

HL5097

USB Type-C CC/SBU Protection Switch

Overview

The HL5097 is a high-performance USB Type-C connector protection IC including two channels for CC or SBU interface. Two input pins (IN_SIG1 and IN_SIG2) of HL5097 facing USB connector have 28V maximum voltage rating to be protected from over-voltage by shorting these signals with VBUS voltage up to 20V.

Downstream system can be protected safely from over-voltage condition, ESD and surge by using HL5097 OVP switch. IN_SIG1 and IN_SIG2 OVP thresholds are pre-fixed to 5.8V for HL5097WL01 and 4.8V for HL5097WL02.

The signal path switches have low 160mΩ Rds(on) to be able to deliver current up to 1.25A for VCONN power. During dead battery condition, internal pull-down resistor Rds(on) IN_SIG1/2 are terminated to GND for Source to detect this Rd and start providing VBUS power supply at dead battery condition.

Most systems require IEC 61000-4-2 system level ESD protection for their external pins. The HL5097 integrates IEC 61000-4-2 ESD protection for the IN_SIG1 and IN_SIG2 removing the need to place high voltage TVS diodes externally on the USB connector.

The HL5097 is available in 6-pin WLCSP package.

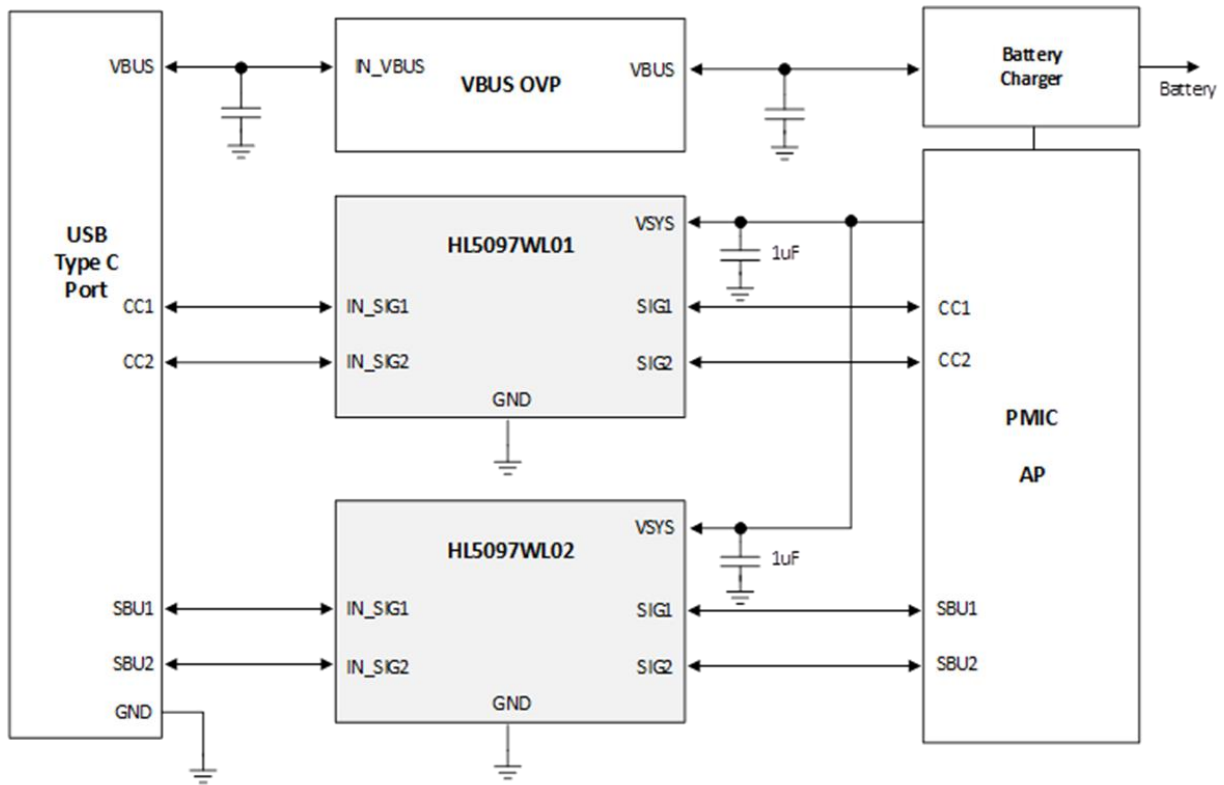
Features

- USB type-C connector protection for dual channel signal path: CC or SBU
- VSYS voltage range: 2.5V to 5.5V
- Absolute maximum voltage rating of IN_SIG: 28V
- Low Rds(on) N-MOS switch: 160mΩ
- Compliance to IEC61000-4-2 for IN_SIG:
 - Contact discharge: ±8kV
 - Air discharge: ±15kV
- Surge protection for IN_SIG: ±40kV
- Fixed over-voltage threshold level by option:
 - 5.8V (CC option, HL5097WL01)
 - 4.8V (SBU option, HL5097WL02)
- Built-in dead battery Rds(on) IN_SIG for VBUS power supply (HL5097WL01)
- Ultra-fast OVP protection response time: 30nsec
- Low quiescent current: 25μA (Typ.)
- Operating temperature range: -40°C ~ 85°C
- 6-Bump WLCSP, 1.25mm x 0.93mm, 0.4mm pitch

Applications

- Smartphones
- Mobile IoT Devices

Typical Application Diagram



Ordering Information

Part Number	OVP Th	Dead Battery Rd	Package	Size
HL5097WL01	5.8V	5.1kΩ	6-pin WLCSP	1.25mm x 0.93mm
HL5097WL02	4.8V	None	6-pin WLCSP	1.25mm x 0.93mm

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