

OVERVIEW

The SiliconDrive USB Blade is designed to meet the low power and small size requirements of embedded systems.

SiliconDrive technology is engineered exclusively for the high performance, high reliability and multi-year product lifecycle requirements of the Enterprise System OEM market. Typical end-market applications include broadband data and voice networks, military systems, flight system avionics, medical equipment, industrial control systems, video surveillance, storage networking, VoIP, wireless infrastructure, and interactive kiosks.

Every SiliconDrive USB Blade is integrated with SiliconSystems patented PowerArmor and patent-pending SiSMART and SiSecure technologies.

PowerArmor prevents data corruption and loss from power disturbances by integrating patented technology into every SiliconDrive.

SiSMART acts as an early warning system to eliminate unscheduled downtime by constantly monitoring and reporting the exact amount of remaining storage system useful life.

SiSecure is a comprehensive suite of user-selectable security technologies that solves the critical need for robust storage security for embedded systems applications that have a small footprint and low-power requirement.

SiSECURE

- SiZone Data zones with different security parameters.
- SiKey Ties SiliconDrive to a specific host and/or software IP.
- SiProtect Protection software for password-required, read/write, or read-only access.
- SiSweep Ultra-fast data erasure.
- SiPurge Non-recoverable data erasure.
- AutoLock Automatically locks the SiliconDrive.

FEATURES

- RoHS 6 of 6 compliant
- Integrated PowerArmor, SiSMART, and SiSecure technology
- Capacity range: 512MB to 4GB
- MTBF: 4,000,000 hours
- Read Transfer Rate (Typical): 10MBps
- Write Transfer Rate (Typical): 10MBps
- Power Consumption:
 - Read (Typical) 0.5W
 - Write (Typical) 0.55W

Note: For mating connector information, see “Connector Information” on page 10.



[Click here](#)



[Click here](#)

SILICONSYSTEMS PROPRIETARY

This document and the information contained within it is confidential and proprietary to SiliconSystems, Inc. All unauthorized use and/or reproduction is prohibited.

REVISION HISTORY

Document No.	Release Date	Changes
5800BU-00DSR	April 2, 2009	Initial release.

SILICONSYSTEMS PROPRIETARY

This document and the information contained within it is confidential and proprietary to SiliconSystems, Inc.
All unauthorized use and/or reproduction is prohibited.

TABLE OF CONTENTS

Overview	i
SiSecure	i
Features	i
Revision History	ii
Table of Contents	iii
List of Figures	iv
List of Tables	v
Physical Specifications	1
Physical Dimensions.....	1
Electrical Specification	2
Pin Assignments.....	2
Product Specifications	3
System Performance.....	3
System Power Requirements.....	3
Reliability.....	4
Projected Operational Life Span.....	4
Environmental Specifications.....	5
Absolute Maximum Ratings.....	5
DC Characteristics.....	6
Sales and Support	7
Part Numbering	7
Nomenclature.....	7
Part Numbers.....	7
RoHS 6 of 6 Product Labeling — Pb-Free Identification Label.....	8
Sample Label.....	8
Related Documentation	9
Connector Information	10

SILICONSYSTEMS PROPRIETARY

This document and the information contained within it is confidential and proprietary to SiliconSystems, Inc.
All unauthorized use and/or reproduction is prohibited.

LIST OF FIGURES

Figure 1: Physical Dimensions.....	1
Figure 2: Sample Label.....	8
Figure 3: USB Blade Mating Connector Information.....	10

SILICONSYSTEMS PROPRIETARY

This document and the information contained within it is confidential and proprietary to SiliconSystems, Inc.
All unauthorized use and/or reproduction is prohibited.

LIST OF TABLES

Table 1: Pin Assignments	2
Table 2: System Performance	3
Table 3: System Power Requirements	3
Table 4: Reliability.....	4
Table 5: Operational Life Span	4
Table 6: Environmental Specifications.....	5
Table 7: Absolute Maximum Ratings	5
Table 8: DC Characteristics	6
Table 9: Part Numbers.....	7
Table 10: Related Documentation	9

SILICONSYSTEMS PROPRIETARY

This document and the information contained within it is confidential and proprietary to SiliconSystems, Inc.
All unauthorized use and/or reproduction is prohibited.

