



VIA Labs, Inc.

Product Preliminary

VP223

USB Type-C DFP CC Controller with Universal Battery Charging

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VIA Labs, Inc.

www.via-labs.com

7F, 529-1, Zhongzheng Rd.,

Xindian District, New Taipei City 231 Taiwan

Tel: (886-2) 2218-1838

Fax: (886-2) 2218-8924

Email: sales@via-labs.com.tw

Product Feature

- Detect the attachment and detachment of Type-C port
- Provide Type-C cable orientation identification
- Provide the selection of VBUS power capability setting
- Provide the control signal for VBUS
- Provide VCONN application with maximum 1.5W
- Integrate VCONN MOSFET power switch
- Meets Chinese Telecommunication Industrial Standard YD/T 1591-2009
- Meets Battery Charging Specification BC 1.2 for DCP
- Automatic selection of D+/D- mode for an attached device
- Thermal and Short-Circuit protection for VCONN
- Under-Voltage Lock Out protection
- Reverse current blocking for CC1 & CC2
- Ambient operating temperature: -40 °C to 85 °C
- Available in 8 pin DFN package
- Lead(Pb)-Free and RoHS compliant

Applications

- USB Type C Wall Charger
- USB Type C Car Charger
- USB Type C Power Bank

General Description

VIA Lab's VP223 is an USB Type-C DFP CC controller and a universal battery charging controller. The VP223 provides the electrical measurement to support the following Type-C CC controller features;

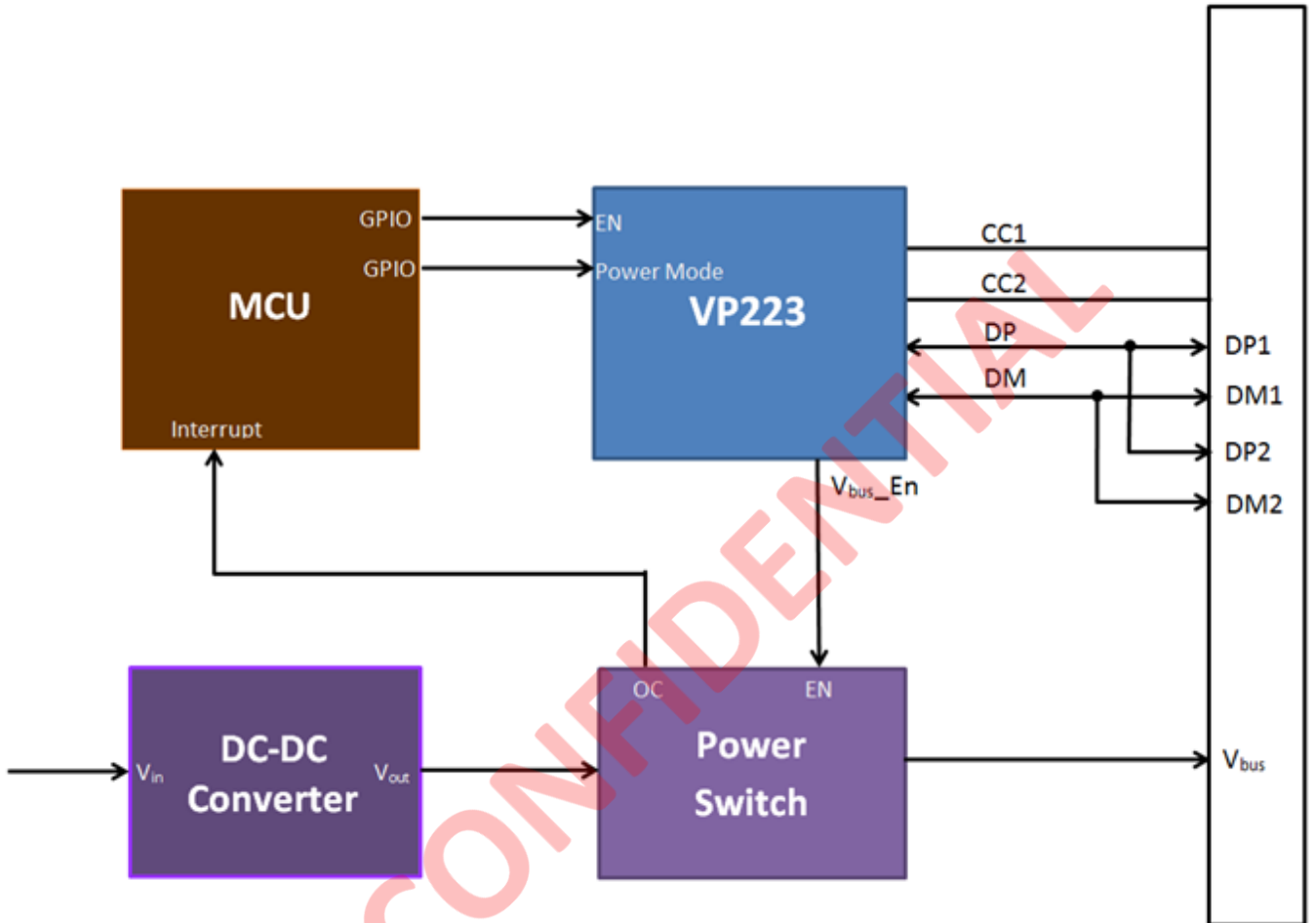
- (1) Detect attach of USB Type-C ports
- (2) Resolve cable orientation and twist connections to establish USB data bus routing
- (3) Establish DFP and UFP roles between two attached ports
- (4) Discover and configure VBUS: USB Type-C Current mode
- (5) Configure VCONN

