

Virtium TuffDrive™ U25PE – eUSB Tuff Drive

eUSB Key Product Manual

1.0 Introduction

Virtium TuffDrive™ eUSB Tuff Drive are ideal solutions for server, networking, embedded and industrial applications that require a modest amount of storage and require a widely supported USB2.0 and USB3.0 interfaces. Typical applications include software distribution, loads and updates, system level diagnostics, backup repository for data in DRAM in the event of a system-level power-down or as a portable storage device for service technicians.

1.1 Features

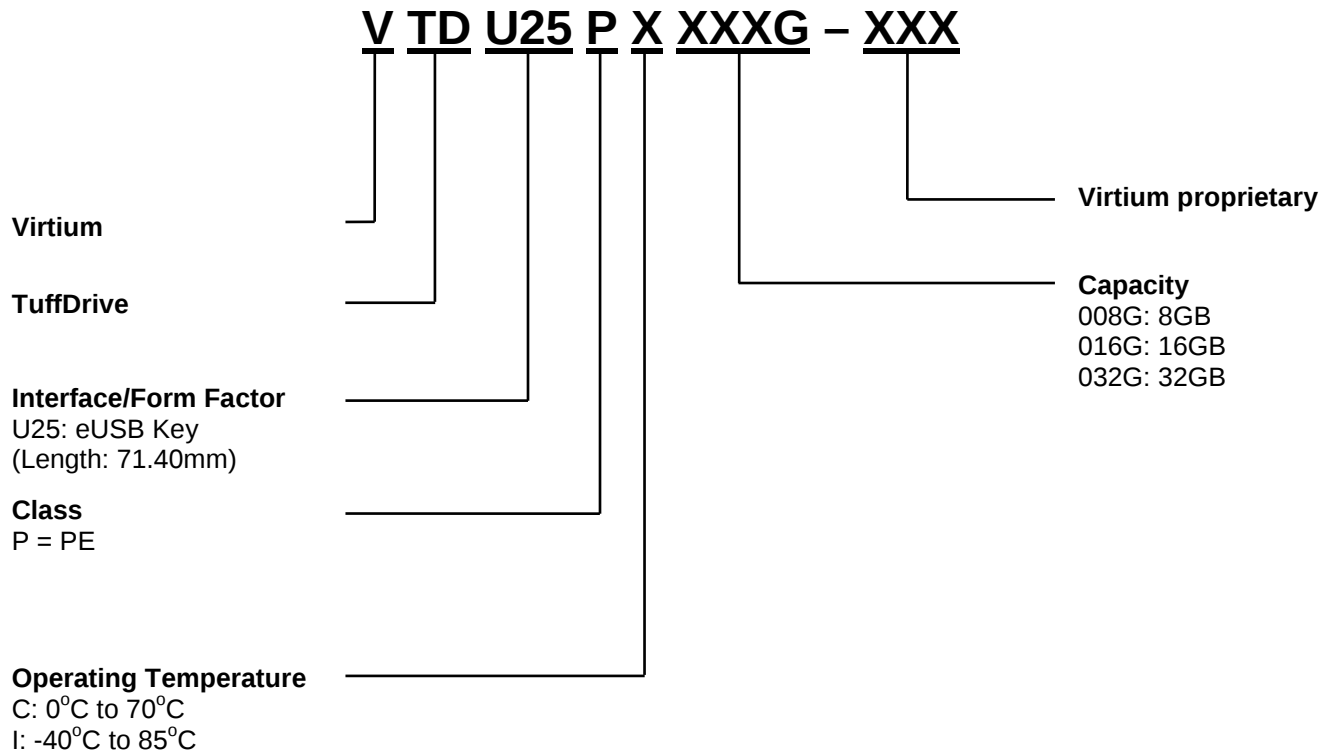
- Capacities: 8GB, 16GB, 32GB
- Industrial SLC
- Sustained Performance
 - o Read: Up to 160MB/s⁽¹⁾
 - o Write: Up to 125MB/s⁽¹⁾
- Temperature
 - o Commercial operating: 0°C to 70°C
 - o Industrial operating: -40°C to 85°C
 - o Non-operating: -55°C to 95°C
- Power: 5V
 - o Maximum: 530mW
 - o Idle: 145mW
- Reliability
 - o MTBF: 4,000,000 hours
 - o ECC algorithm corrects up to 72-bit per 1Kbytes
 - o SLC NAND endurance 100K @ 55°C
- Compliance
 - o USB 2.0 & 3.0 specification
 - o USB Mass Storage Class Bulk-Only Transport Protocol
 - o RoHS, CE, FCC, UL and WEEE certified
- Operating Systems supported: Windows 7, Vista, XP, 200, ME, 98/98SE, and Mac OS 9.x and above, Linux Kernel 2.4 and above
- Supports unique VID, PID, and serial number
- Form Factor: USB Type-A connector
- Mechanical Dimensions - L x W x H mm (inches)
 - o 71.40 (2.811) x 17.50 (0.689) x 8.00 (0.315)
- Weight
 - o 8.2 +/- 0.1 g
- Environmental (Operating/non-operating):
 - o IEC 68-2-27, IEC 68-2-6
 - o Shock: 50g, 10ms duration
 - o Vibration: 5g (500 Hz maximum)