PHYSICAL SPECIFICATIONS

The SiliconDrive USB Blade products are offered in a compact form factor. See ["Part Numbering" on page 7](#) for details regarding USB Blade capacities.

PHYSICAL DIMENSIONS

The following diagram describes the physical dimensions for the USB Blade.

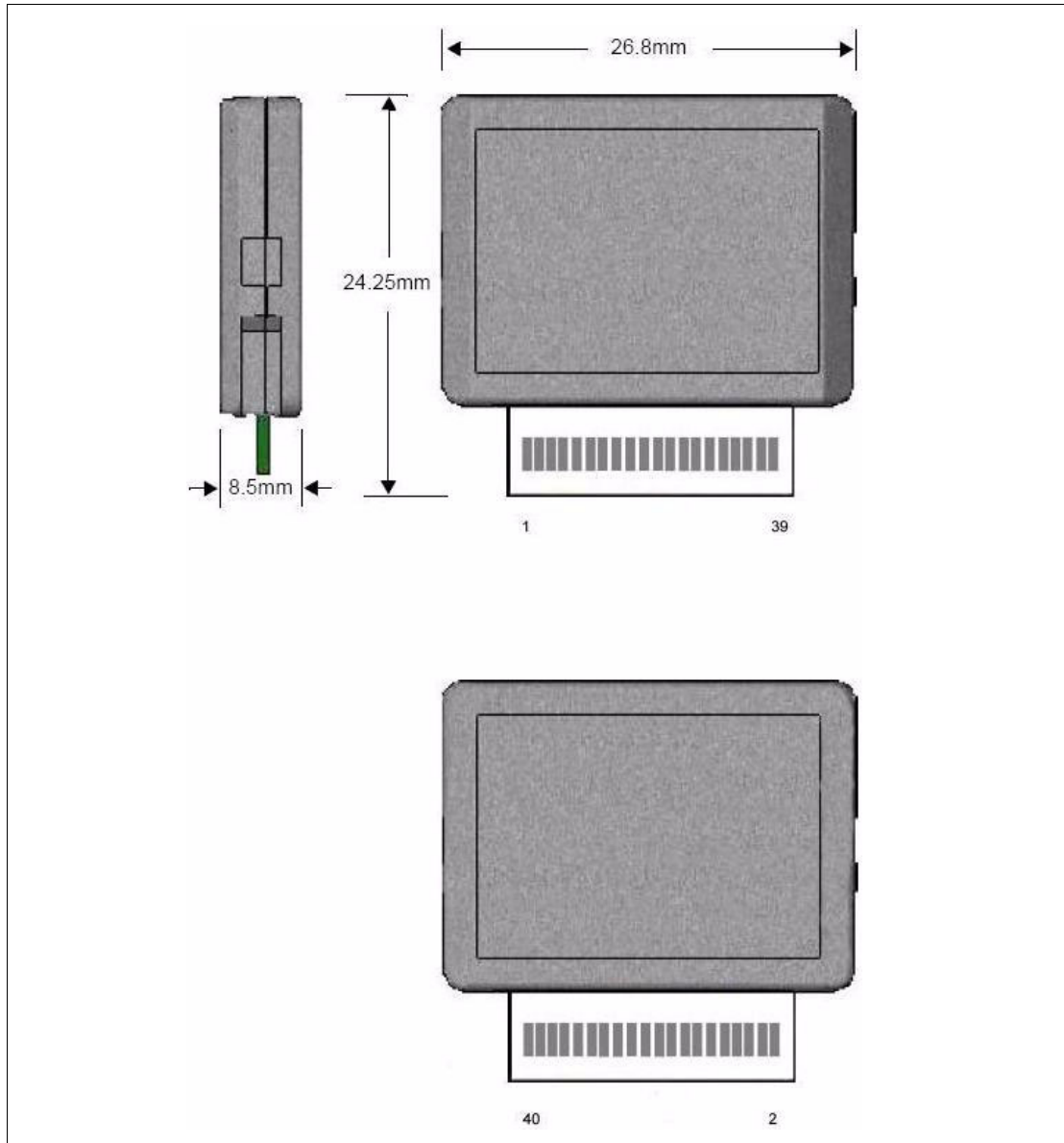


Figure 1: Physical Dimensions

SILICONSYSTEMS PROPRIETARY

This document and the information contained within it is confidential and proprietary to SiliconSystems, Inc. All unauthorized use and/or reproduction is prohibited.

