DIAMOND SYSTEMS Geode Jasper Rugged Computer System User Manual

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Geode Jasper Rugged Computer System

GEODE JASPER
Rugged Computer System
User Manual

Revision	Date	Comments
0.1	04/06/2024	Initial Version

FOR TECHNICAL SUPPORT

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1. IMPORTANT SAFE HANDLING INFORMATION

WARNING!
ESD-Sensitive Electronic Equipment

Observe ESD-safe handling procedures when working with this product. Always use this product in a properly grounded work area and wear appropriate ESD-preventive clothing and/or accessories. Always store this product in ESD-protective packaging when not in use.

Safe Handling Precautions

The SabreNet 12000 contains a high-density connector with many connections to sensitive electronic components. This creates many opportunities for accidental damage during handling, installation and connection to other equipment. The list here describes common causes of failure found on boards and systems returned to Diamond Systems for repair. This information is provided as a source of advice to help you prevent damaging your Diamond (or any vendor's) boards.

ESD damage – This type of damage is usually almost impossible to detect, because there is no visual sign of failure or damage. The symptom is that the board eventually simply stops working, because some component becomes defective. Usually the failure can be identified and the chip can be replaced. To prevent ESD damage, always follow proper ESD-prevention practices when handling computer boards.

Power supply wired backwards – Our power supplies and boards are not designed to withstand a reverse power supply connection. This will destroy each IC that is connected to the power supply (i.e. almost all ICs). In this case the board will most likely will be unrepairable and must be replaced. A chip destroyed by reverse power or by excessive power will often have a visible hole on the top or show some deformation on the top surface due to vaporization inside the package. Check twice before applying power!

2. DESCRIPTION

Geode Jasper is a rugged COM Express Compact/Basic type 6 carrier board system with MIL . The carrier is designed to support a variety of COM Express modules to provide both rapid product line expansion with a variety of processors and long life by enabling simple replacement of the COM when the designed-in one becomes obsolete.

The COM Express module mounts on the bottom side of the board, and the PCIe104 expansion sockets are on the top side. The board dimensions are 4.000” x 5.750”, slightly larger than both COM Express compact/basic and PCIe104 modules. The larger size is necessitated due to the incompatibility between the mounting hole patterns of the two form factors plus the desire to provide increased PCB coastline for I/O connectors. A thicker PCB (.090” / 2.3mm), latching I/O connectors, and full -40/+85C operating temperature provide increased ruggedness, enabling the board to work reliably in mobile and harsh environment applications.

2.1 System features

Sl No	Compo nent	Feature	Qty
1	Power	12V DC supply or 9 to 36V DC supply(Wi th Power Filter Board)	1
2	CPU	COM Express Module with Inter i7, 32GB /64GB RAM support	1
3	Display	HDMI Interface	1

4	Ethernet	2x 1Gbps	2
5	USB	USB2.0 & USB3.0	2x USB2.0, 2x USB3.0
6	Digital I/O	Extended I/O capability	4 GPI and 4 GPIO (3.3/5V Compatible)
7	Serial Port	RS232/RS422/RS485	4xRS232/RS422/RS485
8	Audio	IN, OUT, MIC	1 ports each
9	Utility	I2C, SPI & Power Signals	1
10	Expansion IO	Expansion IO signals	2 Ports

2.2 I/O Features and Connector Types

Feature	Description	Connector Type
Power	+12V DC / +9V to +36V input supply with MIL-STD-461 filtering	D38999/20WC4PN

RTC	3V power input for RTC functionality	1066
USB	2x USB 3.0/USB2.0	SJT00RT12-35S014
	2x USB2.0	D38999/20KE35BN
Ethernet Display	ETH-1 10/100/1000Mbps from COM module	D38999/20KE35BN
	ETH-2 10/100/1000Mbps via I210 Ethernet controller	
	1x HDMI 2.0a/b directly from the COM module	SJT00RT12-35DS014

DIO	4xGPI and 4xGPO form COM Module through expansion ports	D38999/20WF35SN
Mass	2 PCIe minicard socket with USB and SATA Minicard2 supports Nano SIM interface	2 PCIe MiniCard 52 Position (J11 & J12)

Storage	1 M.2 2242 / 2280 SATA/x1 PCIe	M.2 Socket (J15)
	1 Standard 7pin SATA connector	SATA Connector (J9)
Audio	HDA to Analog Audio converter	
PCIe104	4 PCIe x1 ports, 1x PCIe x16	156 Position Vertical Header (J1)
Utility	I2C, Reset Button, Power Button signals	D38999/20WF35SN
Antenna	Support for two SMA connectors on the enclosure	SMA connector on enclosure
Expansion IO	79-Pin expantion Ios support (Two qty of 2×10 pin and one 2×30 pin)	D38999/20WG35SN
Serial Ports	4 ports Software configurable RS-232/422/485 through SP336 transceivers or 2 RS232 only	D38999/20WF35SN

