

# SUPERTALENT USB 3.0 EXPRESS RC4 DATASHEET



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**TABLE OF CONTENTS**

Table of Figures.....	3
Table of Tables.....	3
1.0 product description.....	4
1.1 Product Overview .....	4
1.2 Product Features.....	4
1.3 System Requirements .....	4
2.0 Product Ordering Part Numbers.....	5
2.1 Ordering Part Structure .....	5
2.2 Valid Ordering Part Numbers.....	5
3.0 Physical Specifications .....	6
3.1 Mechanical Specifications.....	6
4.0 Electrical Specifications.....	7
4.1 Performance Specifications .....	7
4.2 VBUS and temperature conditions .....	7
5.0 Environmental Specifications .....	8
6.0 Quality and Reliability Specifications.....	8
7.0 Compliance Specifications .....	8
8.0 Pin Descriptions .....	9
8.1 Pin Assignments .....	9
9.0 USB Interface .....	9
9.1 USB Supports.....	9
For More Information .....	10

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USB 3.0 EXPRESS RC4 Datasheet

---

Change Record ..... 10

**TABLE OF FIGURES**

Figure 1: USB 3.0 EXPRESS RC4 Outline Drawing..... 6

**TABLE OF TABLES**

Table 1: Ordering Part Structure..... 5

Table 2: Valid Ordering Part Numbers..... 5

Table 3: Data Transfer Time Specifications ..... 7

Table 4: Absolute Maximum Ratings ..... 7

Table 5: Pin Assignment..... 9

Table 6: Change Record ..... 10

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**USB 3.0 EXPRESS RC4 Datasheet**

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## 1.0 PRODUCT DESCRIPTION

### 1.1 PRODUCT OVERVIEW

The introduction of the USB 3.0 standard opens up some very exciting possibilities for the external storage market. Boasting a 10x performance increase, USB 3.0 is extremely fast. But performance alone cannot topple a standard as widespread as USB 2.0, this is why USB 3.0 devices are backwards compatible with the USB 2.0 standard.

USB 3.0 Express RC4 delivers outstanding performance. Available in 32GB to 128GB capacities, this drive supports USB 3.0 read speeds of up to 270MB/s.

Measuring 87.5mmx26.1mmx9mm, the new Express RC4 requires no separate cable and is fully backwards compatible with USB 2.0 ports. This high performance USB 3.0 drive copies files up to ten times faster than USB 2.0 drives.

### 1.2 PRODUCT FEATURES

- USB 3.0 Interface for unprecedented speed
- Compatible with USB 3.0 & 2.0 standards
- 4 Channels with Interleave Support
- Highly Reliable single and Dual I/O MLC NAND Flash
- Capacity: 32GB-128GB
- Form Factor:
  - o USB Thumb Drive (87.5mmx26.1mmx9mm)
- Minimum 10 year data Integrity
- Global Wear-Leveling
- Built in error detection and correction(Up to 40 bits/512B)
- Blue LED indicator to show link status and r/w traffic
- Silent, no moving parts
- 100% tested HW and SW

### 1.3 SYSTEM REQUIREMENTS

**Operating Voltage Requirement:**  $V_{CC} = 4.45V - 5.5V$

**Operating System:** Support Microsoft Windows 7, Vista, XP, 2003, 2000, and ME, Mac OS 10.X

**Interface:** USB 3.0 (USB 2.0 lower speeds)

**Installation Requirements for super speed (USB 3.0):**

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- System Hardware which supports USB 3.0.
- Add-on Cards like PCIE to USB 3.0 for System Hardware not supports USB 3.0
- If using Add-on Cards, please check the motherboard PCIE version. The speed would be limited and become slower in PCIE Gen1 (2.5Gbs).

## 2.0 PRODUCT ORDERING PART NUMBERS

### 2.1 ORDERING PART STRUCTURE

Prefix XX	Product Type XX	Density XXX	Technology XXX
ST- SuperTalent	3U – USB 3.0	32G – 32GByte 64G – 64GByte 128 – 128GByte	R4S – USB 3.0 EXPRESS RC4

Table 1: Ordering Part Structure

### 2.2 VALID ORDERING PART NUMBERS

Product Family	Capacity	Flash	Encryption	Channel/Retail Part Number
USB 3.0 EXPRESS RC4	32GB	MLC	EXPRESS	ST3U32GR4S
	64GB	MLC	EXPRESS	ST3U64GR4S
	128GB	MLC	EXPRESS	ST3U128GR4S

