

規格書

Data Sheet

CUSTOMER :

Basler

Model NO :

U3-PCIE1XG205

DESCRIPTION :

2-port USB 3.0 PCI Express x1
Gen 2 Host Card

Revision :

1.1.1

Date: 2023/3/28

| CUSTOMER APPROVED | APPROVAL | ENGINEER | ISSUE BY |
|-------------------|----------|----------|----------|
| | | | |

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Content

Overview:

| | |
|-------------------------------|---|
| Introduction | 3 |
| Technical Specifications | 3 |
| Feature | 4 |
| Computer Platform | 4 |
| Operating System Requirements | 4 |
| Block Diagram | 5 |

Silk Screen and Picture:

| | |
|------------------------------------|---|
| Silk Screen of U3-PCIE1XG205 P.C.B | 6 |
| Picture of U3-PCIE1XG205 PCBA | 6 |

Mechanical Dimension:

7

Kit Parts Information:

| | |
|--------------------------------------|----|
| Datasheet of USB 3.0 Host Controller | 10 |
|--------------------------------------|----|

Certifications & Compliances:

11

Overview:

Introduction

U3-PCIE1XG205 is a 2-port USB 3.0 to PCI Express x1 Gen 2 Host Card.

The U3-PCIE1XG205 complies with Universal Serial Bus 3.0 Specification, and Intel's eXtensible Host Controller Interface (xHCI).

The U3-PCIE1XG205 uses a PCI Express bus interface, and it is applicable for PCI Express solutions with host PC systems.

The U3-PCIE1XG205 supports data transfer up to 5 Gbps when connecting to USB 3.0 compliant peripherals, while maintaining compatibility with existing USB peripheral devices.

Technical Specifications

PCIe Host Bus

- ◇ Compliant with PCI Express base specification 2.0
- ◇ Supports PCI Express card electromechanical specification revision 2.0
- ◇ Compliant with Intel's eXtensible host controller Interface (xHCI) specification revision 1.0
- ◇ Supports PCI Bus Power Management Interface specification revision 1.2
- ◇ Operational registers are direct-mapped to PCI memory space
- ◇ Supports Serial Peripheral Interface (SPI) type ROM

USB Features

- ◇ Supports two downstream ports for all speeds
- ◇ Supports all USB compliant data transfer types as follows; Control / Bulk / Interrupt / Isochronous transfer
- ◇ Compliant with USB 3.0 specification revision 1.0
- ◇ Each USB port supporting SS/HS/FS/LS data rates (5Gbps/480Mbps/12Mbps/1.5Mbps)
- ◇ Supports USB battery charging specification revision 1.2 for charging downstream ports (CDP).

USB Data Transfer Rate

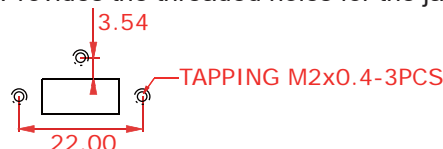
- ◇ Low-speed (1.5 Mbps)
- ◇ Full-speed (12.0 Mbps)
- ◇ High-speed (480.0 Mbps)
- ◇ Super-speed (5.0 Gbps)

Number of USB Ports

- ◇ 1-port: U3-PCIE1XG205P1-10
- ◇ 2-port: U3-PCIE1XG205-10/U3-PCIE1XG205-1A/U3-PCIE1XG205-1S

USB 3.0 Vision Standard cable port lock mechanism

Provides the threaded holes for the jack-screws of USB 3.0 A plug w/Jackscrew lock cable



USB Bus Power Input

U3-PCIE1XG205-10/P1-10: USB bus power is from PCIe 12V (Step-Down)

U3-PCIE1XG205-1A/1S: USB bus power may from the following source (A or B):

- ◇ A. From PCIe 12V (Step-Down)
- ◇ B. From Power Connector (IDE 4-pin or SATA 15-pin)
 - U3-PCIE1XG205-1A: Big IDE 4-pin DC Power Connector
 - U3-PCIE1XG205-1S: SATA 15pin Power Connector

Storage Temperature

- ◇ 0°C to 70°C (32°F to 150 °F)

Storage Humidity

- ◇ 10% to 80% (Non-Condensing)

Feature

1. μ PD720202 (USB IF TID 380000043)

2. USB Bus Power

A. From PCIe 12V (1.3MHz fixed frequency PWM synchronous step-down regulator)

- 4A Output Current
- 80m Ω Internal Power MOSFET Switches
- Up to 95% Efficiency
- 1.3MHz Fixed Switching Frequency
- Internal Soft-Start
- Frequency Synchronization Input
- Thermal Shutdown
- Cycle-by-Cycle Current Limiting
- Hiccup Short Circuit Protection

B. From Power Connector (IDE 4-pin or SATA 15-pin)

3. 2.0A (70m Ω on-resistance) Single Channel Current-Limited Power Switch

- UL Recognized, File Number E322375
- IEC60950-1 CB Scheme Certified

The devices have fast short-circuit response time for improved overall system robustness, and have integrated output discharge function to ensure completely controlled discharging of the output voltage capacitor. They provide a complete protection solution for applications subject to heavy capacitive loads and the prospect of short circuit, and offer reverse current blocking, over-current, over-temperature and short-circuit protection, as well as controlled rise time and under-voltage lockout functionality.

