# XMC-E6760

Graphics XMC Mezzanine Card

# USER MANUAL

**REV1.0**

Air Cooled version

Conduction Cooled version

C3ITOP Co. Ltd

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| 1.0 | L.Lin | G.Wang<br>V.Tan | 1/4/2014 – | The first draft |

# CONTENT

CHAPTER 0

# WARNING

Thank you for choosing C3itop's Graphics XMC mezzanine card. The relevant safety precautions for this product are described as below. The operator and all staff who may be involved in the operation must be fully aware of the contents of this manual to ensure the safety of persons and devices.

## I Description of safety signs

Safety signs involved in the device means as following:

Prohibitions：

**No smoking**

Smoking is prohibited while the device is working

**No burning**

Burning is prohibited while the device is working

Ensure fire safety facilities / equipment in good condition


**No demolition**

Warnings

**Warning danger**

**Warning electric shock**

## II Basic safety precautions

1) The operator should go through the system operation training, and Maintenance personnel should go through the system maintenance training
2) The device must be powered on and powered off according to the procedure set forth herein

## III Other safety precautions

- It is recommended to use anti-static gloves to prevent electrostatic damage, when plug and unplug the device.
- The device needs to be put into static bag when it was transported in single board or was stored
- When transporting the device, the package should be fitted with shock-absorbing protective measures to prevent extrusion, collision or damage during the transport process.
- When the device needs to be stored , you should pay attention to ventilation, damp proof, dust proof, not stored together with corrosive substances

## IV The operation procedures

- The hardware configuration should be in accordance with the instructions; check the device connected to the board to make sure the connection is correct, particularly check if the output voltage(+12V, +5V,+3.3V) of power supply equipment meets the requirements or not.

