

Lesson 1: Introduction to Type-C Video Series, Kits, and Tools

Hello. My name is Alan Hawse. I'm Senior VP Fellow for Solutions and Software here at Cypress. Welcome to Cypress Academy. Today I am launching a new series of videos to teach you how to build your own Type-C and USB power delivery solutions using the Cypress CCGx family of products. For brevity, I'll just call them "Type-C" in the rest of these videos, but the topics cover both Type-C - the connector - as well as the USB protocol called PD.

Cypress has been a leading player in USB since the beginning. We built our reputation as THE leader in USB by building the most programmable USB controllers available. Programmable means that you have control on how your products work. We have now brought this leadership position to Type-C. Cypress was the first to supply a Type-C port controller solution and we've continued to add to the product portfolio. Today we have the largest number of certified USB Type-C controllers in the industry.

To go along with our Type-C controllers, I'm going to show you three of our development kits: the CY4502, which is a cable replacement kit, the CY4531 - the CCG3 kit, and the CY4541 which is the CCG4 kit. These kits demonstrate our 2nd, 3rd, and 4th generation CCG devices respectively.

Each of these chips are optimized to solve your product problems. For example, CCG2 is extremely small and is perfect for electronically marked cable assemblies also known as EMCAs. It can also be used in other applications that require small form factors. CCG3 is a highly integrated device including VCONN FETs, an alternate mode side-band multiplexor, a USB billboard controller, hardware authentication, and much, much more. CCG3 can operate with up to 20V power supplies directly without additional external components. CCG4 and CCG4M add a second Type-C port in a single package to enable you to build a docking station, a hub, or a notebook PC. Both Type-C ports can operate independently of one another which is really cool. Note that the CCG3 and CCG4 kits also contain Cypress CCG2 enabled EMCA cables.

In addition to these development kits, Cypress also offers the CY4500 kit which is a USB PD protocol analyzer. Along with the included PC program, this is an invaluable tool that will help you understand how the PD protocol is operating, and I'll demonstrate that in a later video. Finally, Cypress provides a utility called the "EZ-PD Configuration Utility" and a software development kit called the "EZ-PD CCGx SDK" for easy creation of your own unique Type-C application.

In the next video, I'll provide a brief introduction to the world of USB Type-C and then show you examples of different Type-C functionality in action using the CY4531 CCG3 kit. For simplicity, I'll use the CCG3 kit for all of the demonstrations that I'm going to show you in this series of videos, but the concepts that you'll learn in those videos apply equally well with the other kits.

As always, you are welcome to email me at alan_hawse@cypress.com or send me a tweet @askiotexpert with your comments, suggestions, criticisms, and questions. Another great resource for information on the Cypress Type-C products can be found at www.cypress.com/type-c.