4. Low-ESR Aluminum Electrolytic Capacitor

5. High stability and high reliability SMD 3225 Crystal

6. USB 3.0 Standard-A Type Connector (USB IF TID 360000145)

7. USB 3.0 Vision Standard cable lock mechanism

8. USB 3.0 & PCIe & PCIe Clock Impedance

- USB Characteristic trace impedance
 - Differential mode: 90 Ω nominal +/- 10%.
- PCIe Characteristic trace impedance
 - Single-ended: 50 Ω +/- 15%
 - Differential mode: 85 Ω nominal +/- 15%
- PCIe Clock Characteristic trace impedance
 - Single-ended: 50 Ω +/- 15%
 - Differential mode: 100 Ω nominal +/- 15%

9. Low Profile PCI Form Factor

Computer Platform

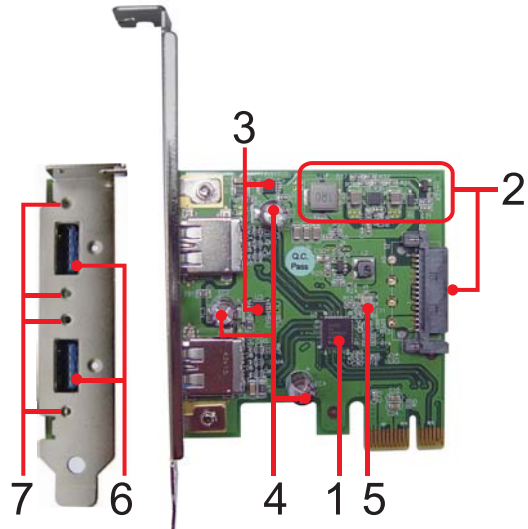
Computer with PCI Express slot (x1, x4, x8, x16)

Note:

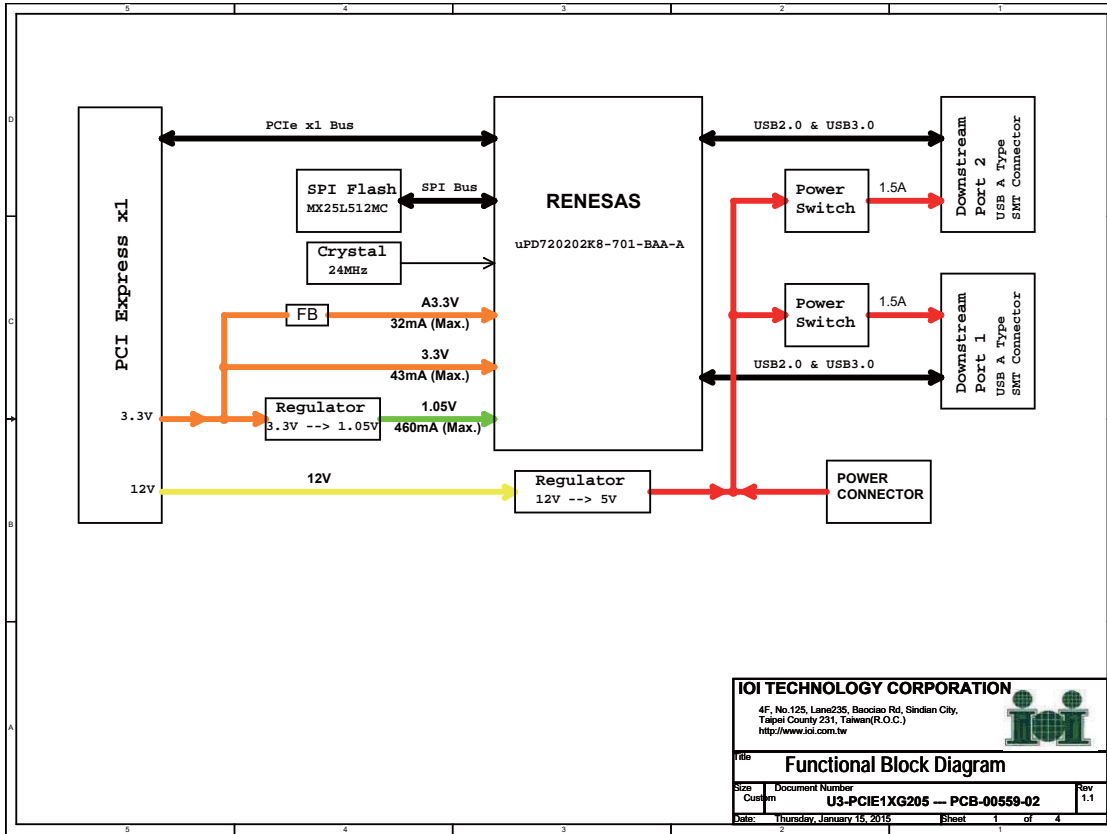
For the best performance (5.0 Gbps), It should be installed in a PCIe Gen 2 compliant slot in the host computer. A PCIe Gen 1 compliant slot reaches up to 2.5 Gbps throughput

Operating System Requirements

- If OS is Windows 8 or later , there are inbox driver for Renesas USB 3.0 Host Controller. OS will detect the presence of new hardware and then install Renesas USB 3.0 Host Controller driver automatically.
- USB 3.0 Host Drivers Kit (x86 and x64) for
 - Windows XP
 - Windows Vista
 - Windows 7
 - Windows Server 2008 Release 2



