

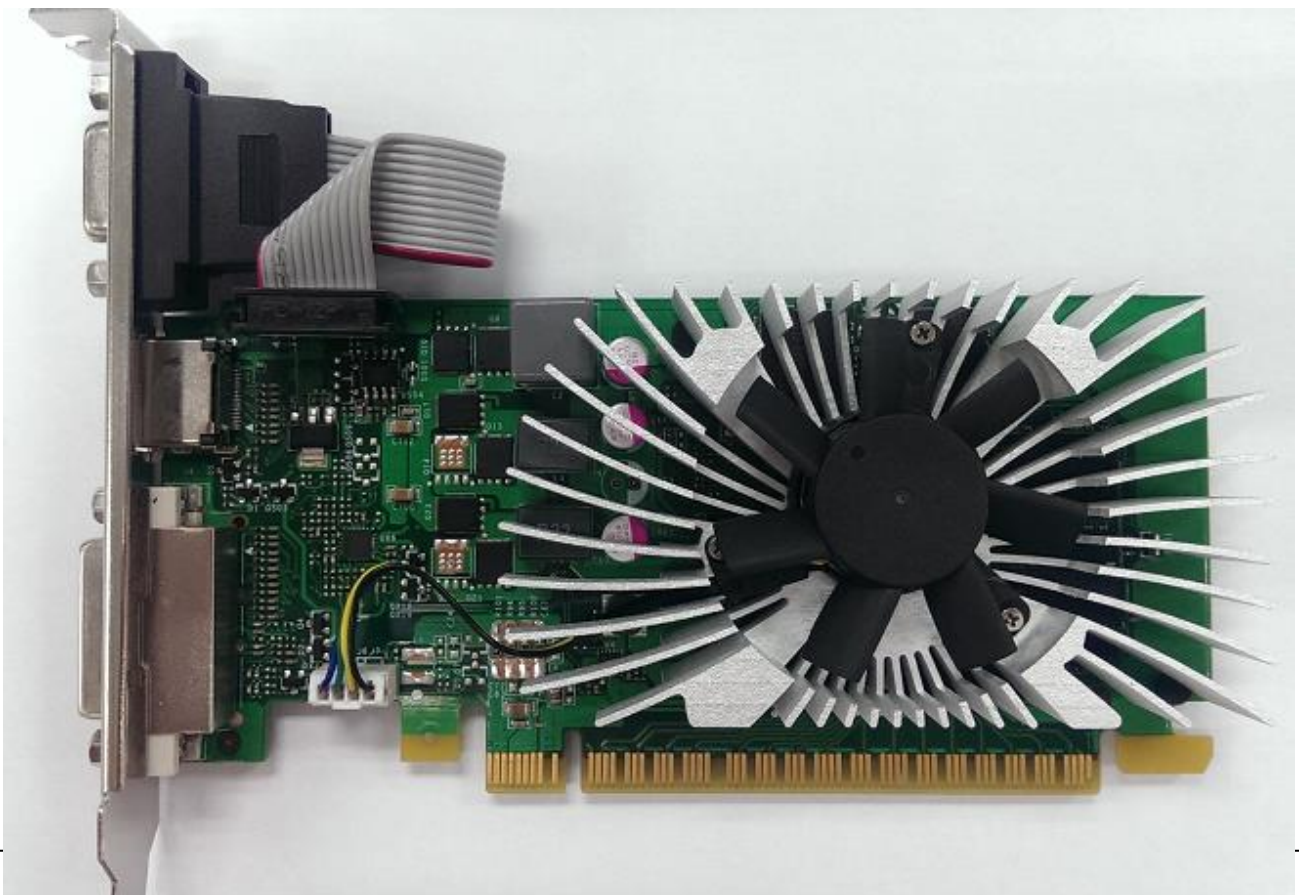
NVIDIA GTX750TI GDDR5 2G

PCIe® ADD-IN BOARD

Datasheet

GFX-NG750TIL16-5C

MPN: 1A1-E000811ADP



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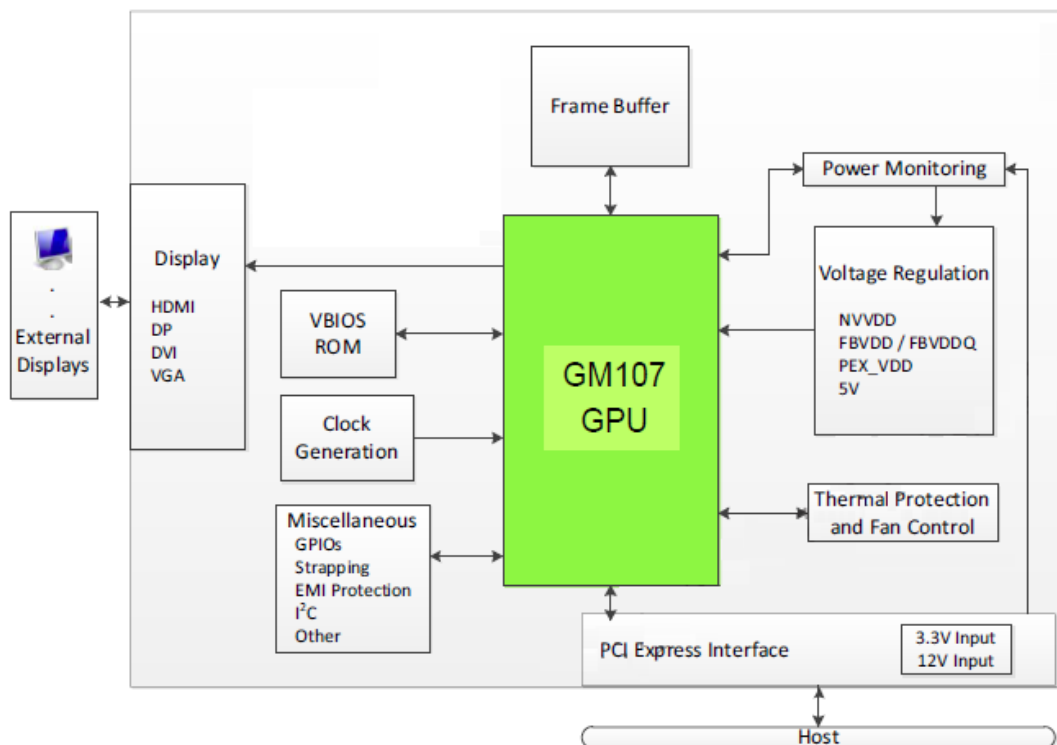
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1. Feature

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

