

# ***NVIDIA GT710 2048MB DDR3 PCIe® ADD-IN BOARD***

## ***Datasheet***

ADVANTECH Model: GFX-NG710L16-3C

MPN numbers : 1A1-E000770ADP



# CONTENTS

1.	Feature .....	3
2.	Functional Overview .....	4
2.1.	GPU Block diagram .....	4
2.2.	KEY FEATURES.....	5
2.3.	Memory .....	5
2.4.	Features and Technologies .....	5
2.5.	Display Support .....	5
2.6.	Digital Audio .....	5
2.7.	Video .....	6
3.	PIN Assignment and Description .....	7
3.1.	DVI-D Connector Pinout .....	7
3.2.	HDMI Connector Pinout .....	7
3.3.	VGA Connector Pinout .....	8
3.4.	VGA Header Pinout.....	8
4.	Power Specifications .....	9
5.	Thermal Specifications .....	9
6.	Output configuration and Board Dimension .....	10
6.1.	Output Configuration .....	10
6.2.	Board Dimension .....	10
7.	Thermal Mechanism.....	11

## 1. Feature

<b>Model Name</b>	<b>GFX-NG710L16-3C</b>
<b>Graphics Processing Unit</b>	
<b>GPU</b>	<b>GeForce GT710 (GK208)</b>
<b>Process Technology</b>	<b>28 nm</b>
<b>Graphics Engine Operating Frequency (max)</b>	<b>954 MHz</b>
<b>Form Factor</b>	<b>Low profile (145 x 69 mm)</b>
<b>Card Interface</b>	<b>PCI Express® 2.0(x16)</b>
<b>CUDA Cores</b>	<b>192 CUDA</b>
<b>Floating Point Performance</b>	<b>366 GFLOPs</b>
<b>DirectX® capability</b>	<b>DirectX® 12 (Feature Level 11.0)</b>
<b>OpenGL</b>	<b>OpenGL™ 4.5</b>
<b>Video Decoder</b>	<b>H.264, VC-1, MPEG-2, MPEG-4 part 2 decode</b>
<b>Memory</b>	
<b>Memory Clock</b>	<b>900 MHz/ 1.8 Gbps</b>
<b>DDR Type</b>	<b>DDR3</b>
<b>Memory Bus</b>	<b>64-bit</b>
<b>Memory Size</b>	<b>2048MB</b>
<b>Display Interface</b>	
<b>Display Output</b>	<b>Dual Link DVI-D, HDMI, VGA</b>
<b>Multi-Display</b>	<b>3</b>
<b>External Power</b>	
<b>Power</b>	<b>No</b>

## 2. Functional Overview

### 2.1. GPU Block diagram

Figure 1.1 shows a simplified block diagram of the GK208 GPUs.

