.0 applications.

KEY FEATURES & BENEFITS
Three protections in one package, 6V overvoltage protection on CC lines
- VBUS Overvoltage protection with external N-channel MOSFET
- ±8kV ESD protection on VBUS and CC lines as per IEC61000-4-2 Level 4
- Compliant with Programmable Power Supply (PPS)

Safe and simple USB Type-C migrations
- Protection against most common electrical surges occurring with USB Type-C connectors
- Null power consumption for battery-powered devices
- Simplify PCB design

KEY APPLICATIONS
- Any battery-powered device with USB-C charging port
- Wireless speakers
- Point of Sale devices
- Glucose meters
- Power tools
- Drones
- USB hub
Hardware tools
USB Type-C port protection expansion board for STM32 Nucleo (X-NUCLEO-USBPDM1) based on TCPP01-M12

Application schematic for consumer (sink) 15w application

VBUS overvoltage Protection response for different threshold (6V, 10V, 13V, 17V, 22V), measured at “SOURCE” pin

Legend
- VBUS from USB-C connector
- OVP response with threshold=6V
- OVP response with threshold=10V
- OVP response with threshold=13V
- OVP response with threshold=17V
- OVP response with threshold=22V

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