2.3 Operating System Support

Windows 10; Ubuntu; Linux

2.4 Mechanical, Electrical, Environmental

Form factor 9.84”x7.05”x3.74”

Cooling Conduction Cooling

Power input +12V DC / 9 to +36V DSC with Filter Circuit

Operating Temp -40°C to +85°C

Weight xxx lb

2.5 Product Images

3. KEY SUBSYSTEMS

3.1 COMe Carrier System

The Geode Jasper supports various COM express modules on the carrier board.

COM Express Carrier supports COM Express Compact (95x95mm) / Basic (95x125mm) type 6 modules. The availability of features is module dependent. Design emphasis is placed on minimizing the need for BIOS customization to enable the module to work with as many different modules as possible without any customization effort.

3.2 Power Supply Specifications

Geode Jasper supports two powering options.

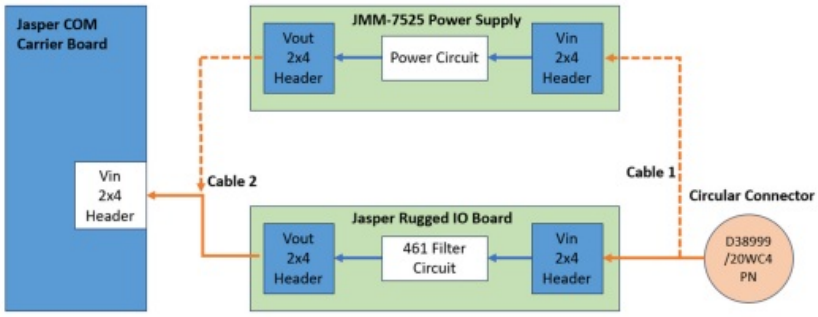
1. Usning on board power filder circuit on Rugged IO board

2. Using JMM-7525 external power filter board

When on board power filter is used, the Geode Jasper can be powered from +12V DC typically. On otherway, Geode Osbourne can be powered from +9V to +36V when external JMM-7525 power filter is used. The maximum allowable reflected ripple, measured at the voltage input connector is 50mV p-p.

These power supplies are sized to support the highest capacity on-board memory and have enough reserve capacity to support the below add-on features.

Following figure shows varios power options.



3.3 Backup Battery

A 2032 coin horizontal battery holder is provided on Jasper Carrier board. The Geode Jasper can boot and function normally without a backup battery as well. RTC of Orin module backup voltage of 3V with 1.8V to 3.46V max is required.

3.4 Ethernet Ports

COM Express Carrier provides two 10/100/1000 Ethernet ports. One port comes directly from the COM module. The other port is derived from the Intel WGI210IT PCIe Ethernet controller. This controller is accessed via x1 PCIe lane from the COM. Each port has on-board magnetics. Both Ethernet ports are available at rugged circular connector J4 on the enclosure.

3.5 PCIe Link Routing

COM Express Carrier x1 PCIe port mapping is provided below. The carrier board routes the PCIe x16 lanes from the COM Express CD connector to the PCIe104 connector banks 2 and 3.

Lane 0 – Minicard Socket1

Lane 1 – Minicard Socket2

Lane 2 – PCIe104 Type1

Lane 3 – Intel I210 Ethernet Controller

Lane 4 – PCIe104 Type1

Lane 5 – PCIe104 Type1

Lane 6 – PCIe104 Type1

Lane 7 – M.2 2280/2242

PEG x16 – PCIe104 Type1

3.6 Display

The board offers one HDMI video output option. The HDMI port is directly from the COM Module and made available on the rugged I/O connector J5. All the common choke and ESD protection circuitry are buit into the system.

3.7 Audio Interface

The HD audio from the COM module is converted to analog audio using Audio Codec. Line IN, Line OUT and Mic signals are terminated on rugged circular connector J3. The system uses internally a 2×10 pin cable assembly (DSC# 6982071) to get the Audio signals from COM carrier board to the rugged IO board.

3.8 Serial Ports

The system supports 4 serial ports using a USB to Quad UART controller (FT4232HL). The ports use SP336 transceivers (1 transceiver for 2 ports) to support RS-232, RS-422, and RS-485 protocols. The protocol is selected using GPIO pins on the FPGA in full feature (JSP BB03A) and Jumper options are given for protocol selection in Full feature without DAQ (JSP BB02D). On board jumpers are provided to enable 121-ohm line termination for RS-422 and RS-485 protocols.