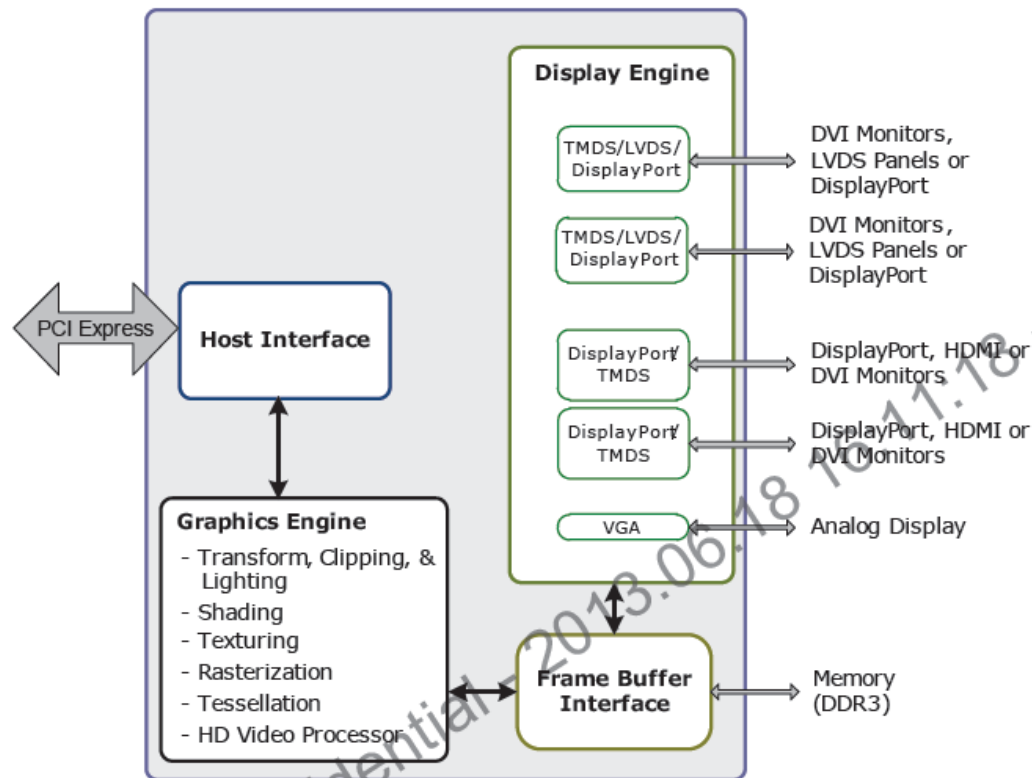


Figure 1.1 GK208 GPUs Simplified Block Diagram

## 2.2. KEY FEATURES

### GPU

- ▶ Core clock: 954 MHz
- ▶ Voltage: 0.85625 V – 1.1875V ± 2%
- ▶ Package size: 23mm x 23mm, 595-ball FCBGA(GB2-64)

### Board

- ▶ 4-layer printed circuit board (PCB)
- ▶ PCI Express 2.0, 8 lanes
- ▶ Physical dimensions: 145 x 69 mm
- ▶ Board power: 19 W

## 2.3. Memory

- ▶ Memory clock: 900 MHz
- ▶ Interface: 64 bit
- ▶ Local frame buffer 2 GB (4pieces 256M X 16 DDR3, FBGA-96 package)

## 2.4. Features and Technologies

- ▶ DirectX® 12 compliant and Shader Model 5.0
- ▶ OpenGL 4.5
- ▶ NVIDIA® PhysX™ technology
- ▶ NVIDIA® CUDA technology

## 2.5. Display Support

- ▶ Support Multi Monitor
- ▶ Internal dual-link TMDS; Maximum resolution over digital port 2560x1600x32bpp@60Hz
- ▶ 400MHz integrated RAMDAC; Maximum VGA Resolution 2048x1536
- ▶ Support HDCP/HDMI

## 2.6. 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

## 2.7. 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. PIN Assignment and Description

### 3.1. DVI-D 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		

### 3.2. HDMI 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+		
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### 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)

### 3.4. VGA Header Pinout

Pin	Signal	Description
1	SCL	Serial clock (DDC2B)
2	SDA	Serial data (DDC2B)
3	+5V	DDC power
4	VSYNC	Vertical sync
5	HSYNC	Horizontal sync
6	GND	Ground
7	Red	Red
8	GND	Ground
9	Green	Green
10	GND	Ground
11	Blue	Blue



12	GND	Ground
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## 4. Power Specifications

Parameter	Value	Unit
<b>Input Board Power (Estimated)</b>		
PCI Express edge connector (12V) (estimated input power)	1.2	A
	14	W
PCI Express edge connector (3V3) (estimated input power)	1.5	A
	5	W
Total estimated input graphics power (estimated TGP)	19	W

<b>Component Power (Estimated)</b>		
GPU (TDP, estimated)	14	W
Memory power (estimated; eight components)	1	W
Power supplies	3	W
Fan, PCB and other losses	1	W