CHAPTER 1

# 1. INTRODUCTION

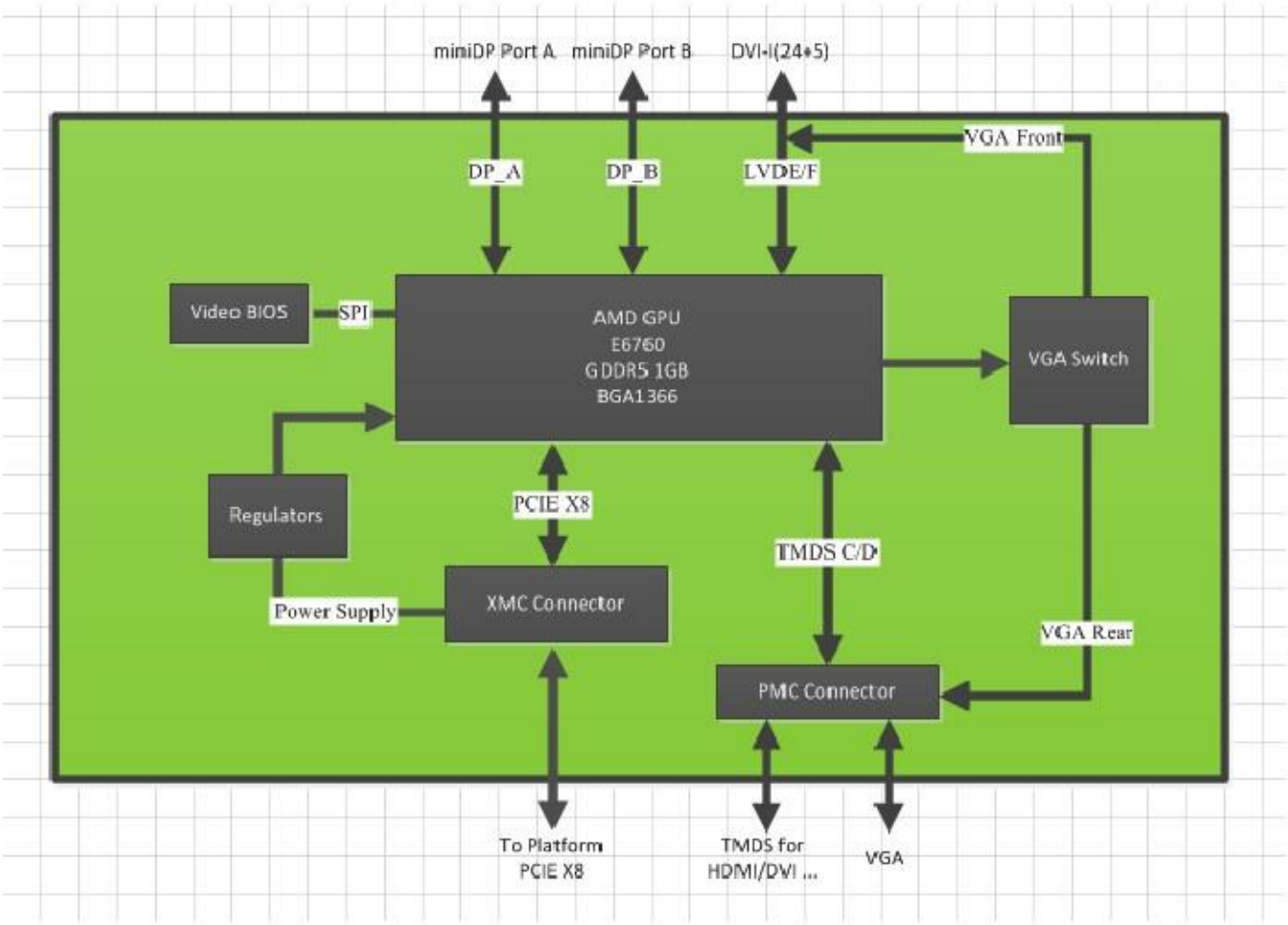
## 1.1 General

This manual is a guide and reference handbook for engineers and system integrators who wish to use the C3itop Technologies XMC-E6760 graphics XMC mezzanine card. The board has been designed for high-quality display and multiple independent display output. It is a wide operating temperature product. The ordering information is list as below,

| Product name | Ordering code | Description |
|---|---|---|
| XMC-E6760 | 10-0000-0168 | AMD E6760, 1GB GDDR5,consumption 25w~45w, X8 PCIE2.0, 2x MiniDP front IO<br>1x DVI-I (Dual link DVI+VGA)front IO, 2x TMDS rear IO,1x VGA rear optional. |
| | | |

The board is available in standard or express temperature and air-cooled versions, Throughout this manual, references to the board will use the generic name XMC-E6760, unless they apply to a specific variant, in which case the full name will be used.
The information contained in this manual has been written to provide users with all the information necessary to configure, install and use the XMC-E6760 as part of a system. It assumes familiarity with XMC and concepts, and with X86 computer architectures and features.