Block Diagram



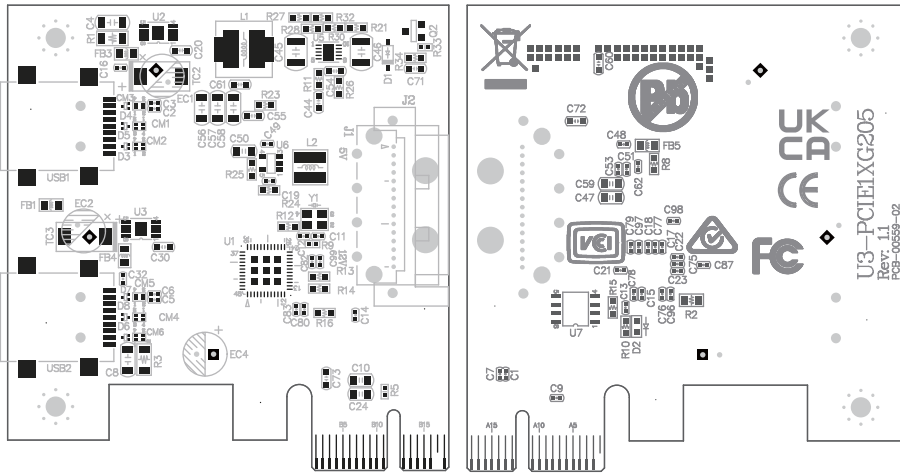
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<http://www.ioi.com.tw>



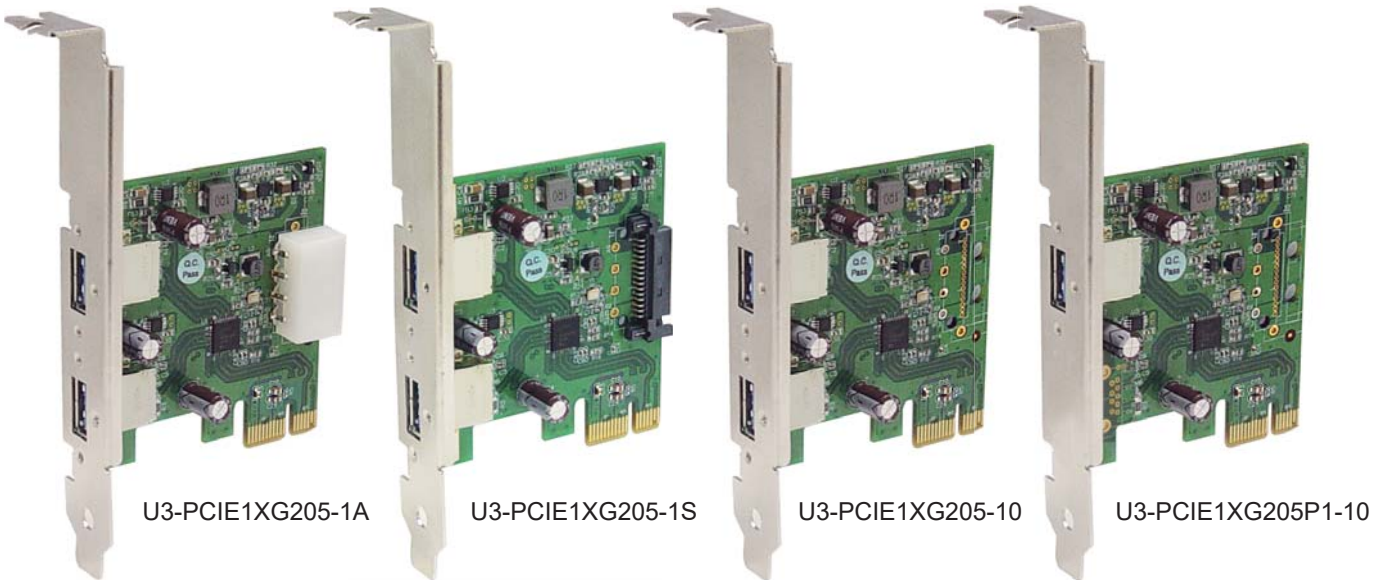
| | | | |
|--------|-------------------------------|--------------------------|--------|
| File | | Functional Block Diagram | |
| Size | Document Number | Rev | |
| Custom | U3-PCIE1XG205 -- PCB-00559-02 | 1.1 | |
| Date | Thursday, January 15, 2015 | Sheet | 1 of 4 |

Silk Screen and Picture:

Silk Screen of U3-PCIE1XG205 P.C.B (PCB-00559-02)



