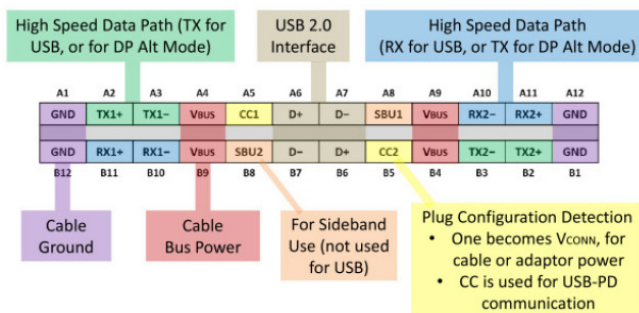


USB 3.1 Type-C Power Delivery Protection

USB Type-C is a breakout standard of data transmission and power delivery. Featuring with data rate up to 10 Gbps, flexible power delivery mode, and the configuration channel (CC Pin) to support alternative mode, the USB 3.1 Type-C is set to define the new generation of transmission technology.



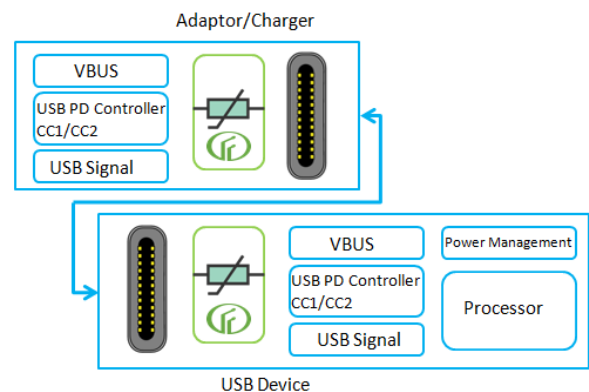
USB 3.1 Type-C Pin out. Please notice its symmetrical and reversible. With the new symmetrical and reversible pin-out design, USB 3.1 Type-C is compatible to USB 2.0 and other transmission standard (Alt Mode). However, it also comes with more design challenge and the increased power level also increases the level of electrical hazard.

USB Power Delivery

Combine with USB Power Delivery's dynamic power management. USB 3.1 Type-C extends the usage of USB interface. The system can provide up to 20V/5A, 100W power, allow more type of device can charge or supply power via USB interface. Increased power level also increases the level of dangerous power hazard. Complete short circuit and current limiting protection must be



implemented on the power host, connected device, and the USB transmission cable.



In USB 3.1 Specification R1.0; Section 11.4.1.1.1 Over-current Protection, released by USB ORG., the over-current limiting mechanism must be resettable without user mechanical intervention. Polymer PTC is one of the examples of methods that can be used for over-current limiting. The compact size FSMD and Low Rho SMD PPTC can be easily implemented on USB devices and cable connectors.

Why Fuzetec PPTC?

With our patented PPTC formula, Fuzetec developed a full line of high current, high voltage rating PPTC products to meet the USB Power Delivery standard. Fuzetec PPTC is the cost effective solution compared to overcurrent protection ICs to provide circuit protection from excessive current.

USB Power Delivery Profile

	Profile 0	Reserved
Mobile phone	Profile 1	10W
	5V @ 2A	Startup Profile
Tablet, Netbook	Profile 2	18W
	5V @ 2A, 12V @ 1.5A	
Ultrabook	Profile 3	36W
	5V @ 2A, 12V @ 3A	
Standard	Profile 4	60W(Limited to micro
Notebook, Hub	5V @ 2A, 12V, 20V @	A/B connector)
	3A	
Workstation, Hub	Profile 5	100W(Limited to
	5V @ 2A, 12V, 20V @	Std A/B connector)
	5A	

Solution

Fuzetec SMD PPTC

Voltage/Current Rating : 2A/6V, 1.2V/1.5A, 2.4V/3A*

Package Size : 1206 , 2920*(2.4V/3A)

Fuzetec Low Rho SMD PPTC

Voltage/Current Rating: 6V/5A, 12V/5A, 20V/5A

Package Size: 1206

Compliance

USB Power Delivery, USB 3.1

Quick Charge 2.0/3.0

UL60950 (Limited Power Source)