## 1.2 Block Diagram



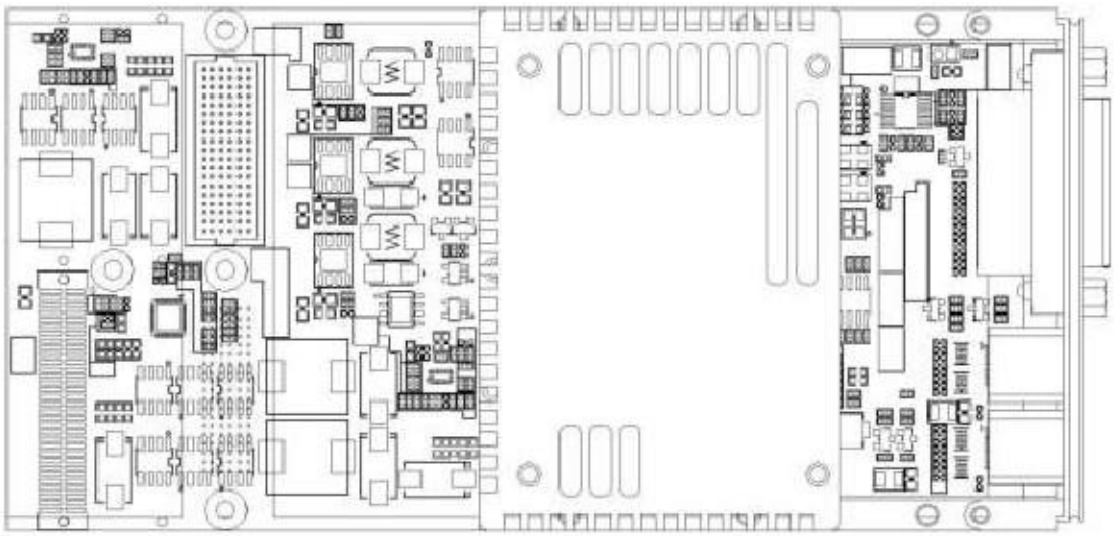
CHAPTER 2

# 2. HARDWARE INSTALLATION

## 2.1 Air Cooled

### 2.2.1 Installation of XMC-E6760 Air Cooled radiator

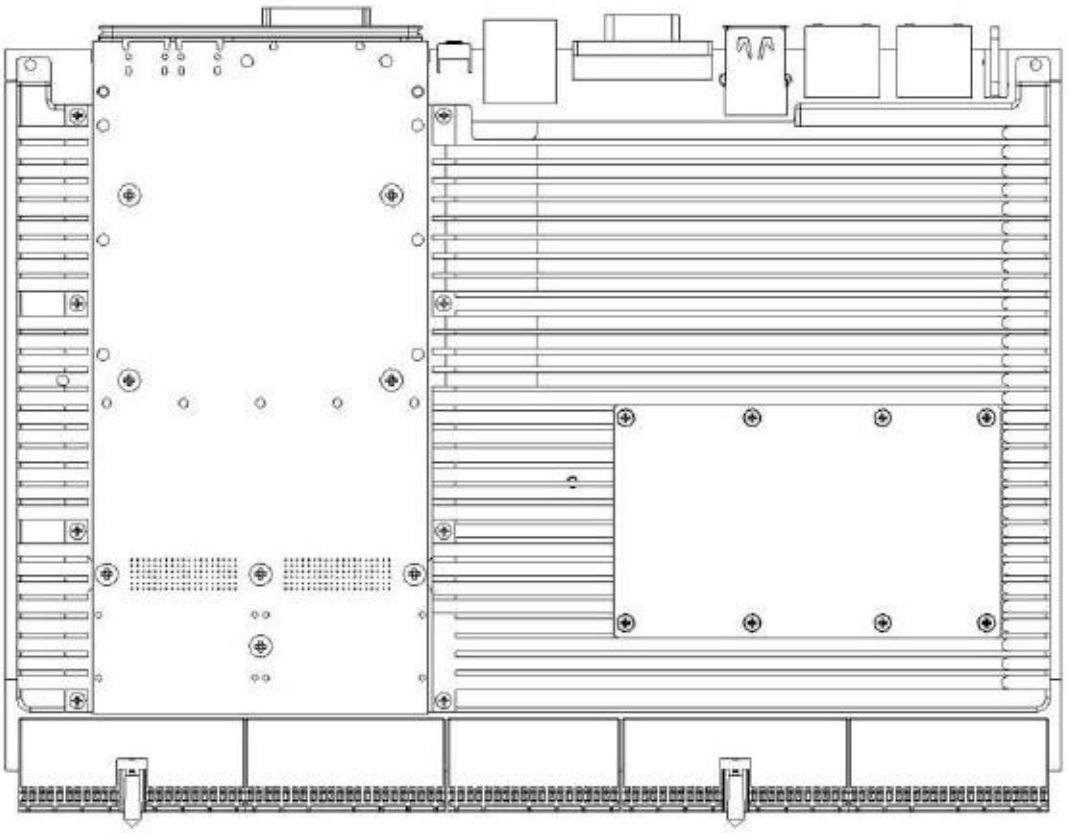
1) Place the module topside upward
2) Align the screw holes and the radiator module placement
3) Install the pan head screws