ELECTRICAL SPECIFICATION

PIN ASSIGNMENTS

The following table describes the SiliconDrive USB Blade connector signals.

Table 1: Pin Assignments

Pin	USB Blade	Pin	USB Blade
1	NC	2	GND
3	NC	4	NC
5	NC	6	NC
7	NC	8	V _{CC}
9	NC	10	NC
11	NC	12	NC
13	NC	14	NC
15	GND	16	NC
17	USB+	18	NC
19	USB-	20	NC
21	GND	22	NC
23	NC	24	NC
25	NC	26	NC
27	BLADE_PRSENT#	28	NC
29	NC	30	NC
31	NC	32	NC
33	GND	34	V _{CC}
35	NC	36	NC
37	NC	38	NC
39	NC	40	GND
41	NC	42	NC
43	NC	44	NC

SILICONSYSTEMS PROPRIETARY

This document and the information contained within it is confidential and proprietary to SiliconSystems, Inc.
All unauthorized use and/or reproduction is prohibited.

PRODUCT SPECIFICATIONS

Note: All SiliconDrive USB Blade values quoted are typical at 25°C and nominal supply voltage.

SYSTEM PERFORMANCE

Table 2: System Performance

Read Transfer Rate (Typical)	10MBps
Write Transfer Rate (Typical)	10MBps

SYSTEM POWER REQUIREMENTS

Table 3: System Power Requirements

DC Input Voltage	5.0 ± 5%
Sleep (Standby Current)	500uA
Read (Typical)	100mA
Write (Typical)	110mA

SILICONSYSTEMS PROPRIETARY

This document and the information contained within it is confidential and proprietary to SiliconSystems, Inc.
All unauthorized use and/or reproduction is prohibited.

RELIABILITY**Table 4: Reliability**

MTBF (@ 25°C)	4,000,000 hours
Bit Error Rate	<1 non-recoverable error in 10 ¹⁶ bits read

PROJECTED OPERATIONAL LIFE SPAN**Table 5: Operational Life Span**

SiliconDrive Part#	Capacity	Service Life*	GB Written per Day
SSD-B0004U(C/I)-5800	4GB	52.0 Years	@ 210.9GB
SSD-B0002U(C/I)-5800	2GB	26.0 Years	@ 210.9GB
SSD-B0001U(C/I)-5800	1GB	13.0 Years	@ 210.9GB
SSD-B0051MU(C/I)-5800	512MB	6.5 Years	@ 210.9GB

* There are unlimited read cycles. Service life is determined using SiliconSystems' LifeEST calculation at 100% duty cycle with 25% write cycles.

LifeEST is a comprehensive measurement that considers numerous factors to determine the projected life span of a SiliconDrive. A white paper that describes the benefits of LifeEST and how to calculate it can be found at http://www.siliconsystems.com/resources/Documents/Whitepaper/SiliconSystems_NAND_Evolution.pdf.

The actual life of a SiliconDrive is dependant on the customer usage model. SiSMART is a patented technology of SiliconSystems that enables host systems to monitor actual usage of a SiliconDrive in real time. SiSMART measures and reports the remaining life of a SiliconDrive. For more information on SiSMART, refer to the *Eliminating Unscheduled Downtime by Forecasting Useable Life* white paper at http://www.siliconsystems.com/technology/pdfs/SiliconDrive_SiSMART.pdf.

SILICONSYSTEMS PROPRIETARY

This document and the information contained within it is confidential and proprietary to SiliconSystems, Inc.
All unauthorized use and/or reproduction is prohibited.

ENVIRONMENTAL SPECIFICATIONS**Table 6: Environmental Specifications**

Temperature	0°C to 70°C (Commercial) -40°C to 85°C (Industrial)
Humidity	8% to 95% non-condensing
Vibration	16.3gRMS, MIL-STD-810F, Method 514.5, Procedure I, Category 24
Shock	1000G, Half-sine, 0.5ms Duration 50g Pk, MIL-STD-810F, Method 516.5, Procedure I
Altitude	80,000ft, MIL-STD-810F, Method 500.4, Procedure II

ABSOLUTE MAXIMUM RATINGS**Table 7: Absolute Maximum Ratings**

Parameter	Symbol	Minimum	Maximum	Units
Storage Temperature	T_S	-55	125	°C
Operating Temperature*	T_A	-40	85	°C
Power Supply Voltage Relative to Ground	V_{CC}	-0.3	6.0	V
Input/Output Voltage	V_{IO}	-0.3	$V_{CC} + 0.3$	V

* = Industrial temperature version.