The four serial ports are available on rugged circular connector J3 on the enclosure.

3.9 PCIe Minicard Socket

The system offers two full size (51mm length) or two half size Minicard sockets. Minicard interface support PCIex1 and SATA using a mux. Both minicard support USB2.0 interface.

On minicard connector1, PCIe lane 0 and SATA Port 2 are muxed using a high-speed mux IC. USB2.0 Port 6 is muxed with minicard connector 1 and PCIe104 and can be selected using jumper configuration available at JP3 on Jasper carrier board.

On Minicard connector2, PCIe lane 1 and SATA port 3 are muxed using high-speed mux IC. USB2.0 port 5 is also made available at the connector. Nano sim connector is

supported on minicard connector 2.

Board provides 2nos onboard M2 4mm spacer on each minicard sockets to mount modules and for half minicard there are M2 2mm spacer which acts as nut for the Male to Female M2 4mm spacer provided as accessory.

3.10 USB

The Geode Jasper supports 2x USB2.0 ports routed to rugged I/O connector J4. Two numbers of USB3.2 are also routed to the rugged USB connector J7.

2 x USB2.0 ports are routed to one 2×5 headers and 3x USB 3.0/USB2.0 ports are routed to three nos of 2×5 headers.

USB2.0 port 6 is muxed between minicard socket 1 and PCIe104 and can be selected using jumper configuration at JP3.

USB port mapping is shown below:

USB3.0 Ports	
Port Number	Port Termination
Port 0	USB3.0 Header 1
Port 1	USB3.0 Header 2
Port 2	USB3.0 Header 3

Port 3	Not Used
USB2.0 Ports	
Port Number	Port Termination
Port 0	USB3.0 Header 1
Port 1	USB3.0 Header 2
Port 2	USB2.0 Header
Port 3	
Port 4	USB to Quad UART
Port 5	Minicard Socket2
Port 6	Minicard Socket1 / PCIe104
Port 7	USB3.0 Header 3

3.11 SATA M.2 Socket

The carrier board offers up to four SATA ports, derived from the COM express module.

M.2 2242/2280 socket supports SATA Port 0 / PCIe Lane 7 using a high-speed mux. SBC provides onboard M3 4mm spacer to mount M.2 2280 SATA SSD and M3 2mm spacer acts as nut for the Male to Female 4mm spacer provided to mount M.2 2242 SATA SSD.

Second SATA port (mapped as Port 1 from COM) is connected to an industry-standard vertical 7pin SATA connector that accepts cables with latching.

Third SATA (mapped as Port 2 from COM) and fourth (mapped as Port 2 from COM) SATA ports are made available on the first and second minicard sockets respectively using high speed mux. PCIe/SATA interface is supported depending on the type of minicard module inserted.

3.12 PCIe104 Expansion

The board offers expansion over 3 bank PCIe104 connector with 22mm stacking height.

Design supports up to four, x1 lane PCIe ports on one bank PCIe104 connector and x16 PEG port on the 2nd and 3rd bank. The PCIe ports availability depends on the COM express module used.

One of the USB2.0 (Port 6) is muxed with minicard2 can be selected using jumper configuration at JP3.

3.13 Digital I/O

The board contains a GPIO header with 4 GPI and 4 GPO available from the COM module. GPI3 (by default) is muxed with TPM IRQ.

It provides 500mA fused 3.3V supply.

The GPIO signals are available on rugged circular connector J4. The system uses internally a 2×10 pin cable assembly (DSC# 6982071) to get the GPIO signals from

COM carrier board to the rugged IO board.

3.14 Utility signals

Power button, Reset and I2C signals are also made available on the circular connector J4.

3.15 Trusted Platform Module (TPM)

The board contains Infineon's SLB 9670XQ2.0 TPM module featuring a fully TCG TPM 1.2/2.0 standard compliant module with an SPI interface. TPM can be used as a root of trust for platform integrity, remote attestation and cryptographic services. This feature will be supported based on the customer requirement and not implemented by default.

3.16 Expansion IO

Geode Osbourne also provides another rugged circular connector J6 on the enclosure. This can be used for IO expansion in future.

3.17 Data Acquisition

The system provides an optional data acquisition subcircuit containing analog input, analog output, and digital I/O features. This circuit is controlled by an FPGA attached to the processor via the LPC bus. A pin header on the board provides access to JTAG signals for reprogramming the FPGA on the board and in the field.