Table 2: Valid Ordering Part Numbers

### 3.0 PHYSICAL SPECIFICATIONS

#### 3.1 MECHANICAL SPECIFICATIONS

**Length:**  $87.5 \pm 0.25$  mm

**Width:**  $26.1 \pm 0.25$  mm

**Thickness:**  $9.0 \pm 0.25$  mm

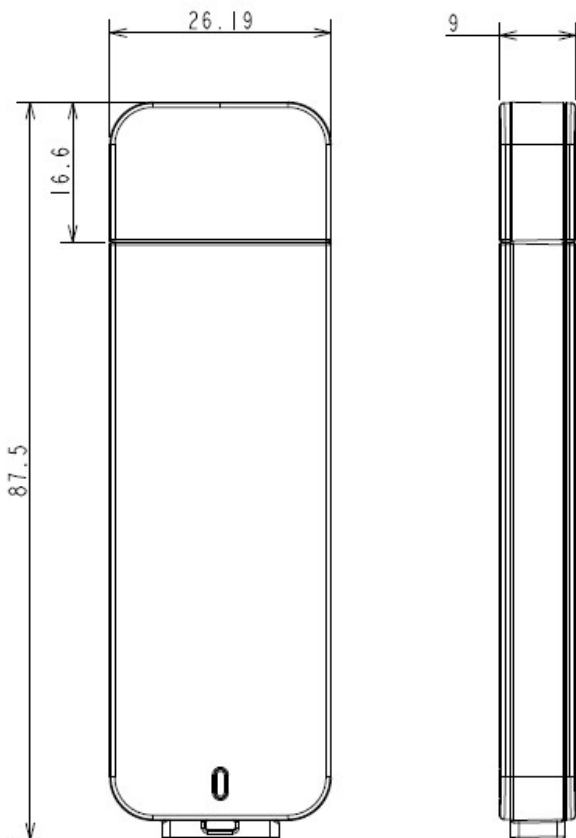


Figure 1: USB 3.0 EXPRESS RC4 Outline Drawing

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#### 4.0 ELECTRICAL SPECIFICATIONS

**Operating Voltage:**  $V_{CC} = 4.45V - 5.5V$

**Modes:** USB 3.0 or USB 3.0 lower speeds

#### 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:**

\* USB 3.0 Port and the installation of an enhanced driver required for maximum speed

Device	Sequential Read Max (MB/Sec) *	Sequential Write Max (MB/Sec) *
ST3U32GR4S	270	100
ST3U64GR4S	270	100
ST3U128R4S	270	100

Table 3: Data Transfer Time Specifications

#### 4.2 VBUS AND TEMPERATURE CONDITIONS

Symbol	Rating	Value	Unit
$V_{CC}$	Power Supply Voltage	4.45 – 5.25	V
$T_{STG}$	Storage Temperature	-55 to 140	°C
$T_{OPR}$	Operating Temperature	0 to 70	°C

Table 4: Absolute Maximum Ratings

## 5.0 ENVIRONMENTAL SPECIFICATIONS

**Operating Temperature:** Commercial Temp Range Only

- Commercial 0°C to 70°C

**Humidity:** 5% to ~98% RH

**Operating Shock:** 1500G

**Operating Vibration:** 16G

**Operating Altitude:** TBD

## 6.0 QUALITY AND RELIABILITY SPECIFICATIONS

**Data Retention:** Minimum of 10 years

**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/512B ECC protection.

**MTBF:** >1,000,000 hours

**Power Cycle:** TBD

## 7.0 COMPLIANCE SPECIFICATIONS

All USB 3.0 EXPRESS RC4 are compliant with the following standards and regulations:

- RoHS
- CE
- FCC



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## 8.0 PIN DESCRIPTIONS

### 8.1 PIN 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 5: Pin Assignment

## 9.0 USB INTERFACE

### 9.1 USB SUPPORTS

EXPRESS RC4 supports for the standard USB mass storage class protocol. This means that the EXPRESS RC4 connects to most computers (Windows, Linux, or Macs) 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 to 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.

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**FOR MORE INFORMATION**

For Technical Support:

If additional support is needed, please visit the Super Talent Web site at [www.supertalent.com](http://www.supertalent.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	April 09 <sup>th</sup> , 2013	Initial Release in new template

Table 6: Change Record