The VP223 also provides the backward compatibility with the electrical protocol handshake on D+/D- to support the following battery charging schemes:

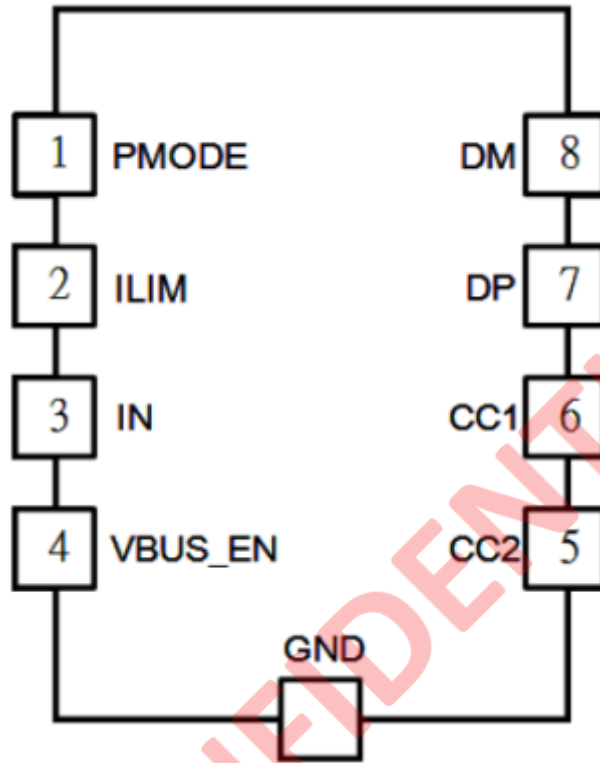
- (1) USB 2.0 Battery Charging Specification 1.2 (BC 1.2)
- (2) Chinese Telecommunication Standard YD/T 1591-2009
- (3) Divider 3 mode, complaint with most of Apple® devices such as iPod®, iPhone® (1A), and iPad® (2.4A)
- (4) DCP 1.2V Mode, compliant with Samsung devices

VP223 provides two power capability setting for 1.5A and 3.0A at default Vbus 5V. The PowerMode pin is used to configure the Power capability setting. The chip integrates an auto-detect feature that supports 3 DCP schemes for USB2.0 Battery Charging Specification (BC 1.2), the Divider mode and DCP 1.2V mode without the need from outside user interaction..

