

Description

General

The transceiver from SANOC is the industry standard 1x9 package with duplex fiber optical connector for serial optical data Communications applications specify of Gigabit Ethernet IEEE802.3z/D5 and Fiber Channel. This module is designed for single-mode -fiber (SMF) and operates at a nominal wavelength of 1310 nm with cost effective and high performance.

Transmitter Section

The transmitter consists of a high-performance 1310 nm Fabry-Perot (FP) laser or MQW DFB structure laser in the optical subassembly (OSA), which is housed within a metal package. In addition, this component is also class 1 laser compliant with according to International Safety Standard IEC-825 Compliant. Complies with EN60825-1 and FDA 21 CFR 1040.10 and 1040.11

Receiver Section

The receiver contain of an InGaAs PIN photodiode coupled to a high sensitivity transimpedance amplifier (TIA) in an OSA. This OSA combination is mated to a post amplifier IC that provides the post amplification and SD (Signal Detection) or LOS (Loss of Signal) indication circuit, which provides logic high state output when an unusable input optical signal level is detected.



1x9 Duplex SMF Transceiver	
SC Type	SC1312-10/15/20/40ATOC(WT)
FC Type	SD1312-10/15/20/40ATOG(WT)
ST Type	SE1312-10/15/20/40ATOG-P/M(WT)

Features

- Single + 3.3V power supply
- Differential Inputs and Outputs
- Industry Standard 1x 9 Footprint.
- Compliant with Specification for IEEE802.3z / D5
- Compliant with Specification for Fiber Channel
- Class 1 Laser International Safety Standard IEC 825 Compliant. Complies with EN60825-1 and FDA 21 CFR 1040.10 and 1040.11
- Commercial Operation Temp.: 0 °C to +70 °C
- Industrial Operation Temp.: -40 °C to +85 °C
- RoHS Compliant

Applications

- Bridges/Routers/intelligent hub and concentrators
- Gigabit Ethernet / Fiber Channel
- Storage Area Network

Performance Specifications

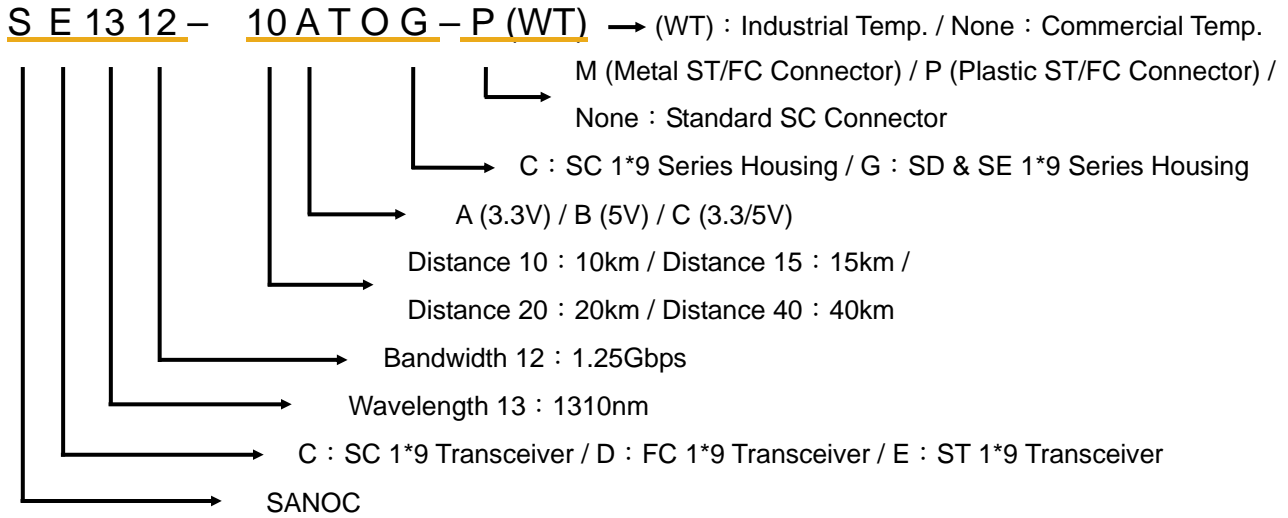
Absolute Maximum Ratings						
Parameter		Symbol	Min	Typ	Max	Unit
Supply Voltage		V _{CC}	0	-	4	V
Storage Temperature		T _S	-40	-	85	°C
Operating Temperature	Commercial	T _{OP-com}	0	-	70	°C
	Industrial	T _{OP-ind}	-40	-	85	°C
Lead Soldering Limits		T _{SOLD}	-	-	260/10	°C /sec
General Specifications						
Parameter		Symbol	Min	Typ	Max	Units
Data Rate		B	0.80	1.25	1.50	Gbps
Supported Link Length on 9/125µm SMF	for 1312-10	L	10	-	-	Km
	for 1312-15		15	-	-	Km
	for 1312-20		20	-	-	Km
	for 1312-40		40	-	-	Km
Supply Current		I _{Tx+Rx}	-	-	300	mA
Power Dissipation		P _{Dis}	-	-	1000	mW

