



**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**

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>■ <b>Compatibility</b><br/>SATA Revision 3.2<br/>ATA-8 ACS4 command set</li> <li>■ <b>Declarations</b><br/>RoHS &amp; REACH compliant</li> <li>■ <b>Flash technology</b><br/>3D-NAND flash technology</li> <li>■ <b>Form-factor</b><br/>Standard mSATA form factor<br/>Compliant with JEDEC MO-300A<br/>mini PCI-e connector with 52 pins SATA pin out</li> <li>■ <b>Host Interface</b></li> <li>■ <b>Performance</b> <ul style="list-style-type: none"> <li>➤ <b>Data transfer rate</b><br/>SATA 1.5Gb/s, 3.0Gb/s, 6.0Gb/s</li> <li>➤ <b>Sequential read</b><br/>560 MB/sec (Max.)</li> <li>➤ <b>Sequential write</b><br/>520 MB/sec (Max.)</li> <li>➤ <b>4KB random read</b><br/>87K IOPS (Max.)</li> <li>➤ <b>4KB random write</b><br/>75K IOPS (Max.)</li> </ul> </li> <li>■ <b>Environmental</b> <ul style="list-style-type: none"> <li>➤ <b>Operating temp.</b><br/>STD. 0°C~+70°C/W.T. -40°C~+85°C</li> <li>➤ <b>Non-operating temp</b><br/>STD. -20°C~+80°C/W.T. -50°C~+95°C</li> <li>➤ <b>Humidity</b><br/>10% ~ 95% non-condensing</li> <li>➤ <b>Vibration</b><br/>70 Hz to 2K Hz, 20G, 3 axes</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>➤ <b>Shock</b><br/>0.5ms, 1500G, 3 axes</li> <li>➤ <b>Altitude</b><br/>70,000 feet</li> <li>■ <b>Power consumption</b></li> <li>➤ <b>Power requirement</b><br/>+3.3V ± 5%</li> <li>➤ <b>Reading mode</b><br/>630 mA (Max.)</li> <li>➤ <b>Writing mode</b><br/>840 mA (Max.)</li> <li>➤ <b>Idle mode</b><br/>250 mA (Max.)</li> <li>■ <b>Reliability</b> <ul style="list-style-type: none"> <li>➤ <b>Wear-leveling</b><br/>Static wear-leveling algorithms</li> <li>➤ <b>TBW</b><br/>Up to 1,170 TBW at 1TB Capacity<br/>(Client workload by JESD-219A)</li> </ul> </li> <li>➤ <b>Erase counts</b><br/>Up to 3,000 times</li> <li>➤ <b>ECC</b><br/>LDPC (Low Density Parity Check)</li> <li>■ <b>Physical specification</b> <ul style="list-style-type: none"> <li>➤ <b>Weight (Max.)</b><br/>8g</li> <li>➤ <b>Dimension (WxL)</b><br/>29.85 x 50.80 (mm)</li> <li>■ <b>Conformal coating</b><br/>Optional</li> <li>■ <b>Warranty</b><br/>2 years or within 3,000 erasing counts</li> </ul> </li> </ul> |
|--|---|

**Part Number List**

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

**Example**

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

- 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  
oSLC  
MLC  
3D-NAND  
DRAM Module  
Adapter  
Card-drive