

Description

General

The transceiver from SANOC is the industry standard 2 x 5 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 1310nm MQW DFB structure laser in the optical subassembly (OSA), which is housed within a plastic barrel 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 quantized 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.



2x5 SFF Duplex SMF Transceiver	
LC Type	SG1312-10/20/40ATOJ(WT)

Features

- Single + 3.3V power supply
- Differential Inputs and Outputs
- Industry Standard 2x 5 Footprint.
- Compliant with Specification for IEEE802.3z / D5
- Compliant with Specification for Fiber Channel
- Low Power Consumption
- 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 1312-20		20	-	-	Km
	for 1312-40		40	-	-	Km
Supply Current		I _{Tx+Rx}	-	-	300	mA
Power Dissipation		P _{Dis}	-	-	1000	mW

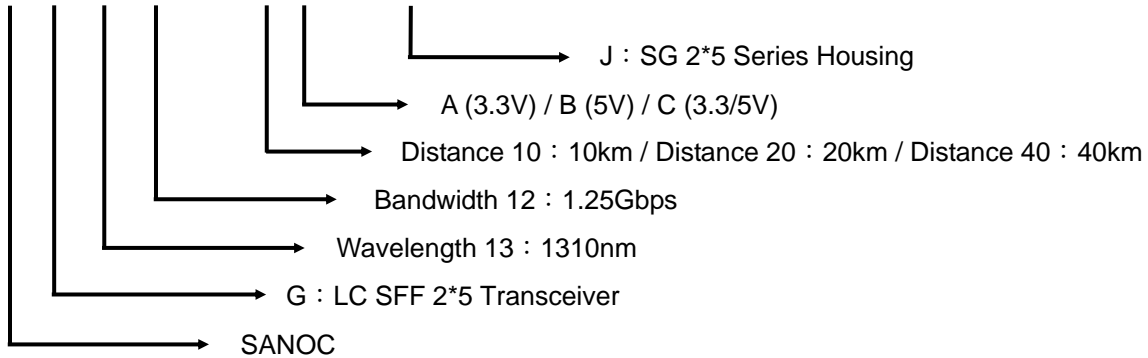
Optical and Electrical Characteristics

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	
TX Disable Voltage-High	V_{TF}	2.0	-	V_{CC}	V	
TX Disable Voltage-Low	V_{TN}	0	-	0.8	V	
Transmitter Optical Characteristics						
Parameter	Symbol	Min	Typ	Max	Unit	
Output Optical Power on 9 μ m SMF	P_O	for 1312-10/20	-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)	$\Delta\lambda_{20dB}$	-	-	1	nm	
Spectral Width (RMS)	$\Delta\lambda_{RMS}$	-	-	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	
P _{Out} @TX Disable Asserted	POFF	-	-	-45	dBm	