Optical and Electrical Characteristics

Transmitter Electrical Characteristics						
Parameter	Symbol	Min	Typ	Max	Unit	
Supply Voltage	V _{CC}	3.15	3.3	3.45	V	
Data Differential Input Voltage	V _{in, pp}	400	-	2000	mV	
Disable Input Voltage	V _{IL} - V _{CC}	-1.81	-	-1.48	V	
Enable Input Voltage	V _{IH} - V _{CC}	-1.16	-	-0.88	V	
Transmitter Optical Characteristics						
Parameter	Symbol	Min	Typ	Max	Unit	
Output Optical Power on 9/125μm SMF	P _O	for 1312-10/15/20	-9	-	-3	dBm
		for 1312-40	-2	-	+3	dBm
Center Wavelength	λ _C	1280	1310	1340	nm	
Side Mode Suppression Ratio	SMSR	30	-	-	dB	
Spectral Width (-20dB)	Δλ _{20dB}	-	-	1	nm	
Spectral Width (RMS)	Δλ _{RMS}	-	-	2	nm	
Optical Rise Time (20%-80%)	t _r	-	-	0.26	ns	
Optical Fall Time (20%-80%)	t _f	-	-	0.26	ns	
Extinction Ratio	ER	8.2	-	-	dB	

Receiver Electrical Characteristics						
Parameter	Symbol	Min	Typ	Max	Unit	
Supply Voltage	V _{CC}	3.15	3.3	3.45	V	
Data Differential Output Voltage	V _{out, pp}	500	-	1200	mV	
Signal Detect Output voltage-High	V _{OH}	for PECL	V _{CC} -1.1	-	V _{CC} -0.74	V
		for TTL	2.0	-	V _{CC}	V
Signal Detect Output voltage-Low	V _{OL}	for PECL	V _{CC} -2.0	-	V _{CC} -1.58	V
		for TTL	0	-	0.8	V
Data Output Rise Time (20%-80%)	t _r	-	-	0.35	ns	
Data Output Fall Time (20%-80%)	t _f	-	-	0.35	ns	
Receiver Optical Characteristics						
Parameter	Symbol	Min	Typ	Max	Unit	
Maximum Receiver Power	P _{in}	-3	-	-	dBm	
Receiver Sensitivity	P _S	for 1312-10	-	-	-21	dBm
		for 1312-15/20	-	-	-23	dBm
		for 1312-40	-	-	-24	dBm
Operating Wavelength	λ _C	1100	-	1600	nm	
Optical Return Loss	P _R	-	-	12	dB	
Signal Detect-Asserted	P _A	for 1312-10	-	-	-21	dBm avg.
		for 1312-15/20	-	-	-23	dBm avg.
		for 1312-40	-	-	-24	dBm avg.
Signal Detect-Deasserted	P _D	-36	-	-	dBm avg.	
Signal Detect-Hysteresis	P _A -P _D	0.5	-	-	dB	

Ordering Information



- ◎ SE1312-10ATOG-P : Plastic connector
- ◎ SE1312-10ATOG-M : Metal connector

Recommended Circuit Schematic

Data Input/Output :