SILICONSYSTEMS PROPRIETARY

This document and the information contained within it is confidential and proprietary to SiliconSystems, Inc.
All unauthorized use and/or reproduction is prohibited.

DC CHARACTERISTICS

Table 8: DC Characteristics

Parameter	Symbol	Test Conditions	Minimum	Typical	Maximum	Unit
Supply Voltage	V_{CC}	-	4.75	5.00	5.25	V
Supply Current (RMS):						
Operating	I_{CC}	$V_{CC} = 5.0V$	-	100	110	mA
Suspend	I_{CCS}	$V_{CC} = 5.0V$	-	<500	<1.0	μA
Input Levels USB Signals (D+, D-):						
Low	V_{IL}	-	-0.3	-	0.8	V
High	V_{IH}	-	2.0	-	$V_{CC} + 0.3$	V
Output Voltage USB Signals (D+, D-):						
Low	V_{OL}	$I_{OL} = 2mA$	-	-	0.4	V
High	V_{OH}	$I_{OH} = -2mA$	2.4	-	-	V
Output Signal Crossover Voltage USB Signals (D+, D-)	V_{CRS}	-	1.3	-	2.0	V

SILICONSYSTEMS PROPRIETARY

This document and the information contained within it is confidential and proprietary to SiliconSystems, Inc.
All unauthorized use and/or reproduction is prohibited.

SALES AND SUPPORT

To order or obtain information on pricing and delivery, contact your SiliconSystems Sales Representative.

PART NUMBERING

NOMENCLATURE

The following table defines the SiliconDrive USB Blade part numbering scheme.

SSD- (Product Family)	B (Form Factor)	YYYY (Capacity)	X (Interface)	X (Temperature)	-5800 (Part Number Suffix)
			U = USB	<ul style="list-style-type: none"> • C = 0°C – 70°C • I = -40°C – 85°C 	
		Capacity: 0051M = 512MB to 0004 = 4GB			
	B = Blade				
SiliconSystems' SiliconDrive					

PART NUMBERS

The following table lists the SiliconDrive's part numbers.

Table 9: Part Numbers

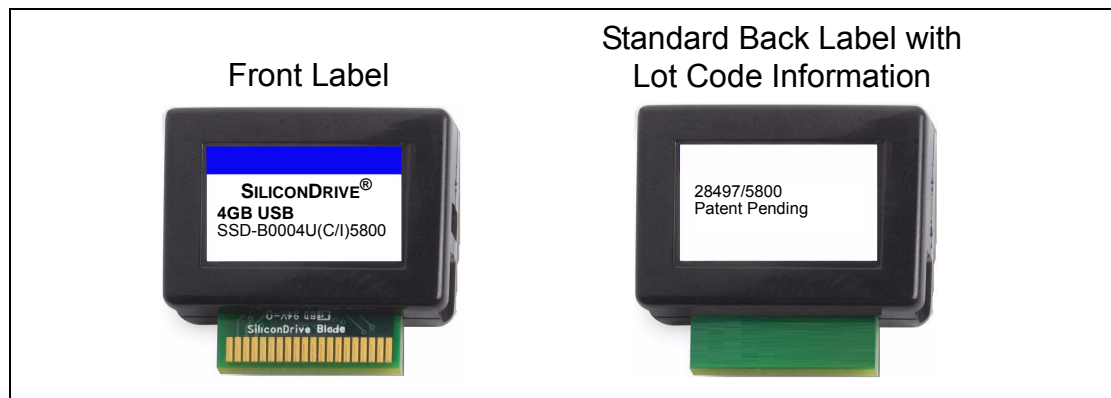
Part Number	Capacity
SSD-B0004U(C/I)-5800	4GB
SSD-B0002U(C/I)-5800	2GB
SSD-B0001U(C/I)-5800	1GB
SSD-B0051MU(C/I)-5800	512MB

SILICONSYSTEMS PROPRIETARY

This document and the information contained within it is confidential and proprietary to SiliconSystems, Inc.
All unauthorized use and/or reproduction is prohibited.