Application Diagram



Pin Diagram



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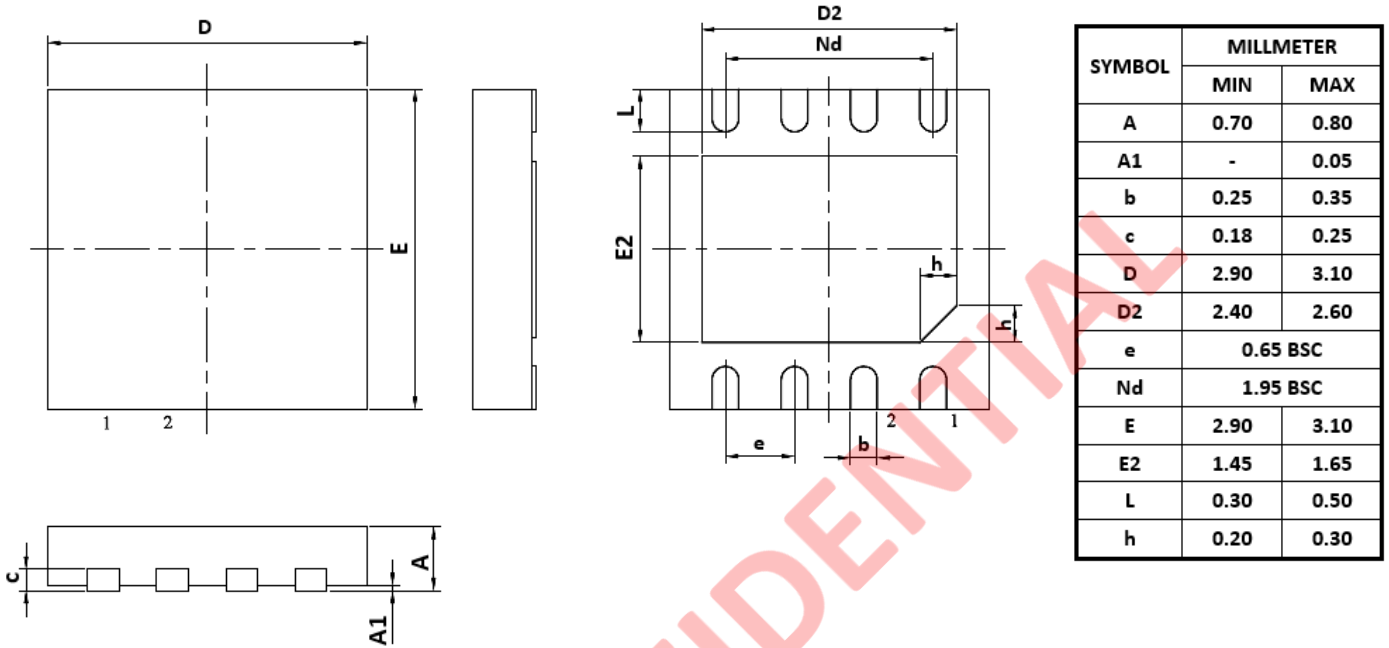
Pin Descriptions

Signal Type Definition

Name	Type	Signal Description
Input	I	Input is a standard input-only signal
Output	O	This is a standard active driver
Input/Output	IO	This is an input/output signal
Open-Drain Output	OD	Output with Open-Drain driver
Power	PWR	A power pin
Ground	GND	A ground pin

Pin Name	Pin #	Type	Description
VBUS_EN	4	O	Logic-level output signal used to control the Vbus Power Switch
IN	3	PWR	Input voltage and supply voltage
ILIM	2	I	External Resistor referred by Rp.
PMODE	1	I	Logic-level control input for setting the Type-C current mode
CC2	5	O	Initially monitor voltage on it and monitor the voltage when UFP is connected.
CC1	6	O	The VCONN will be applied in the other CC pin is connected and the other CC pin detect Ra
DP	7	I/O	D+ data line to downstream connector
DM	8	I/O	D- data line to downstream connector
PowerPAD		GND	Internally connected to GND; used to heat-sink the part to the circuit board traces, Connect to GND plane

Package Information



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