USB PD 智能快充的未来大趋势

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威锋电子简介





VIA Labs, Inc.

VLI Standard Product Categories

USB 3.1

Host Controller

Hub Controller

SATA Bridge Controller

USB Type-CTM

Electronic Marker

DisplayPort Alternate Mode Controller

USB Data Switch

USB Audio Controller

Power IC

Normal USB with Protection

Normal USB with Charging Detection

USB-C™ Port Controller (DFP / UFP / DRP)

USB PD Wall Adapter

VLI's Expanding Capabilities & Customer Base

USB Type-C

Single Connector, Total Solution From Basic to Advanced Functions Covers Most Charging Needs Extensible, Ready for the Future!

Power

Data

Video

PC/NB Peripherals

Tablet/Mobile Accessories

Smart Phone Accessories

Total Connectivity
Solutions

USB PD & USB-C 简介

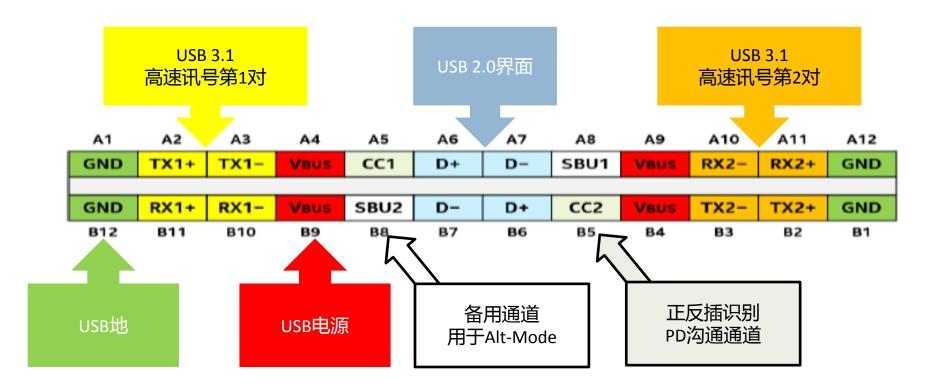




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USB Type-C 接头



电源. PD 3.0 与 PD 2.0 的不同

- PD电源规则
- 数据传输与发送的方式
- 支持(IEC63002)涵盖多种电源供应器信息
- 电池容量与状态
- 进行快速电源角色转换(Fast Role Swap)
- 支持 [USBTypeCAuthentication 1.0] 与[USBPDFirmwareUpdate 1.0]
- 移除BFSK通信方式
- 可编程电源供应模式(Programmable Power Supply)

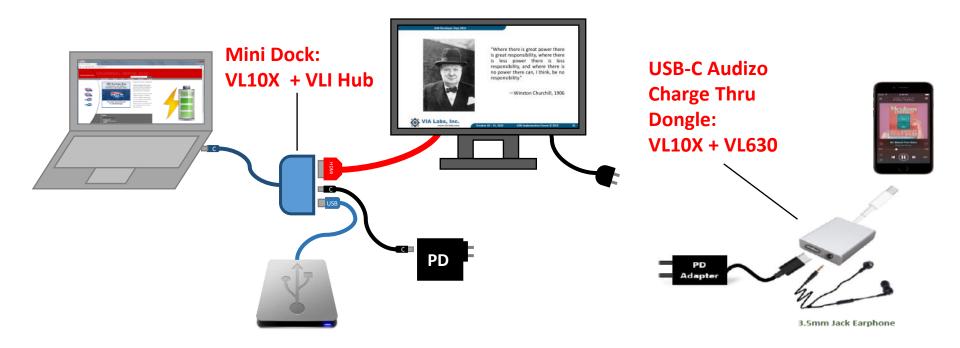
笔记本电脑市场趋势与解决方案





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VLI Dongles Applications for PC & Phone



Data, Video and Power - All on Single USB Type-C

Major Design-ins & wins in 2017 (More...)



PS:支持多接口同时连接



超薄笔记本接口不再单一



PD快充 · 干兆网络 · 数据传输 · 拓展大屏 · 读卡





VLI New application: Smart PD charging

- 动态切换PDO
 - 预扣不同的瓦数: USB 2.0 & USB 3.1
 - 侦测装置接上,才进行扣电
 - 侦测充电器接上,开启 Hub 支持 BC 1.2 功能,并调整预扣瓦数
- 支持 QC Charger (Type-A to Type-C cable),实现快速充电(5V/9V/12V)
- 支持 2个USB-C 接口盲插充电(Interchangeable)

VL10x DP Alt-mode and PD Controllers

USB PD 3.0



One USB-C UFP and One DFP

DP video out
PD Charge Thru & Data-link
Fast-Role-Swap
Built-in USB Billboard
Crystal-less
QFN48 6x6mm



One USB-C UFP and One DFP

VL102 + Auto-Standby for ultra low idle power Pin-compatible to VL102 QFN48 6x6mm





One USB-C UFP and Two DFPs

Interchangeable DFPs
Auto-Standby mode
HV process up to 22V
Sync Buck controller
QFN48/60 & VFBGA69 5x5mm

