NX20P0407

USB Type C CC and SBU Protection IC

Rev 1.1 — 23 Jan 2018 **Datasheet**

1. General description

NX20P0407 is a single chip USB type C port protection solution. CC1/CC2 and SBU1/SBU2 pins in system side are protected from up to 28V short to VBUS, which pins are located right next VBUS pins.

USB Type C allows VBUS voltage to increase up to 20V through Power delivery protocol, the concern is that these CC1/2 and SBU1/2 pins can be shorted with VBUS when plugging out with mechanical twisted connector since Type C connector contact pin is 25% closer to each other than prior generation connector, micro USB which most mobile devices have been using. Another concern is that moisture or fine dust may cause short to 20V VBUS with next to pins.

NX20P0407 enables CC and SBU to be more robust in even abnormal conditions. NX20P0407 has 28V DC tolerant on CON_CC1, CON_CC2, CON_SBU1 and CON_SBU2 pins in connector side and quickly disconnects switches if the voltage is above over voltage threshold, CC1, CC2, SBU1 and SBU2 in system side are protected from the high voltage.

NX20P0407 integrates IEC 61000-4-2 ESD protection on CON_CC1 and CON_CC2, +15KV air discharge and +8KV contact discharge, which helps to reduce external BOM cost. NX20P0407 CON_CC1 and CON_CC2 pins are designed to be protected from surge up to +/- 35V

2. Features and benefits

- USB Type C CC1/2 and SBU1/2 short protection to VBUS
  - CON_CC1 / CON_CC2 : $28V_{DC}$
  - CON_SBU1 / CON_SBU2 : $28V_{DC}$
- Rd circuit in CON_CC1/CON_CC2 in dead battery
- Low Rdson switch
  - CC switch : 160mΩ
  - SBU switch : 3.6Ω
- Robust ESD immunity for CON_CC1/2
  - IEC 61000-4-2 Contact discharge: 8KV
  - IEC 61000-4-2 Air discharge: 15KV
- +/- 35V surge protection on CON_CC1/2
- Low SYS leakage current : 32uA
- CC1/2 leakage current : < 1uA
- Fast OVP turn off time : 60ns

3. Applications

- Smartphone
- Tablet
- Laptop

4. Ordering information

Table 1. Ordering information

Type number	Temperature range	Name	Description	Version
NX20P0407UK	−40 °C to +85 °C	WLCSP12	Wafer level chip-size, 12 bumps; 1.27 x 1.67 x 0.525 mm (back side coating included)	NX20P0407

5. Marking

Table 2. Marking Codes

Type number	Marking code
NX20P0407UK	N07

6. Functional Diagram

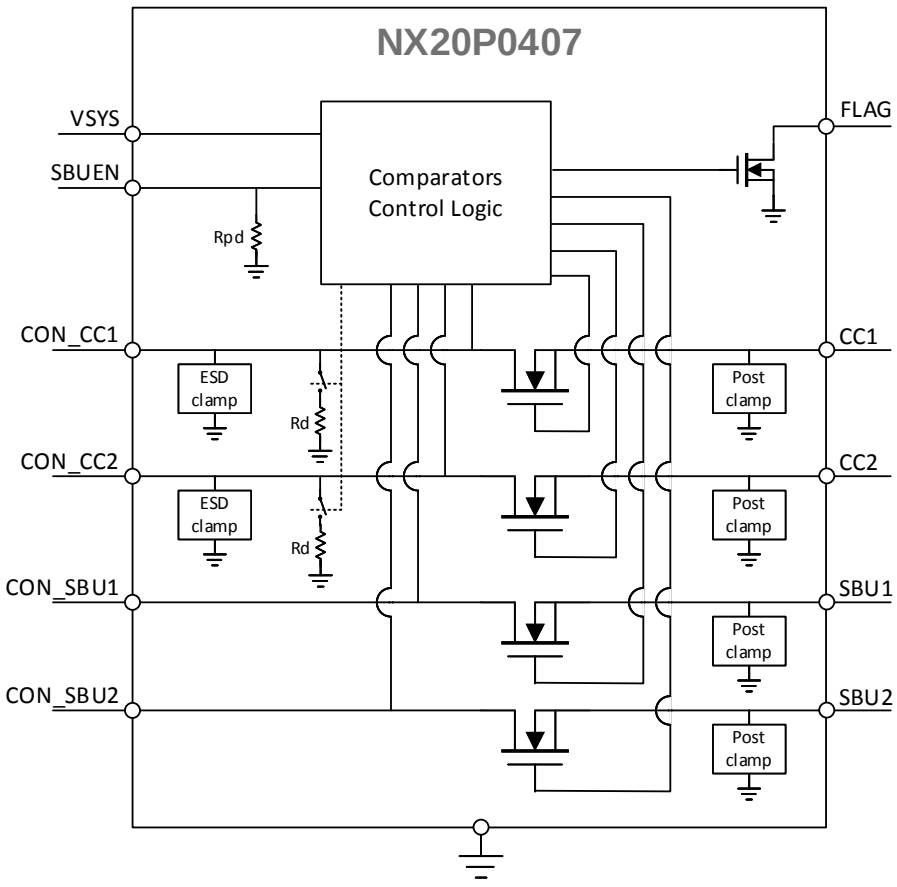

Fig 1. Block diagram