

SUPERTALENT
USB 3.0 EXPRESS **DRAM★DISK™**
ENGINEERING DATASHEET



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1.0 PRODUCT DESCRIPTION

1.1 PRODUCT OVERVIEW

The USB 3.0 Express Dram★Disk™ uses your computer's free RAM to transfer files at an amazingly quick rate. The USB 3.0 Express Dram★Disk™ provides the power of increased productivity through its incredible speed abilities, which can be many times faster than a SSD. This drive is especially suited for creative professionals. The USB 3.0 Dram★Disk™ is an ideal drive for anyone seeking a speedy drive with great performance. Software is included.

1.2 TARGET APPLICATIONS

- Creative professionals
- Adobe Photoshop
- AutoCAD
- Autodesk Maya

1.3 PRODUCT FEATURES

- Capacity: 8GB, 16GB, 32GB
- Reliable MLC type flash
- Electrically fully complied with USB 3.0 and USB 2.0 standards
- OS Support: Windows XP, Windows Vista Windows 7, Windows 8
- Form Factor: USB Thumb Drive
- One channel data bus by small footprint package
- Global Wear-Leveling
- Built in error detection and correction
- LED indicator to show link status and read/write traffic
- Silent, no moving parts
- Sleek aluminum case with protective cap and key ring attachment
- 100% tested HW and SW, backwards compatible with USB 2.0

1.4 SYSTEM REQUIREMENTS

Operating Voltage Requirement: $V_{cc} = 4.45V \pm 5.5\%$

Operating System: Windows XP, Windows Vista, Windows 7, Windows 8

Interface: USB 3.0, USB 2.0, or an add-on card like PCIe to USB 3.0

2.0 PRODUCT ORDERING PART NUMBERS

2.1 ORDERING PART STRUCTURE

Prefix XX	Product XX	Density XX	Technology XXX
↓	↓	↓	↓
ST – SuperTalent	3U – USB 3.0	8 – 8GByte 16 – 16GByte 32 – 32GByte	RAM – Dram★Disk™

Table 1: Ordering Part Structure

2.2 VALID ORDERING PART NUMBERS

Product Family	Capacity	Flash	Encryption	Channel/Retail Part Number
USB 3.0 Dram★Disk™	8GB		Express	ST3U8RAM
	16GB		Express	ST3U16RAM
	32GB		Express	ST3U32RAM

Table 2: Valid Ordering Part Numbers

3.0 PHYSICAL SPECIFICATIONS

3.1 MECHANICAL SPECIFICATIONS

Length: 70.0 ± 0.25 mm

Width: 18.0± 0.25 mm

Thickness: 8.0 ± 0.25 mm

Weight: <7.0g

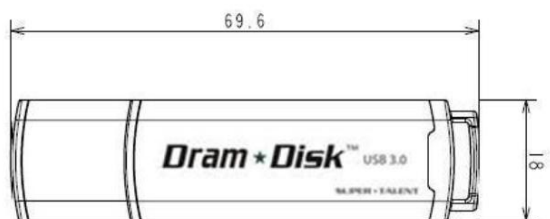
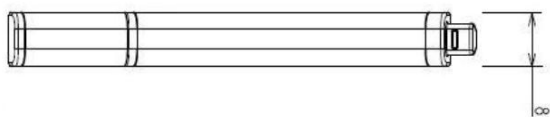


Figure 1: Dram★Disk™ Outline Drawing

4.0 ELECTRICAL SPECIFICATIONS

Operating Voltage: $V_{CC} = 4.45V \pm 5.5\%$

Modes: USB 3.0 or USB 2.0 standards

4.1 PERFORMANCE SPECIFICATIONS

Access Time: 0.2 ms

Seek Time: 0 ms

Mount Time: Dependent on system HW and SW

Power on to Ready: Dependent on system HW and SW

Data Transfer Time:

Device	Sequential Read Max (MB/Sec) *	Sequential Write Max (MB/Sec) *
ST3U8RAM	70 MB/s	20 MB/s
ST3U16RAM	79 MB/s	21 MB/s
ST3U32RAM	86 MB/s	44 MB/s

Table 3: Data Transfer Time Specifications

*Results may vary based on test environment

4.2 POWER AND TEMPERATURE CONDITIONS

Symbol	Rating	Value	Unit
V _{CC}	Power Supply Voltage	4.45	V
V _{IN}	Input Voltage	V _{CC} +/-5.5%	V
T _{STG}	Storage Temperature	-55 to 140	°C
T _{OPR}	Commercial Grade:	0 to +70	°C
I	Power Consume	120-200	mA

Table 4: Absolute Maximum Ratings

5.0 ENVIRONMENTAL SPECIFICATIONS

Operating Temperature:

Commercial Grade: 0°C to 70°C

Humidity: 5% to ~98% RH

Operating Shock: 1500G

Operating Vibration: 16G

6.0 QUALITY AND RELIABILITY SPECIFICATIONS

Data Retention: JESD47 compliant

Wear Leveling: Global Wear-leveling

Bad Block Management: Drive will self identify bad blocks and remap physical to logical addresses to avoid bad blocks.

