



BSE-Series

Silicom Ethernet Managed Bypass Switch Specifications

Product Description

Silicom Managed Bypass Switch is designed for 10 / 1 Gigabit Ethernet networks. The Silicom managed Bypass switch is targeted to maintain network connectivity when the in-line system fails. The Managed Bypass switch is based on reliable a passive switch, console management port and on board watch dog timer controller.

Silicom Managed Bypass switch supports two modes of operations: Normal and Bypass. In Normal modes, the Bypass switch diverts the network traffic to attached in-line network system. In Bypass mode, the inline traffic is diverted to the network link and no longer routed to the in-line device. The Managed Bypass Switch can be programmed to Bypass its Ethernet ports on event of power fail, Link fail or user request.

The Silicom Managed Bypass switch includes an on board Watchdog timer controller (WDT) and a passive switch. The on board WDT controller can receive heartbeat “alive” packet via its serial communication console, USB, or its Ethernet port (selected models).

The Silicom Managed Bypass switch can be shipped as a stand alone unit (BSS) or as a rackmount 1U host system (BS1U). The rackmount 1U host system support up to four Bypass modules. Each Bypass module supports a Bypass segment. The Bypass modules in the 1U host system can be chained in order to enable multi-Bypass segment to support systems with limited management accessibility.

Stand Alone unit

The Silicom Managed Bypass switch a stand-alone flavor includes four 10 / 1 Gigabit Ethernet data ports. Console management include Serial (RJ11), USB and Ethernet port (selected models). The stand-alone flavor includes an external +12V power supply.

Figure: 1- Front panel view of BSSF-CEM



1U Rackmount host system

The 1U host system that supports up to four Bypass Switch modules. The Bypass switch host includes two redundant internal dual 110 – 220 V AC power supplies.

The Silicom Managed Bypass switch host supports two types of Bypass switch modules, a controller (-C) and a slave (-S). A controller Bypass switch (-C) module includes data ports and management ports. A slave module includes data ports only. A controller Bypass module (-C) and a slave Bypass module can be chained 1U host system. The chain of modules was designed in order support systems with limited management accessibility that requires multi-Bypass segment configurations.

Figure: 2 – Front panel view of BS1U with four BSF-CEM



Key Features

- Bypass Ethernet ports on Power Fail, System Hangs, management port fail, Software Application Hangs or user request
- Software programmable Bypass or Normal Mode
- On Board Watch Dog Timer (WDT) Controller
- Software programmable time out interval
- Software Programmable WDT Enable / Disable counter
- Software programmable Bypass Capability Enable / Disable: Can be also in Normal mode at power off
- Built-in Bypass circuitry, which operates in host system fails, Power OFF and programmable software
- Programmable state (Bypass mode or Normal mode) at switch and host Power up, switch and host power off
- Independent Bypass / Normal operation in every module
- Reliable passive switch architecture
- Chained configuration: enable multi-Bypass segment to support systems with limited management accessibility

10G / 1G Fiber Multi-mode

- Supports Fiber Gigabit Ethernet (1000Base-SX)
- Supports Short Range Fiber 10 Gigabit Ethernet (10GBase-SR)

10G / 1G Fiber Single – mode

- Supports Fiber Gigabit Ethernet (1000Base-LX)
- Supports Long Range Fiber 10 Gigabit Ethernet (10GBase-SR)

Bypass Switch 1U Host switch (BS1U)

- Enable chaining modules – one console can control several slave modules in the system
- 1U mechanical specification
- Dual internal 110 – 220V AC Power supply for redundancy

Technical Specifications

Multi-Mode: Fiber Gigabit Ethernet Technical Specifications – (10GBase-SR)

IEEE Standard / Network topology	Fiber Gigabit Ethernet, 10GBase-SR (850nM)
Data Transfer Rate	20Gbit/s in full duplex mode per port
Cables and Operating distance	Multimode fiber:62.5um 16.5m maximum at 62.5 um ** Theoretical Distance – Defined as half a distance as stated by the IEEE 802.3 standard
Insertion loss (Normal)	Typical: 0.8 dB Maximum: 1.9 dB
Insertion Loss (Bypass)	Typical: 0.8 dB Maximum 1.9 dB

Fiber Gigabit Ethernet General Technical Specifications – (1000Base-SX)

IEEE Standard / Network topology	Fiber Gigabit Ethernet, 1000Base-SX (850nM)
Cables and Operating distance	Multimode fiber: 137m maximum at 62.5 um ** **Theoretical Distance – Defined as half a distance as stated by the IEEE 802.3 standard
Insertion Loss (Normal Mode)	Typical: 0.8 dB Maximum: 1.9 dB
Insertion Loss (Bypass Mode)	Typical: 0.8 dB Maximum: 1.9 dB

Single-Mode: Fiber 10Gigabit Ethernet Technical Specifications – (10G Base-LR) Adapters

