

NVIDIA GT740
PCIe® ADD-IN BOARD
Datasheet
AEGX-N3A2-01FMS1

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1. Feature

Model Name	AEGX-N3A2-01FMS1
Graphics Processing Unit	
GPU	GeForce GT740(GK107-425-A2)
Process Technology	28 nm
Basic clock	993 MHz
Form Factor	ATX Low Profile(144X68.9 mm)
Card Interface	PCI Express® 3.0 (X16)
CUDA Cores	384
DirectX® capability	DirectX® 11
OpenGL	OpenGL™ 4.4
OpenCL	Yes
Video Decoder	H.264, VC-1, MPEG-2, MPEG-4 part 2 Advanced, Blu-Ray
Memory	
Memory Clock	1250MHz / 5.0Gbps
DDR Type	GDDR5
Memory Bus	128-bits
Memory Size	1024MB
Display Interface	
Display Output	Dual Link DVI-D, HDMI, VGA
Multi-Display	3

2. Functional Overview

2.1. GPU Block diagram

Figure 1.1 shows a simplified block diagram of the GK107 GPU.

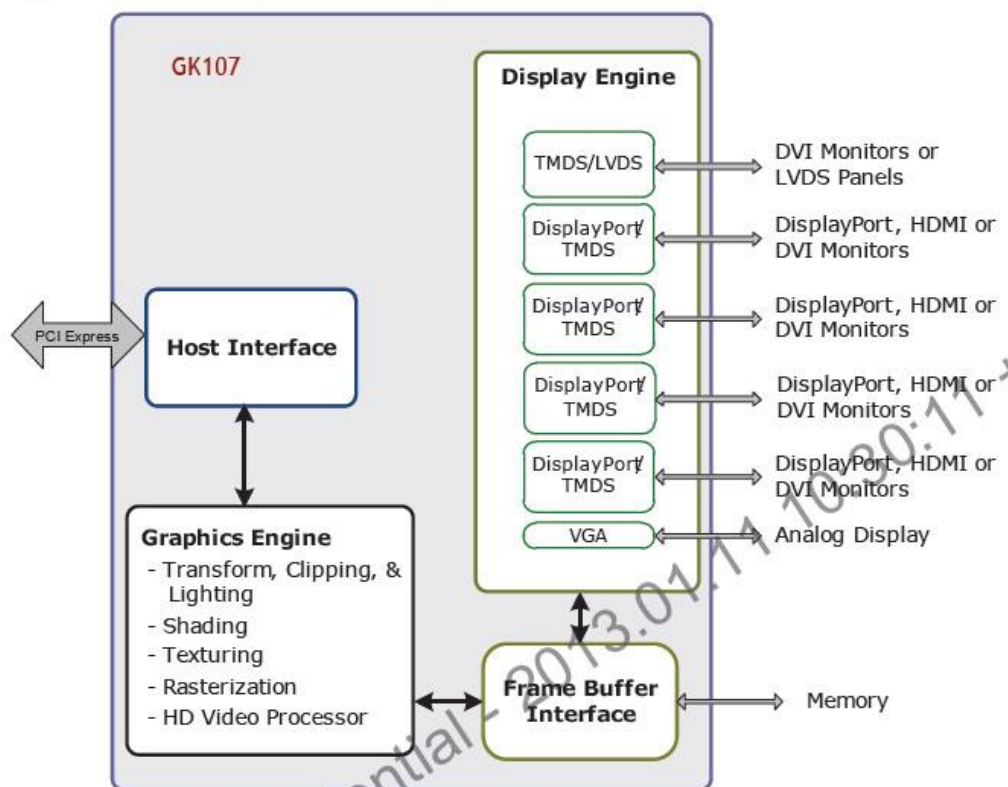


Figure 1.1 GK107 Simplified Block Diagram

2.2. Memory Interface

Memory configuration support:

The E740FXL-IKCF2 supports industry standard GDDR5 technology memory interface. The Frame Buffer DRAM interface of GK107-425-A2 is 128-bit (two Frame Buffer partitions). All DRAM devices must be the same type, and the same size on each channel, and must run at the same voltage.

GDDR5 Memory Configuration Options:

- GDDR5 Configuration: 64Mx32, 128Mx32
- The GK107 GPU supports a frame buffer interface up to 128 bits.
- Supports GDDR5 error detection and correction (EDC).