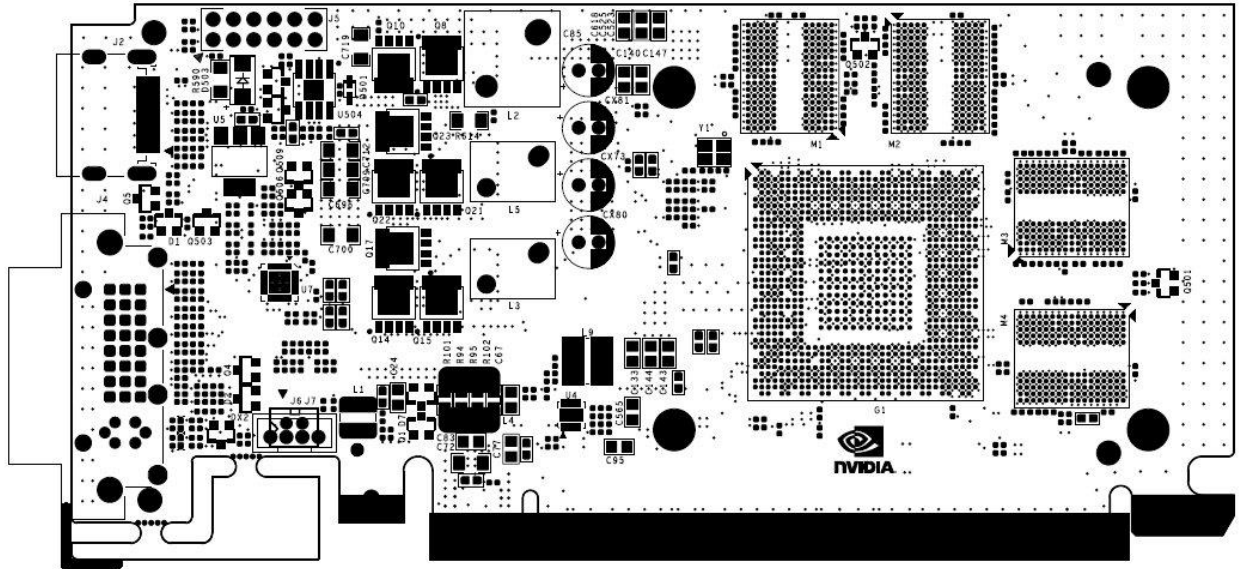
Parameter	Value	Unit
Fan inlet temperature (max.)	50	°C
Operating temperature	0~50	°C
GPU slowdown temperature (max.Tj)	95	°C
GPU shutdown temperature	101	°C
TGP Power Cap Limit	75	W
Memory case temperature (max.)	105	°C
Power FET case temperature (max.)	120	°C