Mass Production

VL103 Auto-Standby Power Consumption

VL103-Q3 App1 (Pure Video Dongle)	Vbus Power (mA)	Note			
Port1 ON, HDMI not ON	0.34 mA	About 1/100 to VL100-Q3			
Port1 ON, HDMI ON (BB enabled for FW update)	0.5 mA	About 1/70 to VL100-Q3			
VL103-Q4 App5 (Charging-thru Dongle)	Vbus Power (mA)	Note			
Port1 ON, HDMI not ON, Port2 not ON	0.75 mA	About 1/40 to VL102-Q4			
Port1 ON, HDMI ON, Port2 not ON	0.75 mA	BB enabled on Hub ~1/40 to VL102-Q4			
Port1 ON, HDMI ON, Port2 ON	1.47 mA	Self-powered mode ~1/20 to VL102-Q4			

USB 3.1 Gen2 Hub Products

USB 3.1 Gen 2 (10Gbps)

VL820 Q8 VL820-Q8 (4-Port)
USB Type-C Support

UFP/2x DFP Switch Integrated BB + HID QFN88 10x10mm

VL820 Q7 VL820-Q7 (4-Port)
Standard-A USB Hub
Smart Charging 2
QFN76 9x9mm

USB PD Support



VL821-Q8 (4-Port)

USB Type-C + PD + Alt-Mode UFP/ 2x DFP Switch Integrated TCPM, DPM, PPM Integrated BB + HID Supports PD Bridge QFN88 10x10mm



VL821-Q7 (4-Port)

Standard-A USB Hub w/
USB-PD + Alt-Mode
Integrated TCPM, DPM, PPM
Integrated BB + HID
Supports PD Bridge
QFN76 9x9mm

Mass Production

USB 3.1 Gen1 Hub Products

USB 3.1 Gen 1 (5Gbps)





VL817 (4-Port/ 2-Port)
USB 3.1 Gen1, 5Gbps
Smart Charging 2
Low Power
Integrated DC-DC
QFN76 9x9mm (4-port)
QFN56 7x7mm (2-port)



VL211 (1+3 Port)
USB 3.1 Gen1, 5Gbps
4x DFP: 1x SS, 3x HS
Smart Charging 2
Smart Management
Integrated BB + HID
Integrated DC-DC
Pin Compatibility with VL210
QFN48 6x6mm

USB PD Support



VL212 (1+3 Port)
Enhanced VL210
4x DFP: 1x SS, 3x HS
USB-PD + Alt Modes
2x Integrated TCPM, DPM, PPM
Integrated BB + HID
Supports PD Bridge
Integrated DC-DC
QFN48 6x6mm

Mass Production

智能手机快充与解决方案





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USB Type-C 作为手机的充电界面

- 透过扩展坞扩充功能
- 3.5mm耳机孔消失后的替代方案
- 支持PD- PPS快速充电

Major Design-ins & wins

Customers	Samsung
OEM/ODM	Luxshare-ICT
Project name	MPA2 (Multiport Adapter 2) EE-P5000
Application	Tablet / Phone Dongle
Solutions	VL817-Q7
MP schedule	September 2017















Major Design-ins & wins

Customers	Huawei Mobile				
OEM/ODM	UGREEN				
Project name	DFH 1.8m C-to-HDMI cable				
Application	C-to-HDMI cable				
Solutions	VL103-Q3				
MP schedule	November 2017				







Design for Listening to music & Charging



近年,威锋电子与各大手机品牌进行技术交流, 为推动市场趋势不遗余力,包括: 华为、OPPO、VIVO、小米、中兴、锤子、联想......等。 无论PD规格演进或市场敏锐度,威锋电子皆与品牌需求同步!















VP302 USB-C & USB PD for SMPS

Key Features

- Type-C and USB PD Support
 - Compliant to USB Type-C 1.3
 - Compliant to USB Power Delivery 3.0
- High Integration
 - Integrated USB Type-C baseband transceiver PHY
 - Built-in Vconn switch (sourced from Vcc)
 - Over-current protection for VCONN
 - Operating Voltage from 2.8V to 5.5V
 - ADC for Vbus voltage monitor
 - External NTC input for thermal protection
 - CC1/CC2 pins rated up to 25V
 - System level ESD 15KV Air-discharge/8KV contact
 - D+D- bonding optional
 - PD 3.0 with PPS
 - TID:1000130

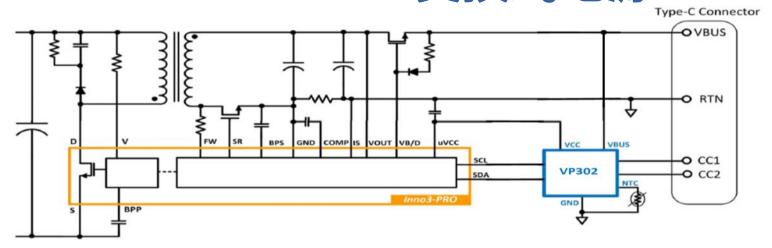


DFN8 3x4





VP302 USB-C & USB PD 交换式电源



报告	应用	输入范围 (VAC)	输出功率 (W)	输出电压范围 (V)	InnoSwitch3-Pro 型号	控制器
DER-703	USB PD 3.0 + PPS	85 - 264	27W	3-11V	INN3366C	VP302
DER-704	USB PD 3.0 + PPS	85 - 264	45W	3-15V	INN3368C	VP302

