Ordering Information: USB 3.0 Thumbdrives

Viking High Performance USB Drive Ordering Information

Part Number	Temp	Raw Capacity (GB)	Controller	Interface	NAND
VNFUSB3064GCC5WT3	(0 to +70'c)	64	SMI	USB 3.0	TSB 3D TLC NAND
VNFUSB3032GCC1WT3	(0 to +70'c)	32	SMI	USB 3.0	TSB 3D TLC NAND
VNFUSB3016GCCDWT3	(0 to +70'c)	16	SMI	USB 3.0	TSB 3D TLC NAND

Note:

1. Storage capacity listed will vary due to formatting and additional functions, and therefore is not available for storage.
2. USB's ship unformatted from the factory unless otherwise stated or requested.
3. All USBs are based on TLC flash unless otherwise requested.
4. The lower case "xx" characters denotes a wild card to specify locked BOM attributes (i.e MLC NAND or customer specific information
5. Modules are 5V standard.

Product Picture(s)

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1 Introduction

1.1 Product Overview

Viking Flash Drives are small, removable, high-speed USB 3.0 and USB 2.0 compatible data storage systems using flash technology. USB Drives allow easy data storage and transfer via the USB port on the host system with no driver installation required. The high speed Read/Write operation eliminates latency and seek-time associated with a hard disk drive. Flash storage incorporates an intelligent power management scheme that provides the lowest total power consumption.

1.2 Features

The USB drive delivers the following features:

- USB 3.0 high speed compatible (supports Bulk-Only transport protocol)*
- Drive Activity indicator signal (Blue LED is on when USB is active)
- Low power Dissipation
- Solid state, Non-volatile NAND Memory
- RoHS Compliant
- Static Wear Leveling
- Write Protect
- Blue mating key inside the metal connector indicates USB 3.0

* With exception of 3.3V only operation, USB specification is 5V.

1.3 USB Interface

- The USB interface is compliant with the USB 3.0 specification.
- The USB interface connects the host computer to the USB.
- second). If the host computer is unable to negotiate USB 3.0 speeds, the USB interface automatically renegotiates to lower speeds.

2 Product Specifications

2.1 Performance

USB 3.0 adds the new transfer rate referred to as SuperSpeed USB (SS) that can transfer data at up to 5 Gbit/s (625 MB/s), which is about 10 times as fast as the older USB 2.0 standard. The actual read/write bandwidth may be lower due to software overhead.

2.2 Electrical Characteristics

2.2.1 Absolute Maximum Ratings

Table 2-1: Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
5.0 Supply Voltage	VBUS	-0.3 ~ 5.5	V
3.3 Supply Voltage	VBUS	-0.3 ~ 3.6	V
Input Voltage	VIN	GND - 0.5 ~ VCC + 0.3	V
Storage Temperature	TST	-40 ~ 125	°C

Notes:

1. Permanent device damage may occur if 'ABSOLUTE MAXIMUM RATINGS' are exceeded. Functional operation should be restricted to recommended operating condition. Exposure to higher than recommended voltage for extended periods of time could affect device reliability.

2.2.2 DC Operating Conditions and Characteristics

Table 2-2: Voltage and Current Ratings

Parameter	Symbol	Min.	Typical	Max.	Unit
5.0 Supply voltage (± 5%)	VBUS	4.75	5.0	5.25	V

Parameter	Symbol	Min.	Typical	Max.	Unit
3.3 Supply voltage (± 5%)	VBUS	3.135	3.3	3.465	V
Input high voltage	VIH	2.0	-	-	V
Input low voltage	VIL	-	-	0.8	V
Output high voltage	VOH	2.4	-		V
Output low voltage	VOL	-	-	0.4	V
Standby Current[2]	I_{STB}	-	22 est	56 est	µA
Operating Current[2]	I_{OP}	-	140 est	200	mA

Notes:
1. Recommended operating conditions (Voltages referenced to GND, TA = 0 to 70C)
2. Based on 3.3V NAND, BGA or TSOP

2.2.3 Power Consumption

Maximum Power Consumption is 1 watt.