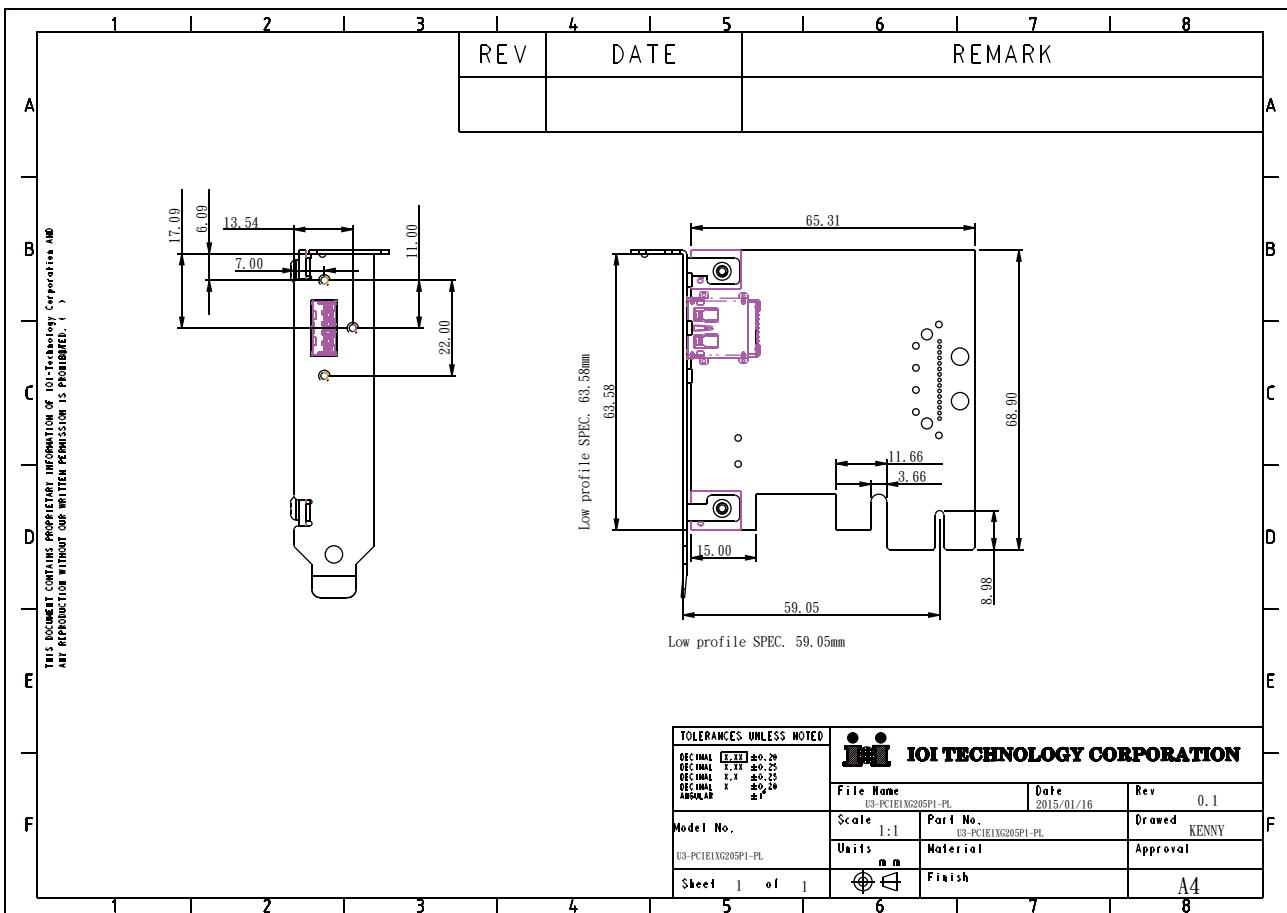
