



**Features**

- TOSHIBA BiCS Flash™ (3D-NAND) technology
- Built with DRAM cache
- Support Trim command set
- Support Native Command Queuing (NCQ)
- Support S.M.A.R.T. command set and utility
- Support LDPC (Low Density Parity Check) ECC algorithm.
- Ultra-high random read/write speed
- Capacities from 128GB up to 1TB

**Specification**

- **Compatibility** SATA Revision 3.2  
ATA-8 ACS4 command set
- **Declarations** RoHS & REACH compliant
- **Flash technology** 3D-NAND flash technology
- **Form-factor** Standard mSATA form factor  
Compliant with JEDEC MO-300A  
mini PCI-e connector with 52 pins SATA pin out
- **Host Interface**
- **Performance**
  - **Data transfer rate** SATA 1.5Gb/s, 3.0Gb/s, 6.0Gb/s
  - **Sequential read** 560 MB/sec (Max.)
  - **Sequential write** 520 MB/sec (Max.)
  - **4KB random read** 87K IOPS (Max.)
  - **4KB random write** 75K IOPS (Max.)
- **Environmental**
  - **Operating temp.** STD. 0°C~+70°C/W.T. -40°C~+85°C
  - **Non-operating temp** STD. -20°C~+80°C/W.T. -50°C~+95°C
  - **Humidity** 10% ~ 95% non-condensing
  - **Vibration** 70 Hz to 2K Hz, 20G, 3 axes

- **Shock** 0.5ms, 1500G, 3 axes
- **Altitude** 70,000 feet
- **Power consumption**
- **Power requirement** +3.3V ± 5%
- **Reading mode** 630 mA (Max.)
- **Writing mode** 840 mA (Max.)
- **Idle mode** 250 mA (Max.)
- **Reliability**
  - **Wear-leveling** Static wear-leveling algorithms
  - **TBW** Up to 1,170 TBW at 1TB Capacity (Client workload by JESD-219A)
- **Erase counts** Up to 3,000 times
- **ECC** LDPC (Low Density Parity Check)
- **Physical specification**
  - **Weight (Max.)** 8g
  - **Dimension (WxL)** 29.85 x 50.80 (mm)
- **Conformal coating** Optional
- **Warranty** 2 years or within 3,000 erasing counts

**Part Number List**

Capacity	0°C~+70°C	Capacity	-40°C~+85°C
128GB	SBMSR128G-VECT3-(T)	128GB	WBMSR128G-VEIT3-(T)C
256GB	SBMSR256G-VECT3-(T)	256GB	WBMSR256G-VEIT3-(T)C
512GB	SBMSR512G-VECT3-(T)	512GB	WBMSR512G-VEIT3-(T)C
1TB	SBMSR001T-VECT3-(T)	1TB	WBMSR001T-VEIT3-(T)C

**Part Number Decoder**

X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14	X15	X16	X17	X18	X19	X20
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**Example**

W	B	M	S	R	0	0	1	T	-	V	E	C	T	3	-	T	C		
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**X1 Grade**

S : Standard grade operating temp. 0°C~+70°C  
W : Wide temp. grade operating temp. -40°C~+85°C

**X2 The material of casing**

B : Bare (without casing)

**X3 X4 X5 Product category**

MSR : Mini SATA Module (mSATA) w/ DRAM cache

**X6 X7 X8 X9 Capacity**

128G : 128GB      512G : 512GB  
256G : 256GB      001T : 1TB

**X11 Controller**

V : MUSE Series

**X12 Controller version**

A, B, C, D.....

**X13 Controller grade**

C : Commercial grade

**X14 Flash IC brand**

T : Toshiba NAND flash IC

**X15 Flash IC type**

3 : BiCS 3D-NAND Flash IC

**X17 X18 X19 X20 Reserved for specific requirements**

Blank : Standard product w/o thermal sensor and conformal-coating

T : Thermal Sensor (optional)

C : Conformal coating (optional)

SLC  
eSLC  
MLC  
3D-NAND  
DRAM Module  
Adapter  
Card-drive