(1) For 32GB, USB 3.0

Product Specification	
eUSB Tuff Drive eUSB Key	Rev: 1.1

2.0 Ordering Information and Part Numbering System



Product Specification	
eUSB Tuff Drive eUSB Key	Rev: 1.1

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4.0 Specifications

4.1 Capacity

Table 1: TuffDrive 25PE capacity

Unformatted Capacity (GB) ⁽¹⁾	User-Addressable LBA ⁽²⁾	User-Addressable Capacity Bytes
8	16,236,544	8,313,110,528
16	32,473,088	16,626,221,056
32	64,946,176	33,252,442,112

(1) 1GB = 1,000,000,000 bytes

(2) LBA: Logical Block Address. Logical block size of 512 bytes (1 sector)

4.2 Performance⁽¹⁾

Table 2: Read/Write Performance

Transfer Rate	USB 2.0	USB 3.0	Units
Sustained Read (max)	37	160	MB/s
Sustained Write (max)	35	125	MB/s

(1) Performance of 32GB

4.3 Environmental Specifications

4.3.1 Temperature and Humidity

Table 3: Temperature and Humidity

P/N	Operating Temperature (°C)	Non-Operating Temperature (°C) & Moisture Sensitivity
VTDU25PCxxxG-xxx	0°C to 70°C	-65°C to +95°C 5% to 95% (non-condensing)
VTDU25PIxxxG-xxx	-40°C to 85°C	

4.3.2 Shock and Vibration

Table 4: Shock and Vibration

Reliability	Test Conditions
Shock ⁽¹⁾	Duration: 10ms, 50g, 3 axes, 20 times
Vibration ⁽²⁾	10 Hz to 500 Hz, 5g, 3 axes, 1 hour

(1) IEC 68-2-27

(2) IEC 68-2-6

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4.4 Mean Time Between Failures (MTBF)

Virtium's TuffDrive achieves a MTBF of 4,000,000 hours predicted based on the component reliability data using Telcordia SR-332 methods at 40°C.

4.5 Power Requirements

5V (±10%) single power supply operation.

Table 5: Power Consumption

Voltage	Maximum ⁽¹⁾	Typical ⁽²⁾	Idle
5V	530 mW	404 mW	145 mW

(1) Max power consumption measured on 32GB TuffDrive eUSB, 100% 64KB sequential writes

(2) 70/30 read/write workload

4.6 Certifications and Compliance

Table 6: Certifications and Compliance

Compliance/Certification	Description
CE and FCC Compliant	Class: FCC Part 15 Subpart B Class B:2011 Declaration of Conformity registration No. STE120607699
RoHS Compliant	Restriction of Hazardous Substance Directive
UL Certified	Underwriters Laboratories, Inc. 94V-0
WEEE Certified	Waste, Electrical and Electronic Equipment Directive

5.0 Physical Specification

5.1 Pin Assignments

Table 7: Pin Assignments

Pins	Type	Description
1	VBUS (+5V)	Input Power
2	D -	Differential Data (-)
3	D +	Differential Data (+)
4	GND	Ground
5	StdA_SSRX-	Superspeed Receiver Differential Data (-)
6	StdA_SSRX+	Superspeed Receiver Differential Data (+)
7	GND_DRAIN	Ground For Signal Return
8	StdA_SSTX-	Superspeed Transmitter Differential Data (-)
9	StdA_SSTX+	Superspeed Transmitter Differential Data (+)