## 5. Thermal Specifications

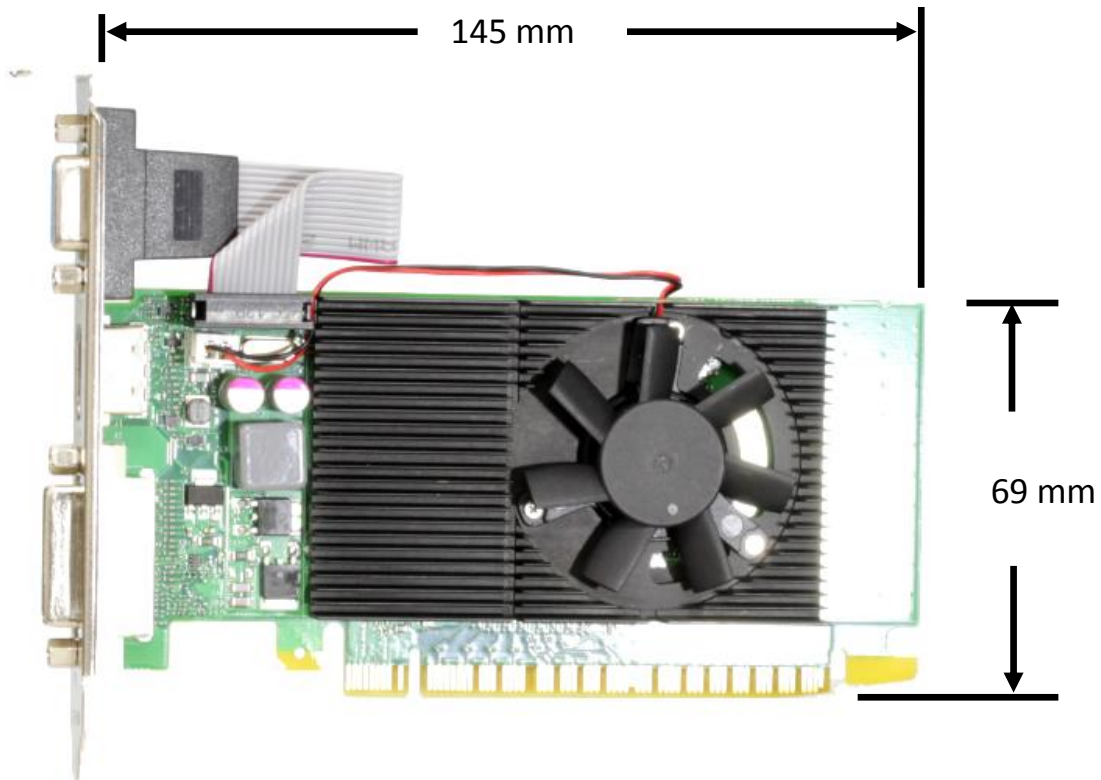
Parameter	Value	Unit
Fan inlet temperature (max.)	55	°C
GPU slowdown temperature (max.Tj)	95	°C
GPU shutdown temperature (max.)	102	°C
GPU junction temperature (estimated)	88	°C

## 6. Output configuration and Board Dimension

### 6.1. Output Configuration

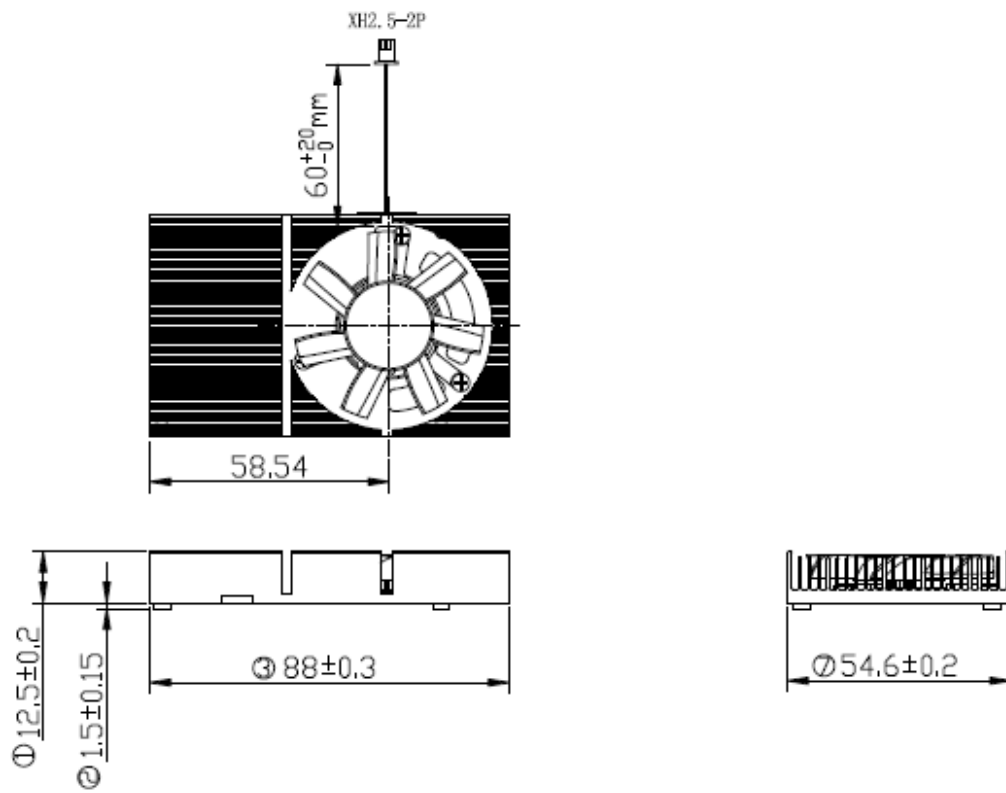


### 6.2. Board Dimension



Tolerances : +/- 0.13 mm

## 7. Thermal Mechanism



## Change log or update history

Rev.	Data	History
1.0	2016/07/01	7102048Q3S64LAU datasheet

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