Features of the DAQ subcircuit include: 16 single-ended / 8 differential analog inputs with 16-bit resolution, programmable input ranges, and 250KSPS maximum throughput; 4 analog outputs with 16-bit resolution and programmable output ranges; and 22 digital I/O lines with selectable 3.3V/5V logic levels, selectable pull-up/down resistors, programmable direction, buffered I/O, and capability for use as counter/timer and PWM circuits.

If this option is added, the signals are available on the rugged expansion IO connector J6.

4. KEY INTERFACES

The interfaces on Geode Osbourne are derived from the different subsystems. A summary of the interfaces provided on the system with its provider are tabulated below:

Sl No	Interface	Subsystem
1	HDMI	COMe Module
2	2x 1G Ethernet	One from COMe Module. One from WGI210IT 1G CTRLR+PHY
3	4xRS-232/RS422/RS485	Derived from SP336
4	2xUSB3.2	COMe Module
5	2xUSB2.0	COMe Module
6	4xGPI + 4xGPO	COMe Module
7	1x SATA M.2	COMe Module

8	2x MiniPCIe Socket	COMe Module
9	PCIe104 Expansion Ports	COMe Module+PCIe 104 Exp Board
10	AUDIO – IN, OUT, MIC IN	From ALC892-CG Audio CODEC
11	1x I2C	COMe Module
Power		
12	Power	Through external power filter (JMM 7515) or through onboard power filter on rugged IO board

5. SYSTEM ARCHITECTURE

Figure 1 provides an overview of the block diagrarm of the Geode Jasper system.