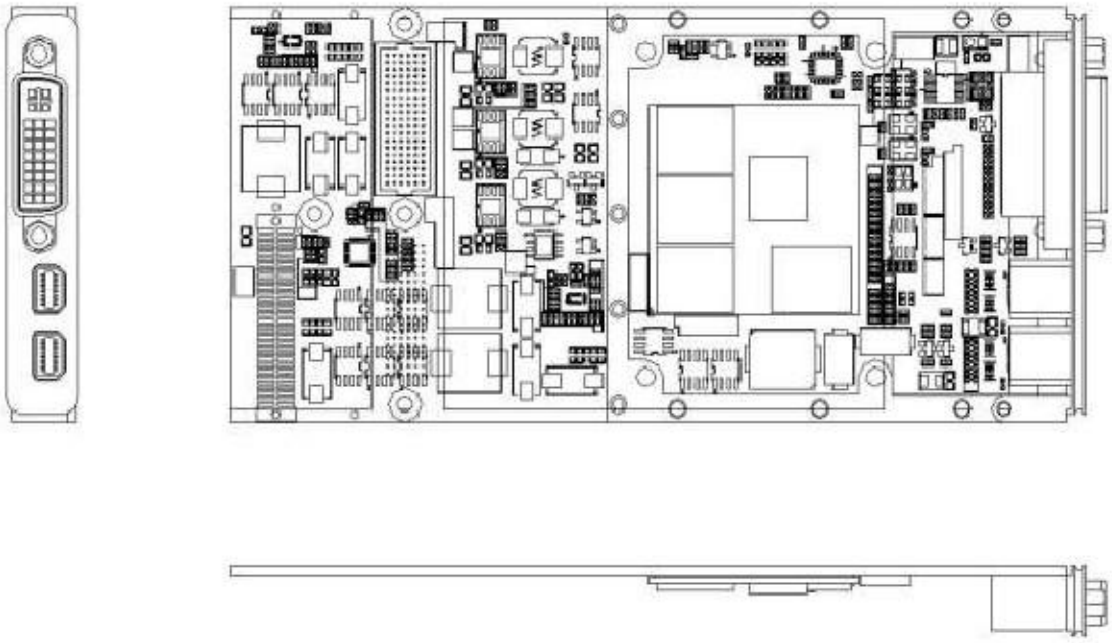
### 2.2.2 Installation of a XMC-E6760 Module on 6U SBC

1) Remove the top side cover.
2) Align the holes at the front and middle of the XMC-E6760 with the matching holes on the sbc
3) Lower the XMC module, component side down, fitting the XMC connectors into their mating connectors. Press them together so that the friction from the pins holds the XMC module in place.

4) Install the 8 pan head screws.



### 2.2.3 Installation of a front panel on XMC-E6760



CHAPTER 3

# 3. SPECIFICATIONS

## 3.1 Functional Specification

- AMD™ E6760 GPU 600MHz
- 576 GFLOPS GPGPU
- Rugged air-cooled with revolutionary heatplate design
- 1GB GDDR5 memory, 800MHz 128-bit
- Standard XMC form factor (VITA 42.3)
- PCIe 2.1 x8 bus interface
- Up to 5 independent digital outputs

## 3.2 Environment Specification

### 3.2.1 Storage Temperature

XMC-E6760 might be malfunction and be mechanically damaged if stored out of the temperature range from -55℃ to +85℃.

### 3.2.2 Working Temperature

The working temperature of XMC-E6760 can be extended to -40～+70℃ as industrial grade.

### 3.2.3 Power Requirement

The power consumption of XMC-E6760 is about 25~45Watt according to the respective load conditions. The primary power inputs of XMC-E6760 is +5V, or +12V. It depends on the SBC you are using. The voltage level range can be less than +5V or+12V ±5%.