2.3. Features and Technologies

- ▶ Direct X 11
- ▶ OpenGL 4.4
- ▶ NVIDIA PhysX™ technology
- ▶ NVIDIA CUDA technology
- ▶ G-SYNC-ready
- ▶ Adaptive VSync
- ▶ NVIDIA GPU Boost 2.0
- ▶ NVIDIA 3D Vision™-Ready
- ▶ Two New anti-aliasing Modes: NVIDIA FXAA™ and TXAA™
- ▶ Support 4K (4 times FullHD 1920x1080) resolution.
- ▶ FAN: 2 ball bearing Fan

2.4. Display

- ▶ Support multi monitor at 3.
- ▶ DVI-I and DVI-D: Dual-link resolution 2560 x 1600MHz @60 Hz refresh rate
- ▶ HDMI version: 1.4b (340MHz).
 - Full backwards compatibility with HDMI 1.x
- ▶ Support maximum resolution at 4096x2160 (4K) on HDMI and DP output
- ▶ HDCP: Provides digital content protection on any display
- ▶ Maximum VGA Resolution 2048x1536

2.5. Digital Audio

- ▶ Supports for HD Audio over PCI Express
- ▶ Support for secure premium audio (e.g. 7.1 Audio)
- ▶ Data rates of 44.1KHz, 48KHz, 88.2KHz, 96KHz, 176KHz and 192KHz
- ▶ Word sizes of 16-bit, 20bit, and 24-bit

2.6. Video

The following video formats are supported:

- ▶ MPEG-2
- ▶ MPEG-4 Part 2 Advanced Simple Profile
- ▶ H.264 SVC codec support
- ▶ Support for 3D Blu-Ray
- ▶ VC1

- ▶ DivX version 3.11 and later
- ▶ MVC

A full range of video resolutions are supported including 1080p, 1080i, 720p, 480p and 480i.

3. Output PIN Assignment and Description

3.1 DVI-I Connector Pinout

Pin	Signal	Pin	Signal
1	TMDS data 2-	13	TMDS data 3+
2	TMDS data 2+	14	+5VDC power
3	TMDS data 2/4 shield	15	Ground (Return for +5)
4	TMDS data 4-	16	Hot plug detected
5	TMDS data 4+	17	TMDS data 0-
6	DDC clock	18	TMDS data 0+
7	DDC data	19	TMDS data 0/5 shield
8	Analog vertical sync	20	TMDS data 5-
9	TMDS data 1-	21	TMDS data 5+
10	TMDS data 1+	22	TMDS clock shield
11	TMDS data 1/3 shield	23	TMDS clock+
12	TMDS data 3-	24	TMDS clock-
C1	Analog red	C4	Analog horizontal sync
C2	Analog green	C5	Analog ground (RGM return)
C3	Analog blue		
C3	Analog blue		

3.2 HDMI 1.4b Connector Pinout

Pin	Signal	Pin	Signal
1	TMDS Data 2+	11	TMDS Clock Shield
2	TMDS Data 2 Shield	12	TMDS Clock-
3	TMDS Data 2-	13	No Connect
4	TMDS Data 1+	14	No Connect
5	TMDS Data 1 Shield	15	DDC Clock
6	TMDS Data 1-	16	DDC Data
7	TMDS Data 0+	17	Ground
8	TMDS Data 0 Shield	18	+5V Power
9	TMDS Data 0-	19	Hot Plug Detect
10	TMDS Clock+		

3.3 VGA Connector Pinout

Pin	Signal	Description
1	Red	Red
2	Green	Green
3	Blue	Blue
4	Reserved	Macintosh sense , RW
5	Ground	DDC return
6		Red ground
7		Green ground
8		Blue ground
9	+5V	DDC power
10	SGND	Sync ground
11	ID0	Monitor ID bit 0 (Opt)
12	SDA	Serial data (DDC2B)
13	HSYNC	Horizontal sync
14	VSYNC	Vertical sync
15	SCL	Serial clock (DDC2B)

