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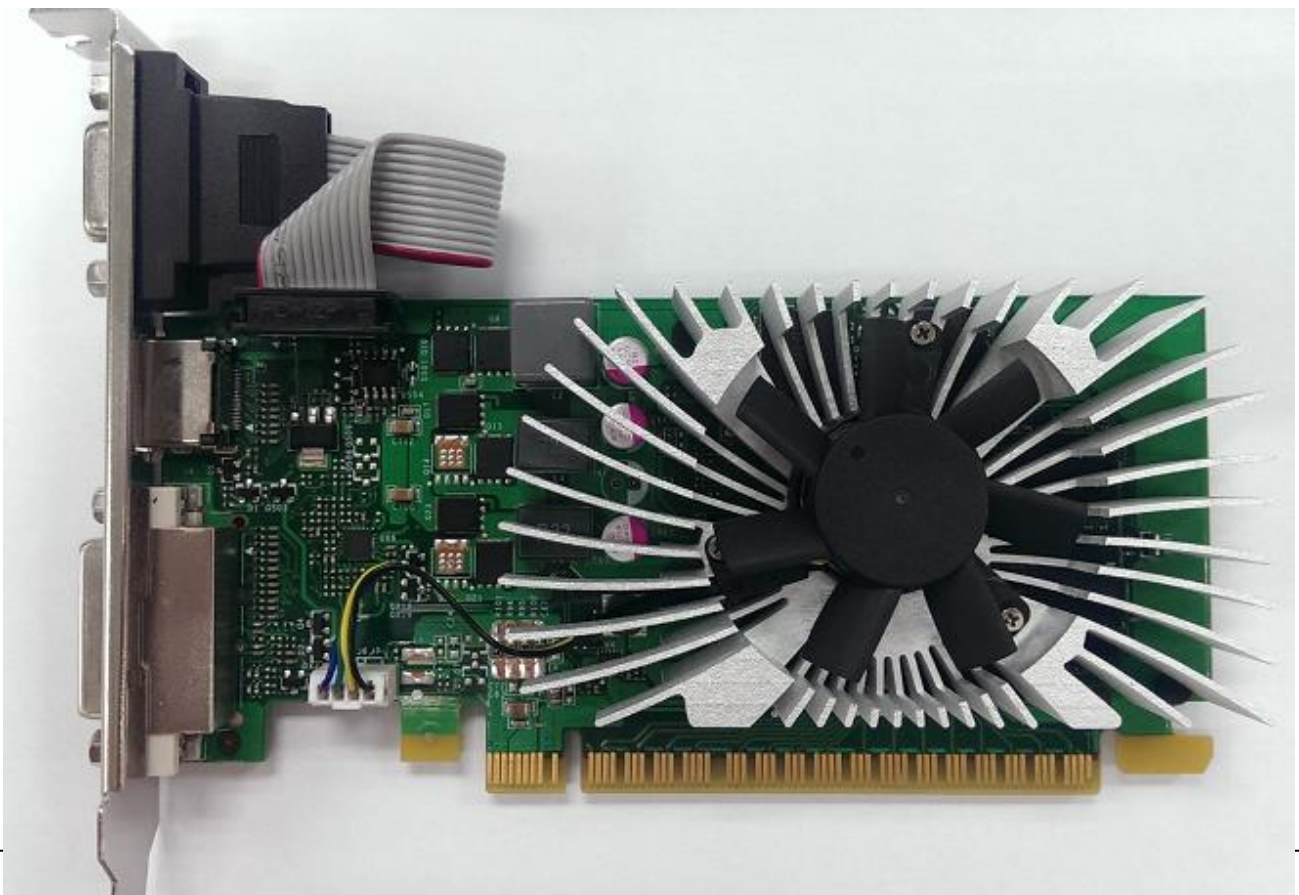