ROHS 6 OF 6 PRODUCT LABELING — Pb-FREE IDENTIFICATION LABEL

The Pb-free identification label indicates that the enclosed components/ devices and/or assemblies do not contain any lead (i.e., they are lead-free, as defined in RoHS directive 2002/95/ED). The above symbol is on all RoHS 6 of 6 compliant product labels, as seen in [Figure 2](#).

SAMPLE LABEL**Figure 2: Sample Label****SILICONSYSTEMS PROPRIETARY**

This document and the information contained within it is confidential and proprietary to SiliconSystems, Inc.
All unauthorized use and/or reproduction is prohibited.

RELATED DOCUMENTATION

For more information, visit www.siliconsystems.com or contact your SiliconSystems Sales Representative.

Table 10: Related Documentation

SiliconDrive Application-Specific Technology	Description	Document Number
PowerArmor	Eliminates drive corruption.	<i>Eliminating Drive Corruption from Power Disturbances White Paper</i> (http://www.siliconsystems.com/technology/pdfs/SiliconDrive_PowerArmor.pdf)
SiProtect	Protection software for password-required, read/write, or read-only access.	<i>Designing Robust Security Options for Embedded Systems</i> (http://www.siliconsystems.com/technology/pdfs/SiliconDrive_SiSecure.pdf)
SiSweep	Ultra-fast data erasure.	<i>Designing Robust Security Options for Embedded Systems</i> (http://www.siliconsystems.com/technology/pdfs/SiliconDrive_SiSecure.pdf)
SiPurge	Non-recoverable data erasure.	<i>Designing Robust Security Options for Embedded Systems</i> (http://www.siliconsystems.com/technology/pdfs/SiliconDrive_SiSecure.pdf)



SILICONSYSTEMS PROPRIETARY

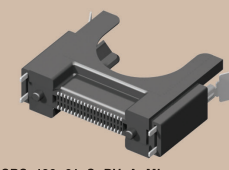
This document and the information contained within it is confidential and proprietary to SiliconSystems, Inc.
All unauthorized use and/or reproduction is prohibited.

CONNECTOR INFORMATION

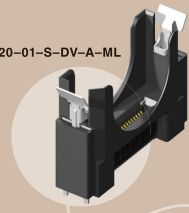
The following contains SiliconDrive mating connector information.

F-208-1



SBS-120-01-S-DV-A-ML



SBS-120-01-S-DV-A-ML

SILICON BLADE SOCKET SBS SERIES

SPECIFICATIONS

For complete specifications and recommended PCB layouts see www.samtec.com/SBS

Insulator Material:
Black Liquid Crystal Polymer

Contact:
BeCu

Plating:
Au over 50µ" (1.27µm)
Ni on contact

Current Rating:
3.1A @ 30°C Temperature Rise

Operating Temp:
-55°C to +125°C



RoHS Compliant:
Yes

Processing:
Max Processing Temp:
230°C for 60 seconds, or
260°C for 20 seconds 3x

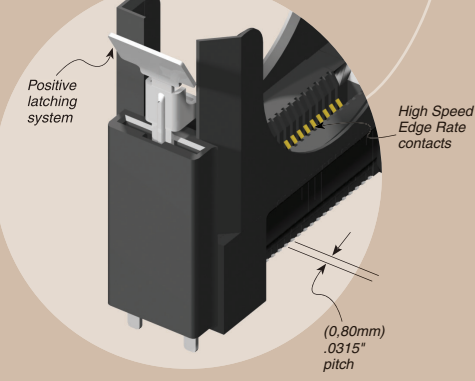
Lead-Free Solderable:
Yes

SMT Lead Coplanarity:
(0,10mm) .004" max

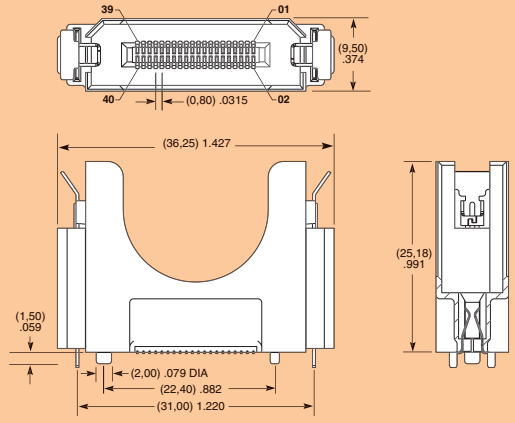
Mates with:
SiliconSystems
SiliconBlade
products

APPLICATION



SBS	1	NO. OF PINS PER ROW	CARD THICKNESS	PLATING OPTION	DV	A	OTHER OPTION
			-01	-S			-ML
			= (1,60mm) .062" thick card	= 30µ" (0,76µm) Gold on contact, Matte Tin on tail			= Metal Latch



Note: Some lengths, styles and options are non-standard, non-returnable.