2.2.4 Capacitance

Table 2-3: Bus Line Capacitance

Parameter	Symbol	Min	Max	Unit
Bus line capacitance	C_L	-	20 est	pF

2.3 Environmental Conditions

2.3.1 Temperature and Altitude

Table 2-4: Temperature and Altitude Related Specifications

Conditions	Operating	Shipping	Storage
Commercial Temperature	0 to 70°C (32 to 158° F)	-40 to 85°C (-40 to 185° F)	-40 to 85°C (-40 to 185° F)
Industrial Temperature[1]	-40 to 85°C (-40 to 185° F)	-40 to 85°C (-40 to 185° F)	-40 to 85°C (-40 to 185° F)
Humidity (non-condensing)	5% to 95%	5% to 95%	5% to 95%
Max Temperature Gradient	20°C/Hour (36°F/Hour)	n/a	n/a
Altitude	-304.8 to 24,384 m	-304.8 to 24,384 m	-304.8 to 24,384 m

	(-1,000 to 80,000 ft)	(-1,000 to 80,000 ft)	(-1,000 to 80,000 ft)
Storage Time Duration	n/a	n/a	1 year

Notes:

1. TLC flash based products are available in the following temperature ranges:
   a) Commercial temperature range of 0 to 70°C (32 to 158° F)
   b) Industrial temperature range -40 to 85°C (-40 to 185° F)

2.4 Reliability

Table 2-5: Reliability Specifications

Parameter	Value
Mean Time Between Failures (MTBF)	2,500,000 hours est
Read Endurance	Unlimited
Write or Erase Endurance	(specified by the flash component)
Data retention	>10 years

3 Mechanical Information

3.1 Physical Dimensions

Table 3-1: Physical Dimensions

Height (mm)	Width (mm)	Length (mm)
13	21.9	72

Notes:

1. All dimensions are in millimeters.

3.2 Weight

The USB weight is 10grams

4 Pin and Signal Descriptions

Table 4-1: Pin Assignments

Pin Number	Signal Name	Description	Mating Sequence
1	VBUS	Power	Second
2	D-	USB 2.0 differential pair	Third
3	D+		
4	GND	Ground for power return	Second
5	StdA_SSRX-	SuperSpeed receiver differential pair	Last
6	StdA_SSRX+		
7	GND_DRAIN	Ground for signal return	
8	StdA_SSTX-	SuperSpeed transmitter differential pair	
9	StdA_SSTX+		
Shell	Shield	Connector metal shell	First

Notes:
1. Tx and Rx are defined from the host perspective
2. Note that pins 1 to 4 are referred to as the USB 2.0 pins, while pins 5 to 9 are referred to as the SuperSpeed pins.

5 Certifications and Compliance

Table 5-1: Device Certifications

Certification/Compliance	Description
RoHS	Viking, Sanmina-SCI Corporation ("Viking") shall use commercially reasonable efforts to provide components, parts, materials, products and processes to customers that do not contain: (i) lead, mercury, hexavalent chromium, polybrominated biphenyls (PBB) and polybrominated diphenyl ethers (PBDE) above 0.1% by weight in homogeneous material or (ii) cadmium above 0.01% by weight of homogeneous material, except as provided in any exemption(s) from RoHS requirements (including the most current version of the "Annex" to Directive\ 2002/95/EC of 27 January, 2003), as codified in the specific laws of the EU member countries. Viking strives to obtain appropriate contractual protections from its suppliers in connection with the RoHS Directives.
EU WEEE Compliant	The Waste Electrical and Electronic Equipment Directive (WEEE Directive) is the European Community directive 2002/96/EC on waste electrical and electronic equipment (WEEE) which, together with the RoHS Directive 2002/95/EC, became European Law in February 2003, setting collection, recycling and recovery targets for all types of electrical goods.

Certification/Compliance	Description
Safety	All printed circuit boards (PCBs) have a flammability rating of UL94V-0.

6 References

- USB Specification, version 3.0
- https://en.wikipedia.org/wiki/USB_3.0

7 Revision History

Revision	Release Date	Description of Change	Checked By (Full Name)
A	7/25/18	Initial release based on modified PSFUSB2XXXXCXX. Update performance and revise pin assignment	

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