

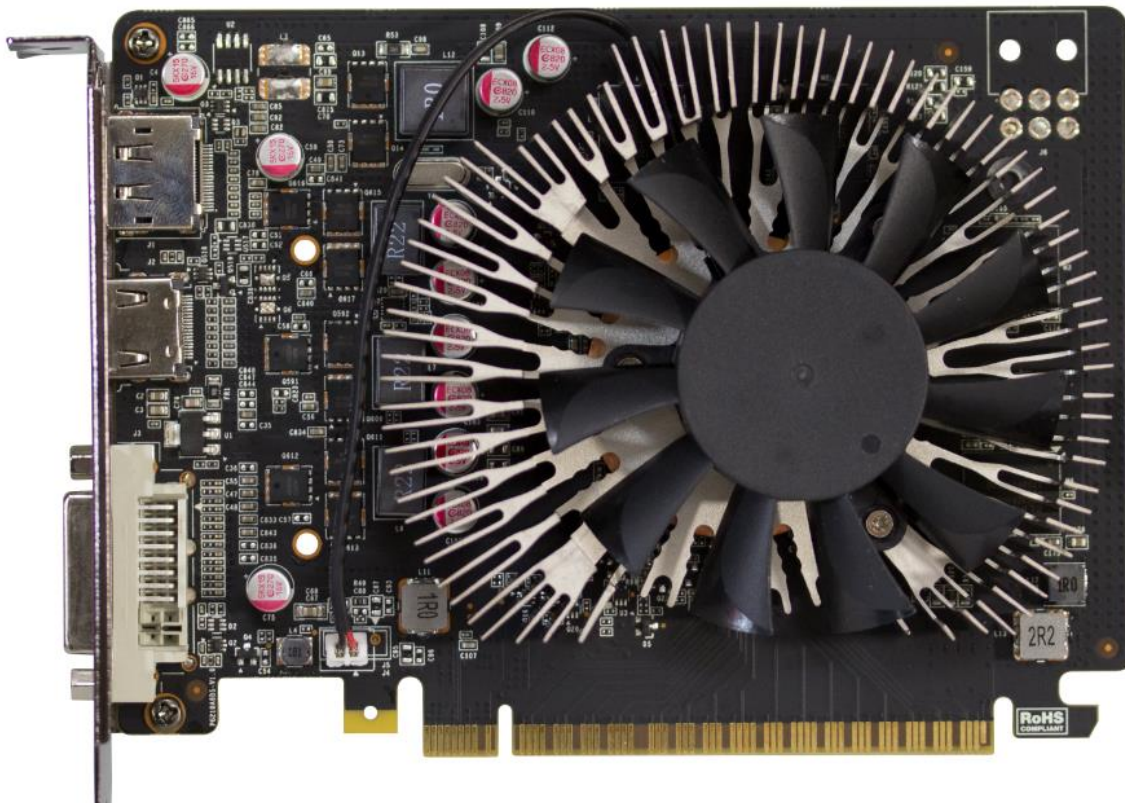
***NVIDIA GTX 1050 2GB GDDR5***

***PCIe® ADD-IN BOARD***

***GFX-NG1050F16-5D1***

***MPN: 2A1-E000055ADP***

***Datasheet***



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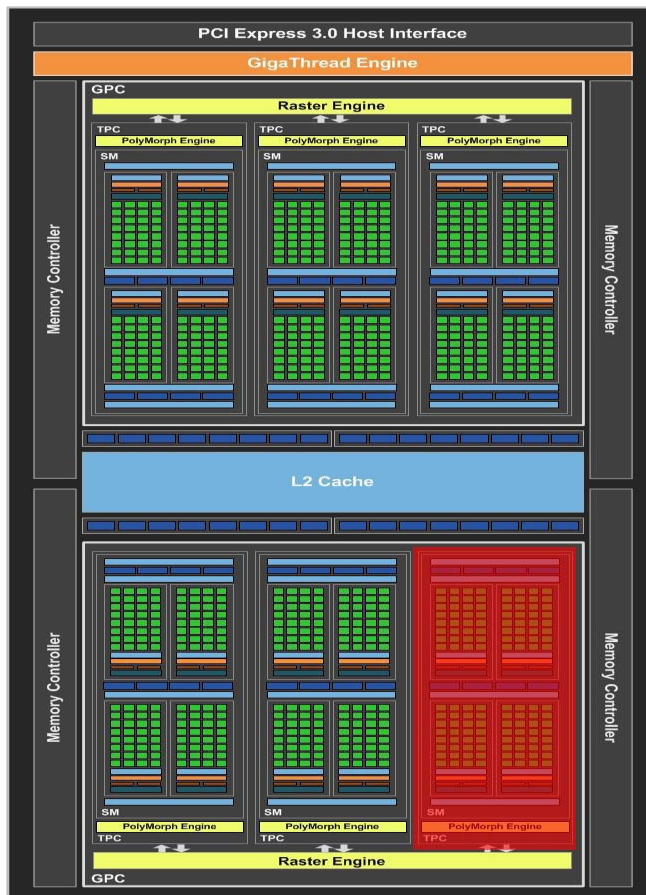
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# 1. Feature