**NVIDIA GTX750TI GDDR5 2G  
PCIe® ADD-IN BOARD**

**Datasheet**

**GFX-NG750TIL16-5C**

**MPN: 1A1-E000811ADP**



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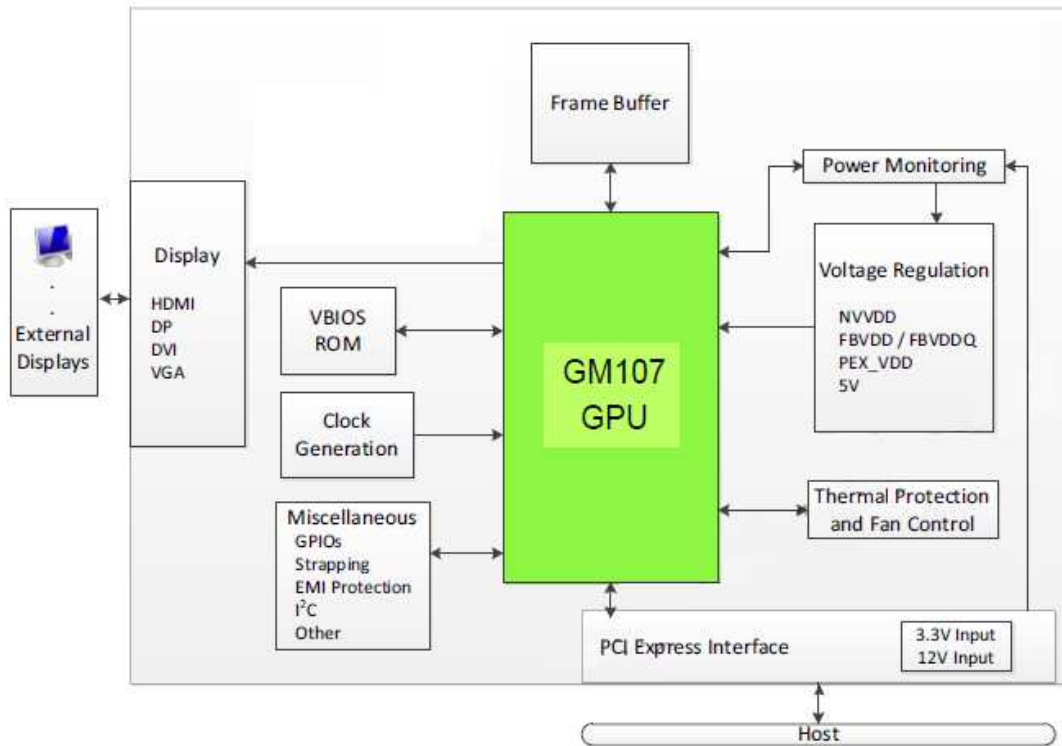
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## 1. Feature

<b>Model Name</b>	<b>GFX-NG750TIL16-5C</b>
<b>Graphics Processing Unit</b>	
<b>GPU</b>	GeForce GTX750Ti(GM107)
<b>Process Technology</b>	28 nm
<b>Basic clock</b>	1020 MHz
<b>Form Factor</b>	Low profile (145 X 69 mm)
<b>Card Interface</b>	PCI Express® 3.0 (X16)
<b>CUDA Cores</b>	640
<b>DirectX® capability</b>	DirectX® 12
<b>OpenGL</b>	OpenGL™ 4.4
<b>OpenCL</b>	Yes
<b>Supported Technologies</b>	3D Vision, PhysX, TXAA, FXAA, Adaptive VSync
<b>Video Decoder</b>	H.264, VC-1, MPEG-2, MPEG-4 part 2 Advanced, Blue Ray
<b>Memory</b>	
<b>Memory Clock</b>	2700MHz
<b>DDR Type</b>	GDDR5
<b>Memory Bus</b>	128-bits
<b>Memory Size</b>	2048MB
<b>Display Interface</b>	
<b>Dual-Link DVI</b>	Dual Link DVI-D
<b>HDMI</b>	HDMI x1
<b>VGA</b>	VGA x1
<b>Multi-Display</b>	3