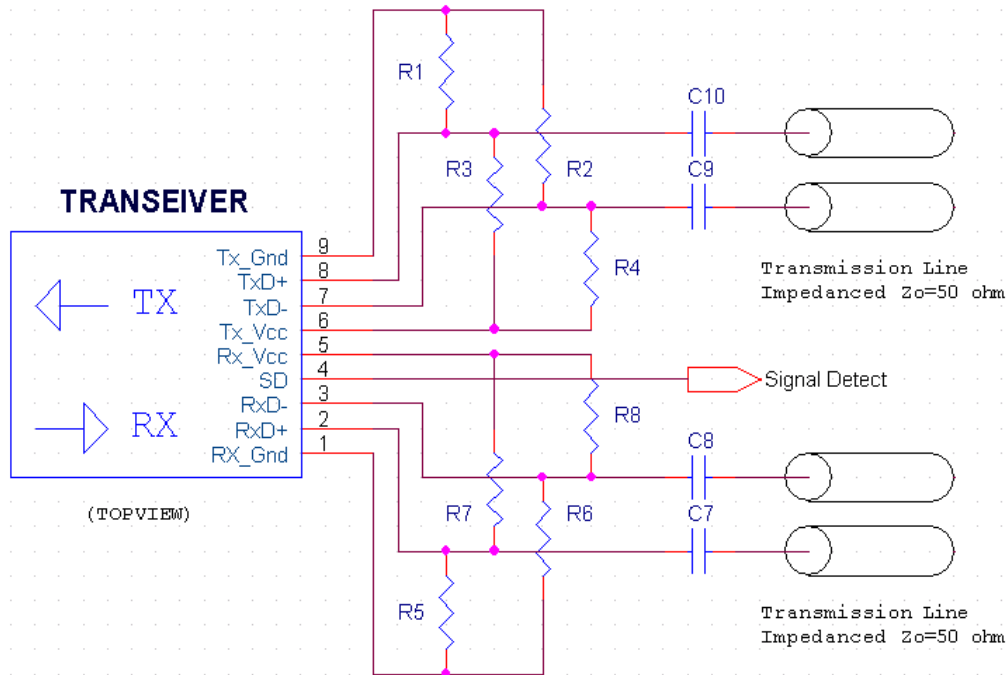


Figure 1

For 3.3V : R3/R4/R7/R8 = 130 Ω, R1/R2/R5/R6 = 82 Ω
For 5V : R3/R4/R7/R8 = 82 Ω, R1/R2/R5/R6 = 130 Ω
C7/C8/C9/C10 = 0.1μF

Signal Detect:

The PECL output option of the signal detect line may be terminated a 50 ohm resistor to a Vcc-2 volt source or the Thevenin equivalent in order to generate the correct voltage outputs.

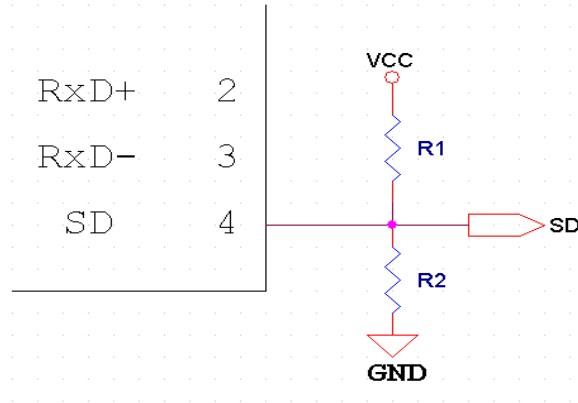


Figure 2

Power Coupling:

The L1 and L2 can use Ferrite Bead (BLM11A102S) or inductor (4.7uH)