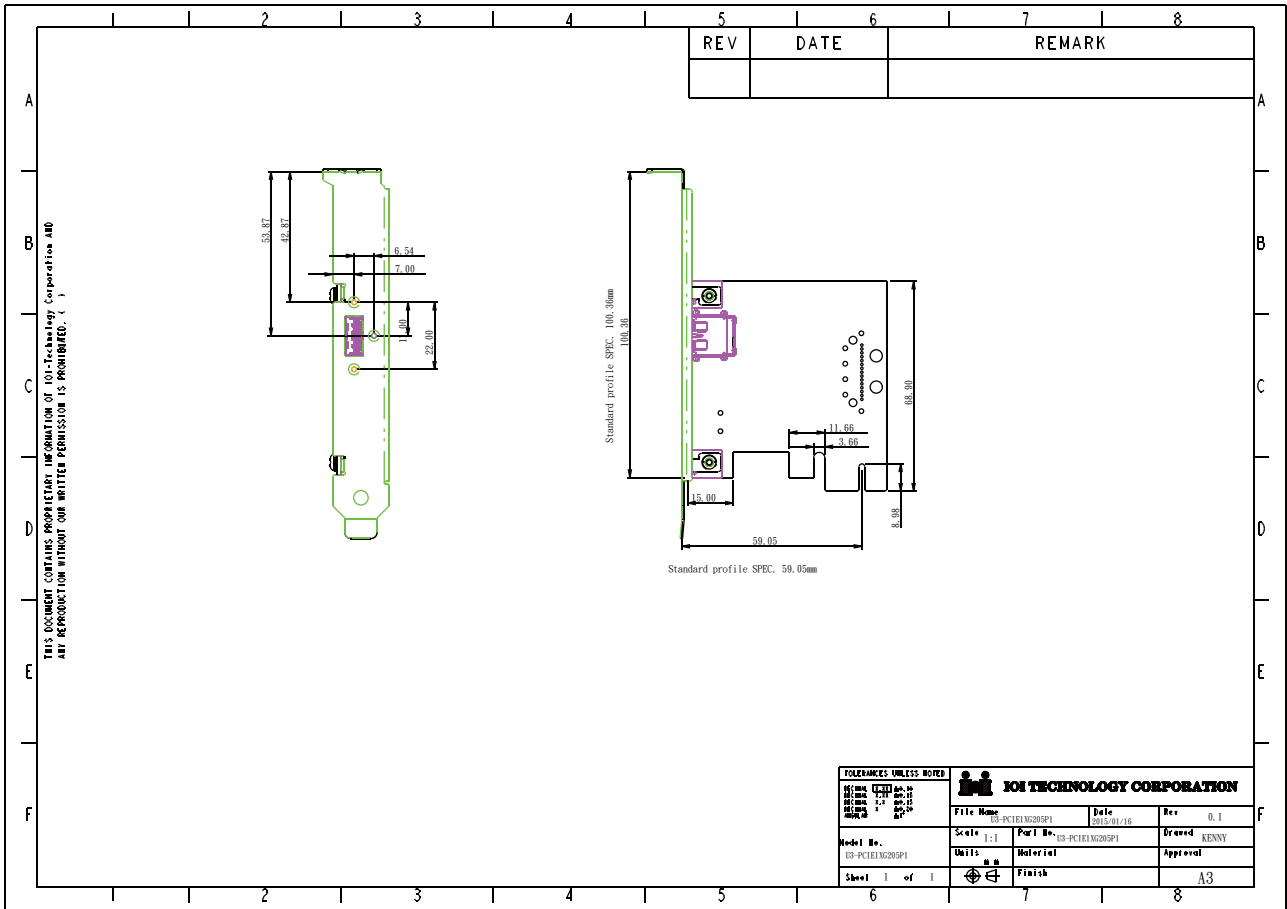
Picture of U3-PCIE1XG205 PCBA

