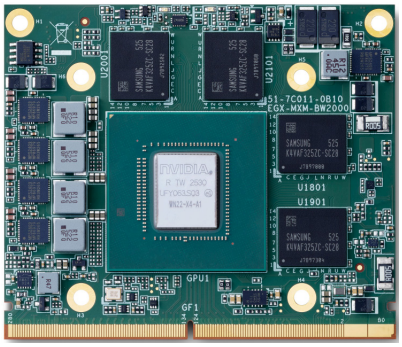
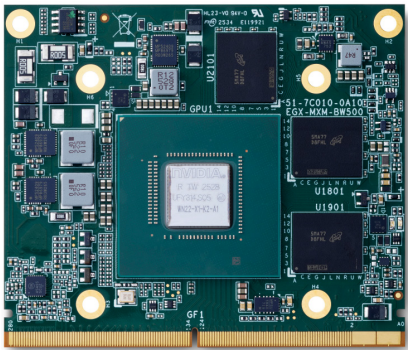
EGX-MXM-BW500/BW2000/BW4000/BW5000

User's Manual

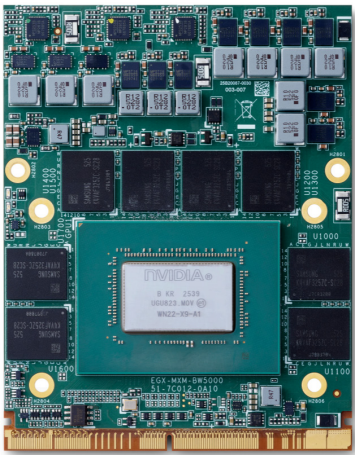
NVIDIA RTX PRO 500/RTX 2000/RTX 4000/RTX 5000 Blackwell Embedded MXM Graphics Card Module



(BW2000)



(BW500)



(BW4000/BW5000)

Manual Rev.:	Rev. 1.0
Revision Date:	August 8, 2026
Part Number:	50M-7C010-1000

LEADING EDGE AI COMPUTING

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Preface

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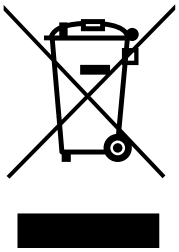
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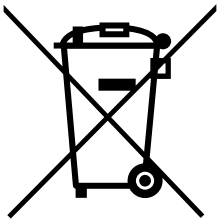
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Battery Labels (for products with battery)









California Proposition 65 Warning



WARNING: This product can expose you to chemicals including acrylamide, arsenic, benzene, cadmium, Tris(1,3-dichloro-2-propyl)phosphate (TDCPP), 1,4-Dioxane, formaldehyde, lead, DEHP, styrene, DINP, BBP, PVC, and vinyl materials, which are known to the State of California to cause cancer, and acrylamide, benzene, cadmium, lead, mercury, phthalates, toluene, DEHP, DIDP, DnHP, DBP, BBP, PVC, and vinyl materials, which are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

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Revision History

Revision	Description	Date	By
1.0	Initial release	2026-08-10	AL

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Conventions

Take note of the following conventions used throughout this manual to make sure that users perform certain tasks and instructions properly.



NOTE:

Additional information, aids, and tips that help users perform tasks.



CAUTION:

Information to prevent ***minor*** physical injury, component damage, data loss, and/or program corruption when trying to complete a task.



WARNING:

Information to prevent ***serious*** physical injury, component damage, data loss, and/or program corruption when trying to complete a specific task.

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1 Introduction

The EGX-MXM Blackwell series brings next-generation GPU acceleration to embedded systems with a lineup of modules powered by NVIDIA RTX PRO Blackwell Generation Embedded GPUs. Designed for AI inference, computer vision, robotics, and edge computing, the series delivers scalable performance and energy efficiency in industry-standard MXM 3.1 Type A and Type B form factors.

The product family includes four modules to meet a wide range of performance and deployment requirements:

- **EGX-MXM-BW500** – Type A MXM: A compact, power-efficient module suitable for space-constrained embedded systems requiring reliable AI inference and graphics acceleration.
- **EGX-MXM-BW2000** – Type A MXM: A high-density module delivering strong edge AI performance in an 82 × 70 mm form factor for embedded AI and robotics systems.
- **EGX-MXM-BW4000** – Type B MXM: A balanced module providing enhanced compute capability for demanding AI inference, computer vision, and graphics workloads.
- **EGX-MXM-BW5000** – Type B MXM: The flagship model featuring NVIDIA Multi-Instance GPU (MIG) support for GPU partitioning, enabling parallel workloads and improved resource utilization in advanced edge AI deployments.

Built on NVIDIA Blackwell architecture, the EGX-MXM Blackwell series delivers advanced AI inference with FP4 precision for higher throughput and improved memory efficiency. The GPUs feature CUDA Cores for parallel compute processing, 4th-generation RT Cores for hardware-accelerated ray tracing, and 5th-generation Tensor Cores optimized for AI and deep learning workloads. Paired with GDDR7 memory (up to 24GB, 256-bit interface, and up to 896 GB/s bandwidth), the platform enables high-bandwidth, low-latency processing for demanding AI, vision, and data-intensive edge applications.

1.1 Features

- NVIDIA Blackwell architecture with FP4 precision
- Standard MXM 3.1 Type A / Type B form factors
- PCIe Gen5 x16 host interface
- 5th-generation Tensor cores, 4th-generation RT cores, and NVIDIA CUDA® cores
- Peak FP32 performance up to 49.8 TFLOPS
- Up to 24GB GDDR7 memory with 256-bit interface
- Up to 896 GB/s memory bandwidth
- Support for up to four DisplayPort 2.1a outputs
- Configurable power envelope from 45W to 150W TGP
- Support for NVIDIA Multi-Instance GPU (MIG)
- 5-year product lifecycle availability for long-term embedded deployments

1.2 Unpacking Checklist

Before unpacking, check the shipping carton for any damage. If the shipping carton and/or contents are damaged, inform your dealer immediately. Retain the shipping carton and packing materials for inspection. Obtain authorization from your dealer before returning any product to ADLINK. Ensure that the following items are included in the package.

- EGX-MXM-BW500 embedded graphics module
- EGX-MXM-BW2000 embedded graphics module
- EGX-MXM-BW4000 embedded graphics module
- EGX-MXM-BW5000 embedded graphics module

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2 Specifications

2.1 Core System

	BW 500	BW 2000	BW4000	BW5000
Graphics Engine	1792 CUDA Cores GB207-925/ 14 RT Cores/ 56 Tensor Cores	3328 CUDA Cores GB206-950/ 26 RT Cores/ 104 Tensor Cores	7680 CUDA Cores GB203-925/ 60 RT Cores/ 240 Tensor Cores	10496 CUDA Cores GB203-952/ 80 RT Cores/ 320 Tensor Cores
Graphic Clock (MHz)	60W: Base Clock:2160MHz/ Boost Clock:2565MHz/P0=P3= P5:180~3090MHz P8:180~885MHz	60W: Base Clock:1522MHz/ Boost Clock:2070MHz/ P0=P3=P5:180~3090MHz P8:180~885MHz	115W: Base Clock:1545MHz/ Boost Clock:2197MHz/ P0=P3=P5:180~3090MHz P8:180~885MHz	115W: Base Clock:1402MHz/ Boost Clock:1935MHz/ P0=P3=P5:180~3090 MHz P8:180~885MHz
Memory	6GB GDDR7	8GB GDDR7	16GB GDDR7	24GB GDDR7
Memory Clock (MHz)	12000MHz by VBIOS		14000MHz by VBIOS	
Memory Interface Width	96-bit	128-bit	256-bit	
Memory Bandwidth (GB/sec)	288	384	896	
BUS standard	PCIe Gen5 x8		PCIe Gen5 x16	
DirectX	12 or later		12 or later	
OpenGL	4.1 or later			
OpenCL	3.0			
NVIDIA CUDA Support	Enabled			
Support Technology	Hybrid mode optional			
Operation System	Windows 10, Windows 11, and Linux			
Max. Displays per Board	3		4	
Max. Digital Display	8K at 240Hz or 16k at 60Hz			
Outputs	DisplayPort 1.4a			
Max. Board Power Consumption (W)	60W	60W (100W optional)	115W	115W (150W optional)
Form Factor	MXM graphics module version 3.1 Type A		MXM graphics module version 3.1 Type B	
Dimensions (mm)	70x82		105x82	
Temperature (℃)	Storage Temperature: -40 + 85°C Operating Temperature: 0 + 55°C Operating Temperature: -40 + 85°C (ETT SKU optional)		Storage Temperature: -40 + 85°C Operating Temperature: 0 + 50°C Operating Temperature: -40 + 85°C (ETT SKU optional)	
Operating Humidity	~95% @40C (non-condensing)	~95% @40C (non-condensing)	~95% @40C (non-condensing)	~95% @40C (non-condensing)

Operating Power Condition	Power Modes: MXM spec. - Standard Voltage Input: P_+SRC: 7V to 20V DC P_+5V: 5V P_+3V3: 3.3V	Power Modes: MXM spec. - Standard Voltage Input: P_+SRC: 12V to 20V DC P_+5V: 5V P_+3V3: 3.3V	Power Modes: MXM spec. - Standard Voltage Input: P_+SRC: 12V to 20V DC P_+5V: 5V P_+3V3: 3.3V
Vibration	10G peak, 5 - 2000Hz		
Shock	30G peak for air-cooled, 40G peak for conduction-cooled		
ESD	Contact +/- 4KV, Air +/- 8KV		
EMC	CE & FCC class B		

For more information, please consult your ADLINK representative.

2.2 Functional Description

The NVIDIA® EN22-X1(BW500)/EN22-X4 (BW2000)/EN22-X9 (BW4000)/EN22-X11 (BW5000) GPU supports GDDR7 memory.

The EN22 GPU supports the following features and technologies:

- NVIDIA CUDA support
- DirectX 12 or later support - BW500/BW2000/BW4000/BW5000
- OpenGL 4.1 support
- OpenCL 3.0 support

This GPU fully integrates hardware acceleration for both graphics and computing workloads, enabling hardware acceleration for a wider class of software applications than ever before.

2.3 Interface Specifications

2.3.1 Graphics

- **BW500/BW2000/BW4000/BW5000**: DisplayPort DP 2.1a support. Resolutions up to 8K @ 240 Hz with DSC, with maximum data rates of 10 / 13.5 / 20 Gbps per connector.

2.3.2 PCI Express Bus

- **BW500 / BW2000**: The GPU supports PCI Express 5.0 with x8 PCIe lanes, providing a peak bandwidth (both directions) of up to 32 GT. The PCI Device ID for BW500 is 0x2DF9 and for BW2000 is 0x2D79.
- **BW4000 / BW5000**: The GPU supports PCI Express 5.0 with x16 PCIe lanes, providing a peak bandwidth (both directions) of up to 32 GT. The PCI Device ID for BW4000 is 0x2C79 and for BW5000 is 0x2C77.

2.3.3 SMBus Slave Device Addresses

Address (HEX)	Function	Device
0x9E(Write),0x9F(Read)(Primary) or 0x9C(Write),0x9D(Read)	SMBus/Internal thermal sensor	GPU

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2.4 SW Specification

2.4.1 OS Requirement

The EGX-MXM-BW series supports Windows 10 and 11 (64-bit), Linux (64-bit).

For Linux driver installation, please follow NVIDIA's instructions in Chapter 4. Installing the NVIDIA Driver: https://us.download.nvidia.com/XFree86/Linux-x86_64/610.43.02/README/installdriver.html.

2.5 Thermal Specifications

The GPU core clock throttles when the temperature (TJ) exceeds the values listed in this table, which shows the throttling temperature and other thermal parameters. Thermal throttling is necessary to ensure that the hottest point on the die does not exceed the sensor temperature for prolonged periods.

Table 1: Temperature parameter table

Parameter	Value	Units
Thermal Resistance (Junction to Case, R_{JC})	0.019 BW4000/BW5000 0.034 BW2000 0.049 BW500	°C/W
Thermal Resistance (Junction to PCB Board, R_{jb})	1.012 BW4000/BW5000 1.764 BW2000 2.147 BW500	°C/W
GPU Maximum Operating Temperature[1]	89	°C
GPU Slowdown Temperature (THERM_ALERT)[2]	97	°C
GPU Shutdown Temperature (OVERT)[3]	100	°C

NOTE:

1. The GPU **maximum operating temperature** is the highest temperature at which the GPU is guaranteed to operate at the target performance (base clock) under the total board power level.
2. **THERM_ALERT** results in a **50% (÷2) hardware clock slowdown**.
3. **OVERT** assertion results in a shutdown.