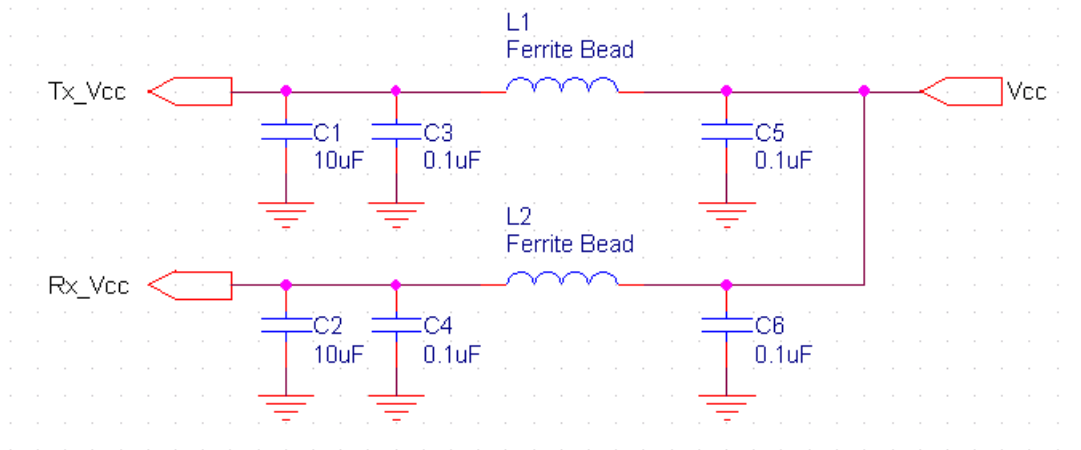
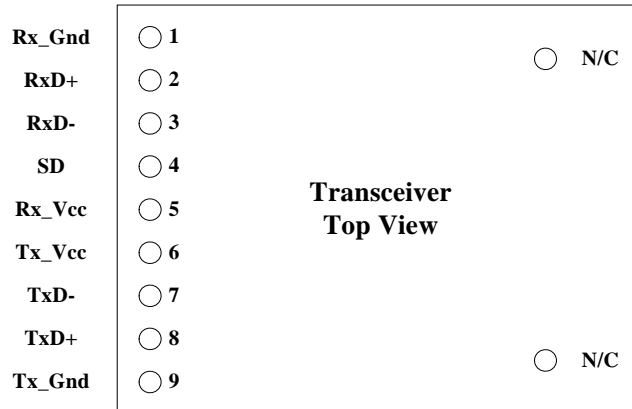