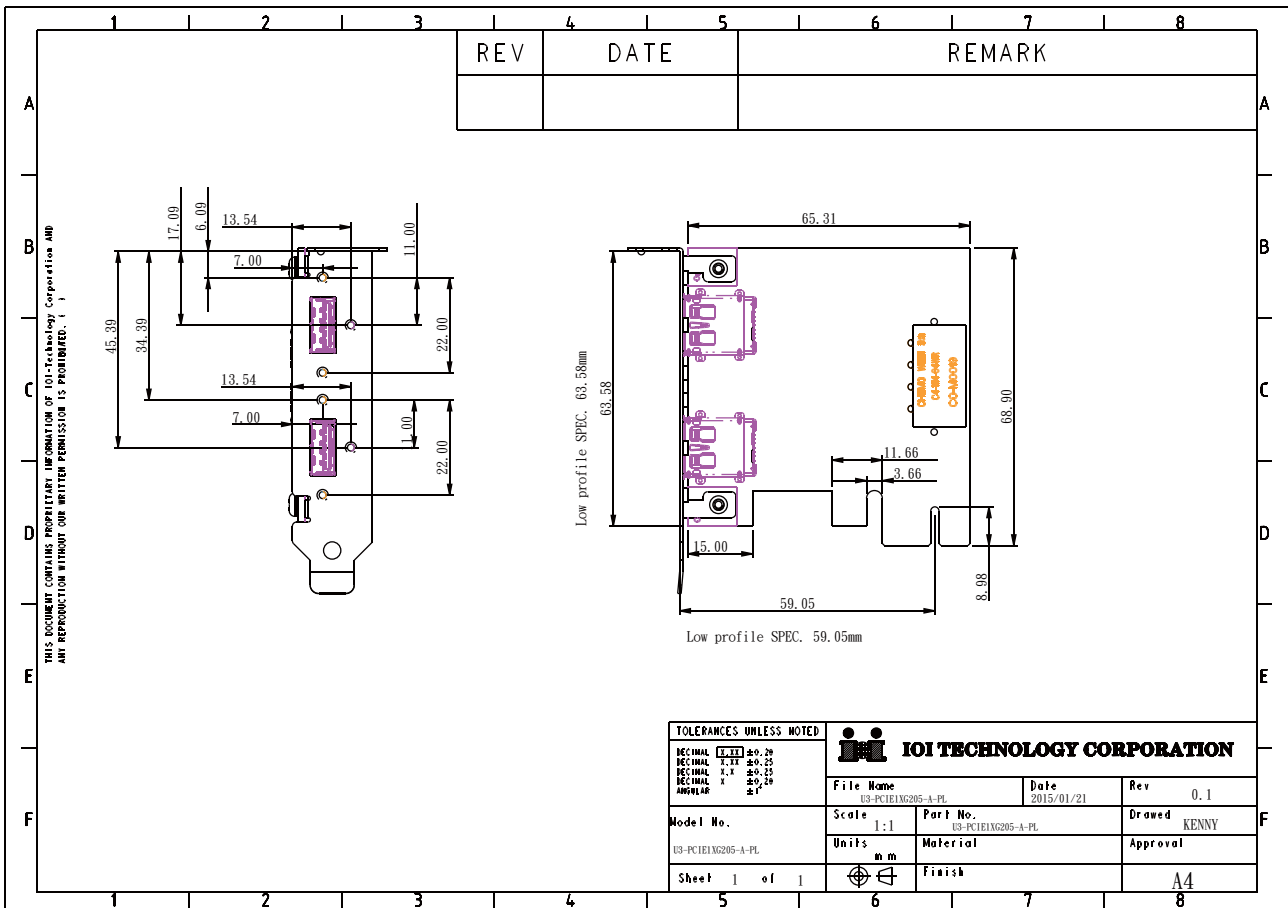
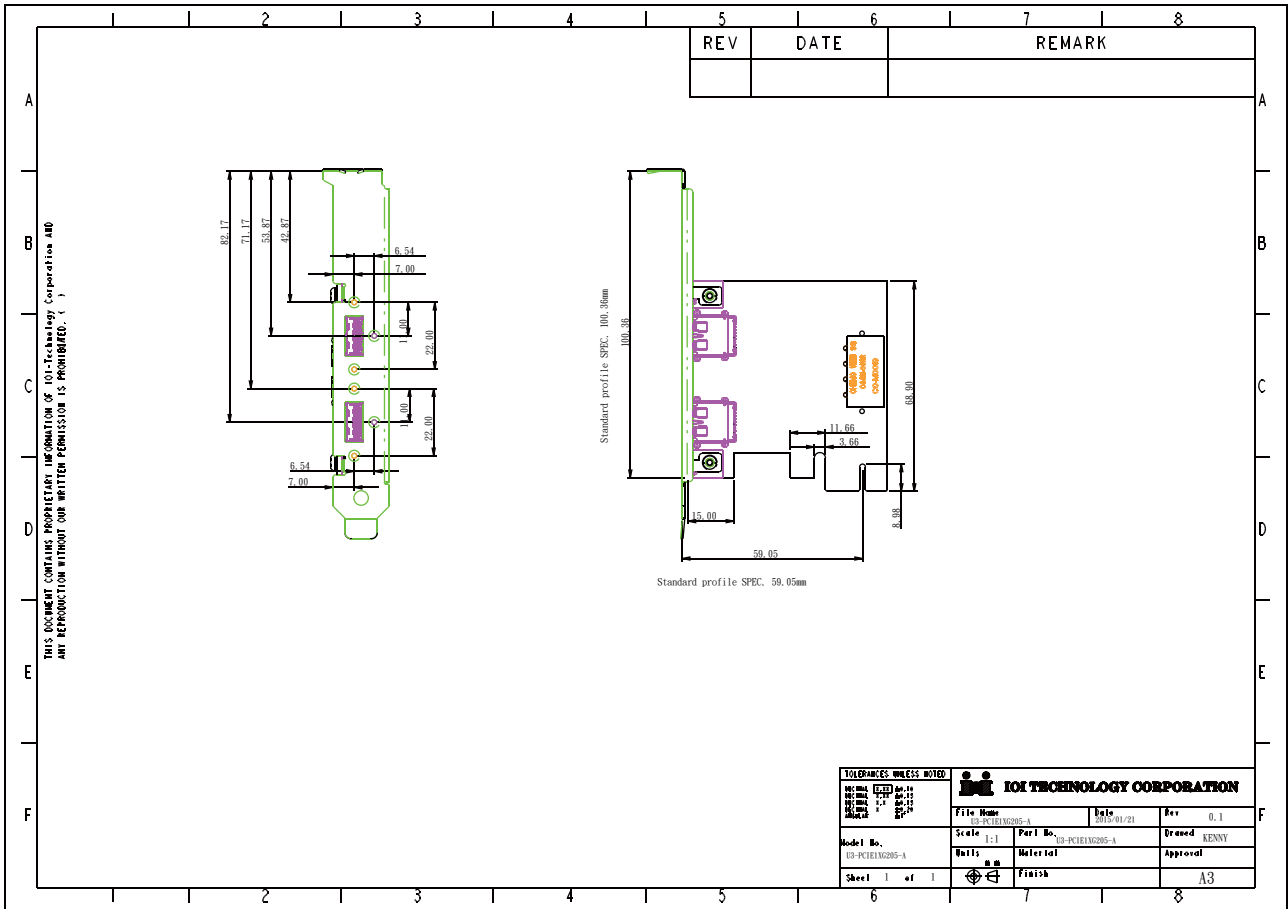