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3 Functional Block Diagram

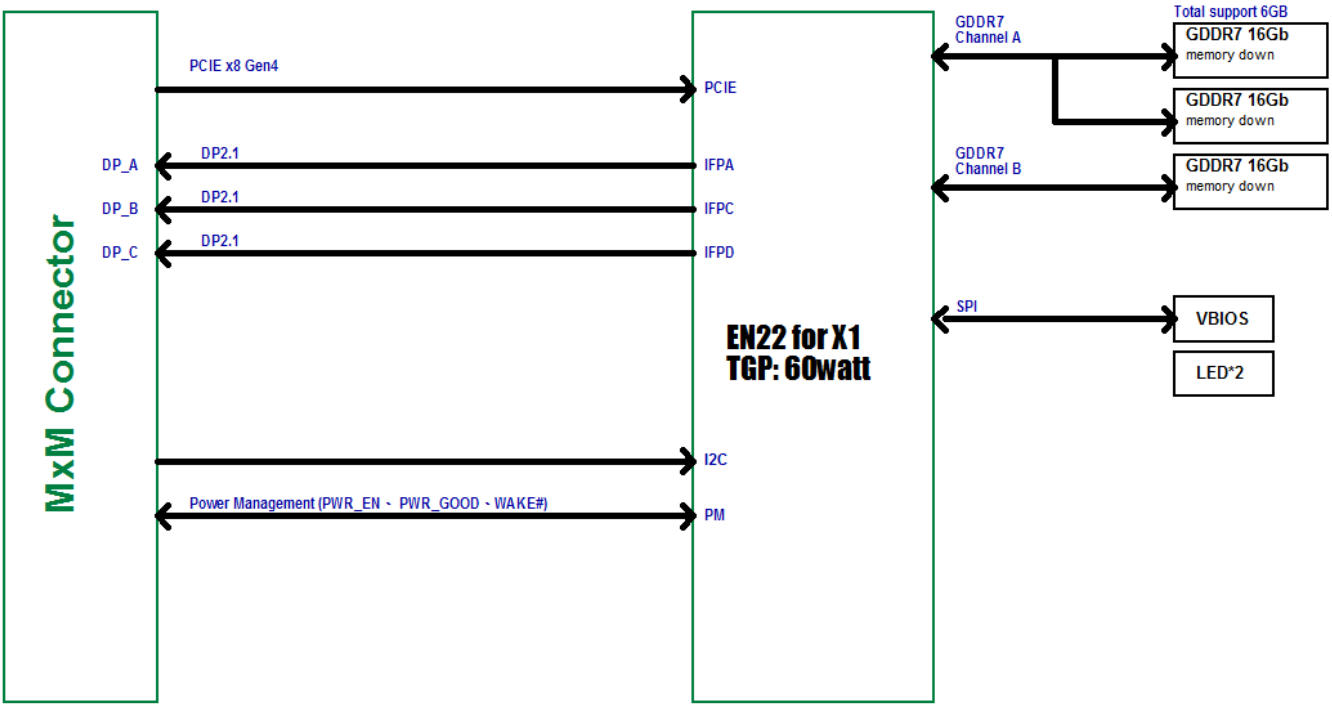


Figure 1: EGX-MXM-BW500 functional block diagram

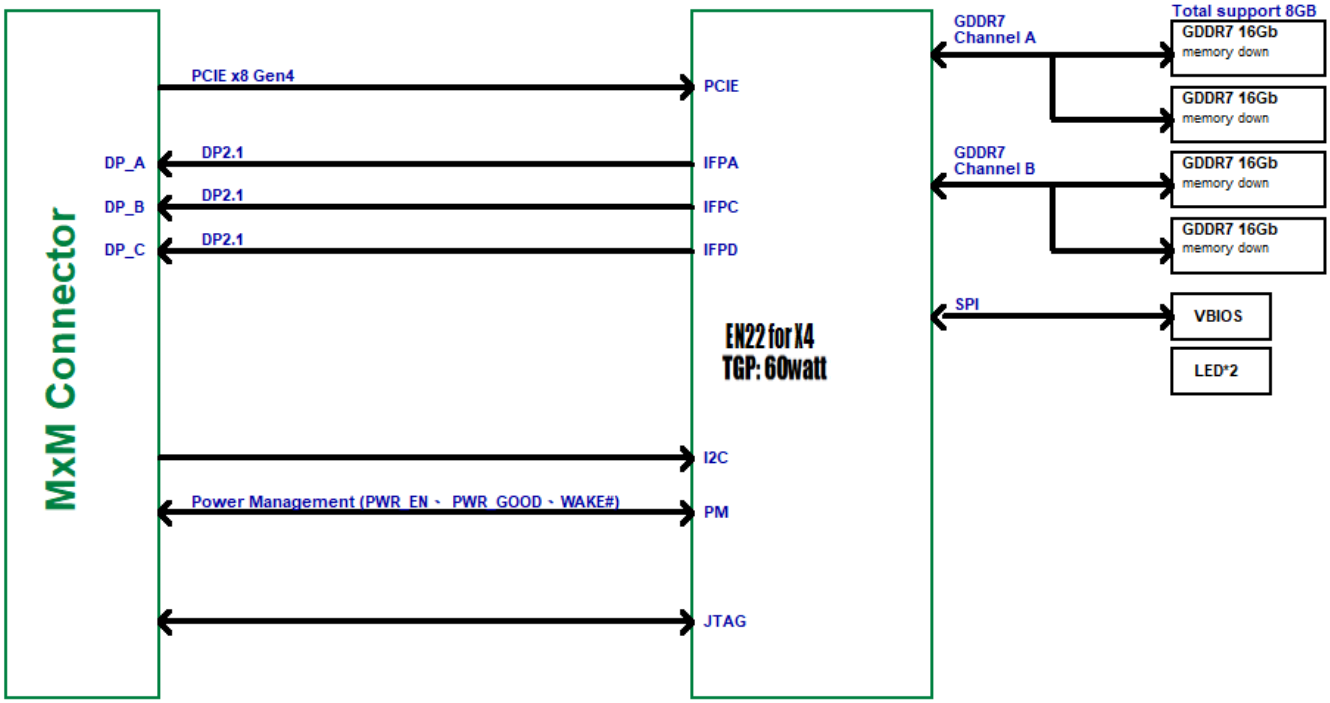


Figure 2: EGX-MXM-BW2000 functional block diagram

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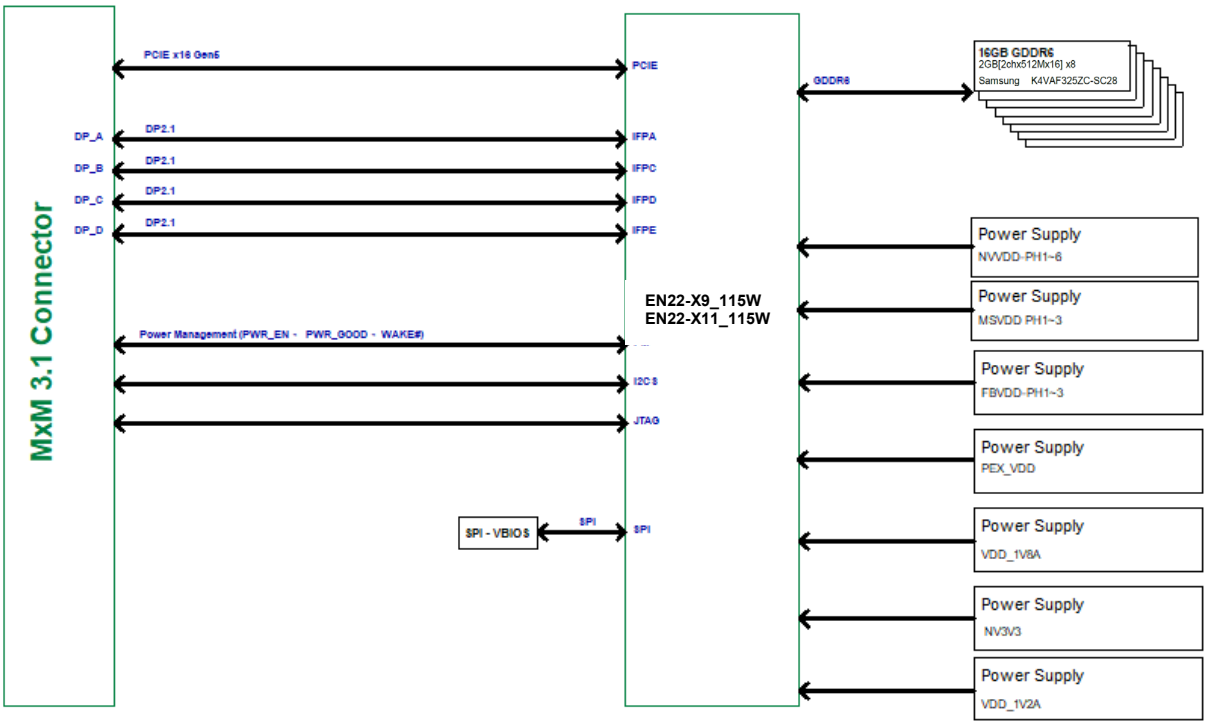


Figure 3: EGX-MXM-BW4000/BW5000 functional block diagram

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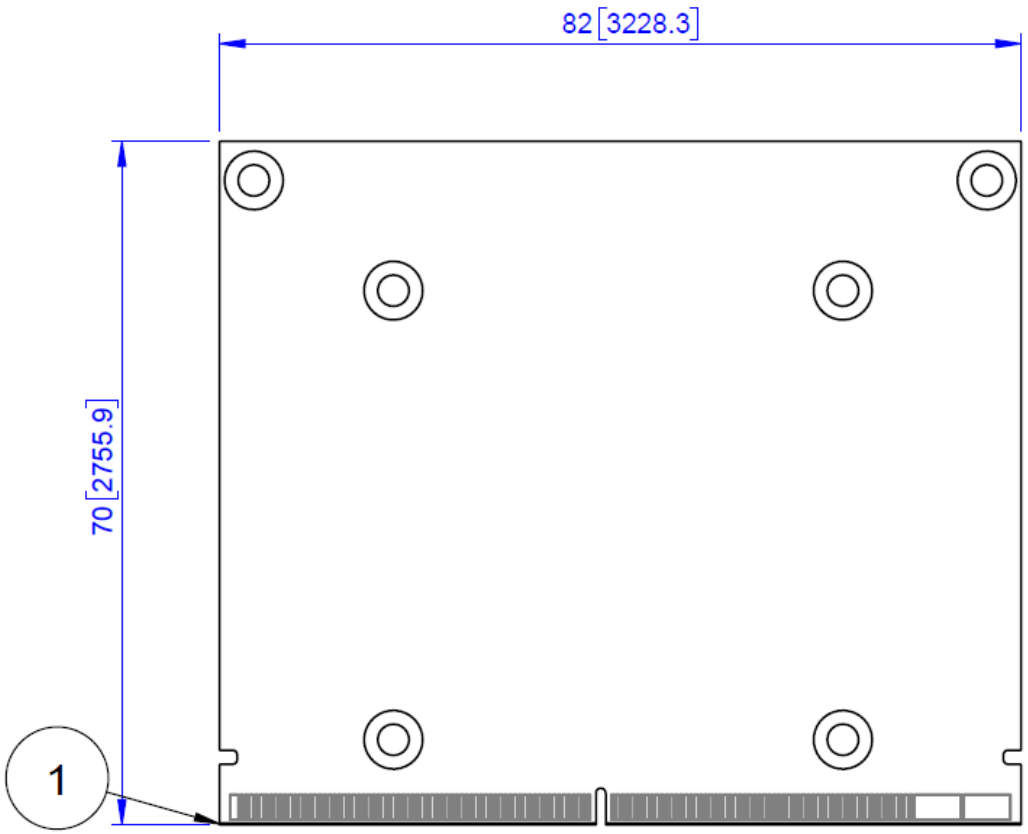
4 Mechanical Layout

NOTE:

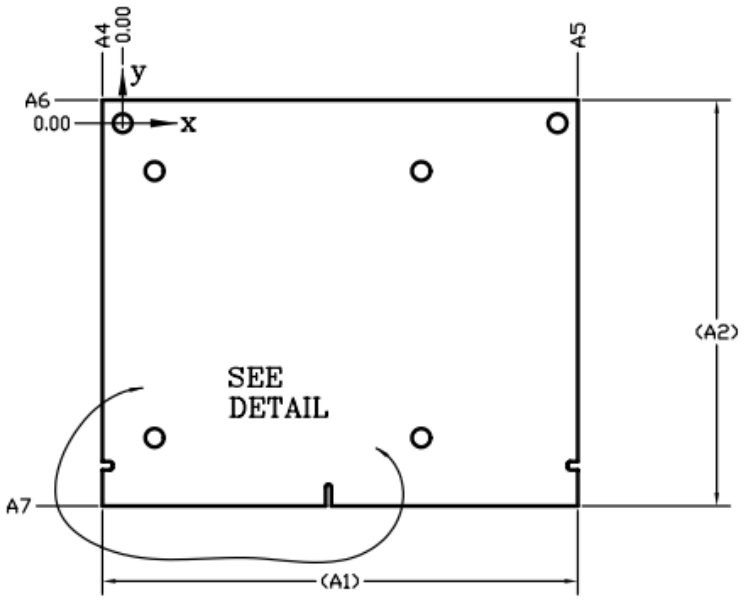
All dimensions shown are in mm.

4.1 Mechanical Dimensions

4.1.1 EGX-MXM-BW500 Mechanical Dimensions



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TYPE A

Symbol	[mm]			[in]		
	min	nom	max	min	nom	max
A1		82.00			3.228	
A2		70.00			2.756	
A3		105.00			4.134	
A4	3.37	3.50	3.63	0.133	0.138	0.143
A5	78.37	78.50	78.63	3.085	3.091	3.096
A6	3.87	4.00	4.13	0.152	0.157	0.163
A7	65.87	66.00	66.13	2.593	2.598	2.604
A8	38.87	39.00	39.13	1.530	1.535	1.541

Figure 4: EGX-MXM-BW500 mechanical dimensions

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4.1.1.1 MXM3.1 Type-A (BW500)

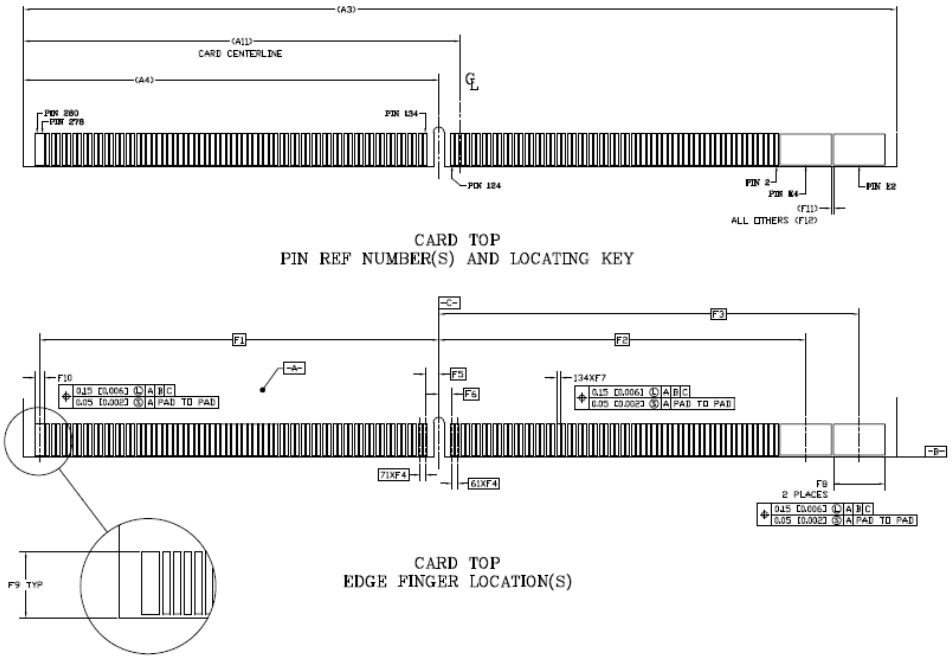


Figure 5: EGX-MXM-BW500 modular edge finger top

Table 2: EGX-MXM-BW500 modular edge finger top

Symbol	[mm]			[in]		
	min	nom	max	min	nom	max
A3		82.00			3.228	
A4		39.00			1.535	
A11		41.00			1.614	
F1		37.50			1.476	
F2		34.49			1.358	
F3		39.51			1.556	
F4		0.50			0.020	
F5		1.25			0.049	
F6		1.25			0.049	
F7	0.32	0.35	0.38	0.013	0.014	0.015
F8	4.79	4.82	4.85	0.189	0.190	0.191
F9	3.02	3.10	3.18	0.119	0.122	0.125
F10	0.82	0.85	0.88	0.032	0.033	0.035
F11		0.20			0.008	
F12		0.15			0.006	

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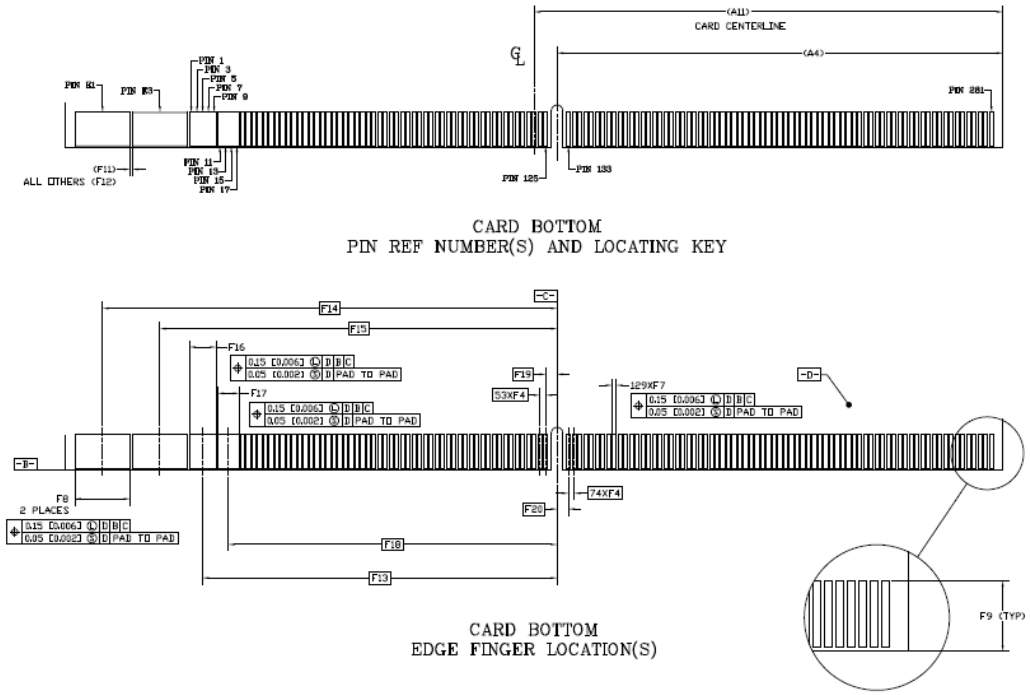


Figure 6: EGX-MXM-BW500 modular edge finger bottom

Table 3: EGX-MXM-BW500 modular edge finger bottom

Symbol	[mm]			[in]		
	min	nom	max	min	nom	max
A4		39.00			1.535	
A11		41.00			1.614	
F4		0.50			0.020	
F7	0.32	0.35	0.38	0.013	0.014	0.015
F8	4.79	4.82	4.85	0.189	0.190	0.191
F9	3.02	3.10	3.18	0.119	0.122	0.125
F11		0.20			0.008	
F12		0.15			0.006	
F13		31.00			1.220	
F14		39.76			1.565	
F15		34.74			1.368	
F16	2.32	2.35	2.38	0.091	0.093	0.094
F17	1.82	1.85	1.88	0.072	0.073	0.074
F18		28.75			1.132	
F19		1.00			0.039	
F20		1.00			0.039	

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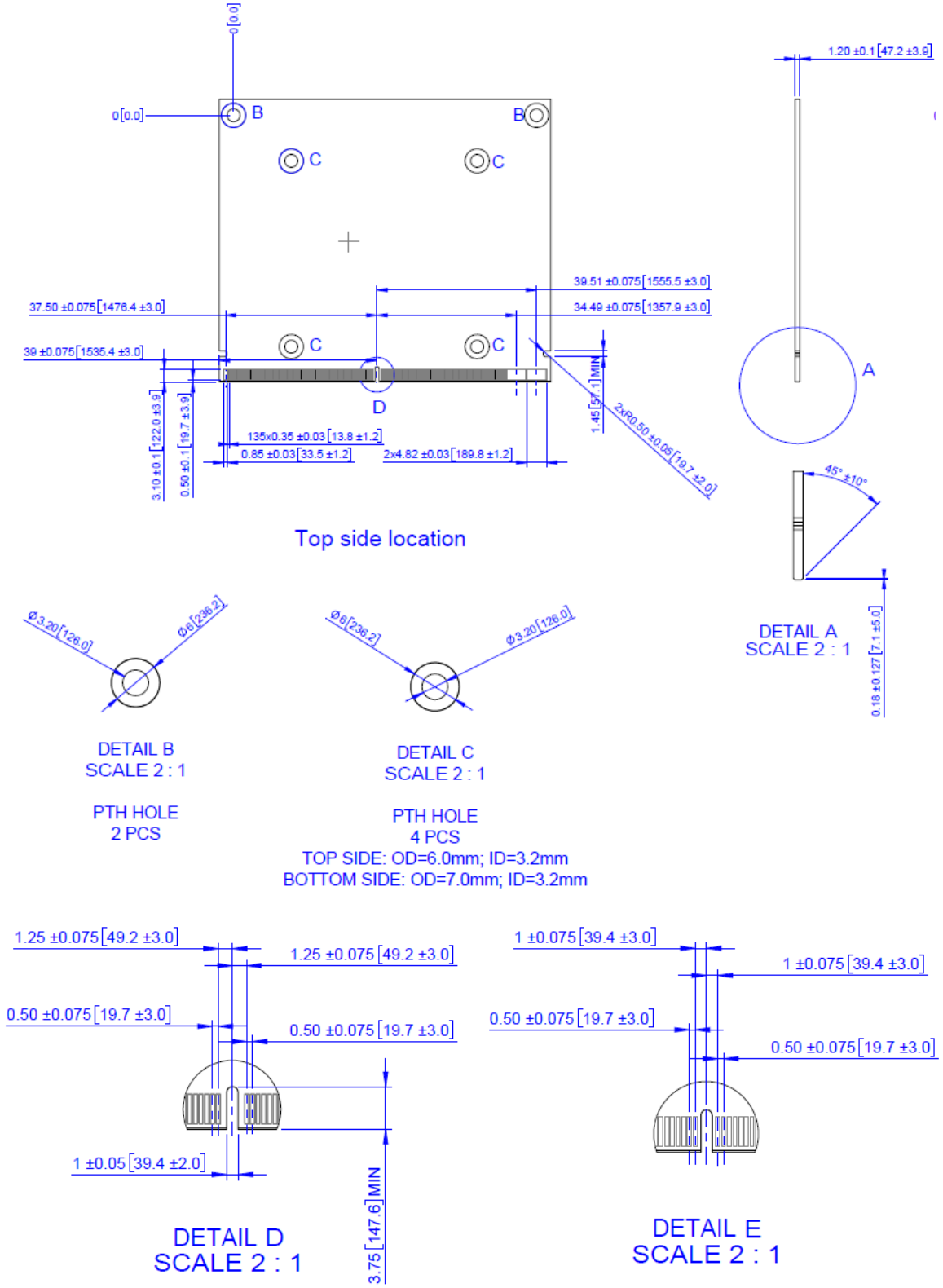