### 3.2.4 Board Size

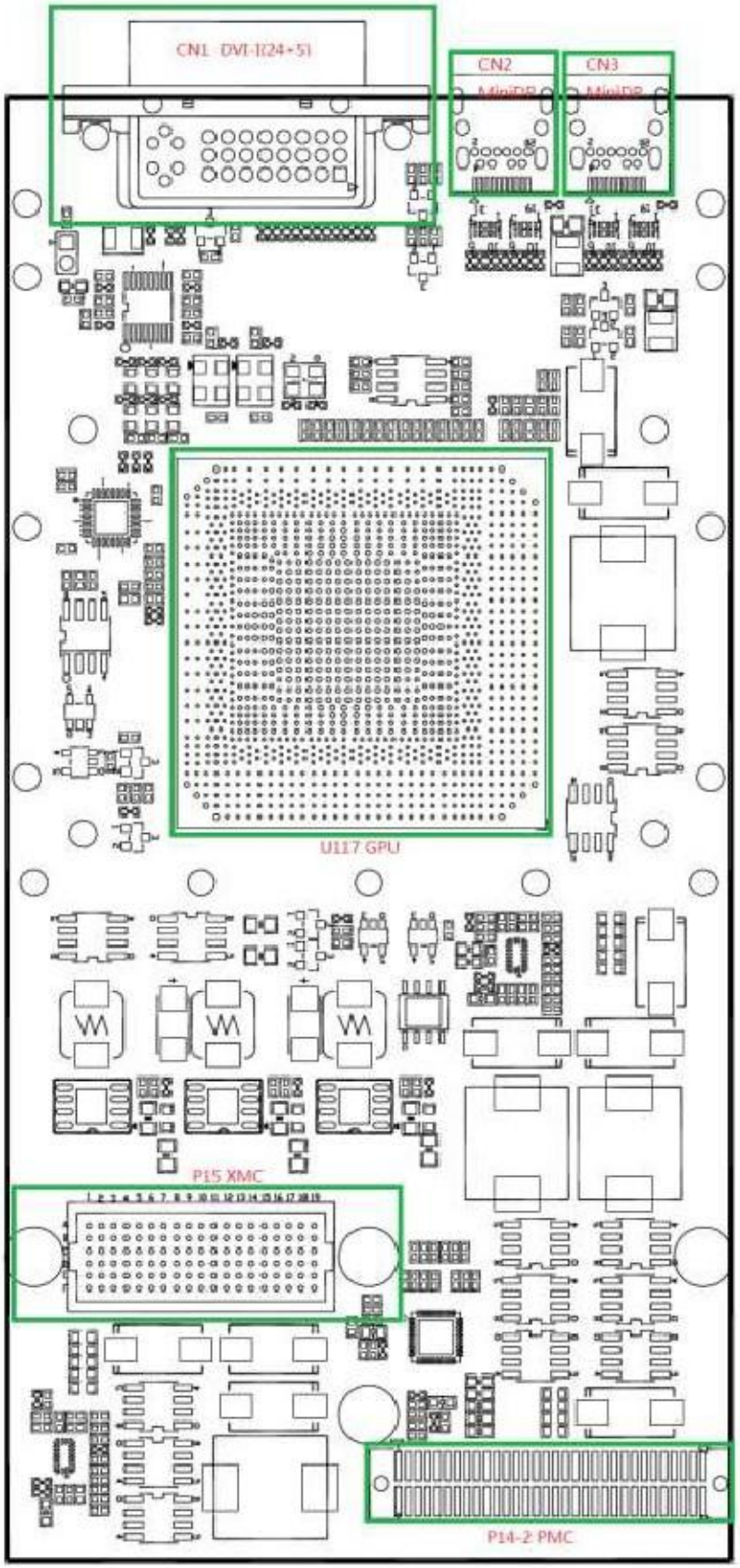
Length x Width: 74×149 (mm)

CHAPTER 4

# 4. PHYSICAL CHARACTERISTICS

## 4.1 Main Components Location

Main components location as below:

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## 4.2 Front Panel Connectors

