

USB Type-C Port Protector for CC and SBU Pins

Features

- Overvoltage Protection (OVP)
 - ▶ 24VDC Tolerance on CC1/2, SBU1/2
 - Robust 27V overshoot clamping
 - ▶ CC1/2 OVP = 5.8V
 - ▶ SBU1/2 OVP = 4.8V
 - ▶ Ultra-Fast 15ns Response Time
- IEC61000-4-5 Surge Protection
 - ▶ ±80V Surge Tolerance on CC1/2
 - ▶ ±35V Surge Tolerance on SBU1/2
- IEC61000-4-2 ESD Protection
 - ▶ ±15kV air gap on CC1/2, SBU1/2
 - ▶ ±8kV contact on CC1/2, SBU1/2
- ±2kV HBM on all pins (JEDEC JS-001-2017)
- Moisture Detection Compatible
 - ▶ Over 10MΩ to ground on CC1/2, SBU1/2
- CC Switches:
 - ▶ 1.25A, 330mΩ, 370pF, 17MHz
 - ▶ Automatic 5.1kΩ dead battery pull-down
- SBU Switches:
 - ▶ 4Ω, 27pF, 235MHz
 - ▶ Reverse current blocking when disabled
- 2.5V to 5.5V Operating Supply Voltage Range
- -40°C to 85°C Operating Temperature Range
- Pb-free 20 bump WLCSP (0.4mm pitch)

Brief Description

The KTU1101 provides ESD, surge, and overvoltage protection (OVP) for USB Type-C ports CC and SBU signal pins. ESD protection meets IEC61000-4-2 standards, eliminating the need for external TVS diodes. Surge protection meets IEC61000-4-5 standards, increasing immunity from power surges such as lightning strikes on the power lines while the USB cable is connected. Overvoltage protection (OVP) eliminates system damage due to physical or moisture-related shorts between the signal pins and VBUS at elevated PD voltage levels.

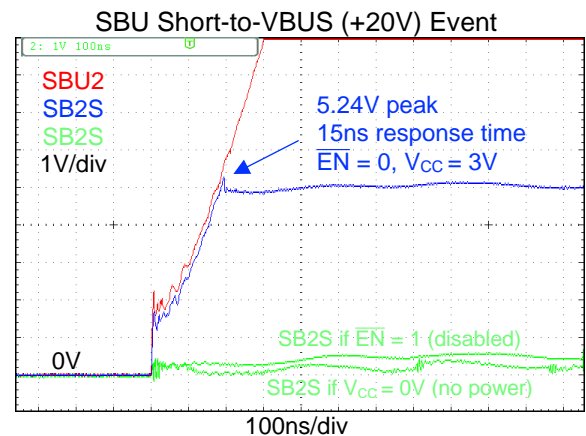
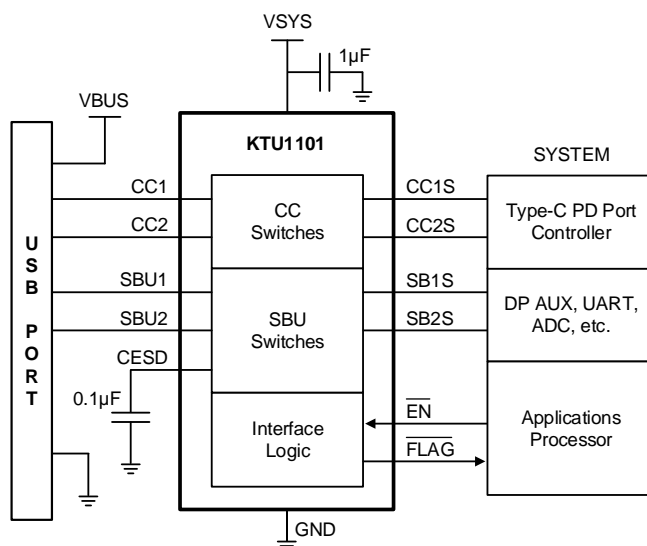
The SBU switches have low on-capacitance for passing high-speed signals. The CC1/2 switches have low on-resistance for passing V_{CONN} power up to 1.25A for CC power delivery communications. During dead battery conditions, internal 5.1kΩ resistors automatically pull down on CC1/2 to ensure that the up-stream source provides 5V to VBUS.

The KTU1101 is packaged in RoHS and Green compliant 1.7mm x 2.1mm wafer-level chip-scale package (WLCSP).

Applications

- Smartphones, Tablets, Notebooks, Monitors, TVs
- Accessories, AI/BT Loudspeakers, IoT
- Any USB Type-C port

Typical Application



Conditions: SB2S = 25mΩ short to +20V
SB2S (SB2S) = open, no load



Ordering Information

Part Number	Marking ¹	Operating Temperature	Package
KTU1101EVF-TR	MCXXYYZZZZ	-40°C to +85°C	WLCSP45-20

1. "MC" is the device ID. "XXYY" is the date code and assembly code. "ZZZZ" is the serial number.

Kinetic Technologies cannot assume responsibility for use of any circuitry other than circuitry entirely embodied in a Kinetic Technologies product. No intellectual property or circuit patent licenses are implied. Kinetic Technologies reserves the right to change the circuitry and specifications without notice at any time.