6. Output configuration and Board Dimension

6.1. Output Configuration



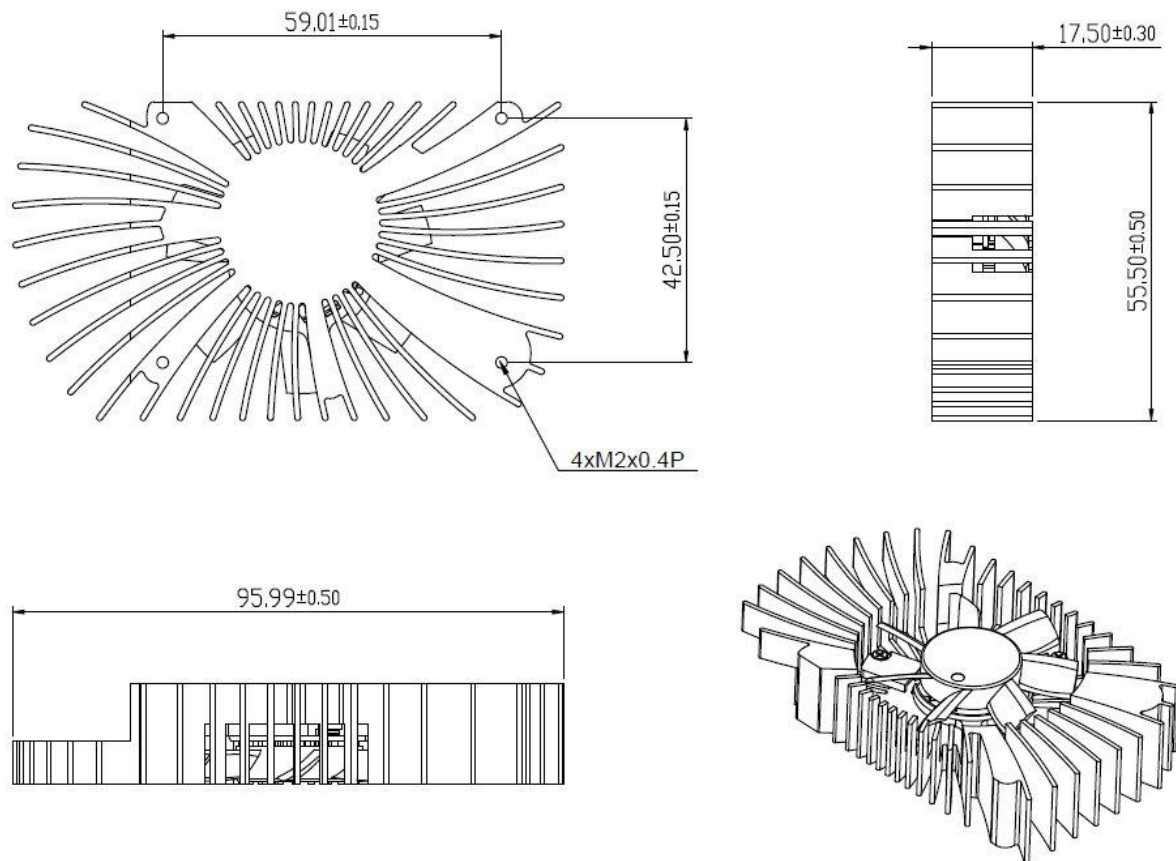
6.2. Board Dimension



(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

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