Figure 7: EGX-MXM-BW500 top and side view

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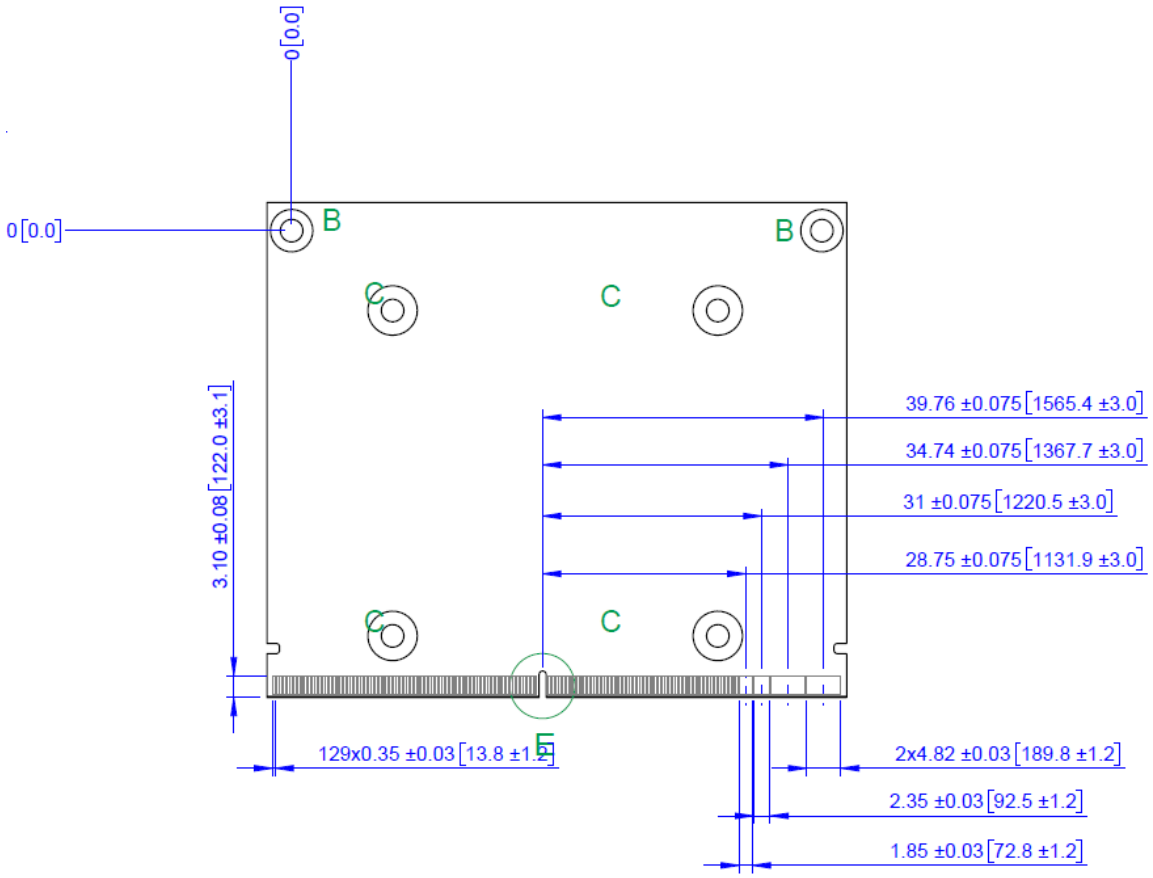
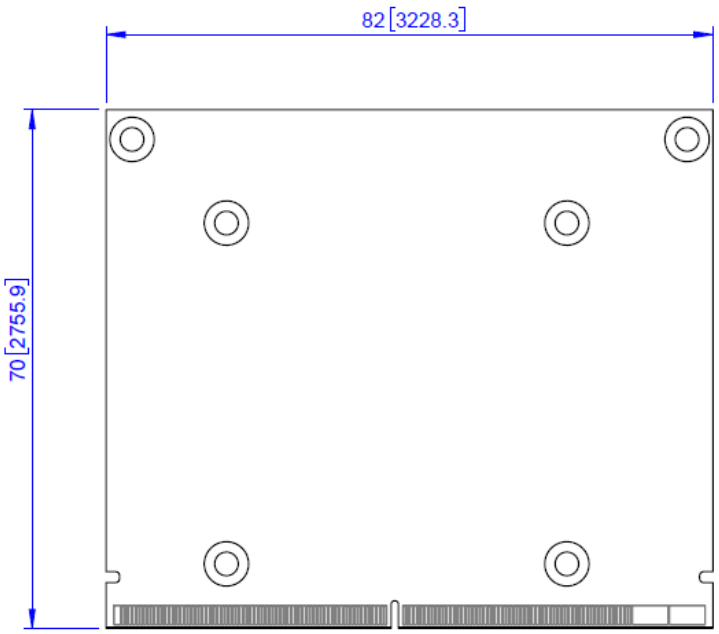
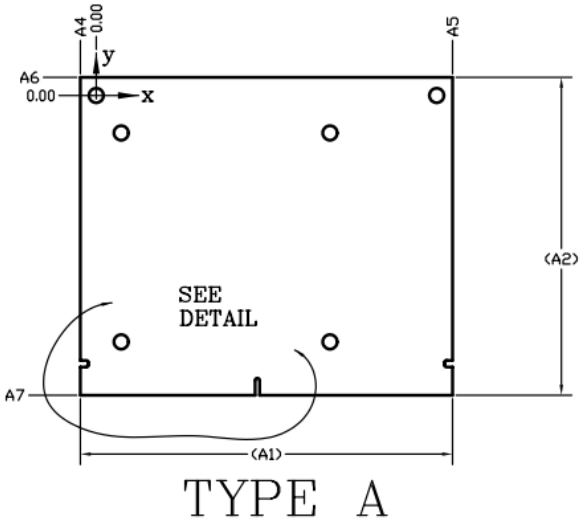


Figure 8: EGX-MXM-BW500 bottom view

4.1.2 EGX-MXM-BW2000 Mechanical Dimensions



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Symbol	[mm]			[in]		
	min	nom	max	min	nom	max
A1		82.00			3.228	
A2		70.00			2.756	
A3		105.00			4.134	
A4	3.37	3.50	3.63	0.133	0.138	0.143
A5	78.37	78.50	78.63	3.085	3.091	3.096
A6	3.87	4.00	4.13	0.152	0.157	0.163
A7	65.87	66.00	66.13	2.593	2.598	2.604
A8	38.87	39.00	39.13	1.530	1.535	1.541

Figure 9: EGX-MXM-BW2000 mechanical dimensions

4.1.2.1 MXM3.1 Gold Finger Type-A (BW2000)

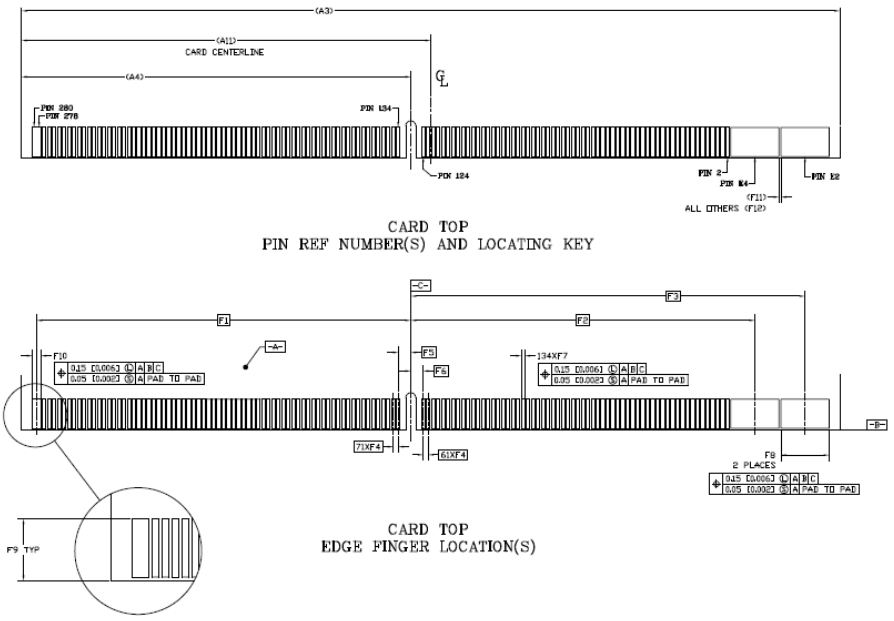


Figure 10: EGX-MXM-BW2000 modular edge finger top

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Table 4: EGX-MXM-BW2000 modular edge finger top

Symbol	[mm]			[in]		
	min	nom	max	min	nom	max
A3		82.00			3.228	
A4		39.00			1.535	
A11		41.00			1.614	
F1		37.50			1.476	
F2		34.49			1.358	
F3		39.51			1.556	
F4		0.50			0.020	
F5		1.25			0.049	
F6		1.25			0.049	
F7	0.32	0.35	0.38	0.013	0.014	0.015
F8	4.79	4.82	4.85	0.189	0.190	0.191
F9	3.02	3.10	3.18	0.119	0.122	0.125
F10	0.82	0.85	0.88	0.032	0.033	0.035
F11		0.20			0.008	
F12		0.15			0.006	

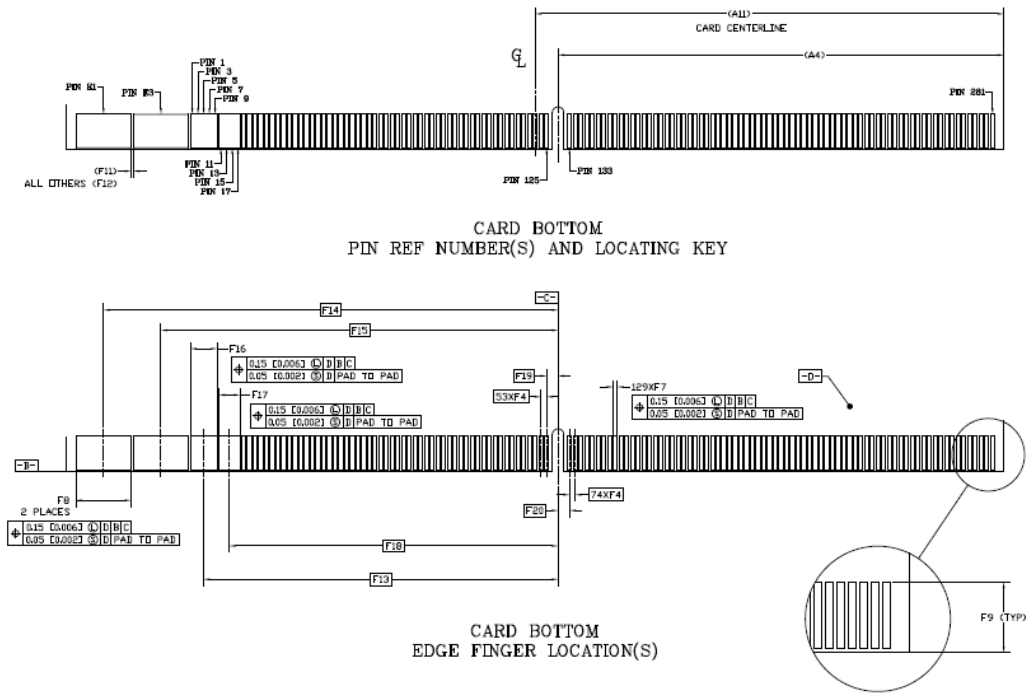


Figure 11: EGX-MXM-BW2000 modular edge finger bottom

Table 5: EGX-MXM-BW2000 modular edge finger bottom

Symbol	[mm]			[in]		
	min	nom	max	min	nom	max
A4		39.00			1.535	
A11		41.00			1.614	
F4		0.50			0.020	
F7	0.32	0.35	0.38	0.013	0.014	0.015
F8	4.79	4.82	4.85	0.189	0.190	0.191
F9	3.02	3.10	3.18	0.119	0.122	0.125
F11		0.20			0.008	
F12		0.15			0.006	
F13		31.00			1.220	
F14		39.76			1.565	
F15		34.74			1.368	
F16	2.32	2.35	2.38	0.091	0.093	0.094
F17	1.82	1.85	1.88	0.072	0.073	0.074
F18		28.75			1.132	
F19		1.00			0.039	
F20		1.00			0.039	

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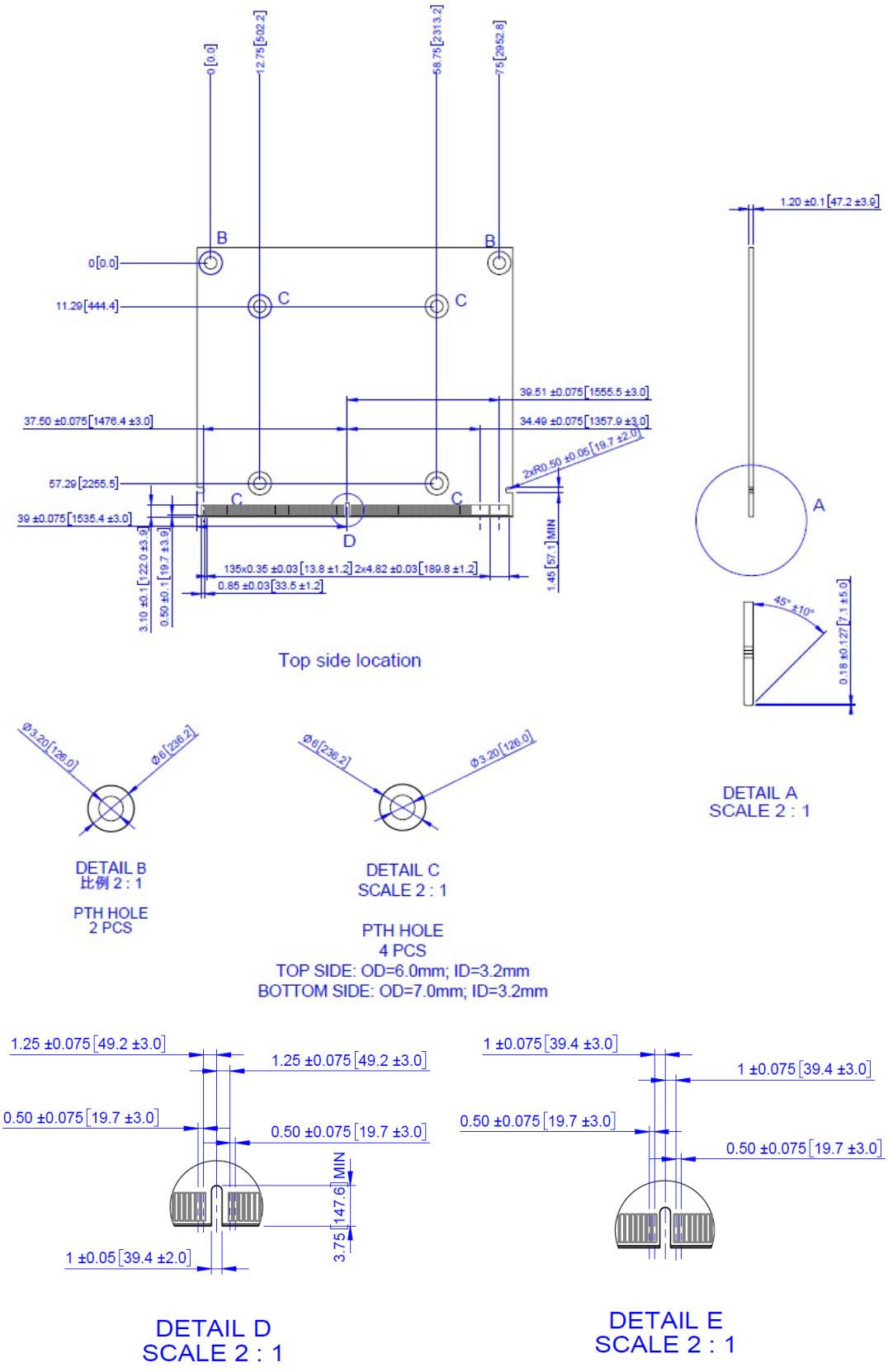