## 2. Functional Overview

### 2.1. GPU Block diagram



Block Diagram of a GM107 Graphics Card

### 2.2. Memory Interface

#### Memory configuration support:

The GM107 supports industry standard GDDR5 technology memory interface. The Frame Buffer DRAM interface of GM107 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, 128Mx16, 128Mx32
- The GM107 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-D: Dual-link resolution 2560 x 1600MHz @60 Hz refresh rate
- ▶ HDMI version: 1.4b
- ▶ Support maximum resolution at 4096x2160 (4K) on HDMI and DP output
- ▶ 400MHz integrated RAMDAC; Maximum VGA Resolution 2048x1536
- ▶ HDCP: Provides digital content protection on any display

## 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-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+		

### 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



## 4. Power Specifications

Parameter	Value	Unit
<b>Input Board Power (Estimated)</b>		
PCI Express edge connector (12V)	4.6	A
	55.3	W
PCI Express edge connector (3V3)	1.4	A
	4.7	W
Total input graphics power (TGP)	60	W
<b>Component Power (Estimated)</b>		
GPU (TDP)	47.8	W
Memory power (four components)	4.0	W
Power supplies	6.0	W
Fan	0.7	W
PCB and others losses	1.5	W

## 5. Thermal Specifications

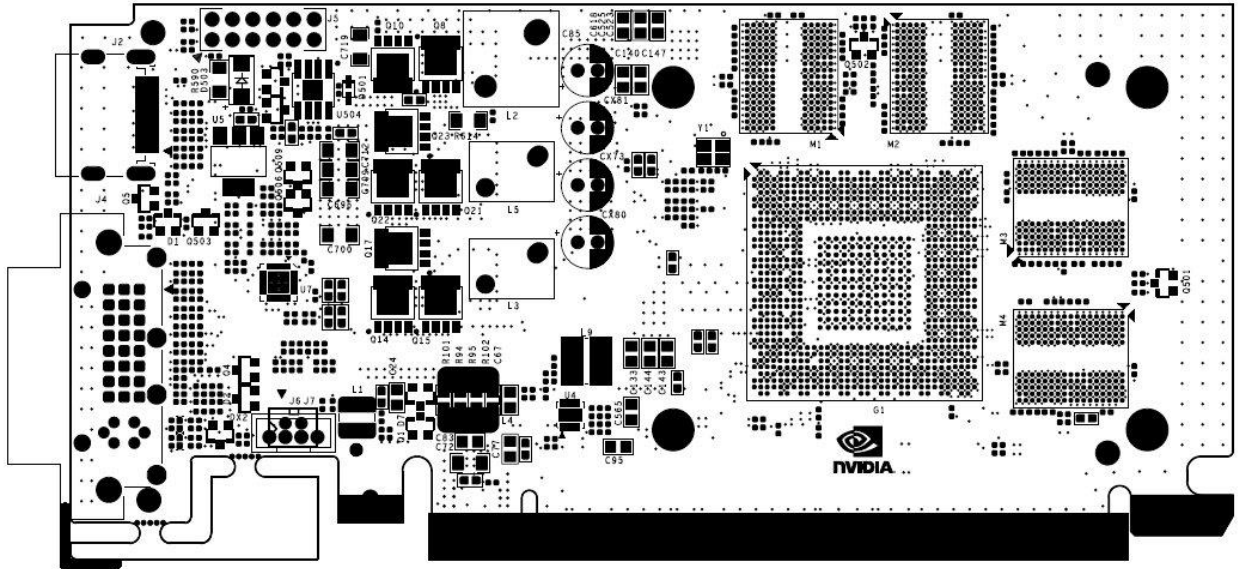
Parameter	Value	Unit
Fan inlet temperature (max.)	50	°C
Operating temperature	0~50	°C
GPU slowdown temperature (max.Tj)	95	°C
GPU shutdown temperature	101	°C
TGP Power Cap Limit	75	W
Memory case temperature (max.)	105	°C
Power FET case temperature (max.)	120	°C

