



NVIDIA T4 70W LOW PROFILE PCIe GPU ACCELERATOR

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Product Brief



DOCUMENT CHANGE HISTORY

PB-09256-001_v04

Version	Date	Authors	Description of Change
01	October 24, 2018	SL, SM	Initial Release
02	November 1, 2018	SL, SM	Updated ECC information
03	December 19, 2018	AN, SM	General product update
04	March 13, 2020	SL, SM	Updated “Overview” section with T4 qualified servers statement

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OVERVIEW

The NVIDIA® T4 is a single-slot, low-profile, 6.6-inch PCI Express Gen3 Universal Deep Learning Accelerator based on the TU104 NVIDIA graphics processing unit (GPU). The T4 has 16 GB GDDR6 memory and a 70 W maximum power limit. The T4 is offered as a passively cooled board that requires system air flow to operate the card within its thermal limits. NVIDIA supports x8 and x16 PCI Express for the T4.

NVIDIA T4 is a universal deep learning accelerator ideal for distributed computing environments. Powered by NVIDIA Turing™ Tensor Cores, T4 provides revolutionary multi-precision performance to accelerate deep learning and machine learning training and inference, video transcoding, and virtual desktops. As part of the NVIDIA AI Platform, T4 supports all AI frameworks and network types, delivering dramatic performance and efficiency that maximize the utility of at-scale deployments.

NVIDIA T4 boards are shipped with ECC and page retirement enabled by default.

For general design and system qualification guidance, refer to the *System Design Guide for NVIDIA Enterprise GPU Products Design Guide* (DG-07562-001).

For best performance with NVIDIA T4, make sure that you use a server that has been qualified for T4 that meets the thermal and airflow requirements for NVIDIA T4. Refer to the following website for the latest list of qualified T4 servers:

<https://www.nvidia.com/en-us/data-center/tesla/tesla-qualified-servers-catalog/>

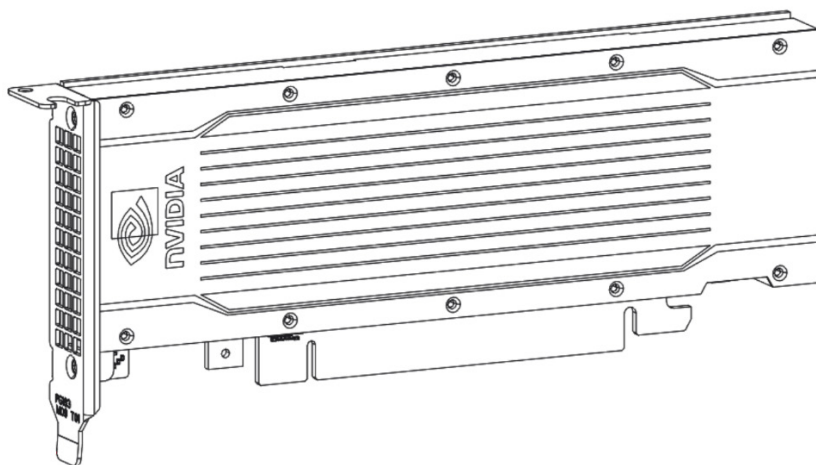


Figure 1. NVIDIA T4 Tensor Core GPU

SPECIFICATIONS

PRODUCT SPECIFICATIONS

Table 1 provides the product specifications for the NVIDIA T4.

Table 1. Product Specifications

Specification		Description
Product SKU		PG183 SKU 200 NVPN: 699-2G183-0200-xxx
Total board power		70 W (default)
GPU SKU		TU104-895
PCI IDs		Device ID: 0x1EB8 Vendor ID: 0x10DE Sub-Vendor ID: 0x10DE Sub-System ID: 0x12A2
GPU clocks	Base	585 MHz
	Maximum Boost	1590 MHz
VBIOS	EEPROM size	8 Mbit
	UEFI	Supported
PCI Express interface		PCI Express 3.0 ×16 x8
Thermal cooling solution		Passive
Weight	Board	301 Grams
	Full Height Bracket with screws	17 Grams
	Half Height Bracket with screws	10 Grams

Table 2 provides the memory specifications for the NVIDIA T4.

Table 2. Memory Specifications

Specification	Description
Maximum memory clock	5001 MHz
Memory size	16 GB
Memory bus width	256 bits
Peak Memory bandwidth	Up to 320 GBytes/s

Table 3 provides the software specifications.

Table 3. Software Specifications

Specification	Description
SR-IOV support	Supported; 16 VF (virtual functions)
Base address (physical function)	BAR0: 16 MB BAR1: 256 MB BAR3: 32 MB
Base address (virtual function)	BAR0: 4 MB, 32-bit (16 VF x 256K) BAR1: 4 GB, 64-bit (16 VF x 256M) BAR3: 512 MB, 64-bit (16 VF x 32M)
Message Signaled Interrupts	MSI-X Supported MSI Not Supported
PCI class code	0x03 - Display Controller
PCI sub-class code	0x02 - 3D Controller
ECC support	Configurable (Enabled by default)
SMBus (8-bit address)	GPU 0: 0x9E (write), 0x9F (read)
SMBus direct access	Supported
SMBPBI (SMBus Post Box Interface)	Supported
Zero Power	Supported

Environmental and Reliability Specifications

Table 4 provides the environment conditions specifications for the NVIDIA T4.