### 4.3.1 Front panel connectors drawings

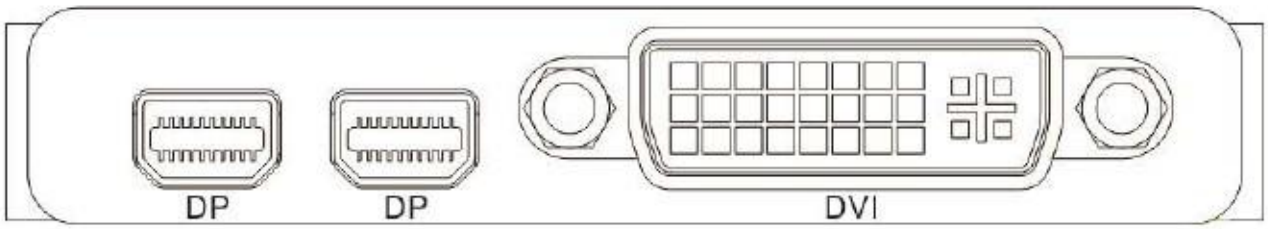


Figure 3-2 The left drawing is no XMC board installed，the right drawing is XMC board installed

### 4.3.2 Front panel DVI-I

CN1 in front panel is standard DVI-I connector. It can be connected to standard Dual-Link DVI and VGA display ports. Figure 3-3 and table 3-3 is pin out description.

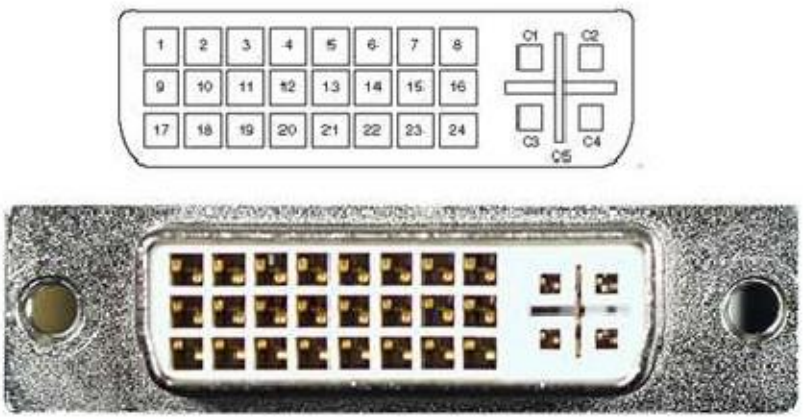


Figure 3-3

| Pin | Signal | Pin | Signal | Pin | Signal |
|---|---|---|---|---|---|
| 1 | DVI_TX2N | 9 | DVI_TX1N | 17 | DVI_TX0N |
| 2 | DVI_TX2P | 10 | DVI_TX1P | 18 | DVI_TX0P |
| 3 | GND | 11 | GND | 19 | GND |
| 4 | DVI_TX4N | 12 | DVI_TX3N | 20 | DVI_TX5N |
| 5 | DVI_TX4P | 13 | DVI_TX3P | 21 | DVI_TX5P |
| 6 | DVI_SCL | 14 | CRT_VCC | 22 | GND |
| 7 | DVI_SDA | 15 | GND | 23 | DVI_CLKP |
| 8 | CRT_VSYNC | 16 | DVI_HPD | 24 | DVI_CLKN |
| C1 | CRT_RED | C2 | CRT_GREEN | C3 | CRT_BLUE |
| C4 | GND | C5 | GND | | |

Table 3-3

### 4.3.3 Front MiniDP Connectors

2 front MiniDP ports are supported on this board.
CN2, CN3 are standard mini-display ports, It can be connected to LCD which support DP signal input.

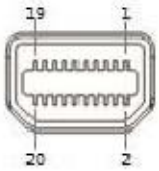


Figure 3－4

CN2 pin out definition

| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | GND | 11 | DPB_TX1N |
| 2 | DPB_HPD_SINK | 12 | DPB_TX3N |
| 3 | DPB_TX0P | 13 | GND |
| 4 | DPB_CONFIG4 | 14 | GND |
| 5 | DPB_TX0N | 15 | DPB_TX2P |
| 6 | DPB_CONFIG6 | 16 | DPB_AUXP |
| 7 | GND | 17 | DPB_TX2N |
| 8 | GND | 18 | DPB_AUXN |
| 9 | DPB_TX1P | 19 | GND |
| 10 | DPB_TX3P | 20 | DPB_PWR |