Figure 12: EGX-MXM-BW2000 top and side view

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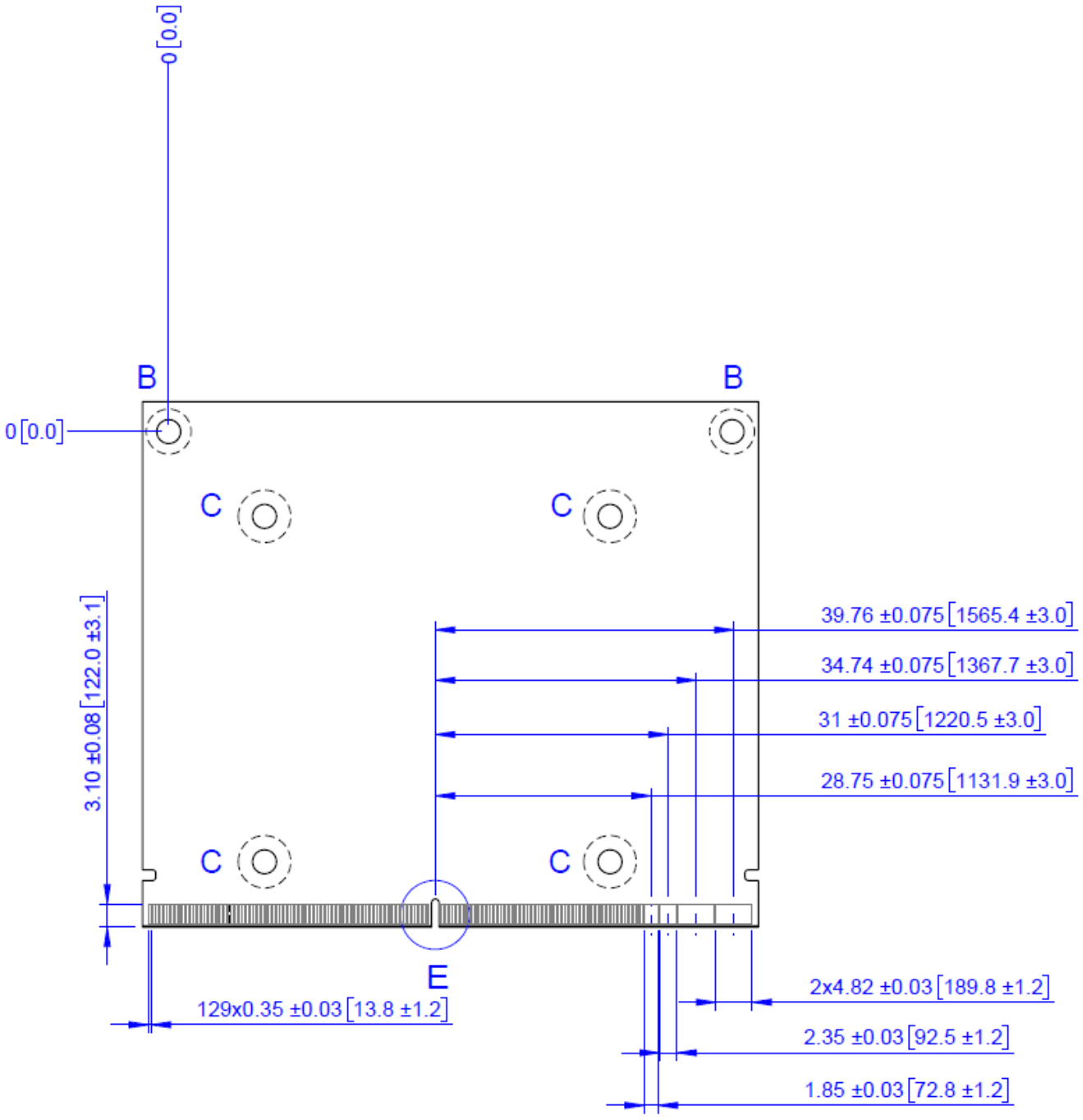
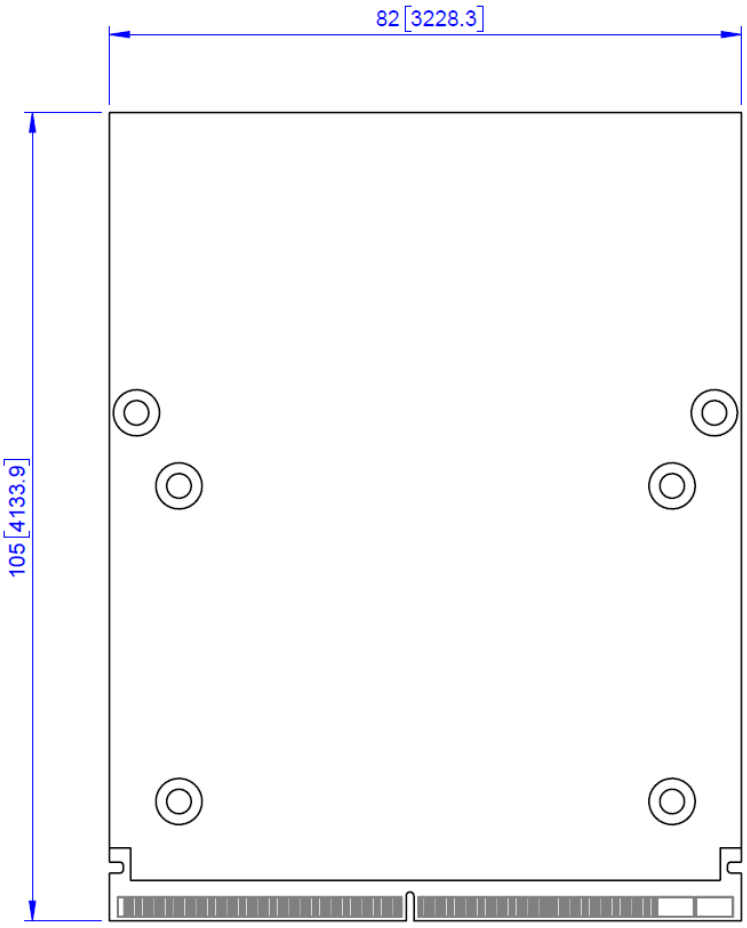
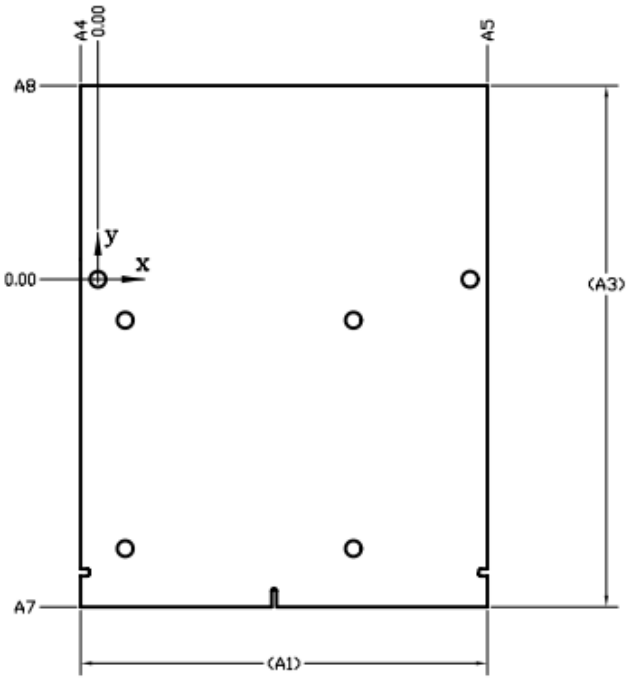


Figure 13: EGX-MXM-BW2000 bottom view

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4.1.3 EGX-MXM-BW4000/BW5000 Mechanical Dimensions





TYPE B

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Symbol	[mm]			[in]		
	min	nom	max	min	nom	max
A1		82.00			3.228	
A2		70.00			2.756	
A3		105.00			4.134	
A4	3.37	3.50	3.63	0.133	0.138	0.143
A5	78.37	78.50	78.63	3.085	3.091	3.096
A6	3.87	4.00	4.13	0.152	0.157	0.163
A7	65.87	66.00	66.13	2.593	2.598	2.604
A8	38.87	39.00	39.13	1.530	1.535	1.541

Figure 14: EGX-MXM-BW4000/BW5000 mechanical dimensions

4.1.3.1 MXM3.1 Gold Finger Type-B (BW4000/BW5000)

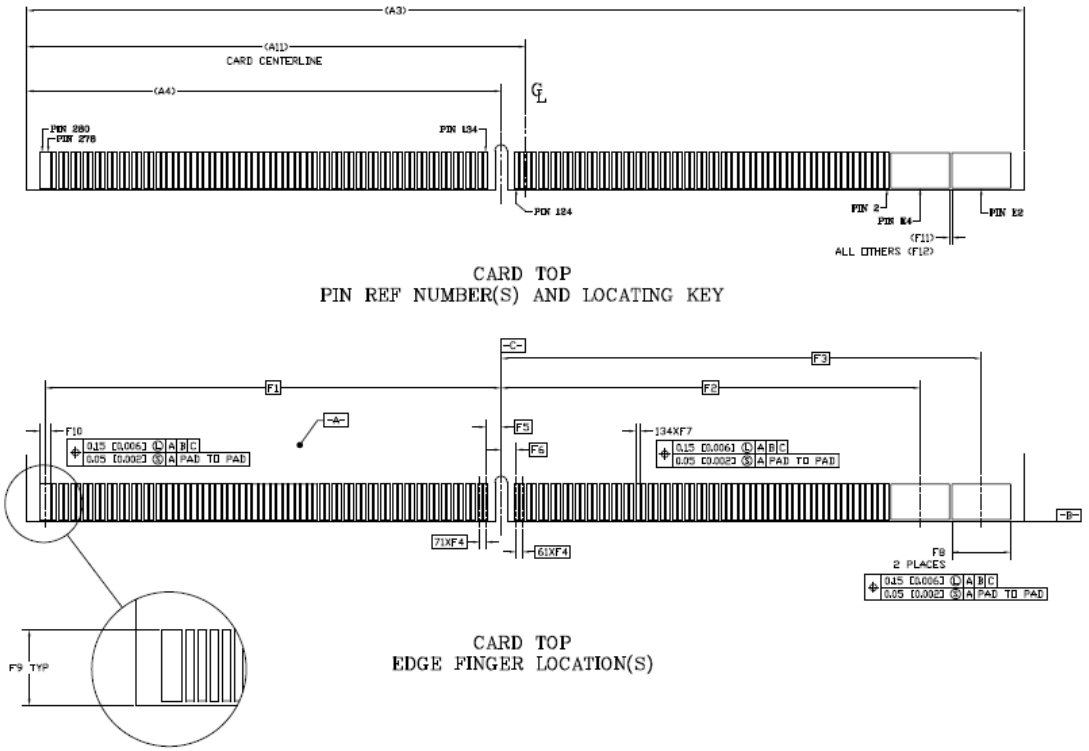


Figure 15: EGX-MXM-BW4000/BW5000 modular edge finger top

Table 6: EGX-MXM-BW4000/BW5000 modular edge finger top

Symbol	[mm]			[in]		
	min	nom	max	min	nom	max
A3		82.00			3.228	
A4		39.00			1.535	
A11		41.00			1.614	
F1		37.50			1.476	
F2		34.49			1.358	
F3		39.51			1.556	
F4		0.50			0.020	
F5		1.25			0.049	
F6		1.25			0.049	
F7	0.32	0.35	0.38	0.013	0.014	0.015
F8	4.79	4.82	4.85	0.189	0.190	0.191
F9	3.02	3.10	3.18	0.119	0.122	0.125
F10	0.82	0.85	0.88	0.032	0.033	0.035
F11		0.20			0.008	
F12		0.15			0.006	

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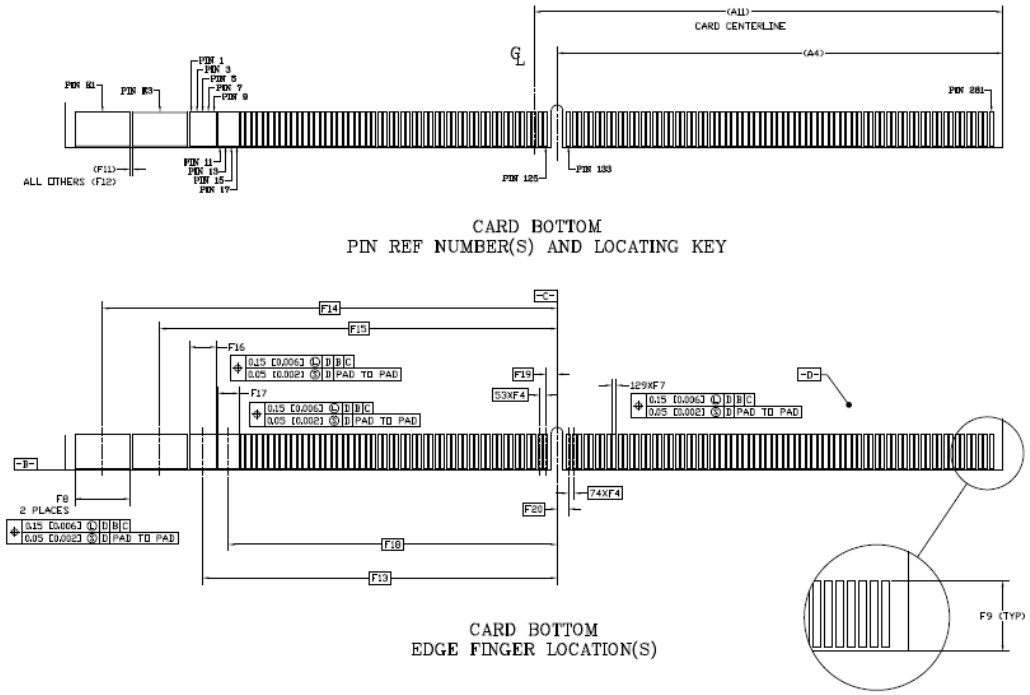


Figure 16: EGX-MXM-BW4000/BW5000 modular edge finger bottom

Table 7: EGX-MXM-BW4000/BW5000 modular edge finger bottom

Symbol	[mm]			[in]		
	min	nom	max	min	nom	max
A4		39.00			1.535	
A11		41.00			1.614	
F4		0.50			0.020	
F7	0.32	0.35	0.38	0.013	0.014	0.015
F8	4.79	4.82	4.85	0.189	0.190	0.191
F9	3.02	3.10	3.18	0.119	0.122	0.125
F11		0.20			0.008	
F12		0.15			0.006	
F13		31.00			1.220	
F14		39.76			1.565	
F15		34.74			1.368	
F16	2.32	2.35	2.38	0.091	0.093	0.094
F17	1.82	1.85	1.88	0.072	0.073	0.074
F18		28.75			1.132	
F19		1.00			0.039	
F20		1.00			0.039	

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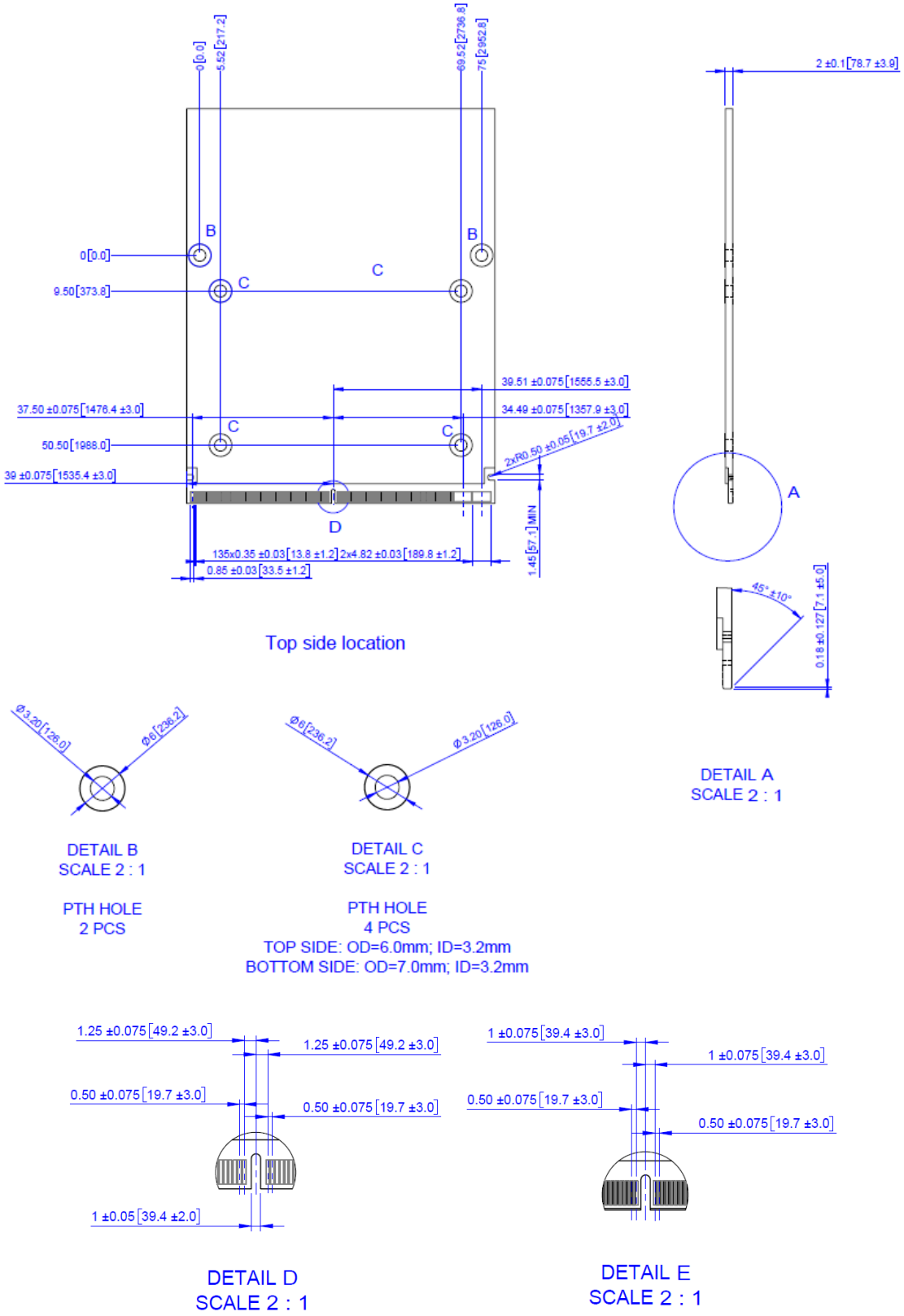


