## **CYPRFSS**

# EZ-PD<sup>™</sup> CCG3PA-NFET: **USB TYPE-C® PORT CONTROLLER** WITH POWER DELIVERY

EZ-PD<sup>™</sup> CCG3PA-NFET is Cypress' highly-integrated USB Type-C port controller with V<sub>BUS</sub> NFET-Gate driver that complies with the latest USB Type-C and PD standards and is designed for power adaptors. CCG3PA-NFET offers significant BOM advantages by integrating all Type-C port termination resistors, 24V-tolerant regulator, a high voltage VBUS NFET gate driver, VBUS to CC short protection, and an integrated feedback circuitry for voltage (VBUS) regulation. CCG3PA-NFET is also offered in a pre-programmed version for customers looking for little to no customization.



### **FEATURES:**

- USB PD 3.0 with PPS
- 0C4.0
- Legacy charging (BC1.2, Samsung AFC, Apple charging)
- Integrates  $\mathrm{V}_{\mathrm{BUS}}$  NFET gate driver
- Integrates 24-V regulator

- Independent CC-CV loop
- Configurable OVP, OCP, and OTP
- 64KB Flash Memory
- Available in both pre-programmed and programmable versions



# **CCG3PA-NFET SOLUTION EXAMPLE: TYPE-C POWER ADAPTOR/MOBILE CHARGER**

PACKAGES:

• 24-pin QFN

#### **CCG3PA-NFET Solution**

- Provides Type-C solution with Power Delivery 3.0 (PD 3.0) with programmable power supply support and Quick Charge 4.0 (QC 4.0)
- Includes an Arm<sup>®</sup> Cortex<sup>®</sup> -MO and certified USB-PD stack
- Integrates voltage regulation, 24-V-tolerant regulator, V<sub>BUS</sub>-to-CC short protection, high-voltage NFET gate driver, and ESD protection
- · Supports field upgrades with free, fully-compliant firmware

New Smartphone Charger with USB-C Receptacle

Secondary

Integrated Controller

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#### <sup>1</sup> Output voltage of the AC-to-DC adaptor

- $^{\rm 2}$  Signal to control  $V_{\text{BUS}}$  load switch
- <sup>3</sup> Output voltage selection using feedback control
- <sup>4</sup> A cable permanently attached to the AC adaptor
- <sup>5</sup> Current-sensing input
- 6 Resistor used to sense overcurrent



# SIMPLIFIED SYSTEM DESIGN WITH BOM INTEGRATION





<sup>1</sup> Output voltage of the AC-to-DC adaptor

<sup>2</sup> Signal to control VBUS load switch

- <sup>3</sup> A cable permanently attached to the AC adaptor
- <sup>4</sup> Current-sensing input
- <sup>5</sup> Resistor used to sense overcurrent

## **APPLICATIONS**

Mobile Chargers | Power Adaptor

1	Circuit	to	measure	the	current	flowing	on	the	VBUS
						-			

<sup>2</sup> Adaptive Fast Charging

<sup>3</sup> Termination resistors: RP read as a DFP, RD as a UFP

## **EZ-PD CCG3PA-NFET PORTFOLIO**

Part Number	Application	Package
CYPD3172-24LQXQ	Power Adaptor based on Opto Coupler Feedback	24-Pin QFN
CYPD3172P-24LQXQ	Power Adaptor based on Opto Coupler Feedback (Programmable)	24-Pin QFN
CYPD3173-24LQXQ	Power Adaptor based on Direct Feedback	24-Pin QFN
CYPD3173P-24LQXQ	Power Adaptor based on Direct Feedback (Programmable)	24-Pin QFN

CONTACT

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