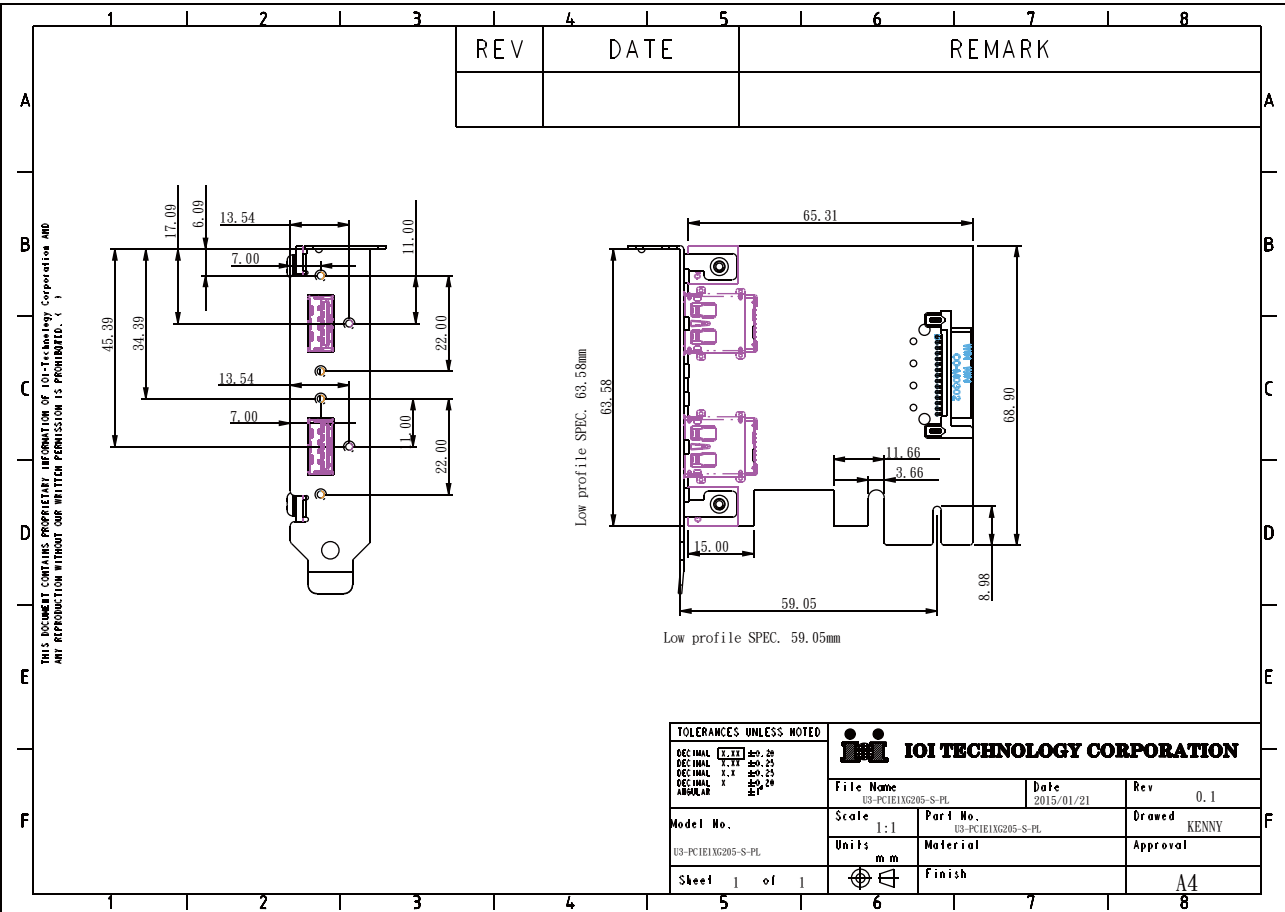
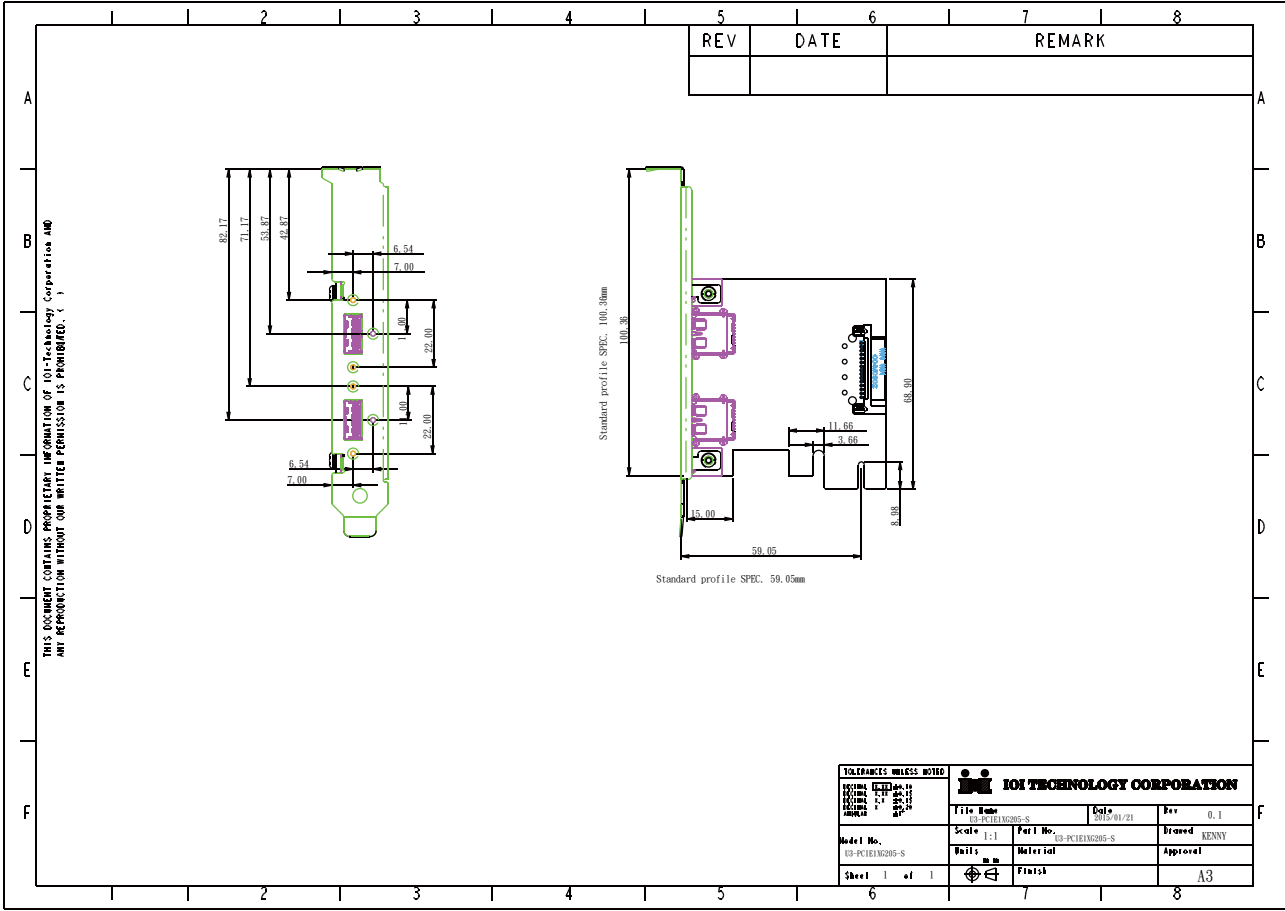
→ Basler Sticker

