TCPP01-M12
Single-chip USB Type-C protection solution shrinks BOM cost, safely

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
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)

KEY BENEFITS
Safe and simple USB Type-C migration
- 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 hubs

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