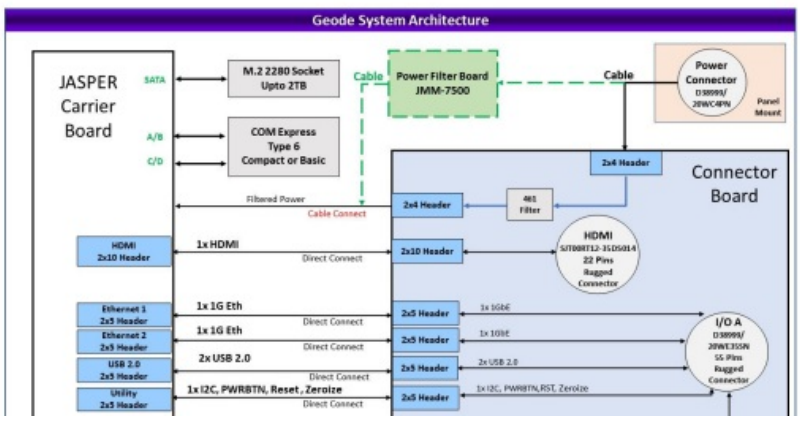


Figure 1: System Architecture of Geode Osbourne

6. GEODE OSBOURNE MECHANICAL DRAWING AND FEATURE LOCATIONS The form factor of the system is 9.5”x8.5”x3.85”.

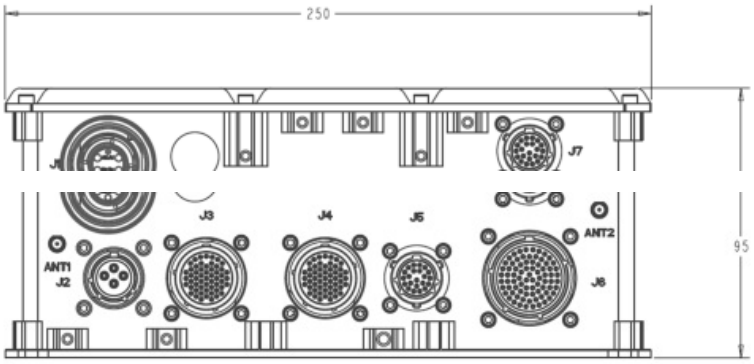


Figure 2: Mechanical outline, front view

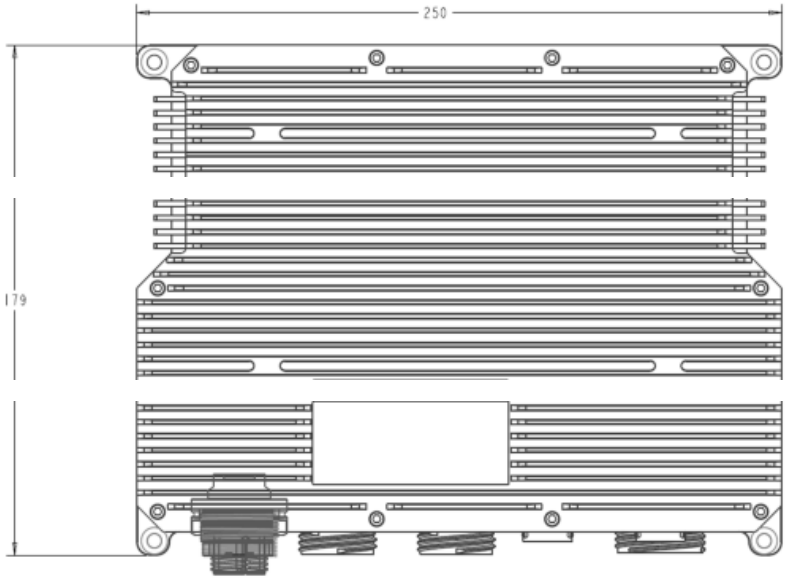


Figure 3: Mechanical outline, top view

Figure 4: Mechanical 3D, side view

7. I/O CONNECTORS

Following image shows the connector details on Geode Jasper system.

7.1 J2 – Power Input (Power)

Geode Jasper provides D38999 series circular connector for power input. Connector pinout is as shown below:

D38999 Pin no.	Signal

B	Vin
C	Vin
A	Ground
D	Ground

Geode system connector	Connector type	MIL D38999/20WC4PN
	Description	Shell type Straight Plug Material and Olive Drab Cadmium finish Plated Nickel Base Shell Size C Insert Arrangement C4 Contact type Pin Keying position Normal Keying Pins 4

	Illustration Viewed from exterior	
Mating connector	Connector Part#	MIL D38999/26WC4SN
	Description	Shell type Straight Plug Material and Olive Drab Cadmium finish Plated Nickel Base Shell Size C Insert Arrangement C4 Contact type Socket Keying position Normal Keying Pins 4
	Illustration Viewed from exterior	

7.2 J3 – IO Connector

Geode Jasper provides four serial ports, Audio In, Audio Out, MIC ports and Expansion IO signals on to D38999 series circular connector. Connector pinout is as shown below:

Interface	D38999 Pin no.	Signal Name
Serial Port 1	50	TX/TX_P/RX_P
	49	RX/RX_P
	55	RTS/TX_N/RX_N
	53	CTS/RX_N
	48	GND
Serial Port 2	41	TX/TX_P/RX_P
	33	RX/RX_P
	47	RTS/TX_N/RX_N
	40	CTS/RX_N
	32	GND

Serial Port 3	36	TX/TX_P/RX_P
	30	RX/RX_P
	29	RTS/TX_N/RX_N
	37	CTS/RX_N
	38	GND
Serial Port 4	46	TX/TX_P/RX_P
	52	RX/RX_P
	45	RTS/TX_N/RX_N
	51	CTS/RX_N
	39	GND
	31	D_EXP_1
	23	D_EXP_3

Expansion IOs	15	D_EXP_5
	14	D_EXP_7
	7	D_EXP_9
	6	D_EXP_11
	5	D_EXP_13
	11	D_EXP_15
	18	D_EXP_17
	25	D_EXP_19
	24	D_EXP_2
	16	D_EXP_4
	9	D_EXP_6
	8	D_EXP_8

	3	D_EXP_10
	2	D_EXP_12
	1	D_EXP_14
	4	D_EXP_16
	10	D_EXP_18
	17	D_EXP_20

Audio In	42	LINE_OUT_L
	43	LINE_OUT_R
	34	AUD_GND
Audio Out	26	LINE_IN_L
	27	LINE_IN_R

	35	AUD_GND
MIC In	20	MIC_IN
	13	AUD_GND
Audio GND	21	AUD_GND
	22	AUD_GND
No Connect	12	NC
	19	NC
	28	NC
	44	NC
	54	NC

	Connector type	MIL D38999/20KE35BN

Geode system connector	Description	Shell type Straight Receptacle Material and Olive Drab Cadmium finish Plated Nickel Base Shell Size E Insert Arrangement F35 Contact type Socket Keying position Normal Keying
	Illustration Viewed from exterior	
	Connector type	MIL D38999/26WE35PN

Mating connector	Description	Shell type Straight Plug Material and Olive Drab Cadmium finish Plated Nickel Base Shell Size E Insert Arrangement F35

		Contact type Pin Keying position Normal Keying
	Illustration Viewed from rear (terminal insertion side)	

7.3 J4 – IO Connector

Geode Jasper provides two 1G Ethernet, two USB2.0, GPIO, I2C and power signals on to D38999 series circular connector. Connector pinout is as shown below:

