

> what is default max output power of USB-PD or Qualcomm QuickCharge power supplies into passive cable and connector without any control resistors or negotiation?



USB Power Delivery (USB-PD) and Qualcomm Quick Charge are both technologies that allow for increased power levels to be delivered over a USB connection, but they work differently and have different power limits.

USB Power Delivery (USB-PD) is a standard from the USB Implementers Forum (USB-IF) that allows for power delivery up to 100W. USB-PD uses a communication line to negotiate power delivery, so if there is no negotiation (such as with a passive cable or connector without any control resistors), the USB-PD standard defaults to the basic USB power level, which would be up to 2.5W for USB 2.0 (5V at 0.5A) or up to 4.5W for USB 3.0 (5V at 0.9A).

Qualcomm Quick Charge, on the other hand, is a proprietary technology developed by Qualcomm. As of my knowledge cutoff in September 2021, Quick Charge 5 is the latest version and it supports power levels up to 100W as well. However, Quick Charge also requires negotiation for higher power levels. If there's no negotiation, a Quick Charge enabled power supply will default to the basic USB power level, same as USB-PD.

It's worth noting that the actual power you can get will also depend on the capabilities of both the power supply and the device being charged. Not all power

supplies or devices will support the maximum power levels, even if they do support USB-PD or Quick Charge. Always refer to the specifications of your specific devices and cables for accurate information.



what resistors are needed to allow 5V 3A or 5A output?
is this possible without active negotiation?



Both USB Power Delivery (USB-PD) and Qualcomm Quick Charge (QC) require some sort of negotiation between the charger and the device in order to deliver higher power levels. This negotiation typically involves a combination of resistors and communication protocols.

USB-C, the connector commonly used with USB-PD, has a system of resistors that can be used to indicate the power capabilities of the cable itself, but it does not allow for specifying power levels above the USB standard without active negotiation.

The USB Battery Charging specification (BC 1.2) introduced a method of indicating charging capability with resistors, where a DCP (Dedicated Charging Port) has the D+ and D- data lines shorted together with a resistance not exceeding 200 ohms. This indicates to the device that it can draw more than the standard USB current, up to 1.5A.

In the case of Qualcomm's Quick Charge, it uses variable voltage on the D+ and D- lines to indicate different modes. Quick Charge 2.0 has three modes (5V, 9V, 12V), and Quick Charge 3.0 can adjust the voltage dynamically from 3.6V to 20V. However, these

still require active communication between the charger and the device, and they don't allow for specifying a particular current limit.

For delivering 5V at 3A or 5A, this would typically be done through USB-PD, which supports these power levels. However, USB-PD requires active communication for power negotiation, and the specific power level would need to be supported by both the charger and the device. It's not possible to force a specific power level with just resistors.