Table 3-4 MiniDP definition

CN3 pin out definition

| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | GND | 11 | DPA_TX1N |
| 2 | DPA_HPD_SINK | 12 | DPA_TX3N |
| 3 | DPA_TX0P | 13 | GND |
| 4 | DPA_CONFIG4 | 14 | GND |
| 5 | DPA_TX0N | 15 | DPA_TX2P |
| 6 | DPA_CONFIG6 | 16 | DPA_AUXP |
| 7 | GND | 17 | DPA_TX2N |
| 8 | GND | 18 | DPA_AUXN |
| 9 | DPA_TX1P | 19 | GND |
| 10 | DPA_TX3P | 20 | DPA_PWR |

Table 3-5 MiniDP definition

## 4.3.4 XMC and PMC Connectors

### XMC connector pin out definition (PCIE bus)

| PIN | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| 1 | PETp0 | PETn0 | VCC3V3 | PETp1 | PETn1 | VPWR_XMC |
| 2 | GND | GND | NC | GND | GND | RST# |
| 3 | PETp2 | PETn2 | VCC3V3 | PETp3 | PETn3 | VPWR_XMC |
| 4 | GND | GND | NC | GND | GND | NC |
| 5 | PETp4 | PETn4 | VCC3V3 | PETp5 | PETn5 | VPWR_XMC |
| 6 | GND | GND | NC | GND | GND | +12V |
| 7 | PETp6 | PETn6 | VCC3V3 | PETp7 | PETn7 | VPWR_XMC |
| 8 | GND | GND | NC | GND | GND | -12V |
| 9 | NC | NC | NC | NC | NC | VPWR_XMC |
| 10 | GND | GND | NC | GND | GND | NC |
| 11 | PERp0 | PERn0 | NC | PERp1 | PERn1 | VPWR_XMC |
| 12 | GND | GND | NC | GND | GND | GND |
| 13 | PERp2 | PERn2 | NC | PERp3 | PERn3 | VPWR_XMC |
| 14 | GND | GND | NC | GND | GND | NC |
| 15 | PERp4 | PERn4 | NC | PERp5 | PERn5 | VPWR_XMC |
| 16 | GND | GND | NC | GND | GND | NC |
| 17 | PERp6 | PERn6 | NC | PERp7 | PERn7 | NC |
| 18 | GND | GND | NC | GND | GND | NC |
| 19 | REFCLKp | REFCLKn | NC | NC | NC | VGA_SEL |

**Table 3—8**

## PMC connector signal pin out definition (TMDS)

| PIN | Signal | PIN | Signal | PIN | Signal | PIN | Signal |
|---|---|---|---|---|---|---|---|
| 1 | | 17 | | 33 | GND | 49 | |
| 2 | | 18 | | 34 | VGA_BLUE | 50 | |
| 3 | | 19 | TX3P_DPD2P | 35 | VGA_HYSNC | 51 | TX0P_DPC2P |
| 4 | | 20 | TXCDP_DPD3P | 36 | VGADDC_DATA | 52 | TXCCP_DPC3P |
| 5 | | 21 | TX3M_DPD2N | 37 | | 53 | TX0M_DPC2N |
| 6 | | 22 | TXCDM_DPD3N | 38 | GND | 54 | TXCCM_DPC3N |
| 7 | | 23 | | 39 | VGA_RED | 55 | |
| 8 | | 24 | | 40 | VGA_VSYNC | 56 | |
| 9 | DPD_SDA | 25 | TX4P_DPD1P | 41 | DPC_SDA | 57 | TX1P_DPC1P |
| 10 | DPD_SCL | 26 | TX5P_DPD0P | 42 | | 58 | TX2P_DPC0P |
| 11 | | 27 | TX4M_DPD1N | 43 | DPC_SCL | 59 | TX1M_DPC1N |
| 12 | | 28 | TX5M_DPD0N | 44 | VGADDC_CLK | 60 | TX2M_DPC0N |
| 13 | | 29 | | 45 | | 61 | GND |
| 14 | | 30 | | 46 | | 62 | |
| 15 | | 31 | | 47 | | 63 | VGA_GREEN |
| 16 | | 32 | | 48 | | 64 | |

**Table 3－9**