Figure 17: EGX-MXM-BW4000/BW5000 top and side view

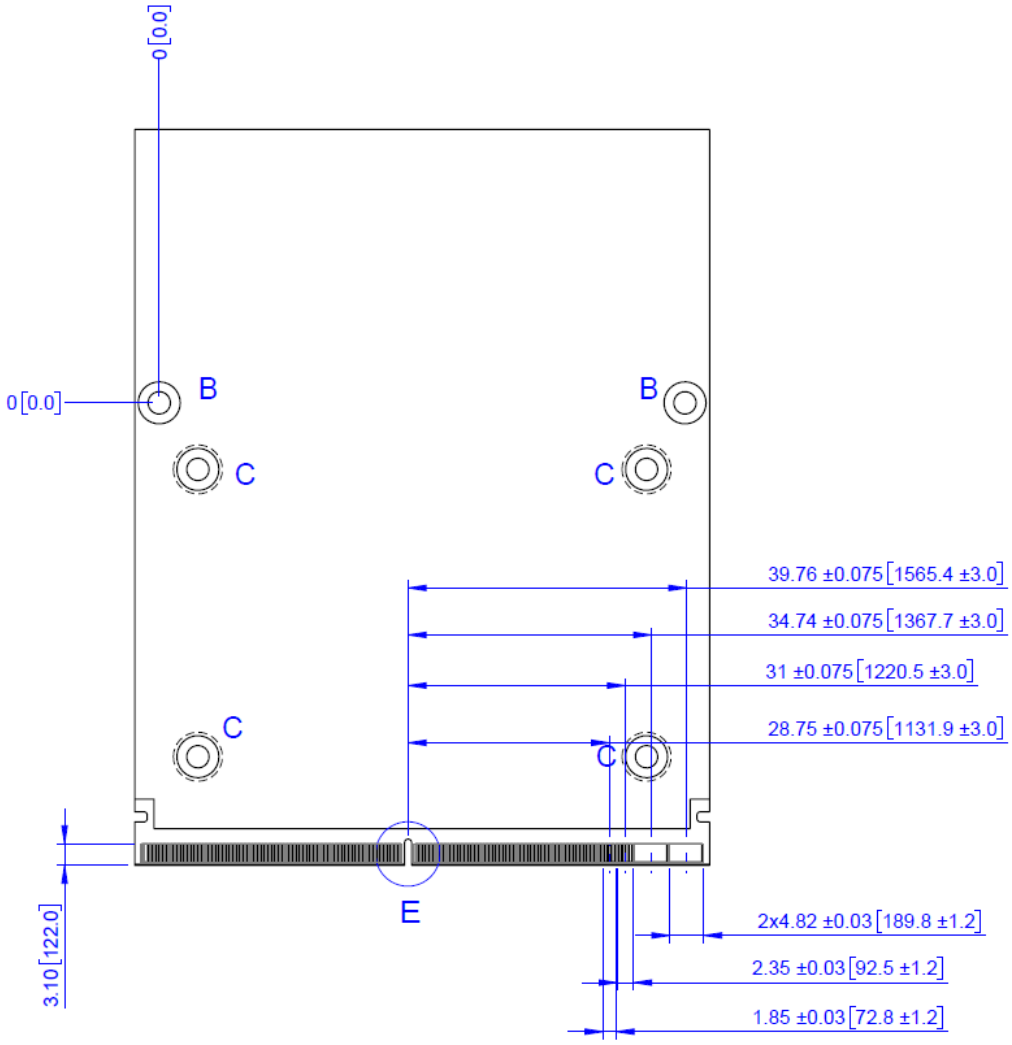


Figure 18: EGX-MXM-BW4000/BW5000 bottom view

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4.2 Board Layout

4.2.1 BW500 Top Side Board Layout

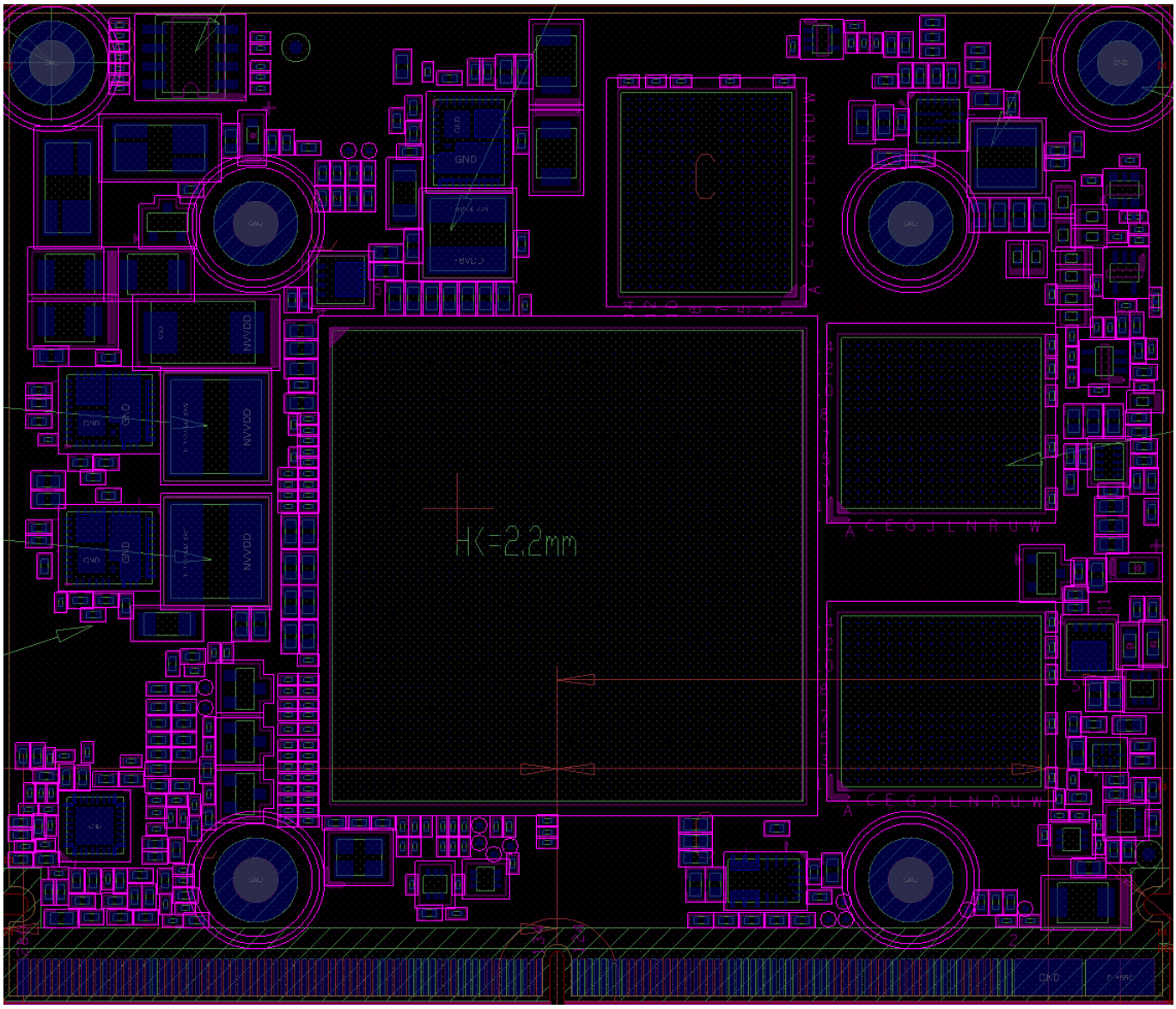


Figure 19: BW500 top side board layout

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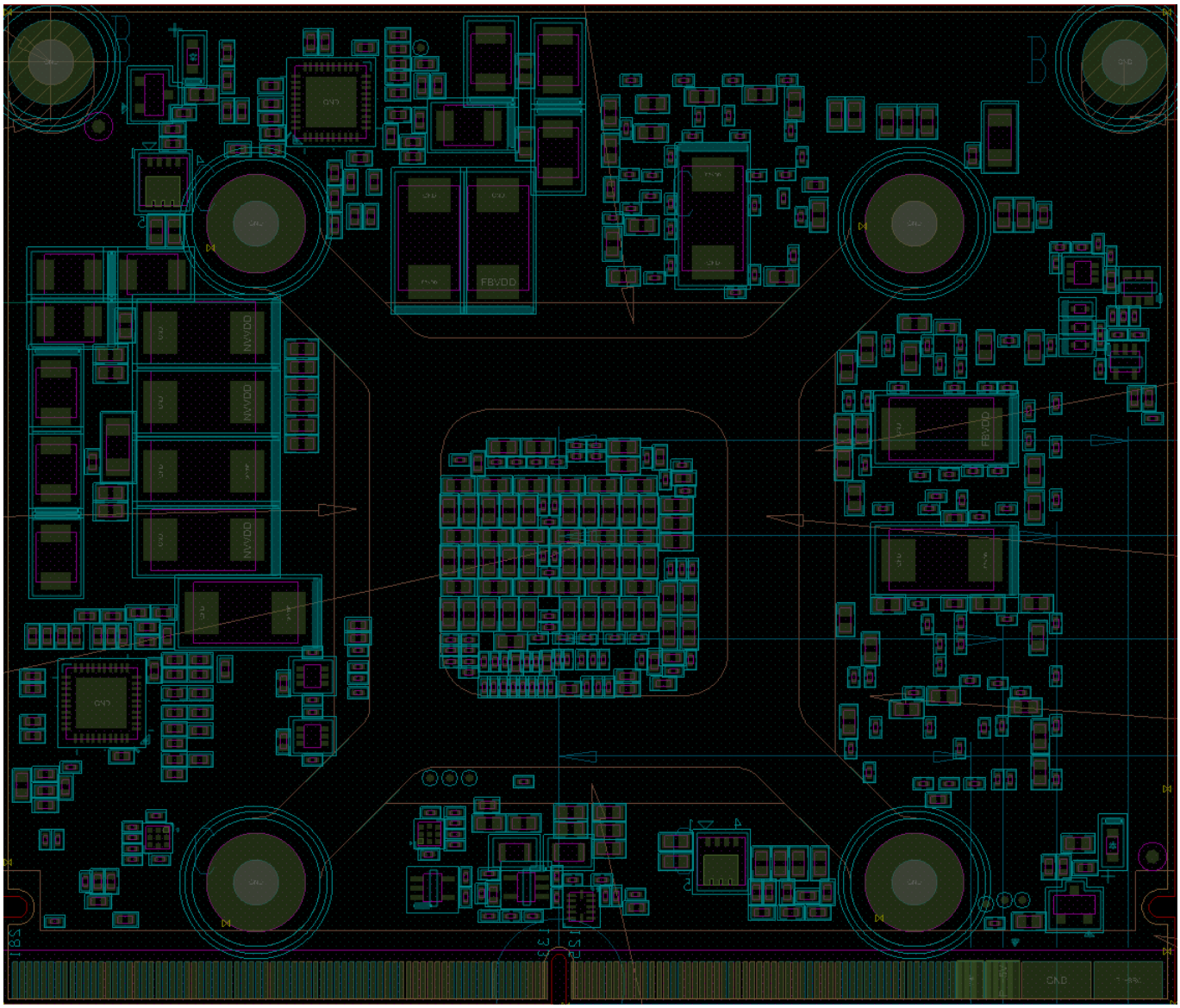
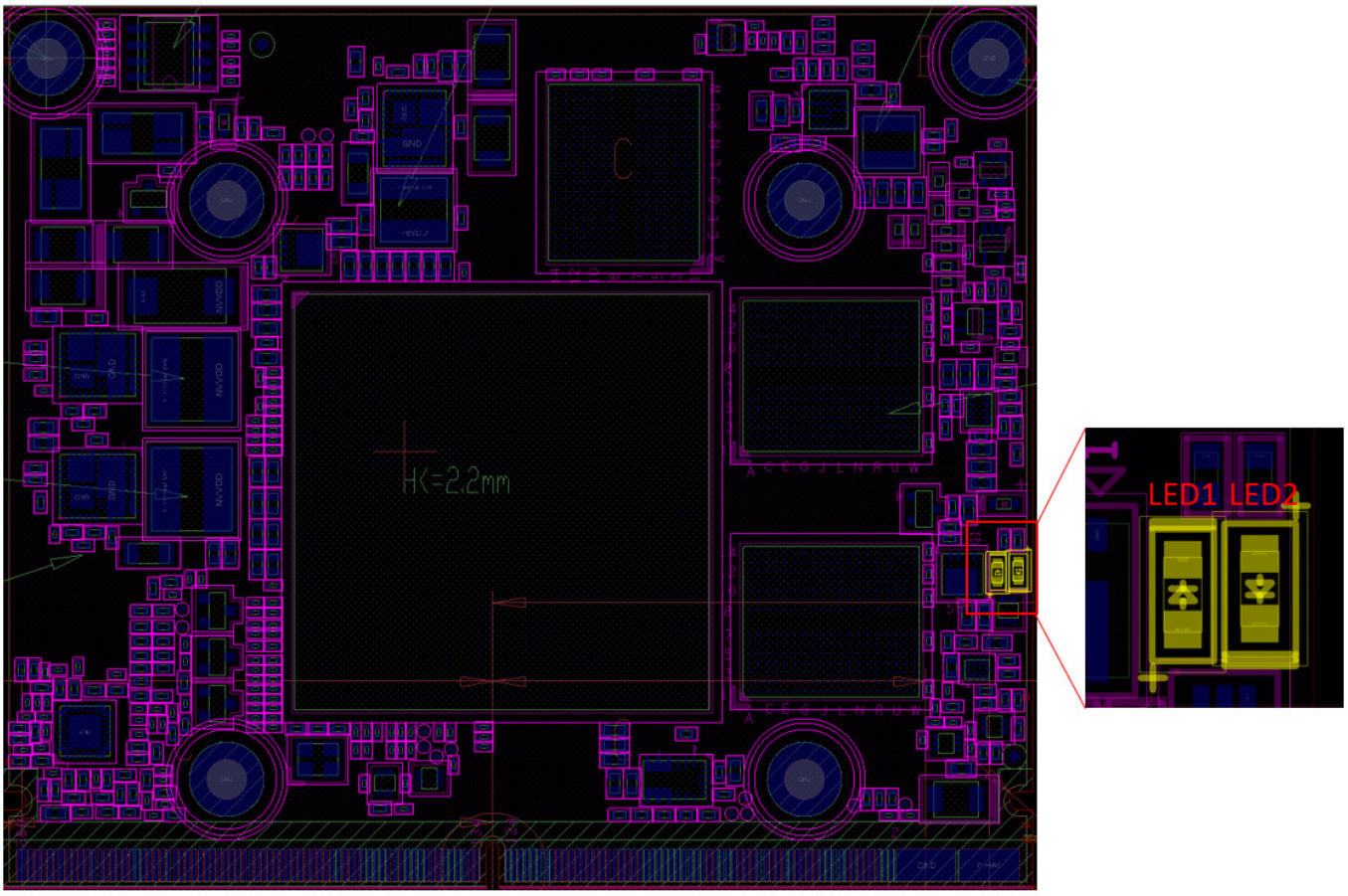