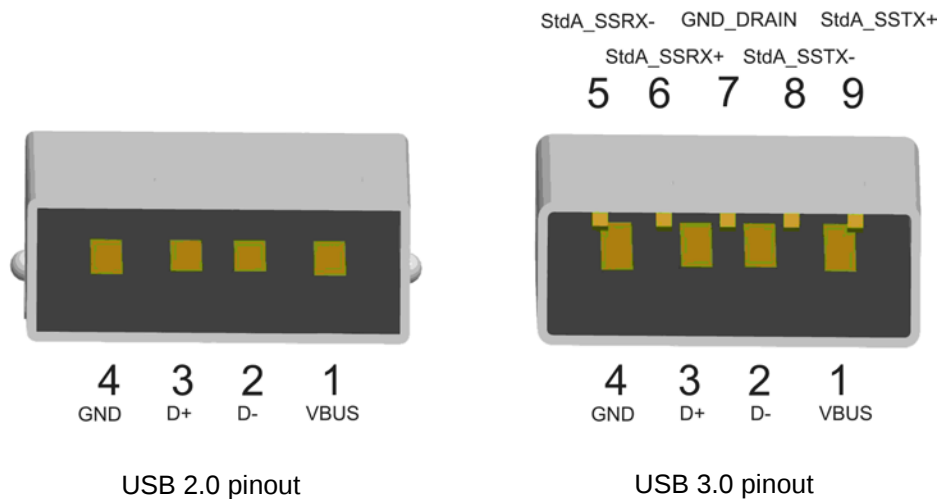


Figure 1: The standard USB type-A plug pinout

5.2 Mechanical Dimensions

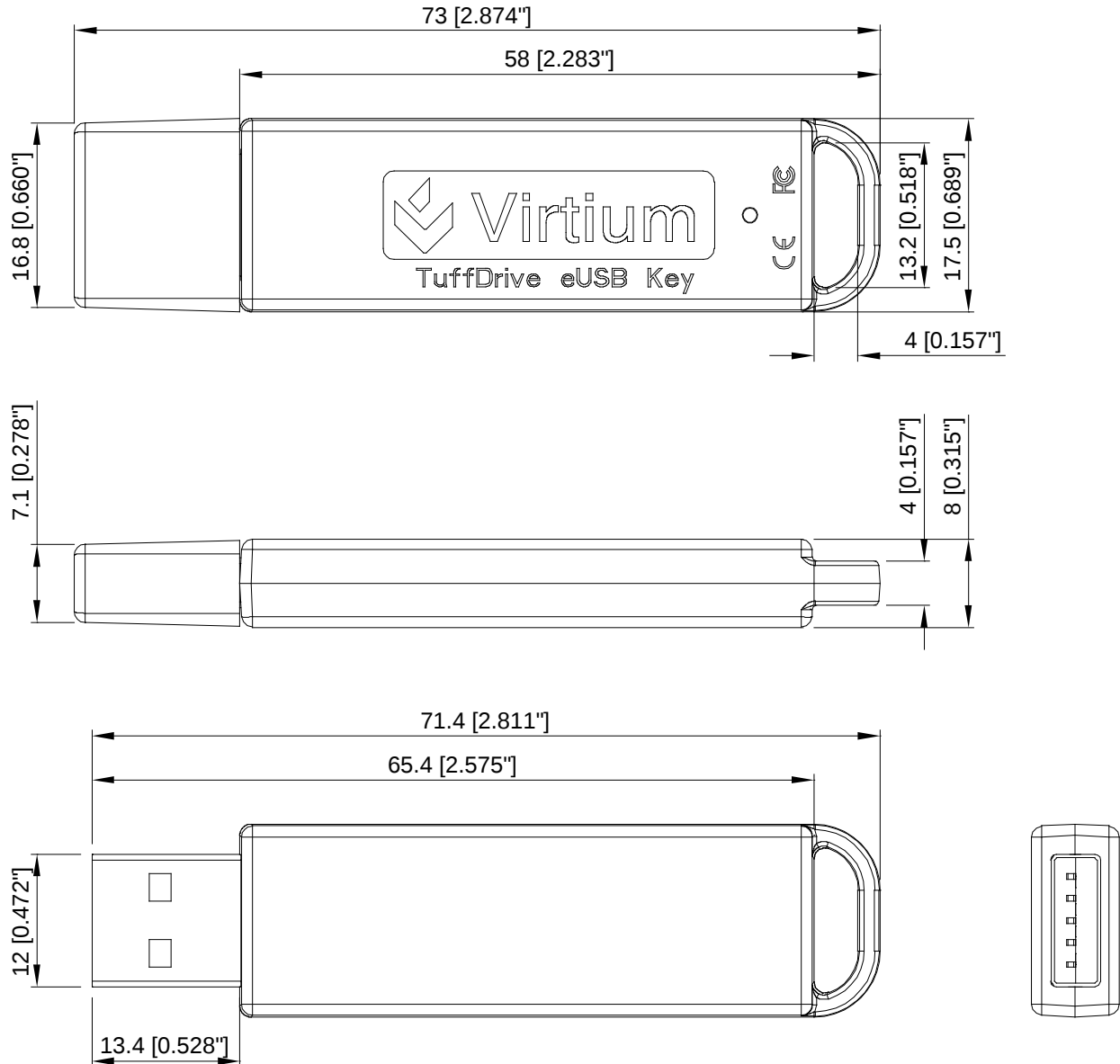


Figure 2: Mechanical Dimensions

6.0 Revision History

Date	Rev.	Page	Changes
10/11/2013	1.0	All	First release
10/31/2013	1.1	1, 2, 4, 5, 7	Update dimensions, reliability, vibration & shock and MTBF

FCC ID: OETEUSBKEY

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for

help.