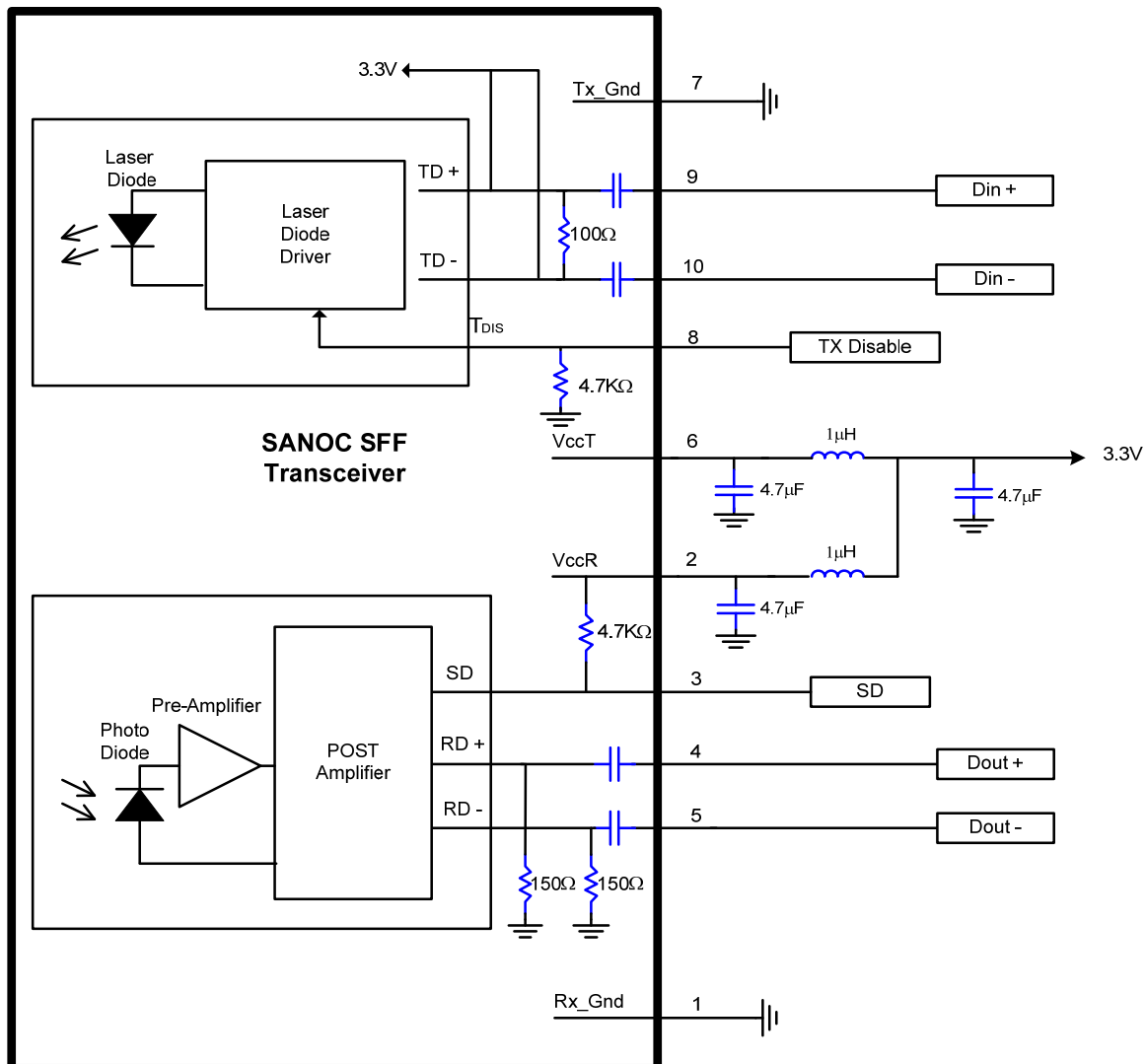
Receiver Electrical Characteristics						
Parameter	Symbol	Min	Typ	Max	Unit	
Supply Voltage	V_{CC}	3.15	3.3	3.45	V	
Data Differential Output Voltage	$V_{out, pp}$	500	-	1200	mV	
Signal Detect Output voltage-High	V_{OH}	for PECL	$V_{CC}-1.1$	-	$V_{CC}-0.74$	V
		for TTL	2.0	-	V_{CC}	V
Signal Detect Output 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 1312-20	-	-	-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 1312-20	-	-	-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

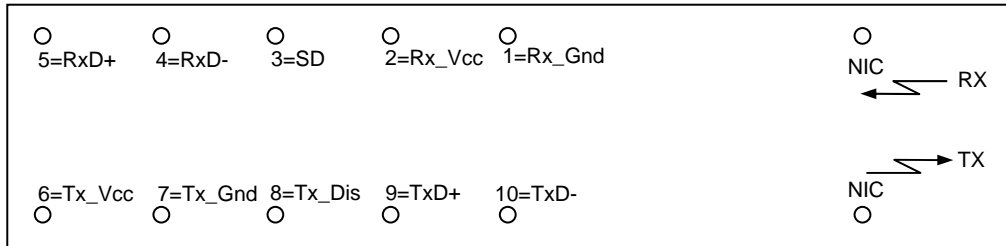
SG1312 – 10ATOJ(WT) → (WT) : Industrial Temp. / None : Commercial Temp.