4. Power Specifications

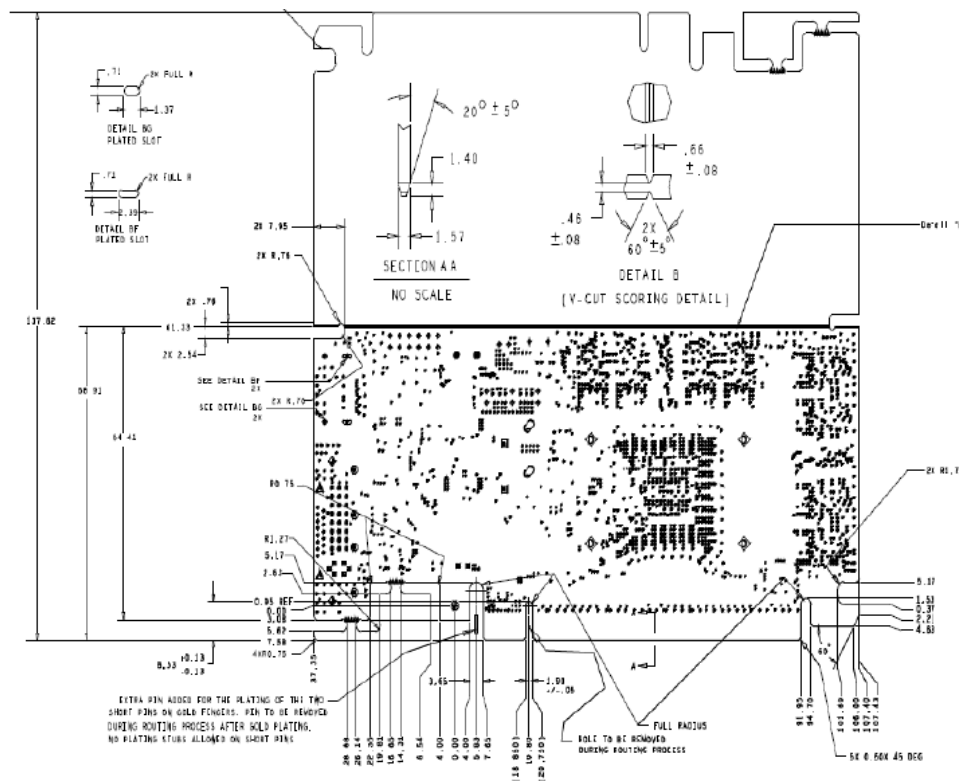
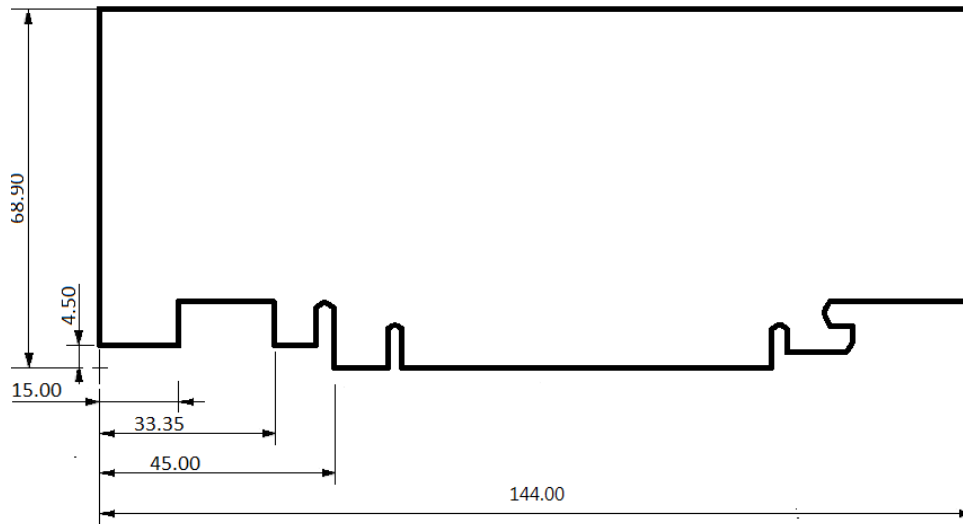
Parameter	Value	Unit
Input Board Power (Measured)		
PCI Express edge connector (12V)	1.0	A
	12.9	W
PCI Express edge connector (3V3)	1.3	A
	4.2	W
Auxiliary 6-pin power connector (12V)	3.81	A
	46.4	W
TDP Max Input Power	63.5	W
Component Power (Estimated)		
GPU (TDP)	47.5	W
Memory power (four components)	7.5	W
Power supplies	5.3	W
Fan	1.7	W
PCB and others losses	1.5	W