## 6. Output configuration and Board Dimension

### 6.1. Output Configuration



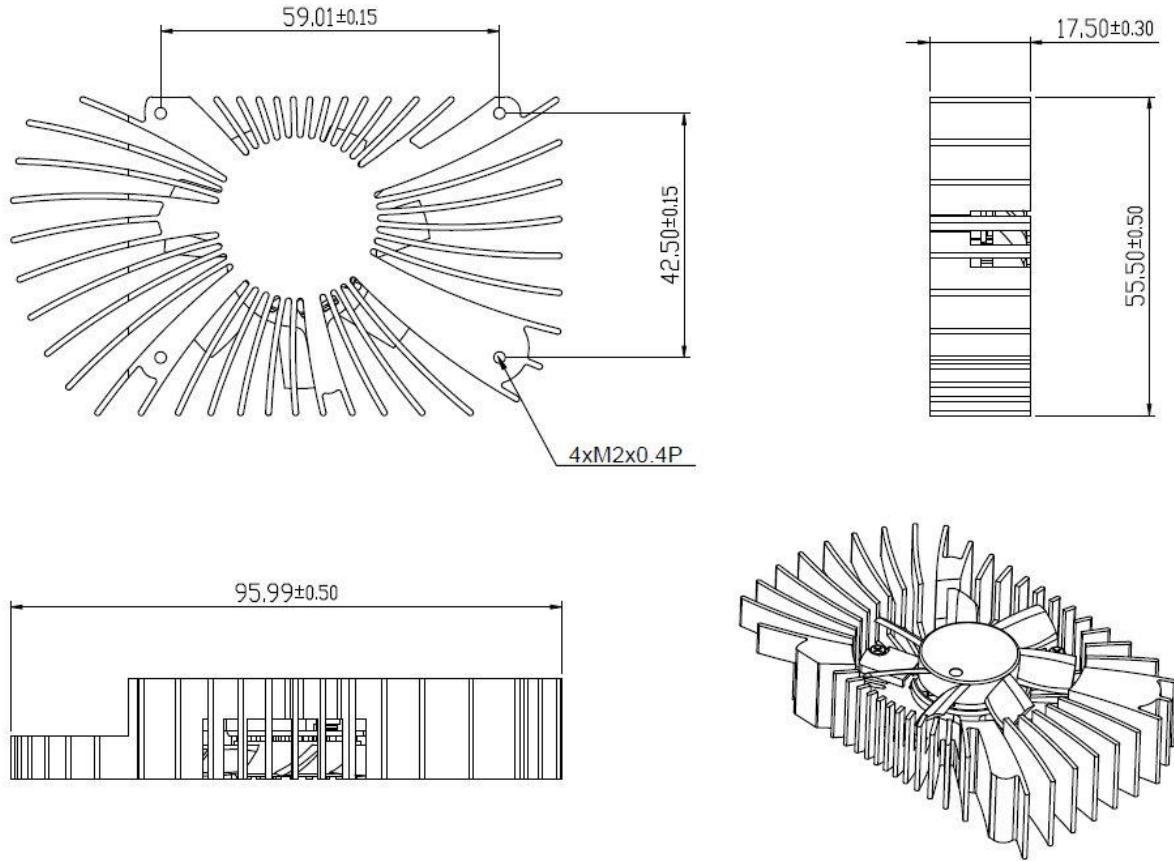
## 6.2. Board Dimension



(Unit : 145x69mm) Tolerances : +/- 0.13 mm

## 7. Thermal Mechanism

(Unit : mm)



## 8. Revision History

Rev.	Date	History
0.1	2014/11/17	1. 1st Draft