Figure 20: BW500 bottom side board layout

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4.2.1.1 BW500 LEDs



LED1	Over Temperature LED
LED2	Power Up LED

Figure 21: BW500 LED location

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4.2.2 BW2000 Board Layout

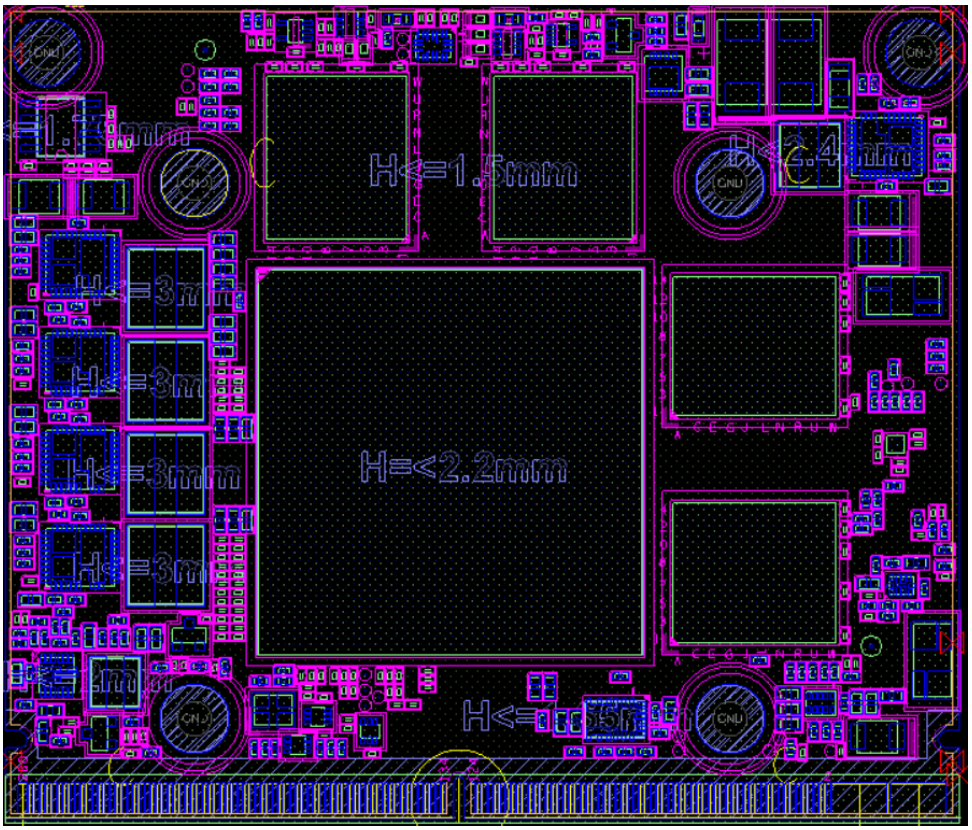


Figure 22: BW2000 top side board layout

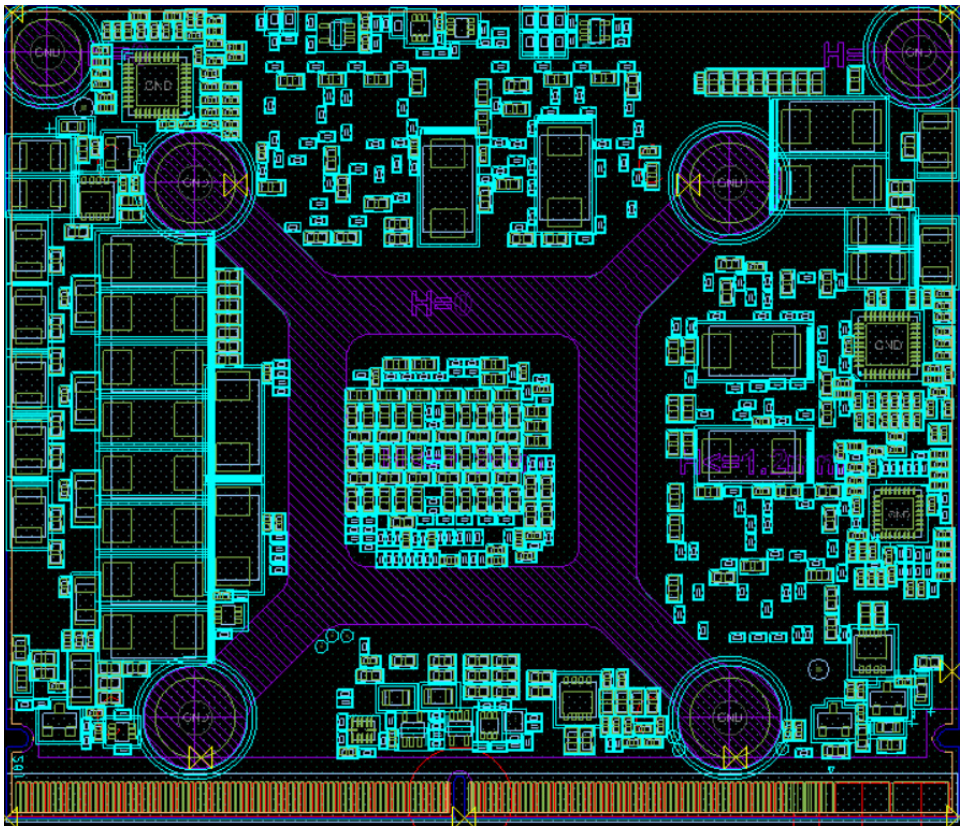
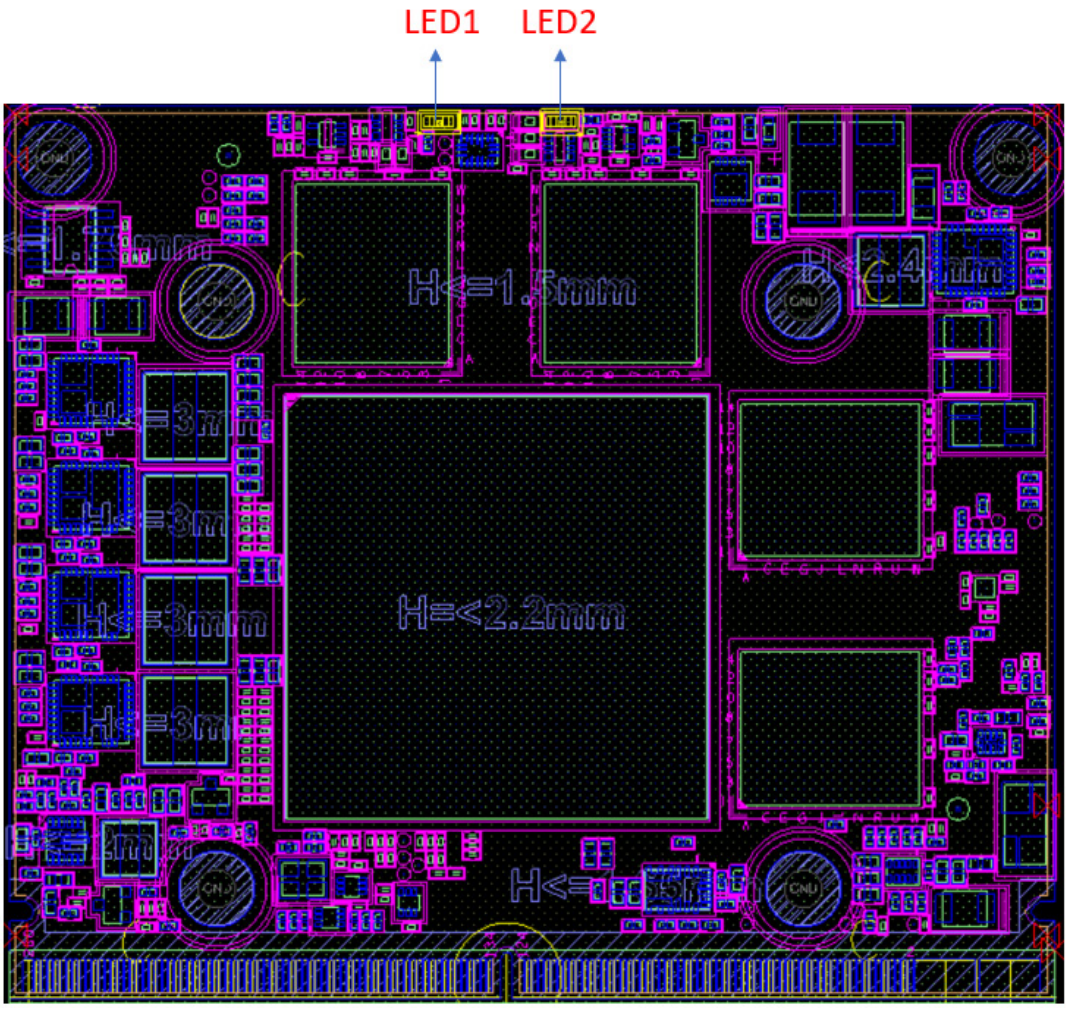


Figure 23: BW2000 bottom side board layout

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4.2.2.1 BW2000 LEDs



LED1	Over Temperature LED
LED2	Power Up LED

Figure 24: BW2000 LED location

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4.2.3 BW4000/BW5000 Board Layout

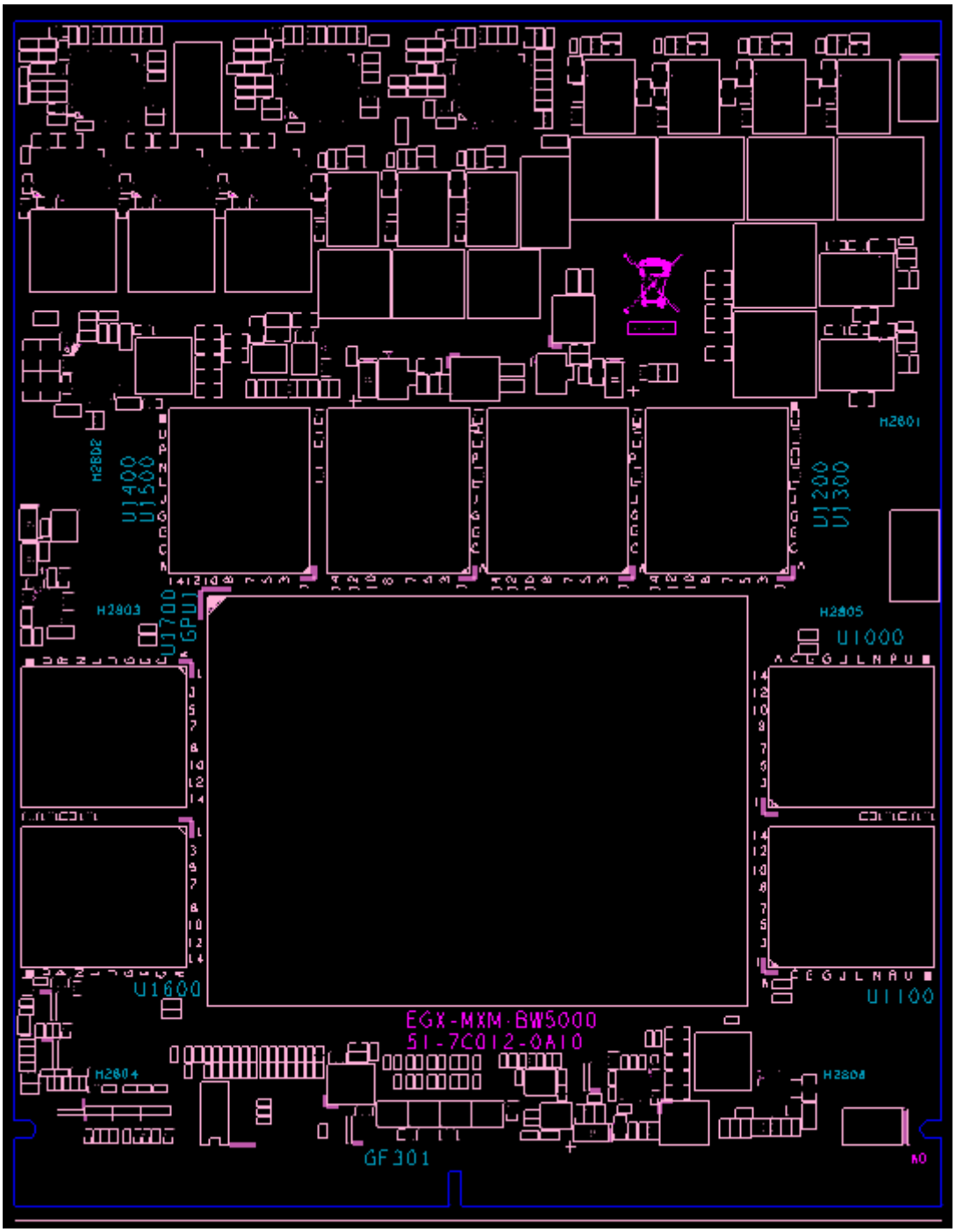


Figure 25: BW4000/BW5000 top side board layout

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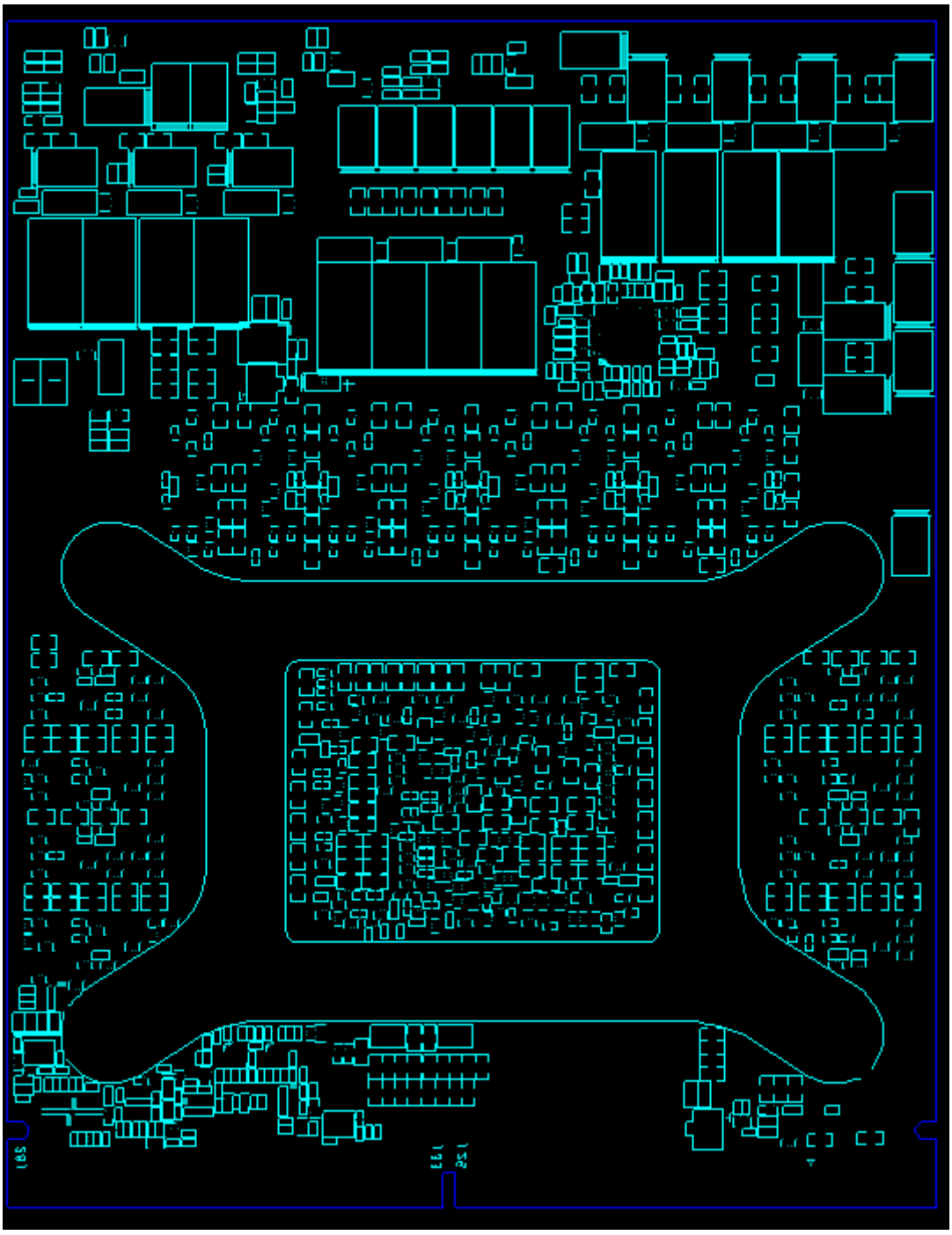
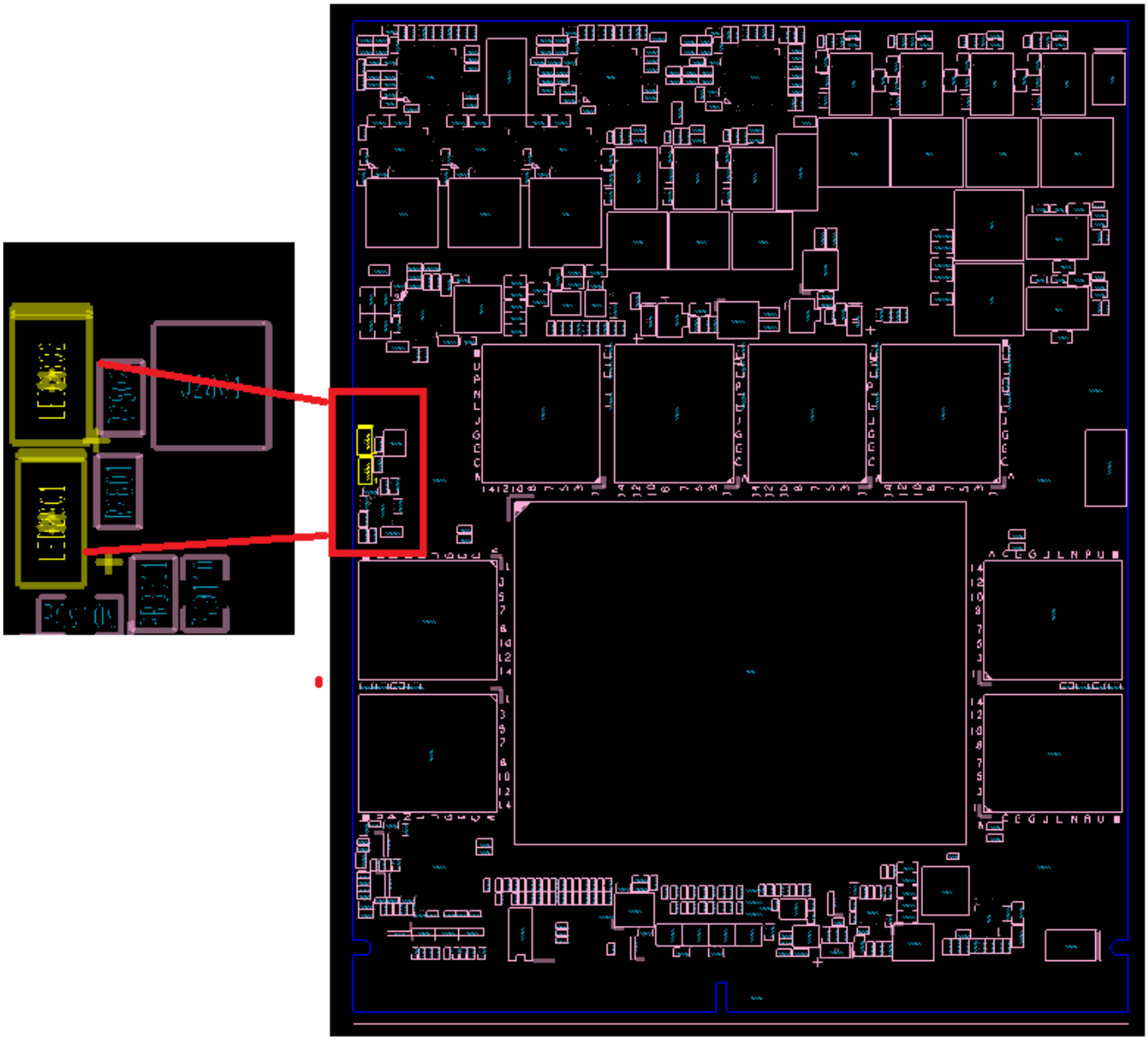