ECC/EDC (Error Correction Code/Error Detection Code): Built in error detection and correction will correct physical bit errors in NAND. Drives use up to 40 bits ECC protection.

MTBF: >1,000,000 hours

USB 3.0 Express Dram★Disk™ Engineering Datasheet

1. Test Platform: Compatibility Test Config

1. Motherboard: ASUS P6X58P
2. CPU: Inter® Core i7 CPU 975 @3.33Ghz
3. Memory: 4096M DDR3
4. OS/: Windows 7 64bit

2. Test Data:

Test Items	Total Times	PASS Times	Fail Times	Log Photo
Cycles	1000 times	1000 times	0 times	
Random	1000 times	1000 times	0 times	

Table 5: Compatibility Test Configuration

7.0 COMPLIANCE SPECIFICATIONS

All USB 3.0 Express Dram★Disk™ are compliant with the following standards and regulations:

- RoHS
- CE
- FCC

8.0 PIN DESCRIPTIONS

8.1 PIN SIGNALS ASSIGNMENTS

Pin	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

Table 6: Pin Assignment

9.0 USB INTERFACE

9.1 USB SUPPORTS

USB 3.0 Express Dram★Disk™ supports the standard USB mass storage class protocol. This means that the USB 3.0 Express Dram★Disk™ connects to most computers without additional drivers or firmware. It supports SuperSpeed, Hi-Speed and Full-Speed USB connections.

USB 3.0 Stream Protocol support allows for mass storage command queuing and out of order data transfers. USB 3.0 features SuperSpeed operations with signal rates reaching 5 Gbits/s. This is over 10 times the bit rate of Hi-Speed USB 2.0. In addition, USB 3.0 supports data bursting flow control, dual simplex transfers, and command queuing – further increasing end user performance.

USB 3.0 is backward compatible with USB 2.0. This means that all existing USB devices can operate with USB 3.0 hosts. Likewise, most USB 3.0 peripherals will work with USB 2.0 hosts (except when the device specifically requires the extra speed or power provided by a USB 3.0 connection). Physically, the USB 3.0 cable contains independent wires and connections for both USB 2.0 and USB 3.0. USB software and drivers work the same for either connection. End users should view USB 3.0 as USB 2.0, just faster.

10.0 INITIAL SETUP

Insert USB 3.0 Express Dram★Disk™ and installation dialogue will pop up.



Figure 2 & Figure 3: USB 3.0 Express Dram★Disk™ Utility Setting & My Computer

After installation is done, USB 3.0 Express Dram★Disk™ is now ready to use!

Data transfer on the STT_VDISK (R:) are able to reach extremely fast speeds.

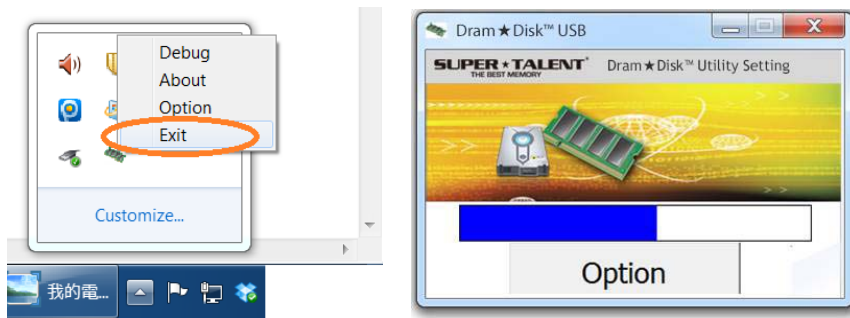


Figure 4 & Figure 5: USB 3.0 Express Dram★Disk™ Exit and Sync

Upon completion of your task, exit out of the USB 3.0 Express Dram★Disk™ program and it will sync the information stored on the volatile memory with non-volatile flash memory on the USB 3.0 Express Dram★Disk™.

10.1 TROUBLESHOOTING

- Attempting to move a file larger than the size of the virtual disk available will display a popup informing you that there is not enough room to perform that action.
- Removal of the USB 3.0 Express Dram★Disk™ before it has fully synced will display a popup informing you to plug it back in within 60 seconds otherwise data could potentially be corrupt or lost.
- USB 3.0 Express Dram★Disk™ creates a virtual disk with the extra available RAM in your host system. Performance varies with system specifications.
- Attempting to use the USB 3.0 Express Dram★Disk™ without enough RAM may result in a virtual disk that is too small to perform transfers or an error.
- See the background sync in action at:
<http://www.youtube.com/user/gosupertalent/videos>

FOR MORE INFORMATION

For Technical Support:

If additional support is needed, please visit the Super Talent Web site at www.supertalent.com or www.dramdisk.com for the following topics:

- **Warranty Services:** Includes the warranty service policy and the RMA request forms.
- **Technical Information:** Includes product data sheets and various USB whitepapers.
- **Tools Section:** Includes frequently asked questions (FAQs).

For More Information or Further Technical Support Please Contact:

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CHANGE RECORD

Version	Release Date	Changes
1.0	July 31 st , 2013	Initial Release in new template, Credits: Roman Nahal, David Nan, Fred Su, Heather Yamada-Hosley, Andrew Yang

Table 7: Change Record