Due to technical progress, all designs, specifications and components are subject to change without notice.

SAMTEC USA • Tel: 1-800-SAMTEC-9 or 812-944-6733 • Fax: 812-948-5047 SAMTEC SILICON VALLEY • Tel: 408-395-5900 • Fax: 408-395-1520 SAMTEC UK • Tel: 01236 739292 • Fax: 01236 727113
 SAMTEC GERMANY • Tel: +49 (0) 89 89460 0 • Fax: +49 (0) 89 89460 259 SAMTEC FRANCE • Tel: 01 60 95 06 60 • Fax: 01 60 95 06 61 SAMTEC ITALY • Tel: 39 039 8980337 • Fax: 39 039 8980315
 SAMTEC NORDIC/BALTIC • Tel: +46-84477280 • Fax: +46-844702413 SAMTEC ISRAEL • Tel: 972-3-7530900 • Fax: 972-3-7530950 SAMTEC INDIA • Tel: +91-80-2272 1512 • Fax: +91-80-4152 6167
 SAMTEC ASIA PACIFIC • Tel: 65 6745-5955 • Fax: 65 6841-1502 SAMTEC JAPAN • Tel: 045-475-1385 • Fax: 045-475-1340 SAMTEC CHINA • Tel: 86-21-61103766 • Fax: 86-21-5423 4575 SAMTEC TAIWAN • Tel: 886-2-2735-6109 • Fax: 886-2-2735-5036
 SAMTEC HONG KONG • Tel: 852-26904858 • Fax: 852-26904842 SAMTEC KOREA • Tel: 82-31-717-5685 • Fax: 82-31-717-5681 SAMTEC SOUTH AFRICA • Tel: 27 11 454 4317 • Fax: 27 86 6714432 SAMTEC ANZ • Tel: 613 9512 7747 • Fax: 613 9512 7745

Figure 3: USB Blade Mating Connector Information

SILICONSYSTEMS PROPRIETARY

This document and the information contained within it is confidential and proprietary to SiliconSystems, Inc. All unauthorized use and/or reproduction is prohibited.

SiliconSystems' performance tests, ratings, and product specifications are measured using specific computer systems and/or components and reflect the approximate performance of SiliconSystems' products as measured by those tests. Any difference in system hardware or software design or configuration, as well as system use, may affect actual test results, ratings, and product specifications. SiliconSystems welcomes user comments and reserves the right to revise this document and/or make updates to product specifications, products, or programs described without notice at any time. SiliconSystems makes no representations or warranties regarding this document. The names of actual companies and products mentioned herein are the trademarks of their respective owners.

SiliconSystems®, SiliconDrive®, SiliconDrive® II, SiliconDrive® III, SiSecure™, SiliconDrive EP®, PowerArmor®, SiSMART®, SiKey™, SiZone™, SiProtect™, SiSweep™, SiPurge™, SiScrub™, SiliconDrive USB Blade®, SolidStor™, SiSTOR™, LifeEST™, and the SiliconSystems logo are trademarks or registered trademarks of SiliconSystems, Inc. and may be used publicly only with the permission of SiliconSystems and require proper acknowledgement. Other listed names and brands are trademarks or registered trademarks of their respective owners.

1 Megabyte (MB) equals 1 Million Bytes; 1 Gigabyte (GB) equals 1 Billion Bytes. Accessible capacity may vary depending on the operating environment.

© Copyright 2009 by SiliconSystems, Inc. All rights reserved. No part of this publication may be reproduced without the prior written consent of SiliconSystems.

SILICONSYSTEMS PROPRIETARY

This document and the information contained within it is confidential and proprietary to SiliconSystems, Inc.
All unauthorized use and/or reproduction is prohibited.