Figure 26: BW4000/BW5000 bottom side board layout

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4.2.3.1 BW4000/BW5000 LEDs



LED2801	Over Temperature LED
LED2802	Power Up LED

Figure 27: BW4000/BW5000 LED location

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5 Connectors and Jumpers

5.1 MXM Connector Pin Definitions

Primary Side (bottom side)				Secondary Side (top side)			
Pin	**Signal**	**BW5000/BW4000**	**BW2000/BW500**	**Pin**	**Signal**	**BW5000/BW4000**	**BW2000/BW500**
E1	PWR_SRC	12~20V from system	7~20V from system	E2	PWR_SRC	12~20V from system	7~20V from system
E3	GND	GND	GND	E4	GND	GND	GND
1	5V	5V from system	5V from system	2	PRSNT_R#	GND	GND
3	5V	5V from system	5V from system	4	WAKE#	NA	NA
5	5V	5V from system	5V from system	6	PWR_GOOD	Pull high 3.3v to 10k ohm from system	Pull high 3.3v to 10k ohm from system
7	5V	5V from system	5V from system	8	PWR_EN	3.3V from system	3.3V from system
9	5V	5V from system	5V from system	10	27MHZ_REF	NA	NA
11	GND	GND	GND	12	GND	GND	GND
13	GND	GND	GND	14	LVDS_U_HDP	NA	NA
15	GND	GND	GND	16	JTAG_TESTEN	NA	NA
17	GND	GND	GND	18	PWR_LEVEL	Pull high 3.3v to 100k ohm	Pull high 3.3v to 100k ohm
19	PEX_STD_SW#	NA	NA	20	TH_OVERT#	Pull high 3.3v to 100k ohm	Pull high 3.3v to 100k ohm
21	VGA_DISABLE#	NA	NA	22	TH_ALERT#	Pull high 3.3v to 100k ohm	Pull high 3.3v to 100k ohm
23	PNL_PWR_EN	NA	NA	24	TH_PWM	NA	NA
25	PNL_BL_EN	NA	NA	26	GPIO0	NA	NA
27	PNL_BL_PWM	NA	NA	28	GPIO1	NA	NA
29	HDMI_CEC	NA	NA	30	GPIO2	NA	NA
31	LVDS_L_HDP	NA	NA	32	SMB_DAT	Pull high 3.3v to 100k ohm	Pull high 3.3v to 100k ohm
33	LVDS_DDC_DAT	NA	NA	34	SMB_CLK	Pull high 3.3v to 100k ohm	Pull high 3.3v to 100k ohm
35	LVDS_DDC_CLK	NA	NA	36	GND	GND	GND
37	GND	GND	GND	38	OEM0	NA	NA
39	OEM1	NA	NA	40	OEM2	NA	NA
41	OEM3	NA	NA	42	OEM4	NA	NA
43	OEM5	NA	NA	44	OEM6	NA	NA
45	OEM7	NA	NA	46	GND	GND	GND

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Primary Side (bottom side)				Secondary Side (top side)			
Pin	**Signal**	**BW5000/BW4000**	**BW2000/BW500**	**Pin**	**Signal**	**BW5000/BW4000**	**BW2000/BW500**
47	GND	GND	GND	48	PEX_TX15#	DC caps 0.22uf from system	NA
49	PEX_RX15#	DC caps 0.22uf from system	NA	50	PEX_TX15	DC caps 0.22uf from system	NA
51	PEX_RX15	DC caps 0.22uf from system	NA	52	GND	GND	GND
53	GND	GND	GND	54	PEX_TX14#	DC caps 0.22uf from system	NA
55	PEX_RX14#	DC caps 0.22uf from system	NA	56	PEX_TX14	DC caps 0.22uf from system	NA
57	PEX_RX14	DC caps 0.22uf from system	NA	58	GND	GND	GND
59	GND	GND	GND	60	PEX_TX13#	DC caps 0.22uf from system	NA
61	PEX_RX13#	DC caps 0.22uf from system	NA	62	PEX_TX13	DC caps 0.22uf from system	NA
63	PEX_RX13	DC caps 0.22uf from system	NA	64	GND	GND	GND
65	GND	GND	GND	66	PEX_TX12#	DC caps 0.22uf from system	NA
67	PEX_RX12#	DC caps 0.22uf from system	NA	68	PEX_TX12	DC caps 0.22uf from system	NA
69	PEX_RX12	DC caps 0.22uf from system	NA	70	GND	GND	GND
71	GND	GND	GND	72	PEX_TX11#	DC caps 0.22uf from system	NA
73	PEX_RX11#	DC caps 0.22uf from system	NA	74	PEX_TX11	DC caps 0.22uf from system	NA
75	PEX_RX11	DC caps 0.22uf from system	NA	76	GND	GND	GND
77	GND	GND	GND	78	PEX_TX10#	DC caps 0.22uf from system	NA
79	PEX_RX10#	DC caps 0.22uf from system	NA	80	PEX_TX10	DC caps 0.22uf from system	NA
81	PEX_RX10	DC caps 0.22uf from system	NA	82	GND	GND	GND
83	GND	GND	GND	84	PEX_TX9#	DC caps 0.22uf from system	NA
85	PEX_RX9#	DC caps 0.22uf from system	NA	86	PEX_TX9	DC caps 0.22uf from system	NA
87	PEX_RX9	DC caps 0.22uf from system	NA	88	GND	GND	GND
89	GND	GND	GND	90	PEX_TX8#	DC caps 0.22uf from system	NA
91	PEX_RX8#	DC caps 0.22uf from system	NA	92	PEX_TX8	DC caps 0.22uf from system	NA
93	PEX_RX8	DC caps 0.22uf from system	NA	94	GND	GND	GND
95	GND	GND	GND	96	PEX_TX7#	DC caps 0.22uf from system	DC caps 0.22uf from system
97	PEX_RX7#	DC caps 0.22uf from system	DC caps 0.22uf from system	98	PEX_TX7	DC caps 0.22uf from system	DC caps 0.22uf from system

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99	PEX_RX7	DC caps 0.22uf from system	DC caps 0.22uf from system	100	GND	GND	GND
101	GND	GND	GND	102	PEX_TX6#	DC caps 0.22uf from system	DC caps 0.22uf from system
103	PEX_RX6#	DC caps 0.22uf from system	DC caps 0.22uf from system	104	PEX_TX6	DC caps 0.22uf from system	DC caps 0.22uf from system
105	PEX_RX6	DC caps 0.22uf from system	DC caps 0.22uf from system	106	GND	GND	GND

Primary Side (bottom side)				Secondary Side (top side)			
Pin	**Signal**	**BW5000/BW4000**	**BW2000/BW500**	**Pin**	**Signal**	**BW5000/BW4000**	**BW2000/BW500**
107	GND	GND	GND	108	PEX_TX5#	DC caps 0.22uf from system	DC caps 0.22uf from system
109	PEX_RX5#	DC caps 0.22uf from system	DC caps 0.22uf from system	110	PEX_TX5	DC caps 0.22uf from system	DC caps 0.22uf from system
111	PEX_RX5	DC caps 0.22uf from system	DC caps 0.22uf from system	112	GND	GND	GND
113	GND	GND	GND	114	PEX_TX4#	DC caps 0.22uf from system	DC caps 0.22uf from system
115	PEX_RX4#	DC caps 0.22uf from system	DC caps 0.22uf from system	116	PEX_TX4	DC caps 0.22uf from system	DC caps 0.22uf from system
117	PEX_RX4	DC caps 0.22uf from system	DC caps 0.22uf from system	118	GND	GND	GND
119	GND	GND	GND	120	PEX_TX3#	DC caps 0.22uf from system	DC caps 0.22uf from system
121	PEX_RX3#	DC caps 0.22uf from system	DC caps 0.22uf from system	122	PEX_TX3	DC caps 0.22uf from system	DC caps 0.22uf from system
123	PEX_RX3	DC caps 0.22uf from system	DC caps 0.22uf from system	124	GND	GND	GND
125	GND	GND	GND	126	KEY	NA	NA
127	KEY	NA	NA	128	KEY	NA	NA
129	KEY	NA	NA	130	KEY	NA	NA
131	KEY	NA	NA	132	KEY	NA	NA
133	GND	GND	GND	134	GND	GND	GND
135	PEX_RX2#	DC caps 0.22uf from system	DC caps 0.22uf from system	136	PEX_TX2#	DC caps 0.22uf from system	DC caps 0.22uf from system
137	PEX_RX2	DC caps 0.22uf from system	DC caps 0.22uf from system	138	PEX_TX2	DC caps 0.22uf from system	DC caps 0.22uf from system
139	GND	GND	GND	140	GND	GND	GND
141	PEX_RX1#	DC caps 0.22uf from system	DC caps 0.22uf from system	142	PEX_TX1#	DC caps 0.22uf from system	DC caps 0.22uf from system
143	PEX_RX1	DC caps 0.22uf from system	DC caps 0.22uf from system	144	PEX_TX1	DC caps 0.22uf from system	DC caps 0.22uf from system
145	GND	GND	GND	146	GND	GND	GND
147	PEX_RX0#	DC caps 0.22uf from system	DC caps 0.22uf from system	148	PEX_TX0#	DC caps 0.22uf from system	DC caps 0.22uf from system
149	PEX_RX0	DC caps 0.22uf from system	DC caps 0.22uf from system	150	PEX_TX0	DC caps 0.22uf from system	DC caps 0.22uf from system
151	GND	GND	GND	152	GND	GND	GND
153	PEX_REFCLK#	PCI Express reference clock 100Mhz from system	PCI Express reference clock 100Mhz from system	154	PEX_CLK_REQ#	GPO low active	GPO low active
155	PEX_REF	PCI Express reference clock	PCI Express reference clock	156	PEX_RST#	3.3V from system	3.3V from system

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	CLK	100Mhz from system	100Mhz from system				
157	GND	GND	GND	158	VGA_DDC_DAT	NA	NA
159	JTAG_TDO	NA	NA	160	VGA_DDC_CLK	NA	NA
161	JTAG_TDI	NA	NA	162	VGA_VSYNC	NA	NA
163	JTAG_TCLK	NA	NA	164	VGA_HSYNC	NA	NA
165	JTAG_TMS	NA	NA	166	GND	GND	GND

Primary Side (bottom side)				Secondary Side (top side)			
Pin	**Signal**	**BW5000/BW4000**	**BW2000/BW500**	**Pin**	**Signal**	**BW5000/BW4000**	**BW2000/BW500**
167	JTAG_TRST	NA	NA	168	VGA_RED	NA	NA
169	LVDS_UCLK#	NA	NA	170	VGA_GREEN	NA	NA
171	LVDS_UCLK	NA	NA	172	VGA_BLUE	NA	NA
173	GND	GND	GND	174	GND	GND	GND
175	LVDS_UTX3#	NA	NA	176	LVDS_LCLK#	NA	NA
177	LVDS_UTX3	NA	NA	178	LVDS_LCLK	NA	NA
179	GND	GND	GND	180	GND	GND	GND
181	LVDS_UTX2#	NA	NA	182	LVDS_LTX3#	NA	NA
183	LVDS_UTX2	NA	NA	184	LVDS_LTX3	NA	NA
185	GND	GND	GND	186	GND	GND	GND
187	LVDS_UTX1#	NA	NA	188	LVDS_LTX2#	NA	NA
189	LVDS_UTX1	NA	NA	190	LVDS_LTX2	NA	NA
191	GND	GND	GND	192	GND	GND	GND
193	LVDS_UTX0#	NA	NA	194	LVDS_LTX1#	NA	NA
195	LVDS_UTX0	NA	NA	196	LVDS_LTX1	NA	NA
197	GND	GND	GND	198	GND	GND	GND
199	DP_C_L0#	IFPD	IFPD	200	LVDS_LTX0#	NA	NA
201	DP_C_L0	IFPD	IFPD	202	LVDS_LTX0	NA	NA
203	GND	GND	GND	204	GND	GND	GND
205	DP_C_L1#	IFPD	IFPD	206	DP_D_L0#	IFPE	NA
207	DP_C_L1	IFPD	IFPD	208	DP_D_L0	IFPE	NA
209	GND	GND	GND	210	GND	GND	GND
211	DP_C_L2#	IFPD	IFPD	212	DP_D_L1#	IFPE	NA
213	DP_C_L2	IFPD	IFPD	214	DP_D_L1	IFPE	NA
215	GND	GND	GND	216	GND	GND	GND

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217	DP_C_L3#	IFPD	IFPD	218	DP_D_L2#	IFPE	NA
219	DP_C_L3	IFPD	IFPD	220	DP_D_L2	IFPE	NA
221	GND	GND	GND	222	GND	GND	GND
223	DP_C_AUX#	IFPD	IFPD	224	DP_D_L3#	IFPE	NA
225	DP_C_AUX	IFPD	IFPD	226	DP_D_L3	IFPE	NA

Primary Side (bottom side)				Secondary Side (top side)			
Pin	**Signal**	**BW5000/BW4000**	**BW2000/BW500**	**Pin**	**Signal**	**BW5000/BW4000**	**BW2000/BW500**
227	RSVD	NA	NA	228	GND	GND	GND
229	RSVD	NA	NA	230	DP_D_AUX#	IFPE	NA
231	RSVD	NA	NA	232	DP_D_AUX	IFPE	NA
233	RSVD	NA	NA	234	DP_C_HPD	IFPD	IFPD
235	RSVD	NA	NA	236	DP_D_HPD	IFPE	NA
237	RSVD	NA	NA	238	RSVD	NA	NA
239	RSVD	NA	NA	240	3V3	3.3V from system	3.3V from system
241	RSVD	NA	NA	242	3V3	3.3V from system	3.3V from system
243	RSVD	NA	NA	244	GND	GND	GND
245	RSVD	NA	NA	246	DP_B_L0#	IFPC	IFPC
247	RSVD	NA	NA	248	DP_B_L0	IFPC	IFPC
249	RSVD	NA	NA	250	GND	GND	GND
251	GND	GND	GND	252	DP_B_L1#	IFPC	IFPC
253	DP_A_L0#	IFPA	IFPA	254	DP_B_L1	IFPC	IFPC
255	DP_A_L0	IFPA	IFPA	256	GND	GND	GND
257	GND	GND	GND	258	DP_B_L2#	IFPC	IFPC
259	DP_A_L1#	IFPA	IFPA	260	DP_B_L2	IFPC	IFPC
261	DP_A_L1	IFPA	IFPA	262	GND	GND	GND
263	GND	GND	GND	264	DP_B_L3#	IFPC	IFPC
265	DP_A_L2#	IFPA	IFPA	266	DP_B_L3	IFPC	IFPC
267	DP_A_L2	IFPA	IFPA	268	GND	GND	GND
269	GND	GND	GND	270	DP_B_AUX#	IFPC	IFPC
271	DP_A_L3#	IFPA	IFPA	272	DP_B_AUX	IFPC	IFPC
273	DP_A_L3	IFPA	IFPA	274	DP_B_HPD	IFPC	IFPC
275	GND	GND	GND	276	DP_A_HPD	IFPA	IFPA
277	DP_A_AUX#	IFPA	IFPA	278	3V3	3.3V from system	3.3V from system
279	DP_A_AUX	IFPA	IFPA	280	3V3	3.3V from system	3.3V from system
281	PRSNT_L#	GND	GND				

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6 System Requirements

6.1 Power Management and Reset

6.1.1 Power Sequencing

For initial power on, or to Resume from S3 and S4, this sequence must be followed.

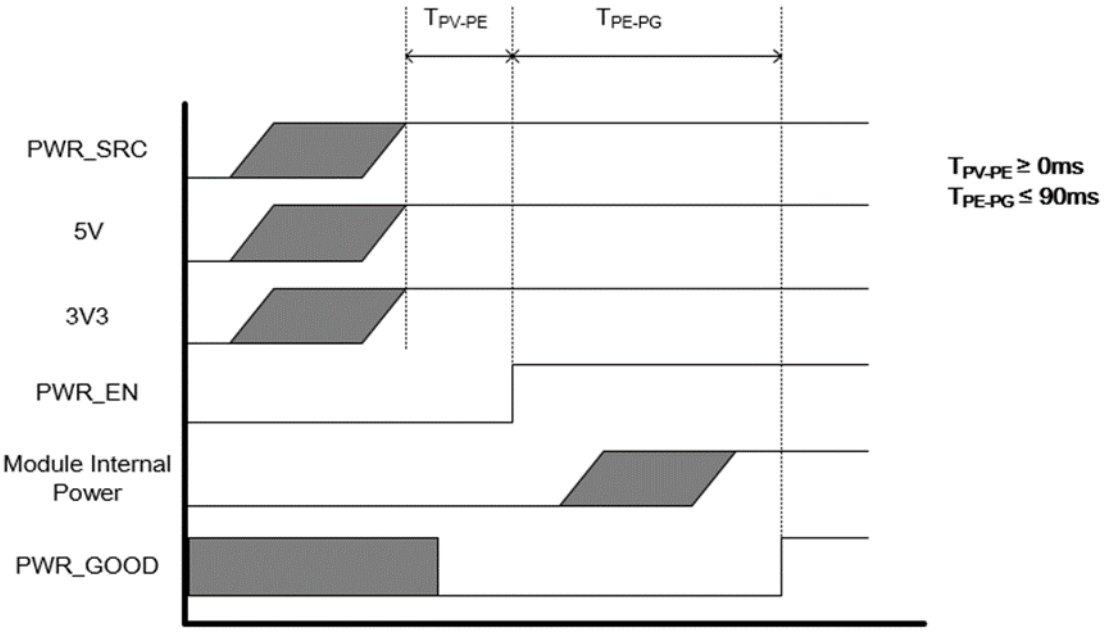


Figure 28: Power sequencing

6.1.2 Module Power Up and Down

Issuing the PWR_EN signal powers the MXM module down, and the system designer can decide whether to keep the module input power when the MXM module is powered down.