Figure 3

Pin Assignment



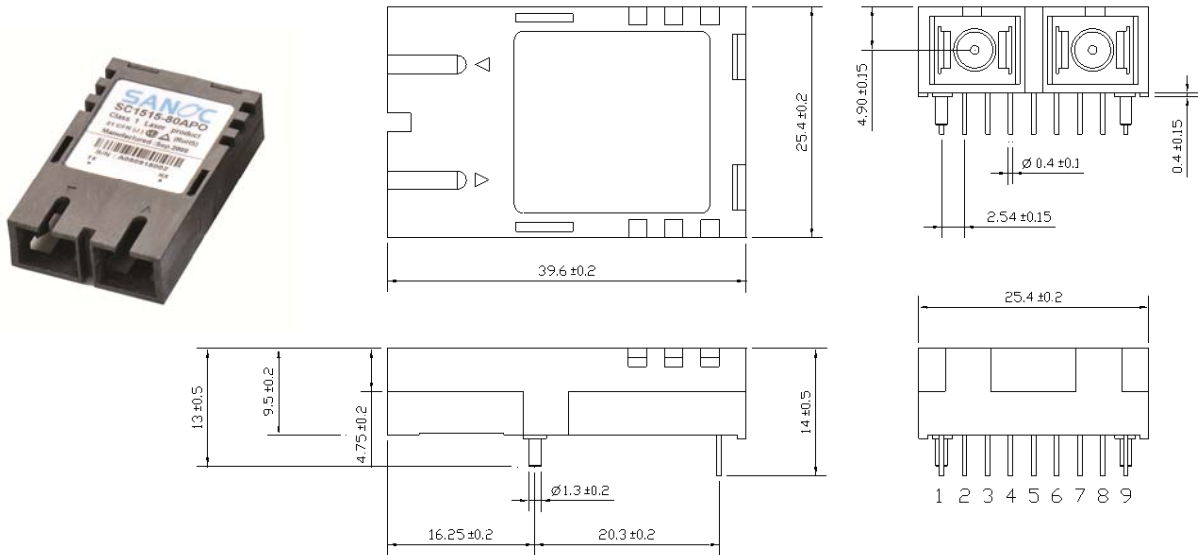
Pinout Table

Pin	Symbol	Name/Description
1	Rx_Gnd	Receiver Signal Ground Directly connect this pin to receiver signal ground plane.
2	RxD+	Receiver Data Out RD+ is used to PECL output. Terminal this high-speed differential PECL output with standard PECL techniques at the follow-on device.
3	RxD-	Receiver Data Out Bar RD- is used to PECL output. Terminal this high-speed differential PECL output with standard PECL techniques at the follow-on device.
4	SD	Signal Detect Normal optical input levels to the receiver result in a logic "1" output, Voh, asserted. Low input optical levels to the receiver result in a fault condition indicated by a logic "0" output Vol, deasserted. There are several types for output interface, PECL, CMOS and TTL.
5	Rx_Vcc	Receiver Power Supply Provide (+3.3V) via the recommended receiver power supply filter.
6	Tx_Vcc	Transmitter Power Supply Provide (+3.3V) via the recommended transmitter power supply filter.
7	TxD-	Transmitter Data In Bar TxD- is used to PECL input. Terminate this high-speed differential PECL input with standard PECL techniques at transmitter input pin.
8	TxD+	Transmitter Data In TxD+ is used to PECL input. Terminate this high-speed differential PECL input with standard PECL techniques at transmitter input pin.
9	Tx_Gnd	Transmitter Signal Ground Directly connect this pin to transmitter signal ground plane.

Package Outline Drawing

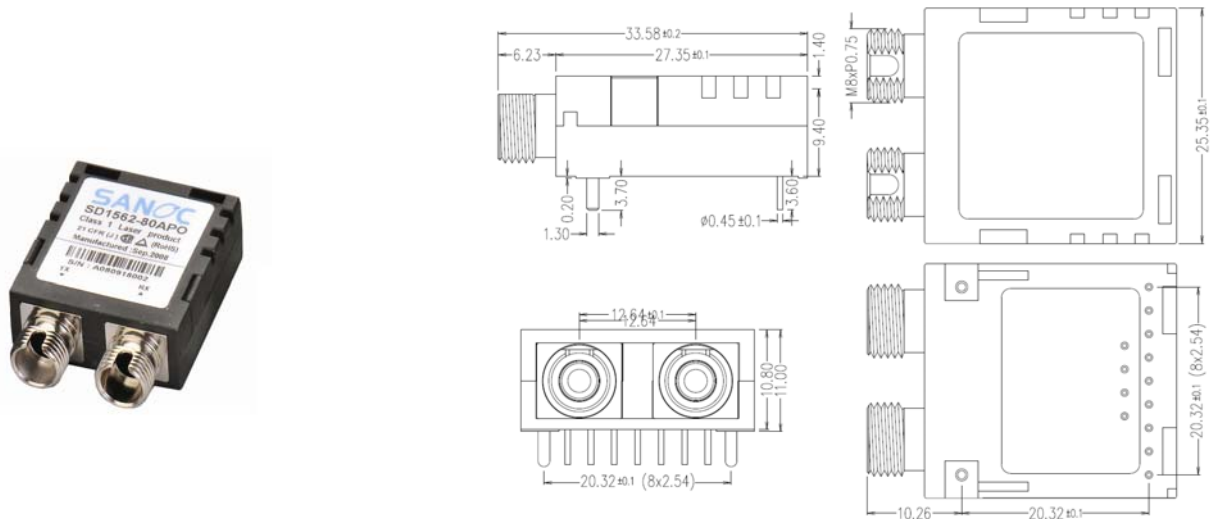
(1)SC Type (SC Series)

Dimension (unit:mm)



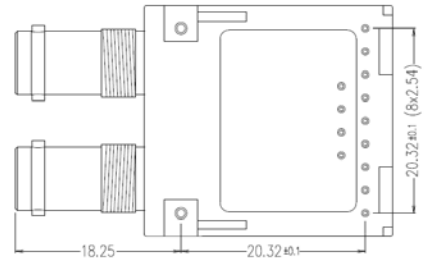
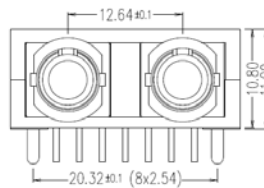
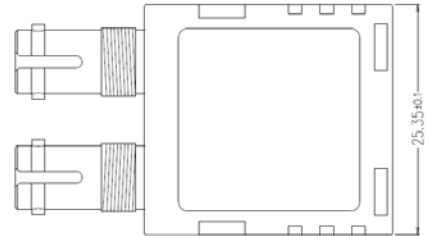
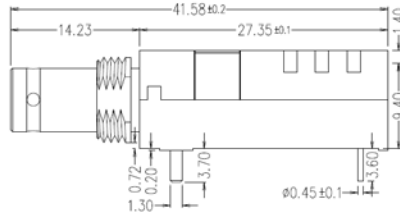
(2)FC Type (SD Series)

Dimension (unit:mm)



(3)ST Type (SE Series)

Dimension (unit:mm)



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