IEEE Standard / Network topology	Fiber Gigabit Ethernet, 10Base-LR (1310nM)
Data Transfer Rate	20Gbit/s in full duplex mode per port
Cables and Operating distance	Multimode fiber:9um 5000m maximum at 9 um ** Theoretical Distance – Defined as half a distance as stated by the IEEE 802.3 standard

Insertion Loss (Normal Mode)	Typical: 1.2 dB Maximum: 1.6 dB
Insertion Loss (Bypass Mode)	Typical: 1.2 dB Maximum: 1.6 dB
Fiber Gigabit Ethernet Technical Specifications – (1000Base-LX) Adapters	
IEEE Standard / Network topology	Fiber Gigabit Ethernet, 1000Base-LX (1310nm)
Data Transfer Rate	2000Mbit/s in full duplex mode per port
Cables and Operating distance	Single-Mode fiber: 9um 2500m maximum at 9um ** ** Theoretical Distance – Defined as half a distance as stated by the IEEE 802.3 standard
Insertion Loss (Normal Mode)	Typical: 1.2 dB Maximum: 1.6 dB
Insertion Loss (Bypass Mode)	Typical: 1.2 dB Maximum: 1.6 dB
Bypass Specification	
WDT Interval (Software Programmable)	3,276,800 mSec (3,276.8 Sec): Maximum 100 mSec (0.1 Sec) : Minimum WDT Interval = (2^wdt_interval_parameter)*(0.1) sec. wdt_interval_parameter: { Valid Range: 0-15}
Bypass Switch stand alone : BSSF-CEM / -CES Stand alone, stand alone Controller Multi-Mode and Single Mode	
Size	x 152mm x 120.5mm x 24mm (6" x 4.75" x 1") Wide x Depth X Height
Voltage	+12V (Min 11.4, Max, 12.6V)
Operating Humidity	0%–90%, non-condensing
Operating Temperature	0°C – 50°C (32°F – 122°F)
Storage Temperature	-20°C–65°C (-4°F–149°F)

EMC Certifications	Class B
MTBF*	> 50 years
BSF : LED Connector Specifications	
LEDs:	(3) LEDs per Power Normal Alarm
Connectors	(4) LC per segment RJ11 console USB console RJ45 console
BS1U: Bypass Switch 1U Host system	
Dockings	Front holders 1U rack mount
Voltage Input	AC: 90-240 VAC Auto-Select
Size	444mm x 270 mm x 44 mm (17.48" x 10.63" x 1.732") Wide x Depth X Height
Operating Humidity	0%–90%, non-condensing
Operating Temperature	0°C – 50°C (32°F – 122°F)
Storage Temperature	-20°C–65°C (-4°F–149°F)
EMC Certifications	Class B
MTBF*	> 50 years
BSF-CEM/ -CES 1U module Controller Multi-Mode and Single Mode	
Size	129mm x 100mm (7.709" x 3.937")
Voltage	+12V (Min 11.4, Max, 12.6V)
Operating Humidity	0%–90%, non-condensing

Operating Temperature	0°C – 50°C (32°F – 122°F)
Storage Temperature	-20°C–65°C (-4°F–149°F)
EMC Certifications	Class B
MTBF*	> 50 years

BSF-CEM/ -CES 1U: LED and Connector Specifications

LEDs	(3) LED Power Normal Alarm
Connectors	(4) LC per segment RJ11 console USB console RJ45 console

BSF-SEM/ -SES 1U module Slave Multi-Mode and Single Mode

Size	129mm x 100mm (7.709" x 3.937")
Voltage	+12V (Min 11.4, Max, 12.6V)
Operating Humidity	0%–90%, non-condensing
Operating Temperature	0°C – 50°C (32°F – 122°F)
Storage Temperature	-20°C–65°C (-4°F–149°F)
EMC Certifications	Class B
MTBF*	> 50 years

BSF-SEM/ -SES 1U Slave Module: LED and Connector Specifications

LEDs:	(3) LED Power Normal Alarm
Connectors	(4) LC per segment

Functional Description

Figure: 3 – Normal Mode Functional Block Diagram

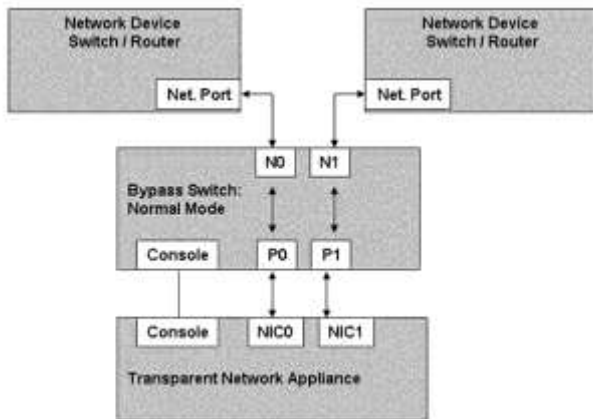
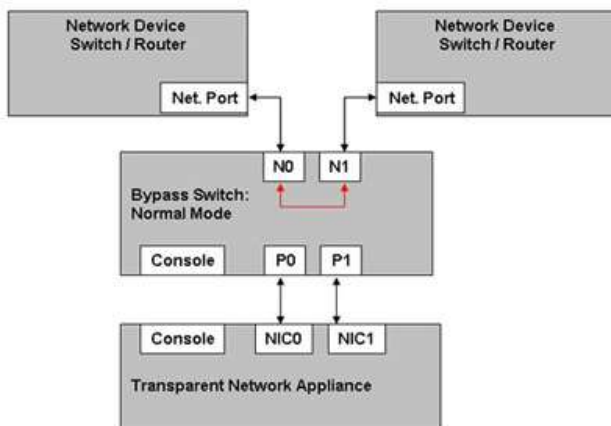