Interface	D38999 Pin no.	Signal Name
GBE Port 1	9	GBE0_TR0_P
	8	GBE0_TR0_N
	24	GBE0_TR1_P
	16	GBE0_TR1_N
	31	GBE0_TR2_P
	39	GBE0_TR2_N
	46	GBE0_TR3_P
	52	GBE0_TR3_N
	51	GBE1_TR0_P
	55	GBE1_TR0_N
	54	GBE1_TR1_P

GBE Port2	53	GBE1_TR1_N
	48	GBE1_TR2_P
	47	GBE1_TR2_N
	40	GBE1_TR3_P
	32	GBE1_TR3_N
USB2.0 Port 1	11	V_USB0_VBUS
	10	USB2_D2_CH_N
	17	USB2_D2_CH_P
	18	GND_DIG
USB2.0 Port 2	2	V_USB1_VBUS
	1	USB2_D3_CH_N
	4	USB2_D3_CH_P

	5	GND_DIG
	22	PWRBTN#
	19	M_2_MEM_ERS_GPIO
	23	RSTBTN#_3P3
	13	GND_DIG
	12	V_3P0_RTC
	14	V_3P3_S_UTILITY
	20	I2C_CLK

	21	I2C_DATA
	25	GND_DIG
	41	E_EXP_1

	42	E_EXP_2
	43	E_EXP_3
	44	E_EXP_4
	45	E_EXP_5
	34	E_EXP_6
	35	E_EXP_7
	36	E_EXP_8
	37	E_EXP_9
	38	E_EXP_10
	26	GND_DIG
	6	NC
	7	NC

No Connect	15	NC
	27	NC
	28	NC
	29	NC
	30	NC
	33	NC
	50	NC

	Connector type	MIL D38999/20KE35BN

Geode system connector	Description	Shell type Straight Receptacle Material and Olive Drab Cadmium finish Plated Nickel Base Shell Size E Insert Arrangement F35 Contact type Socket Keying position Normal Keying

	Illustration Viewed from exterior	
	Connector type	MIL D38999/26WE35PN

Mating connector	Description	Shell type Straight Plug Material and Olive Drab Cadmium finish Plated Nickel Base Shell Size E Insert Arrangement F35 Contact type Pin Keying position Normal Keying
	Illustration Viewed from rear (terminal insertion side)	

7.4 J7 – HDMI Connector

Geode Jasper provides HDMI interface signals which are terminated with SJT00RT12 series circular connector. Connector pinout is as shown below:

D38999 Pin no.	Signal

1	HDMI_DP2_TX0_CON_P
2	HDMI_DP2_TX0_CON_N
15	GND_DIG
3	HDMI_DP2_TX1_CON_P
4	HDMI_DP2_TX1_CON_N
16	GND_DIG
5	HDMI_DP2_TX2_CON_P
6	HDMI_DP2_TX2_CON_N
17	GND_DIG
9	HDMI_DP2_TX3_CON_P
10	HDMI_DP2_TX3_CON_N
19	GND_DIG

20	HDMI_CEC_CON
	NC
12	HDMI_SCL_CON
13	HDMI_SDA_CON
14	GND_DIG
21	V_5P0_HDMI
7	HDMI_HPD_CON
22	GND_DIG
8	NC
11	NC
18	NC

	Connector type	MIL SJT00RT12-35S014

Geode System connector	Description	Shell type Straight Receptacle Material and Olive Drab Cadmium finish Plated Nickel Base Shell Size 12 Insert Arrangement 12-35 Contact type Female Socket Keying position Normal Keying Pins 22
	Illustration Viewed from exterior	

	Connector type	MIL SJTG06RT12-35DP014

Mating connect or	Description	Shell type Straight Plug Material and Olive Drab Cadmium finish Plated Nickel Base Shell Size 12 Insert Arrangement 12-35 Contact type Pin Keying position Normal Key ing Pins 22
	Illustration Viewed from rear (terminal insertion side)	

7.5 J5 – USB3.2 Connector

Geode Jasper provides 2xUSB3.2 interface signals which are terminated with SJT00RT12 series circular connector. Connector pinout is as shown below:

USB Port#	D38999 Pin no.	Signal

USB3.0 Port 1	1	USB3_VBUS
	7	USB D
	8	USB D+
	2	GND
	5	USB3_SSRX
	6	USB3_SSRX+
	16	GND
	3	USB3_SSTX
	4	USB3_SSTX+
	14	USB3_VBUS
	22	USB D
	18	USB D+

USB3.0 Port 2	13	GND
	11	USB3_SSRX
	12	USB3_SSRX+
	19	GND
	9	USB3_SSTX
	10	USB3_SSTX+

Geode system connector	Connector type	MIL SJT00RT12-35S014
	Description	Shell type Straight Receptacle Material and Olive Drab Cadmium finish Plated Nickel Base