<b>Part No.</b>	<b><i>GFX-NG1050F16-5D1</i></b>
<b>Graphics Processing Unit</b>	
<b>GPU</b>	<b>GeForce GTX 1050 (GP107)</b>
<b>Process Technology</b>	<b>14 nm</b>
<b>Base clock</b>	<b>1354 MHz</b>
<b>Boost clock</b>	<b>1455MHz</b>
<b>Form Factor</b>	<b>Dual slot ATX</b>
<b>Card Interface</b>	<b>PCI Express® 3.0 (X16)</b>
<b>CUDA Cores</b>	<b>640</b>
<b>Floating Point Performance</b>	<b>1733 GFLOPs</b>
<b>DirectX® capability</b>	<b>DirectX® 12 (Feature Level 12.1)</b>
<b>OpenGL</b>	<b>OpenGL™ 4.5</b>
<b>Video Decoder</b>	<b>HEVC, H.264, VC-1, MPEG-2, MPEG-4 part 2 decode</b>
<b>Memory</b>	
<b>Memory Clock</b>	<b>3504 MHz / 7.0 Gbps</b>
<b>DDR Type</b>	<b>GDDR5</b>
<b>Memory Bus</b>	<b>128-bits</b>
<b>Memory Size</b>	<b>2048MB</b>
<b>Display Interface</b>	
<b>Display Output</b>	<b>Dual Link DVI-D, HDMI2.0b, DisplayPort 1.4</b>
<b>Multi-Display</b>	<b>3</b>
<b>Board spec.</b>	
<b>External Power</b>	<b>No</b>
<b>Power Consumption</b>	<b>75W</b>
<b>Operating Temperature</b>	<b>0°C~50°C</b>
<b>Dimensions</b>	<b>150mm (L) x 111mm (H)</b>

## 2. Functional Overview

### 2.1. GPU Block diagram



### 2.2. Memory Interface

#### Memory configuration support:

The 10502048A5128Y supports industry standard GDDR5 technology memory interface. The Frame Buffer DRAM interface of GP107 is 128-bit. 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 :

- GDDR5 Configuration: 128Mx32
- The GP107 GPU supports a frame buffer interface up to 128 bits.

## 2.3. Features and Technologies

- ▶ Direct X 12 with Feature Level 12.1
- ▶ OpenGL 4.5
- ▶ NVIDIA CUDA technology
- ▶ NVIDIA G-SYNC-ready
- ▶ Vulkan API
- ▶ NVIDIA GPU Boost 3.0

## 2.4. Display

- ▶ Support multi monitor at 3
- ▶ DVI-D: Dual-link resolution 2560 x 1600 @60 Hz refresh rate
- ▶ Support maximum resolution at 4096x2160 (4K)@60Hz refresh rate on HDMI
- ▶ Support maximum resolution at 4096x2160 (4K)@60Hz on DisplayPort
- ▶ HDCP: Provides digital content protection on any Digital display
- ▶ HDCP 2.2 support on HDMI & DisplayPort

## 2.5. Digital Audio

- ▶ Supports for HD Audio over PCI Express
- ▶ Multi-channel (7.1) LPCM
- ▶ Data rates up to 192KHz
- ▶ Word sizes of 16-bit, 20-bit, 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
- ▶ HEVC(H.265)
- ▶ VP9

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

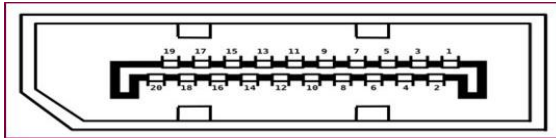
Pin	Signal	Pin	Signal
1	TMDS data 2-	13	TMDS data 3+
2	TMDS data 2+	14	+5VDC power
3	TMDS data 2/4 shield	15	Ground (Return for +5)
4	TMDS data 4-	16	Hot plug detected
5	TMDS data 4+	17	TMDS data 0-
6	DDC clock	18	TMDS data 0+
7	DDC data	19	TMDS data 0/5 shield
8	Analog vertical sync	20	TMDS data 5-
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 2.0 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. DisplayPort Connector