5. Thermal Specifications

Parameter	Value	Unit
GPU slowdown temperature (max.Tj)	98	°C
GPU shutdown temperature	103	°C
GPU junction temperature (estimated)	91	°C
Memory case temperature (max.)	105	°C
Power FET case temperature (max.)	120	°C

6. Board Dimension

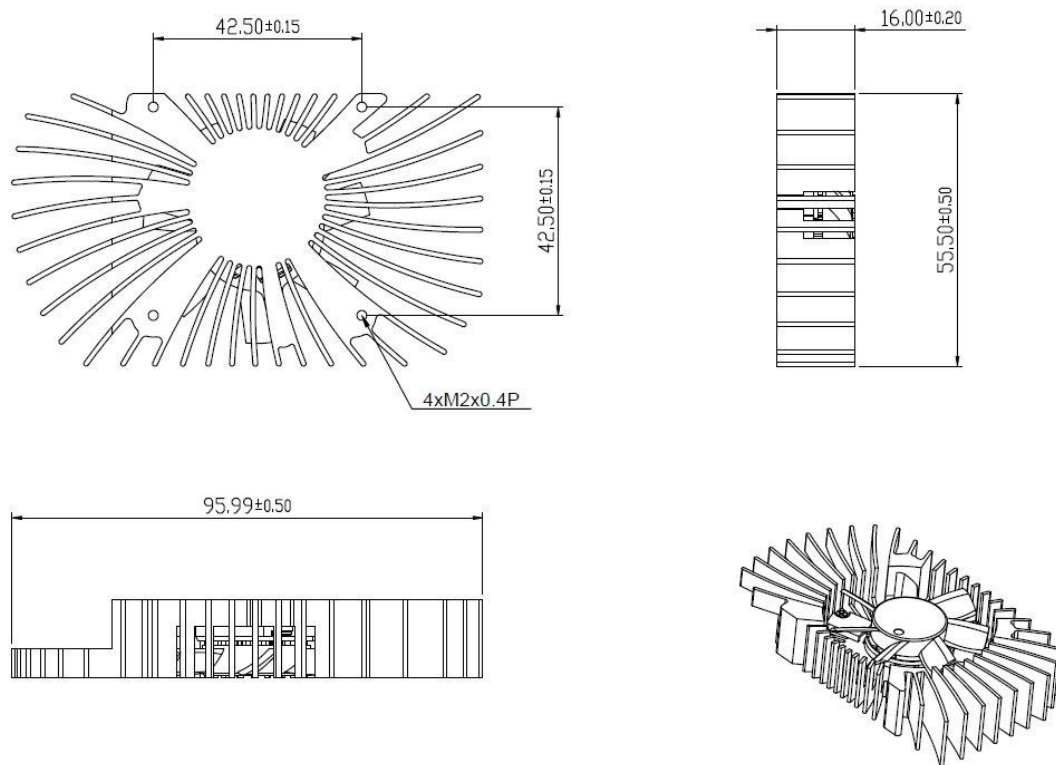
Board Dimension



(Unit : 144x68.9mm) Tolerances : +/- 0.13 mm

7. Thermal Mechanism

(Unit : mm)



8. Order Information

Model	GPU	Form Factor	Memory	DVI-D	VGA	HDMI	Bracket	Thermal Solution	Remark
AEGX-N3A2-01FMS1	GT740	ATX (144 X 68.9 mm)	128-bit wide, 1 GB, GDDR5,	1	1	1	Full Height / Low Profile	Fansink	PCI-E 16X

9. Revision History

Rev.	Data	History
0.1	2014/4/7	1. 1 st Draft
0.2	2014/9/27	2. Update Board and Thermal Dimension
0.3	2015/7/8	3. Update Board Dimension
0.4	2015/7/15	4. Correct HDMI spec.
0.5	2015/9/14	5. Modify the P/N to be AEGX-N3A2-01FMS1 6. Add Item 8: Order information.