		Shell Size 12 Insert Arrangement 12-35 Contact type Female Socket Keying position Normal Keying Pins 22
	Illustration Viewed from exterior	
	Connector type	MIL SJTG06RT12-35DP014

Mating connect or	Description	Shell type Straight Plug Material and Olive Drab Cadmium finish Plated Nickel Base Shell Size 12 Insert Arrangement 12-35 Contact type Pin Keying position Normal Keyi ng Pins 22
	Illustration Viewed from rear (terminal insertion s ide)	

7.6 J2 – I/O Connector

The 1G Eth, 2x CAN, DIO, Audio, 4x Serial ports, 2x USB2.0 and Control Signals of the Geode System are terminated with a D38999 series circular connector. The connector pinouts are as shown below:

Port Type	D38999 Pin no.	Signal

1G Ethernet Port	10	GBE0_TR0_P
	4	GBE0_TR0_N
	17	GBE0_TR1_P
	25	GBE0_TR1_N

	1	GBE0_TR2_P
	5	GBE0_TR2_N
	2	GBE0_TR3_P
	3	GBE0_TR3_N
USB2 Port 1	64	USB VBUS
	66	USB D
	65	USB D+

	62	GND
USB2 Port 2	44	USB VBUS
	51	USB D
	43	USB D+
	58	GND
Serial Port 1 (RS232/RS422/RS485)	11	TX/TX_P/RX_P
	13	RX/RX_P
	12	RTS/TX_N/RX_N
	14	CTS/RX_N
	15	GND_DIG
	16	TX/TX_P/RX_P
	19	RX/RX_P

Serial Port 2 (RS232/RS422/RS485)	9	RTS/TX_N/RX_N
	20	CTS/RX_N
	21	GND_DIG
Serial Port 3 (RS232)	35	TX
	36	RX
	38	RTS
	37	CTS
	39	GND
Serial Port 4 (RS232)	41	TX
	40	RX
	42	GND
	45	SYS_RST_IN_N

Power Signals	47	BUTTON_POWER_ON_N
	50	FORCE_RECOVERY
	48	MEM_ERS
I2C Signals	52	I2C_CLK_3P3
	53	I2C_ DAT_3P3
CAN Signals	6	CAN0_H
	23	CAN1_L
	7	CAN0_L
	22	CAN1_H
DIO Signals	34	DIO_PA0
	26	DIO_PA1
	27	DIO_PA2

	28	DIO_PA3
	29	DIO_PA4

	30	DIO_PA5
	31	DIO_PA6
	32	DIO_PA7
Audio Signals	57	AUDIO_OUT_L
	63	AUDIO_OUT_R
	56	GND_AUD
	61	AUDIO_MIC_IN
	60	GND_AUD
+5V	54	V_5P0

Ground	8	GND
	46	GND
	49	GND
	55	GND
	24	GND
	33	GND
	59	GND
No Connect	18	NC

	Connector type	MIL D38999/20WF35SN

Geode system connector	Description	Shell type Straight Receptacle Material and Olive Drab Cadmium finish Plated Nickel Base Shell Size F Insert Arrangement F35 Contact type Socket Keying position Normal Keying
	Illustration Viewed from exterior	
Mating connector	Connector type	MIL D38999/26WF35PN
	Description	Shell type Straight Plug

		Material and Olive Drab Cadmium finish Plated Nickel Base Shell Size F Insert Arrangement F35 Contact type Pin Keying position Normal Keying
	Illustration Viewed from rear (terminal insertion side)	

8. GEODE JASPER JUMPER CONFIGURATIONS

8.1 Jumpers on Jasper COM Carrier Board

The Jumper blocks on the Jasper COM carrier board can be configured to enable/disable or alter the default signal routing settings on the circuit, using Jumper shunts.

Figure 4: Jumper Blocks on Jasper Carrier Board

The following table describes the Jumper Blocks on the carrier board.

Name	Function
JP1	FPGA address selection
JP2	LVDS_BKLT and LVDS_VDD voltage level selection
JP3	USB TO MPCIE/PCIE/104, input voltage selection
JP4	Serial port mode selection
JP5	DIO Voltage and PU/PD selection
JP6	Serial Port 3 & 4 termination selection
JP7	Serial Port 1 & 2 termination selection

8.2 Jumper Block JP1

JP1 Jumpers Configuration are provided to set the address of the FPGA.