Pin 1	ML_Lane 0 (p)	Lane 0 (positive)
Pin 2	GND	Ground
Pin 3	ML_Lane 0 (n)	Lane 0 (negative)
Pin 4	ML_Lane 1 (p)	Lane 1 (positive)
Pin 5	GND	Ground
Pin 6	ML_Lane 1 (n)	Lane 1 (negative)
Pin 7	ML_Lane 2 (p)	Lane 2 (positive)
Pin 8	GND	Ground
Pin 9	ML_Lane 2 (n)	Lane 2 (negative)
Pin 10	ML_Lane 3 (p)	Lane 3 (positive)
Pin 11	GND	Ground
Pin 12	ML_Lane 3 (n)	Lane 3 (negative)
Pin 13	CONFIG1	connected to Ground <sup>1)</sup>
Pin 14	CONFIG2	connected to Ground <sup>1)</sup>
Pin 15	AUX CH (p)	Auxiliary Channel (positive)
Pin 16	GND	Ground
Pin 17	AUX CH (n)	Auxiliary Channel (negative)
Pin 18	Hot Plug	Hot Plug Detect
Pin 19	Return	Return for Power
Pin 20	DP_PWR	Power for connector (3.3 V 500 mA)

## 4. Power Specifications

Parameter	Value	Unit
<b>Input Board Power (Estimated)</b>		
PCI Express edge connector (12V)	4.96	A
	59.57	W
PCI Express edge connector (3V3)	0.78	A
	2.55	W
Auxiliary 6-pin power connector(12V)	N/A	A
	N/A	W
Total input graphics power (TGP)	59.84	W

## 5. Thermal Specifications

Parameter	Value	Unit
Fan inlet temperature (max.)	55	°C
GPU slowdown temperature (max.Tj)	96	°C
GPU shutdown temperature	101	°C



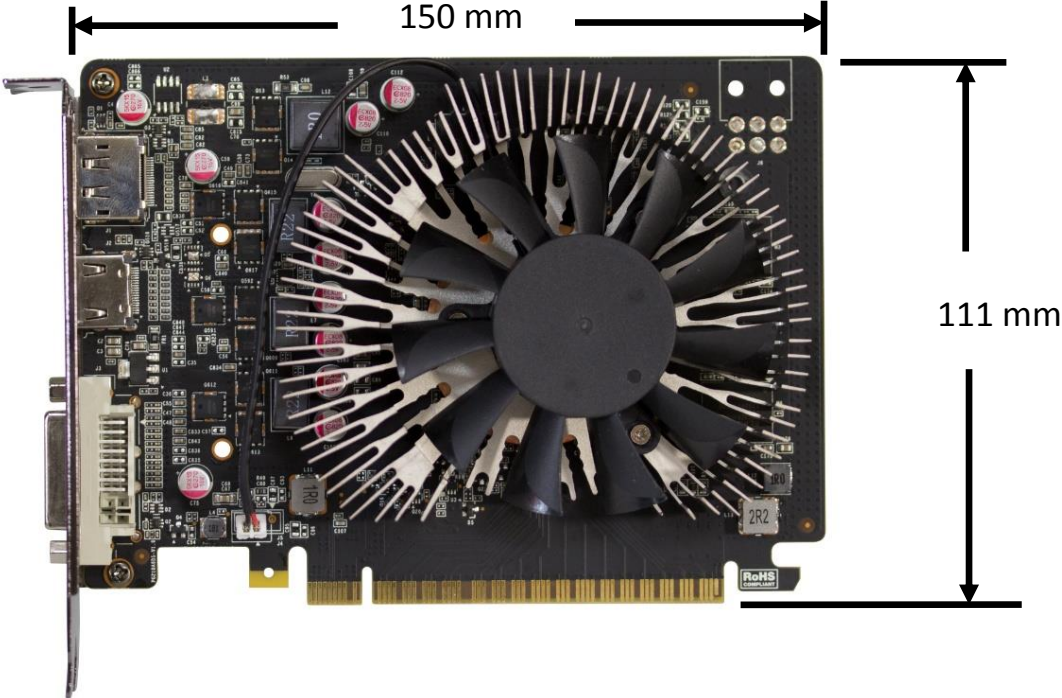
# 6. Output configuration and Board Dimension

## 6.1. Output Configuration



## 6.2. Board Dimension

(Unit : mm)





# Revision History

Rev.	Data	History
1.0	2017/08/22	10502048A5128Y datasheet