Recommended Circuit Schematic



Ping Assignment



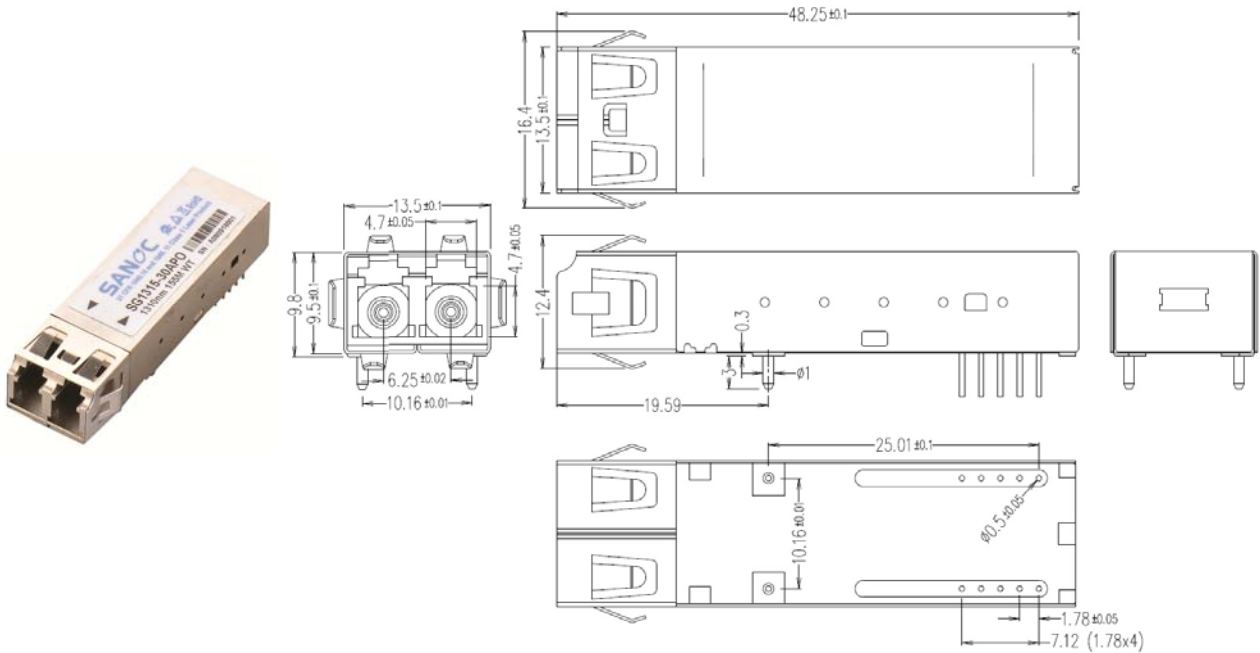
Pinout Table

Pin	Symbol	Name/Description
1	Rx_Gnd	Receiver Signal Ground Directly connect this pin to receiver signal ground plane.
2	Rx_Vcc	Receiver Power Supply Provide (+3.3V) via the recommended receiver power supply filter.
3	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.
4	RxD-	Receiver Data Out Bar RD- is used to PECL output. Terminate this high-speed differential PECL output with standard PECL techniques at the follow-on device.
5	RxD+	Receiver Data Out RD+ is used to PECL output. Terminate this high-speed differential PECL output with standard PECL techniques at the follow-on device.
6	Tx_Vcc	Transmitter Power Supply Provide (+5/+3.3V) via the recommended transmitter power supply filter.
7	Tx_Gnd	Transmitter Signal Ground Directly connect this pin to transmitter signal ground plane.
8	Tx_Dis	Transmitter Disable Connect this pin to +3.3V logic high "1" to disable module. To enable module, connect this pin to logic low "0".
9	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.
10	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.

Package Outline Drawing

(1)LC Type (SG Series)

Dimension (unit:mm)



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版本	發行日期	撰寫者/修改者	變更內容		
V3.0	2015/8/13	潘瑋君	重新發行		
V3.3	2015/10/27	潘瑋君	加入文件履歷		
核 准	廖育聖	制 定 人	潘瑋君	制訂單位	研發部
				發行蓋章處	