Figure: 4 – Bypass Mode Functional Block Diagram



Order Information

P/N	System Format	Media	Console Port	Media Type	-XY-XY-XY	Power Cord	-R
Managed Bypass Switch	1U: 1U S: Stand Alone	F: Fiber T: Copper	-SE: Slave -CE: Controller w/Ethernet	M: Multimode S: Single mode T: Copper	For additional modules console port and media type: X: C / S / CE Y: M/S/T	-US -EU -CN -48	ROHS

Stand Alone

P/N	Description	Notes
BSSF-CEM- US-R	10 /1 Gigabit (MM) Fiber Managed Bypass switch	Stand alone, controller Multimode, w/ US style power cable, Ethernet, serial and USB management cables.
BSSF-CEM- EU-R	10 /1 Gigabit (MM) Fiber Bypass Managed Switch	Stand alone, controller Multimode, w/ EU style power cable, Ethernet, serial and USB management cables
BSSF-CEM- CN-R	10 /1 Gigabit (MM) Fiber Bypass Managed Switch	Stand alone, controller Multimode, w/ CN style power cable, Ethernet, serial and USB management cables.
BSSF-CES- US-R	10 /1 Gigabit (SM) Fiber Bypass Managed switch	Stand alone, controller Singlemode, w/ US style power cable, Ethernet serial and USB management cables
BSSF-CES- EU-R	10 /1 Gigabit (SM) Fiber Managed Bypass Switch	Stand alone, controller Singlemode, w/ EU style power cable, Ethernet, serial and USB management cables
RK-1U-2-BSS	1U Rack Mount Kit for two BSS products	

1U Host System

P/N	Description	Notes
BS1U-CEM-US-R	1U w/ 10 /1 Gigabit (MM) Fiber Managed Bypass Switch 1U	1U host with one controller Multimode, w/ US style power cable, Ethernet, serial and USB management cables
BS1U-CEM-CN-R	1U w/ 10 /1 Gigabit (MM) Fiber Managed Bypass Switch 1U	1U host with one controller Multimode, w/ CN style power cable, Ethernet, serial and USB management cables
BS1U-CES-US-R	1U w/ 10 /1 Gigabit (SM) Fiber Managed Bypass Switch 1U	1U host with one controller Single mode, w/ US style power cable, Ethernet, serial and USB management cables
BS1U-CEM-SM-US-R	1U w/ Two 10 /1 Gigabit (MM) Fiber Managed Bypass Switch	1U host with one controller, one slave Multimode, w/ US style power cable, Ethernet,

		serial and USB management cables
BS1U-CES-SS-US-R	1U w/ Two 10 /1 Gigabit (SM) Fiber Managed Bypass Switch	1U host with one controller, one slave Single mode, w/ US style power cable, Ethernet, serial and USB management cables
BS1U-CEM-CM-EU-R	1U w/ Two 10 /1 Gigabit (MM) Fiber Bypass Switch	1U host with with two Multimode, controller w/ EU style power cable, Ethernet, serial and USB management cables
BS1U-US-RoHS	Bypass Switch 1U Host System	1U host system w. US style power cable
BS1U-EU-RoHS	Bypass Switch 1U Host System	1U host system w / EU style power cable
BS1U-CN-RoHS	Bypass Switch 1U Host System	1U host system w / CN style power cable
BS1U-48-RoHS	Bypass Switch 1U Host System	1U host system w / -48V redundant power supply
BSF-CEM-R	10/1 Gigabit (MM) Fiber Managed Bypass switch	Add-in module, controller Multimode, w/, Ethernet serial and USB management cables
BSF-CES-R	10/1 Gigabit (SM) Fiber Managed Bypass switch	Add-in module, controller single, w/ serial, Ethernet and USB management cables
BSF-SEM-R	10/1 Gigabit (MM) Fiber Managed Bypass switch	Add-in module, slave Multimode, w/ serial, Ethernet and USB management cables.
BSF-SES-R	10/1 Gigabit (SM) Fiber Managed Bypass switch	Add-in module, slave single, w/ serial, Ethernet and USB management cables

Note: Model P/N

-US: Includes US power cable (90-240 VAC Auto-Select)

-EU: Includes EU power cable (90-240 VAC Auto-Select)

-CN: Includes CN power cable (90-240 VAC Auto-Select)

-48: (-75 – -36) VDC

1V5