# Pro**Labs**

# SMCBGSSCX1-C

SMC Networks® SMCBGSSCX1 Compatible TAA 1000Base-SX GBIC Transceiver (MMF, 850nm, 550m, SC)

# Features:

- SFF-8053 Compliance
- Duplex SC Connector
- Multi-mode Fiber
- Commercial Temperature 0 to 70 Celsius
- Hot Pluggable
- Metal with Lower EMI
- Excellent ESD Protection
- RoHS Compliant and Lead Free



#### **Applications:**

- 1000Base-SX Ethernet
- 1x Fibre Channel
- Access and Enterprise

# **Product Description**

This SMC Networks<sup>®</sup> SMCBGSSCX1 compatible GBIC transceiver provides 1000Base-SX throughput up to 550m over multi-mode fiber (MMF) using a wavelength of 850nm via a SC connector. It is guaranteed to be 100% compatible with the equivalent SMC Networks<sup>®</sup> transceiver. This easy to install, hot swappable transceiver has been programmed, uniquely serialized and data-traffic and application tested to ensure that it will initialize and perform identically. It is built to meet or exceed the specifications of SMC Networks<sup>®</sup>, as well as to comply with MSA (Multi-Source Agreement) standards to ensure seamless network integration. This transceiver is Trade Agreements Act (TAA) compliant. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

ProLabs' transceivers are RoHS compliant and lead-free.

TAA refers to the Trade Agreements Act (19 U.S.C. & 2501-2581), which is intended to foster fair and open international trade. TAA requires that the U.S. Government may acquire only "U.S. – made or designated country end products."



Rev. 041423

# **Absolute Maximum Ratings**

Parameter	Symbol	Min.	Max.	Unit
Supply Voltage	Vcc	-0.5	4.0	V
Storage Temperature	TS	-40	85	°C
Operating Humidity	RH	5	95	%

# **Recommended Operating Conditions**

Parameter	Symbol	Min.	Тур.	Max.	Unit
Power Supply Voltage	Vcc	3.13	3.30	3.47	V
Power Supply Current	lcc			250	mA
Case Operating Temperature – Commercial	Тс	0		70	°C
Case Operating Temperature – Industrial	Ti	-40		85	°C
Data Rate (Gigabit Ethernet)			1.25		Gbps
Data Rate (Fibre Channel)			1.063		Gbps
50/125μm MMF	L			550	m

# Electrical Characteristics (TOP=25°C, Vcc=3.3V)

Parameter	Symbol	Min.	Тур.	Max.	Unit	Notes	
Transmitter							
Input differential impedance	Rin	85	100	115	Ω	1	
Single ended data input swing	Vin, pp	250		1200	mV		
TX Disable-High		2		3.45	V		
TX Disable-Low		0		0.8	V		
TX Fault-High		2		Vcc+0.3	V		
TX Fault-Low		0		0.5	V		
Receiver							
Single ended data output swing	Vout, pp	300	400	800	mV	2	
Data output rise time	tr			175	ps	3	
Data output fall time	tf			175	ps	3	
LOS-High		2		Vcc+0.3	V		
LOS-Low		0		0.8	V		

# Notes:

1. AC coupled.

- 2. Into 100 ohm differential termination.
- 3. 20% 80%

# **Optical and Electrical Characteristics**

Parameter	Symbol	Min.	Тур.	Max.	Unit	Notes	
Transmitter							
Average Output Power	РО	-9.5		-4	dBm	1	
Optical Wavelength	λ	830	850	860	nm		
Spectral Width	σ			0.85	nm		
Optical Rise/Fall Time	tr/tf			260	ps	2	
Total Jitter	TJ			56.5	ps		
Optical Extinction Ratio	ER	9			dB		
Receiver							
Receiver Sensitivity	RSENS			-18	dBm	3,4	
Maximum Received Power	RX <sub>MAX</sub>	0			dBm		
Centre Wavelength	λC	770		860	nm		
LOS De-Assert	LOSD			-19	dBm		
LOS Assert	LOSA	-35			dBm		
LOS Hysteresis		0.5		5	dB		

#### Notes:

- 1. Class 1 Laser Safety.
- 2. Unfiltered, 20%-80%. Complies with GE and 1x FC eye masks when filtered.
- 3. Measured with conformance signals defined in FC-PI-2 Rev. 10.0 specifications.
- 4. Measured with PRBS  $2^{7}$ -1 at  $10^{-10}$  BER.