Position	Function	IN	OUT
A0	FPGA Address 0	Refer following table	

A1	FPGA Address 1	Refer following table
A2	FPGA Address 2	Refer following table
A3	FPGA Address 3	Refer following table

*Default Address = 0x240

FPGA Addresses

FPGA Address A0 A1 A2 A3 FPGA Address – 0X100 IN IN IN IN FPGA Address – 0X120 IN IN IN OUT FPGA Address – 0X140 IN IN OUT IN FPGA Address – 0X180 IN IN OUT OUT FPGA Address – 0X200 IN OUT IN IN FPGA Address – 0X240 IN* OUT* IN* OUT* FPGA Address – 0X280 IN OUT OUT IN FPGA Address – 0X2C0 IN OUT OUT OUT FPGA Address – 0X300 OUT IN IN IN FPGA Address – 0X340 OUT IN IN OUT FPGA Address – 0X380 OUT IN OUT IN FPGA Address – 0X3C0 OUT IN OUT OUT FPGA Address – 0X400 OUT OUT IN IN FPGA Address – Reserved OUT OUT IN OUT FPGA Address – Reserved OUT OUT OUT IN

FPGA Address – Reserved OUT OUT OUT OUT *Default Mode

Note:

1. Base address must be selected based on COM module used with Jasper.

2. Whiskey Lake COM supports 0x240 and 0x280 base address.

3. Tiger Lake COM supports 0x240 base address.

8.3 Jumper Block JP2

JP2 Jumpers are provided to select the voltage level of the LVDS display and backlight. The configuration is as shown below:

Position	Function	IN	OUT
12V	LCD Backlight Voltage	12V*	–
5V	LCD Backlight Voltage	5V	–
5V	LCD VDD Voltage	5V	–
3V3	LCD VDD Voltage	3.3V*	–

*Default Mode

Note: Make sure 5V and 3V3 Jumper are not IN at same time.

8.4 Jumper Block JP3

JP3 Jumpers Configuration are provided select the configuration pins of the FPGA, USB interface and Power IN option. USB interface from COMe Type AB connector is multiplex to mPCIe and PCIe/104 connector. Board can be powered with 18V-36V wide input or 12V fixed supply.

Position	Function	IN	OUT
U0	FPGA Config 0	TBD	TBD*

U1	FPGA Config 1	TBD	TBD*
USB	USB SEL	Minicard	PCIe104*
12VIN	Wide Input SEL	12V Fixed	Wide Input*

*Default Mode

8.5 Jumper Block JP4

JP2 Jumpers are provided to select the mode of serial ports 1, 2, 3 & 4. SC0 and SC1 jumpers are used to select mode for serial ports 1 & 2 and SC2 and SC3 jumpers are used to select mode for serial ports 3 & 4. The configuration is as shown below:

Position	Port	RS232	RS485	RS422	Internal Loop
SC0	1&2	IN*	OUT	OUT	IN
SC1	1&2	OUT*	IN	OUT	IN
SC2	3&4	IN*	OUT	OUT	IN
SC3	3&4	OUT*	IN	OUT	IN

*Default Mode

Note: Make sure 5V and 3V3 Jumper are not IN at same time.

8.6 Jumper Block JP5

JP2 Jumpers are provided to select the voltage level and Pullup/pull down configuration of the DIO. By default, the DIOs are 3.3 Volare pulled down. The configuration is as shown below:

Position	Function	IN	OUT
5V	DIO Voltage Level	5V	
3V3	DIO Voltage Level	3.3V*	
PU	DIO Pull up Enable	Enabled Disabled	
PD	DIO Pull down Enable	Enabled* Disabled	

*Default Mode

Note: Make sure 5V and 3V3 Jumper are not IN at same time.

8.7 Jumper Block JP6

JP2 Jumpers are provided to enable and disable the termination of serial ports3-4. The configuration is as shown below:

Position	Function	IN	OUT
TX3	Serial Port3 TX Termination	Enabled	Disabled*
RX3	Serial Port3 RX Termination	Enabled	Disabled*
TX4	Serial Port4 TX Termination	Enabled	Disabled*
RX4	Serial Port4 RX Termination	Enabled	Disabled*

*Default Mode

8.8 Jumper Block JP7

JP2 Jumpers are provided to enable and disable the termination of serial ports1-2. The configuration is as shown below:

Position	Function	IN	OUT
TX1	Serial Port1 TX Termination	Enabled	Disabled*
RX1	Serial Port1 RX Termination	Enabled	Disabled*
TX2	Serial Port2 TX Termination	Enabled	Disabled*

RX2	Serial Port3 RX Termination	Enabled	Disabled*

*Default Mode

Documents / Resources

	DIAMOND SYSTEMS Geode Jasper Rugged Computer System [pdf] User Manual Geode Jasper Rugged Computer System, Rugged Computer System, Computer System

References

- User Manual

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