Table 4. Board Environmental and Reliability Specifications

Specification	Condition
Operating temperature	0 °C to 50 °C
Storage temperature	-40 °C to 75 °C
Operating humidity	5% to 90% relative humidity
Storage humidity	5% to 95% relative humidity
Mean time between failures (MTBF)	Uncontrolled environment: TBD at 35 °C Controlled environment: TBD at 35 °C

AIRFLOW DIRECTION SUPPORT

The T4 supports bi-directional airflow either from left to right, or from right to left. CFM requirements are identical for both airflow directions.

DESIGN DISCUSSION

FORM FACTOR

The NVIDIA T4 board is a half-height, half-length card. The dimensions are shown in Figure 2.

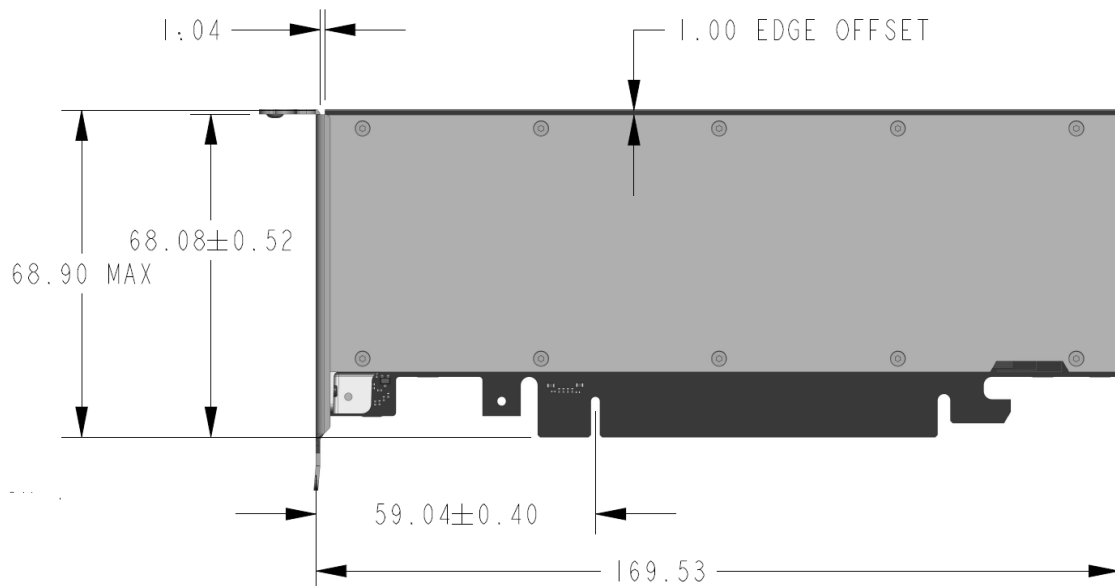


Figure 2. NVIDIA T4 Board Dimensions

EXTENDERS

NVIDIA does not offer extenders for the Tesla T4.

SUPPORT INFORMATION

PLANNED CERTIFICATIONS

- ▶ Windows Hardware Quality Lab (WHQL): Windows 10
- ▶ Ergonomic requirements for office work W/VDTs (ISO 9241)
- ▶ EU Reduction of Hazardous Substances (EU RoHS)
- ▶ Joint Industry guide (J-STD) / Registration, Evaluation, Authorization, and Restriction of Chemical Substance (EU) – (JIG / REACH)
- ▶ Halogen Free (HF)
- ▶ EU Waste Electrical and Electronic Equipment (WEEE)

AGENCIES

- ▶ Australian Communications and Media Authority and New Zealand Radio Spectrum Management (RCM)
- ▶ Bureau of Standards, Metrology, and Inspection (BSMI)
- ▶ Conformité Européenne (CE)
- ▶ Federal Communications Commission (FCC)
- ▶ Industry Canada - Interference-Causing Equipment Standard (ICES)
- ▶ Korean Communications Commission (KCC)
- ▶ Underwriters Laboratories (cUL, UL)
- ▶ Voluntary Control Council for Interference (VCCI)

LANGUAGES

Table 5. Languages Supported

Languages	Windows ¹	Linux
English (US)	Yes	Yes
English (UK)	Yes	Yes
Arabic	Yes	
Chinese, Simplified	Yes	
Chinese, Traditional	Yes	
Czech	Yes	
Danish	Yes	
Dutch	Yes	
Finnish	Yes	
French (European)	Yes	
German	Yes	
Greek	Yes	
Hebrew	Yes	
Hungarian	Yes	
Italian	Yes	
Japanese	Yes	
Korean	Yes	
Norwegian	Yes	
Polish	Yes	
Portuguese (Brazil)	Yes	
Portuguese (European/Iberian)	Yes	
Russian	Yes	
Slovak	Yes	
Slovenian	Yes	
Spanish (European)	Yes	
Spanish (Latin America)	Yes	
Swedish	Yes	
Thai	Yes	
Turkish	Yes	

Note:

¹Microsoft Windows 7, Windows 8, Windows 8.1, Windows 10, Windows Server 2008 R2, Windows Server 2012 R2 and Windows 2016 are supported.

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