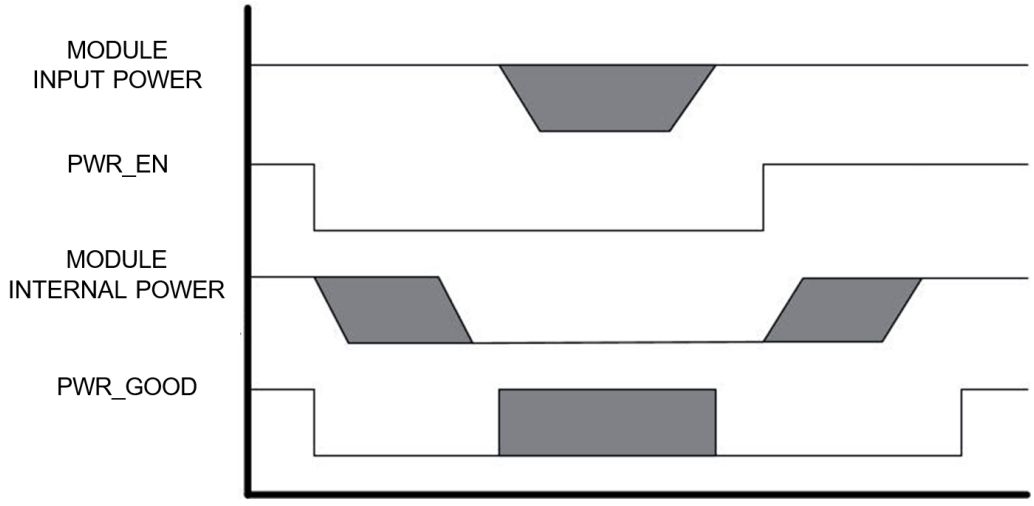


Figure 29: Modular power up and down

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6.1.3 Reset Requirements

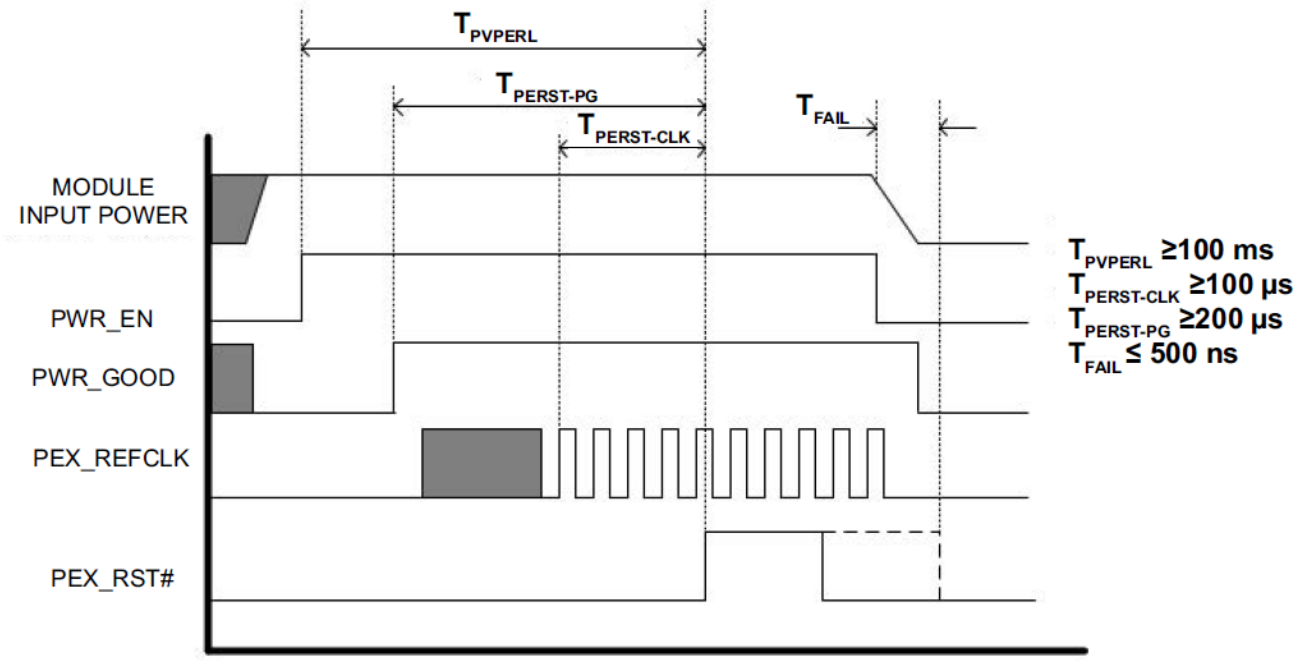


Figure 30: Reset requirements

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6.2 Display Interface Configurations

6.2.1 Dual Mode DisplayPort Implementation

The EGX-MXM-AD2000/AD3500/AD5000 supports four dual mode DisplayPorts by default. HDMI can be supported via dongle. The system requires a switch circuit to determine whether the AUX or DDC signal is output from the MXM module, and AC coupling capacitors should be placed on the system board.

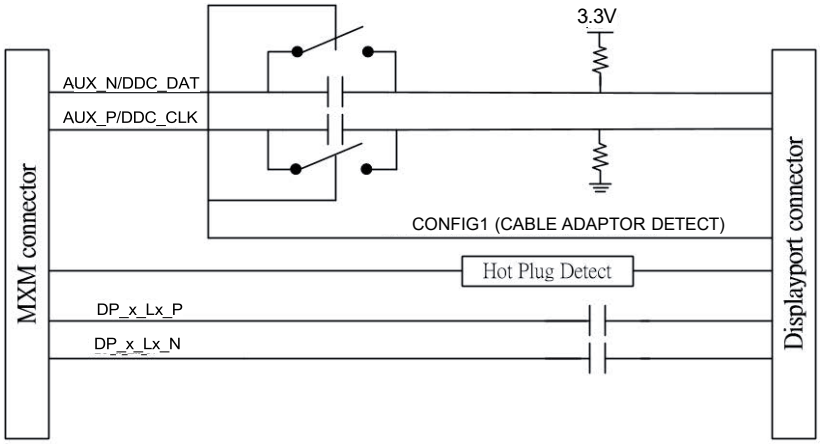


Figure 31: Dual mode DisplayPort implementation

6.2.2 HDMI on DisplayPort Interface

HDMI connectors can both be implemented through the DisplayPort interface. To support HDMI display from MXM, the HDMI port needs to be routed based on the Circuits required on the system board are as shown. 499Ω with 1% pulldown resistors to the ground on the DP lanes must place on the HDMI connector side of the AC coupling, gated by a MOSFET to limit leakage.

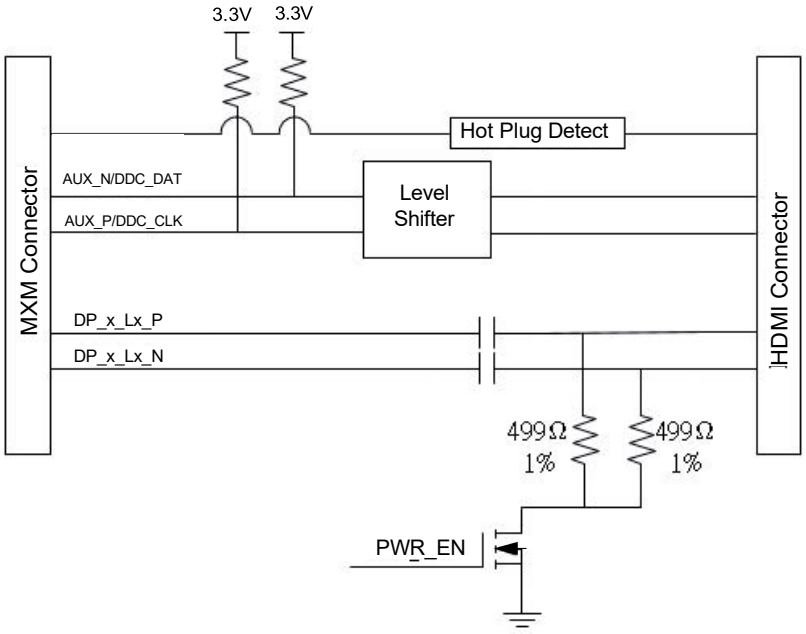


Figure 32: HDMI on DisplayPort interface

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For resolutions higher than 1080p, contact an ADLINK FAE for customized service, or use an active IC in the circuit design.

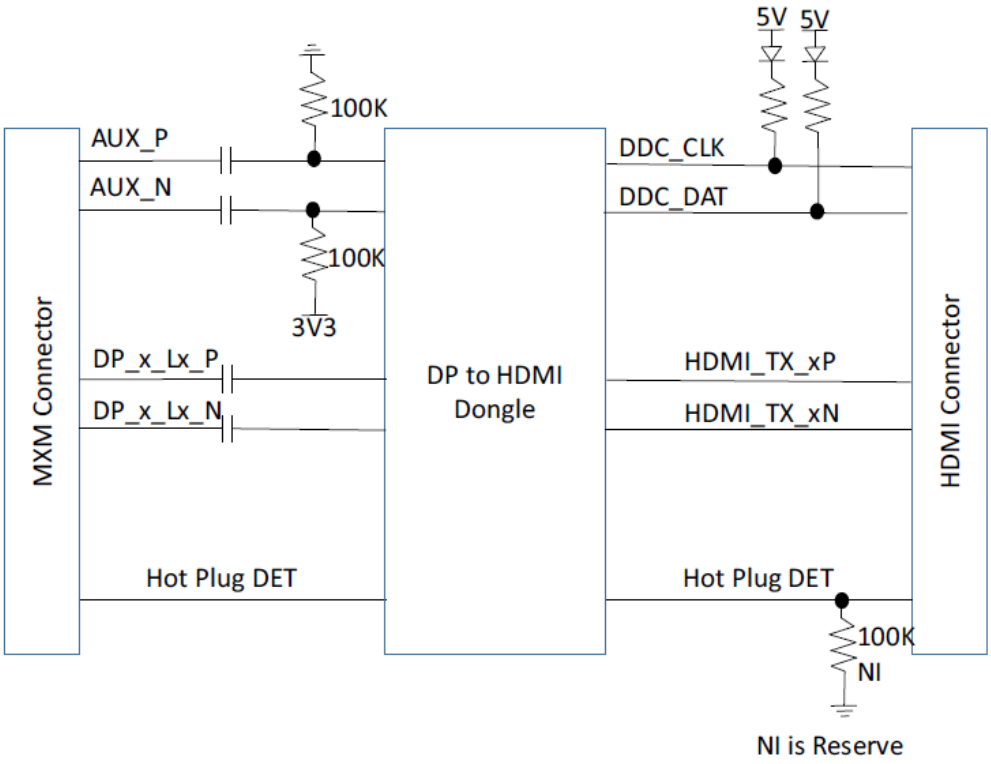


Figure 33: HDMI on DisplayPort interface (For resolutions higher than 1080p)

6.3 Driver Installation

Drivers can be downloaded through the following links:

W500 Driver:

https://www.adlinktech.com/Products/DownloadSoftwareDriver?lang=zh-hant&pdNo=2298&MainCategory=embedded-graphics-solutions&kind=DR

BW2000 Driver:

https://www.adlinktech.com/Products/DownloadSoftwareDriver?lang=en&pdNo=2304&MainCategory=embedded-…

BW4000 Driver:

https://www.adlinktech.com/Products/DownloadSoftwareDriver?lang=en&pdNo=2305&MainCategory=embedded-…

BW5000 Driver:

https://www.adlinktech.com.cn/Products/DownloadSoftwareDriver.aspx?lang=en&pdNo=2306&MainCategory=e…

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6.3.1 NVIDIA App Support

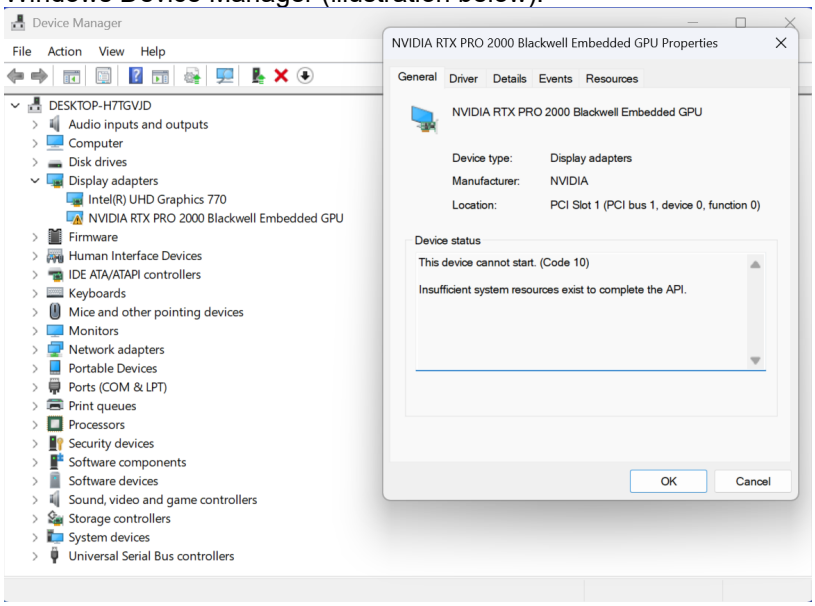
As the legacy NVIDIA Control Panel is approaching End-of-Life (EOL), please use the NVIDIA App for all Blackwell architecture products.

NVIDIA App download link: https://www.nvidia.com/en-us/software/nvidia-app/

6.4 TCC Support Limitation

For Windows environments, NVIDIA Blackwell series graphics cards do not support switching between TCC and WDDM modes.

Although the command "`nvidia-smi -dm 1`" can be executed from an elevated Command Prompt (Administrator) without immediate error, the GPU will fail to initialize after reboot, resulting in a yellow mark in Windows Device Manager (illustration below).



The driver model for Blackwell architecture is locked to WDDM mode by default and does not support pure compute (TCC) mode.

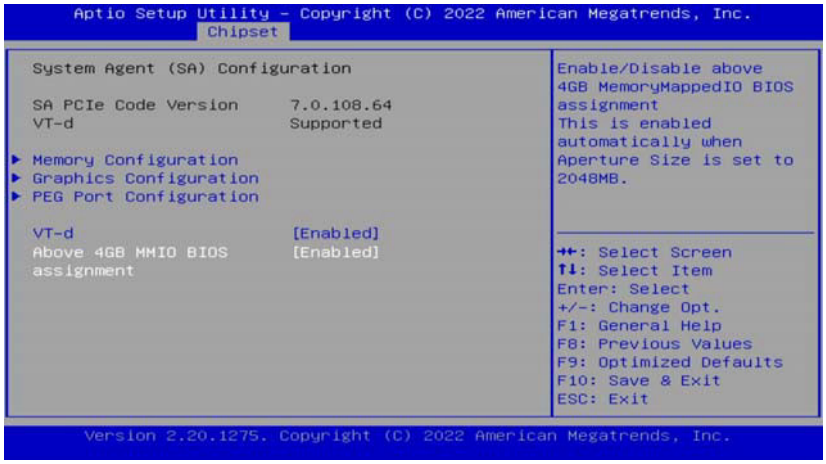
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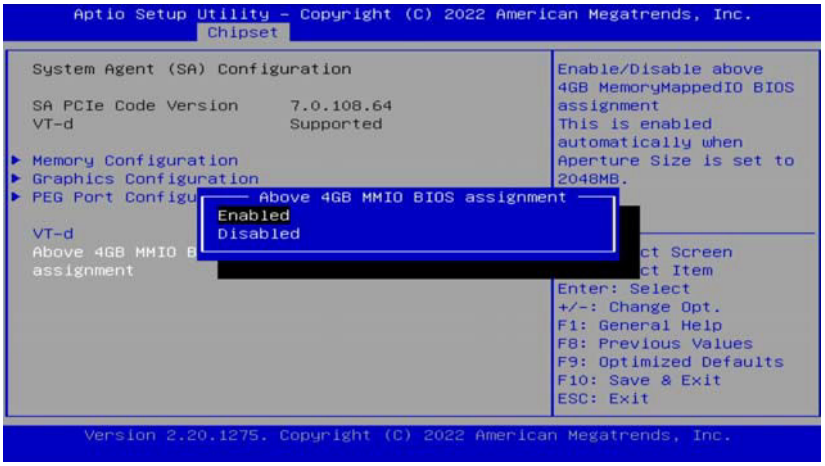
6.5 System BIOS Settings

The system BIOS must meet the following criteria:

- SBIOS must support the "Above 4G decoding" feature to support a resizable BAR1 size.
- SBIOS must enable "Above 4G decoding" as the default configuration.

The following is a sample BIOS menu setting for reference. The actual menu setting can vary depending on the specific SBIOS design.





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Safety Instructions

Read and follow all instructions marked on the product and in the documentation before you operate your system. Retain all safety and operating instructions for future use.

- Please read these safety instructions carefully.
- Please keep this User‘s Manual for later reference.
- Read the specifications section of this manual for detailed information on the operating environment of this equipment.
- When installing/mounting or uninstalling/removing equipment, turn off the power and unplug any power cords/cables.
- To avoid electrical shock and/or damage to equipment:
  - Keep equipment away from water or liquid sources.
  - Keep equipment away from high heat or high humidity.
  - Keep equipment properly ventilated (do not block or cover ventilation openings).
  - Make sure to use recommended voltage and power source settings.
  - Always install and operate equipment near an easily accessible electrical socket-outlet.
  - Secure the power cord (do not place any object on/over the power cord).
  - Only install/attach and operate equipment on stable surfaces and/or recommended mountings.
  - If the equipment will not be used for long periods of time, turn off and unplug the equipment from its power source.
- Never attempt to fix the equipment. Equipment should only be serviced by qualified personnel.

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