#### **Pin Descriptions**

Pin	Symbol	Name/Descriptions	Ref.
1	RX_LOS	Receiver Loss of Signal, logic high, open collector compatible, 4.7K to 10K Ohm pullup to VDDT on host	
2	RGND	Receiver Ground (may be connected with TGND in GBIC)	2
3	RGND	Receiver Ground (may be connected with TGND in GBIC)	2
4	MOD DEF (0)	GBIC module definition and presence, bit 0, 4.7K to 10K Ohm pullup to VDDT on host	2
5	MOD_DEF (1)	GBIC module definition and presence, bit 1, 4.7K to 10K Ohm pullup to VDDT on host	2
6	MOD_DEF (2)	GBIC module definition and presence, bit 2, 4.7K to 10K Ohm pullup to VDDT on host	2
7	TX_DISABLE	Transmitter Disable, logic high, open collector compatible, 4.7K to 10K Ohm pullup to VDDT on GBIC	2
8	TGND	Transmitter Ground (maybe connected with RGND internally)	2
9	TGND	Transmitter Ground (maybe connected with RGND internally)	2
10	TX_FAULT	Transmitter Fault, logic high, open collector compatible, 4.7K to 10K Ohm pullup to VDDT on host	2
11	RGND	Receiver Ground (may be connected with TGND in GBIC)	1
12	-RX_DAT	Receive Data, Differential PECL	1
13	+RX_DAT	Receive Data, Differential PECL	1
14	RGND	Receiver Ground (may be connected with TGND in GBIC)	1
15	VDDR	Receiver +5 volt (maybe connected with VDDT in GBIC)	2
16	VDDT	Transmitter +5 volt (maybe connected with VDDR in GBIC)	2
17	TGND	Transmitter Ground (maybe connected with RGND internally)	1
18	+TX_DAT	Transmit Data, Differential PECL	1
19	-TX_DAT	Transmit Data, Differential PECL	1
20	TGND	Transmitter Ground (maybe connected with RGND internally)	1

#### Notes:

- TX Fault is open collector/drain output, which should be pulled up externally with a 4.7K 10KΩ resistor on the host board to supply <VccT+0.3V or VccR+0.3V. When high, this output indicates a laser fault of some kind. Low indicates normal operation. In the low state, the output will be pulled to <0.8V.</li>
- 2. TX Disable input is used to shut down the laser output per the state table below. It is pulled up within the module with a 4.7-10K resistor. Low (0V-0.8V): Transmitter on between (0.8V and 2V): Undefined High (2.0-VccT): Transmitter Disabled Open: Transmitter Disabled.



Pin-out of connector Block on Host board

#### **Recommended Circuit Schematic**



### **Mechanical Specifications**



# **EEPROM Information**

EEPROM memory map specific data field description is as below:



#### **About ProLabs**

Our experience comes as standard; for over 15 years ProLabs has delivered optical connectivity solutions that give our customers freedom and choice through our ability to provide seamless interoperability. At the heart of our company is the ability to provide state-of-the-art optical transport and connectivity solutions that are compatible with over 90 optical switching and transport platforms.

#### **Complete Portfolio of Network Solutions**

ProLabs is focused on innovations in optical transport and connectivity. The combination of our knowledge of optics and networking equipment enables ProLabs to be your single source for optical transport and connectivity solutions from 100Mb to 400G while providing innovative solutions that increase network efficiency. We provide the optical connectivity expertise that is compatible with and enhances your switching and transport equipment.

# **Trusted Partner**

Customer service is our number one value. ProLabs has invested in people, labs and manufacturing capacity to ensure that you get immediate answers to your questions and compatible product when needed. With Engineering and Manufacturing offices in the U.K. and U.S. augmented by field offices throughout the U.S., U.K. and Asia, ProLabs is able to be our customers best advocate 24 hours a day.



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