Power Brick associated with PI InnoSwitch3-Pro TID:11090042

VP302 USB PD Charger Support List

ROM Code	F/W	PDP	PDO1	PDO2	PDO3	PDO4	PDO5	PDO6	PDO7	OVP	ОСР
A01		27W	5V/3A	9V/3A	12V/2.25A	3.3~5.9V/3A PPS	3.3~11V/3A PPS/CP			120% Latch	115% Auto
A02		18W	5V/3A	9V/2A	12V/1.5A	3.3~5.9V/3A PPS	3.3~11V/2A PPS/CP			120% Auto	115% Auto
A03		30W	5V/3A	9V/3A	12V/2.5A	15V/2A	20V/1.5A	3.3~5.9V/3A PPS	3.3~11V/3A PPS	120% Auto	115% Auto
A04		27W	5V/3A	9V/3A	3.3~11V PPS					120% Auto	110% Auto
A05		45W	5V/3A	9V/3A	12V/3A	15V/3A	20V/2.25A	3.3~16V/3A PPS		120% Auto	110% Auto
A06		45W	5V/5A	9V/3A	15V/3A	20V/2.25A	3.3~5.9V/5A PPS	3.3~16V/3A PPS	3.3~21V/2.25A PPS	120% Auto	110% Auto
A06		60W	5V/3A	9V/3A	15V/3A	20V/3A	3.3~21V/3A PPS			120% Auto	110% Auto
A07		100W	5V/5A	9V/5A	15V/5A	20V/5A	3.3~21V/5A PPS			120% Auto	110% Auto

IPAD PRO USB-C & USB PD 周边解决方案





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iPad Pro支持PD,更在意画质输出的视觉感受







12.9时-2732×2048

图片出处:苹果官网

- 支持DP 1.4, PD充电
- 支持4-LANE 输出5K画质
- 取消3.5mm耳机孔

DP 4 Lane + USB2.0 + PD

USB 2.0 PDUSB Hub Products

USB 2.0 w/ USB PD Support

VL120 Q5

VL120-Q5 (1C+1A)

USB Type-C + USB PD + Alt-Mode UFP/ 1x DFP Built-in PD Integrated TCPM, DPM, PPM Integrated BB + HID Supports USB-C Bridge QFN56 7x7mm





VL120-Q6 (2C)

USB Type-C + USB PD + Alt-Mode UFP/ 2x DFP Built-in PD Integrated TCPM, DPM, PPM Integrated BB + HID Supports USB-C Bridge QFN68 8x8mm





VL120-Q7 (2C+2A)

USB Type-C + USB PD + Alt-Mode UFP/ 2x DFP Built-in PD Integrated TCPM, DPM, PPM Integrated BB + HID Supports USB-C Bridge QFN76 9x9mm



2018 End of December Mass Production

VLI USB Type-C Summary

USB Type-C Cable

 USB Type-C E-Marker for Passive Cables: VL151/ VL152/VL154

USB Type-C Accessory

- Video Dongle: VL100/ VL101/ VL103
- USB Type-C HUB: VL820-Q8
- USB Type-C HUB w/ PD: VL120/ VL819-Q8/ VL821-Q8
- Multi-function Dock/Dongle: VL101/ VL102/ VL103/ VL104 + VLI Hub Controllers
- USB Type-C external HDD: VL713/ VL716
- USB Type-C external HDD w/ PD: VL717
- USB Type-C mobile/tablet/OTG: VP240

USB Type-C Switch

- 4-to-2/2-to-4 switch with CC Logic: VL160
- 4-to-2/2-to-4 switch: VL161
- 6-to-4/4-to-6 switch: VL170

USB Type-C Charging

- USB PD Wall Charging Controller: VP300/ VP302
- USB Type-C Port Controller: VP230/ VP231
- USB Type-C DFP Controller: VP222/ VP223/ VP224/ VP225
- USB Type-C DRP Controller: VP240/ VP242
- USB Type-C UFP Controllers: VP246

USB-C™ & USB PD 解決方案

整合式 PD 扩展坞

PD扩展坞

VL120: USB 2.0 集线器扩展坞



智能充电扩展塢: VL10X + [VL81X or VL82X]

音频适配器: VL104

视频适配器: VL100/ VL101/ VL103

TCPM + TCPC 扩展坞

VL212 + VP230 VL819 + VP230

VL821 + VP230

PD 车/搪充 with PPS

VP302: USB Type-C™ & USB PD 电源控制芯片

PD 外接式硬盘

VL717: USB 3.1 Gen2 to SATA III 桥接芯片

威锋电子全球最好芯

威锋电子





最新规格·绝佳兼容·符合安规·方案完整

USB Type-C™ AND USB-C™ ARE TRADEMARKS OF USB-IF FORUM