→ Barcode Sticker

Mechanical Dimension:







Kit Parts Information:

Datasheet of USB 3.0 host controller (uPD720202)

USB IF TID 380000043

The μ PD720201 and μ PD720202 are Renesas' third generation Universal Serial Bus 3.0 host controllers, which comply with Universal Serial Bus 3.0 Specification, and Intel's eXtensible Host Controller Interface (xHCI). These devices reduce power consumption and offer a smaller package foot-print making them ideal for designers who wish to add the USB3.0 interface to mobile computing devices such as laptops and notebook computers.

The μ PD720201 supports up to four USB3.0 SuperSpeed ports and the μ PD720202 supports up to two USB3.0 SuperSpeed ports. The μ PD720201 and μ PD720202 use a PCI Express® Gen 2 system interface bus allowing system designers to easily add up to four(μ PD720201) or two(μ PD720202) USB3.0 SuperSpeed ports to systems containing the PCI Express bus interface. When connected to USB 3.0-compliant peripherals, the μ PD720201 and μ PD720202 can transfer information at clock speeds of up to 5 Gbps. The μ PD720201 and μ PD720202 and USB 3.0 standard are fully compliant and backward compatible with the previous USB2.0 standard. The new USB 3.0 standard supports data transfer speeds of up to ten times faster than those of the previous-generation USB2.0 standard, enabling quick and efficient transfers of large amounts of information.

Features

- Compliant with Universal Serial Bus 3.0 Specification Revision 1.0, which is released by USB Implementers Forum, Inc
 - Supports the following speed data rate as follows: Low-speed (1.5Mbps) / Full-speed (12Mbps) / High-speed (480Mbps) / Super-speed (5Gbps)
 - μ PD720201 supports up to 4 downstream ports for all speeds
 - μ PD720202 supports up to 2 downstream ports for all speeds
 - Supports all USB compliant data transfer types as follows; Control / Bulk / Interrupt / Isochronous transfer
- Compliant with Intel's eXtensible Host Controller Interface (xHCI) Specification Revision 1.0
 - Supports USB debugging capability on all super-speed ports.
- Supports USB legacy function
- Compliant with PCI Express Base Specification Revision 2.0
- Supports ExpressCard™ Standard Release 1.0
- Supports PCI Express Card Electromechanical Specification Revision 2.0
- Supports PCI Bus Power Management Interface Specification Revision 1.2
- Supports USB Battery Charging Specification Revision 1.2
- Operational registers are direct-mapped to PCI memory space
- Supports Serial Peripheral Interface (SPI) type ROM for Firmware
- Supports Firmware Download Interface from system BIOS
- System clock: 24 MHz crystal
- Small and low count pin package with improved signal pin assignment for efficient PCB layout
 - μ PD720201 adopts 68pin QFN (8 x 8)
 - μ PD720202 adopts 48pin QFN (7 x 7)
- 3.3 V and 1.05 V power supply

Certifications & Compliances:

CE Test: Pass
 UKCA Test: Pass
 FCC Test : Pass
 VCCI Test: Pass



| Model No. | RoHS (2011/65/EU & 2015/863) | EU RoHS Exemption | US TSCA | Reach SVHC Contained | Reach SVHC | Note |
|--|------------------------------|-------------------|-----------|----------------------|------------|-----------------|
| U3-PCIE1XG205-1S U3-PCIE1XG205-1A U3-PCIE1XG205-10 U3-PCIE1XG205P1-10 | Compliant | 7c-i | Compliant | No ※Note 2 | Compliant | Re Series: 7c-i |

Note 2: Some electronic components contain lead under the permission of RoHS exemption (7C-I) in a glass or ceramic. REACH ECHA is not applicable for articles containing glass and ceramics since they are classified under REACH as UVCB substances (substance of unknown or variable composition, complex reaction products or biological material).

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