2 to 1 36V Power MUX and Overvoltage protection for USB PD Application

DESCRIPTION

The MT7956 is a highly integrated power path solution for USB PD applications. It integrates a 2 to 1 power mux switch with two low on resistance power path: high voltage power path with 36V input voltage and 5V voltage power path. Both power paths have reverse block functions. With Fast Role Swap function implemented for 5V power path, MT7956 can respond fast to the unplug of external power source.

Due to compact size of USB Type C connector and wide voltage range on VBUS pin, CCx and SBUx pins next to VBUS pin have the danger of been shorted to VBUS. The MT7956 also integrated CCx and SBUx high voltage protection bypass paths. HOST_CCx is isolated from CONN_CCx when dead battery or VCONN is applied. If CONN_CCx is selected as CC line, CONN_CCx can be bypassed to HOST_CCx by I2C control. MT7956 also integrated VCONN switch with over current protection. The state of VCONN switch and current limit can be programmed with I2C interface.

MT7956 enables USB-PD fast role swap (FRS) via either FRSEN logic or I2C control. Once detected VBUS is lower than 4.75V, the high voltage channel will be shut down and the 5V power path will be turned on in 100us and act as a new source.

FEATURES

- 2 to 1 Power MUX:
  - High Voltage Channel: 4.5V to 36V for VCHG Input Range.
  - 5V Channel: 4V to 5.5V for V5V InputRange
- Smooth Ramp Control When Channel Transition
- Reverse Blocking Function
- Bi-direction Control for High Voltage Channel
- Fast Role Swap
- I2C Interface
- CC and SBU High Voltage (36V) Protection Bypass and Isolation Control
- Dead Battery Wake up Function
- VCONN Path for E-mark Cable
- Protection:
  - Output Current Limit Setting
  - OCP/OVP/TSD/UVP
- Compact QFN5x5_40L package

APPLICATIONS

- USB-C/ PD HUB
- Desktop PC
- Laptop PC
- Smart Phone

TYPICAL APPLICATIONS