

RoHS Compliant 622Mbps 1x9 SC Duplex Optical Transceiver Module for SONET/ OC-12,SDH/STM-4



Description :

The OPT-622A1F1R is 1x9 optical transceiver modules designed expressly for high-speed communication applications that require rates of up to 622Mbps. They are all compliant with the SONET/SDH standards.

The OPT-622A1F1R transceiver is supplied in industry standard 1x9 SIP package style with duplex SC connector. Moreover the OPT-622A1F1R also includes a Signal-Detect circuit that provides PECL logic output state.

The OPT-622A1F1R meet Class-1 eye safety standard and effective distance up to 500m.

Features :

- Industry Standard 1x9 Footprint and Duplex SC Connector Interface.
- Single 5V Power Supply.
- PECL Differential Inputs and Outputs.
- PECL Receiver Signal Detect Indicator.
- Wave Solder and Aqueous Wash Process Compatible.
- RoHS Compliant per Directive 2002/95/EC.

Application :

- Multimode Fiber Backbone Links.
- Fast Ethernet and ATM Compatible.
- Multimode Fiber Media Converter.

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Storage Temperature	T _s	-40		85	°C	
Lead Soldering Temperature	T _{SOLD}			260	°C	
Lead Soldering Time	t _{SOLD}			10	Sec.	
Supply Voltage	V _{CC}	0		6	V	

Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Data Rate			622.08		Mbps	
Operating Temperature	T _A	0		70	°C	
Supply Voltage	V _{CC}	4.75	5	5.25	V	

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Transmitter						
Transmitter Data Input Voltage-Low	V _{IL-VCC}	-1.81		-1.48	V	
Transmitter Data Input Voltage-High	V _{IH-VCC}	-1.16		-0.88	V	
Receiver						
Data Output Voltage-Low	V _{OL-VCC}	-1.95		-1.62	V	
Data Output Voltage-High	V _{OH-VCC}	-1.045		-0.74	V	
SD Output Voltage-Low	V _{SDL-VCC}	-1.95		-1.62	V	ECL Family
SD Output Voltage-High	V _{SDH-VCC}	-1.045		-0.74	V	ECL Family

Optical Characteristics

(Data Rate = 622.08Mbps, PRBS=2²³-1, NRZ, 62.5/125um MMF)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Transmitter						
Supply Current	I _{CC}			150	mA	
Mean Launch Power	P _O	-20		-14	dBm	
Optical Extinction Ratio	E.R.	9			dB	
Center Wavelength	λ _C	1261		1360	nm	
Spectral Width (RMS)	σ			14.5	nm	
Optical Risetime / Falltime	t _r /t _f			3.0	ns	10%~90%
Output Eye Diagram	Compliant with ITU-T recommendation G.957					
Receiver						
Supply Current	I _{CC}			150	mA	
Sensitivity	P _{IN}			-26	dBm	
Input Optical Wavelength	λ	1100		1600	nm	
Signal Detect-Asserted	P _A			-26	dBm	
Signal Detect-DeAsserted	P _D	-35			dBm	
Signal Detect-Hysteresis	P _A -P _D	0.5			dB	
Overload	P _{SAT}	-8			dBm	

Notes : The sensitivity should be tested at BER of 1×10⁻¹⁰ or better with an input signal consisting of 622.08Mb/s, NRZ, PRBS=2²³-1 and E.R.= 9dB.

Pin Definition

PIN	Symbol	Functional description
1	GND	Receiver Signal Ground
2	RD (+)	Receiver Data Out Non-inverted (LVPECL or PECL)
3	RD (-)	Receiver Data Out Inverted (LVPECL or PECL)
4	SD	Receiver Signal Detect (LVPECL or PECL)
5	VccR	Receiver Power Supply
6	VccT	Transmitter Power Supply
7	TD (-)	Transmitter Data In Inverted (LVPECL or PECL)
8	TD (+)	Transmitter Data In Non-inverted (LVPECL or PECL)
9	GND	Transmitter Signal Ground

Pin Descriptions

Pin 1 Receiver Signal Ground, GND

Directly connect these pins to the ground plane.

Pin 2 Receiver Data Out Non-inverted (LVPECL), RD (+)

PECL logic family. Output external biased and internal DC coupled.

Pin 3 Receiver Data Out Inverted (LVPECL), RD (-)

PECL logic family. Output external biased and internal DC coupled.

Pin 4 Receiver Signal Detect (LVPECL), SD

PECL logic family. Normal Operation: Logic "1" Output; Fault Condition: Logic "0" Output.

Pin 5 Receiver Power Supply, VccR

Provide +3.3V dc power supply.

Pin 6 Transmitter Power Supply, VccT

Provide +3.3V dc power supply.

Pin 7 Transmitter Data In Inverted (LVPECL), TD (-)

Pin 7 Transmitter Data Input Inverted (LVPECL), TD (-).

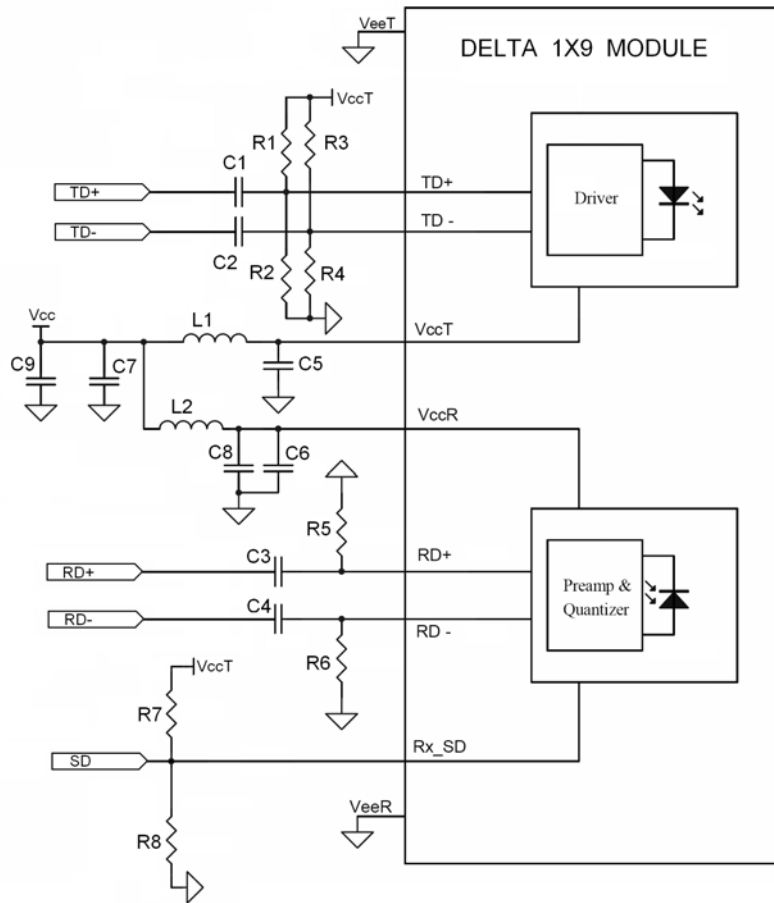
Pin 8 Transmitter Data In Non-inverted (LVPECL), TD (+)

Pin 8 Transmitter Data Input Non-inverted (LVPECL), TD (+).

Pin 9 Transmitter Signal Ground, GND

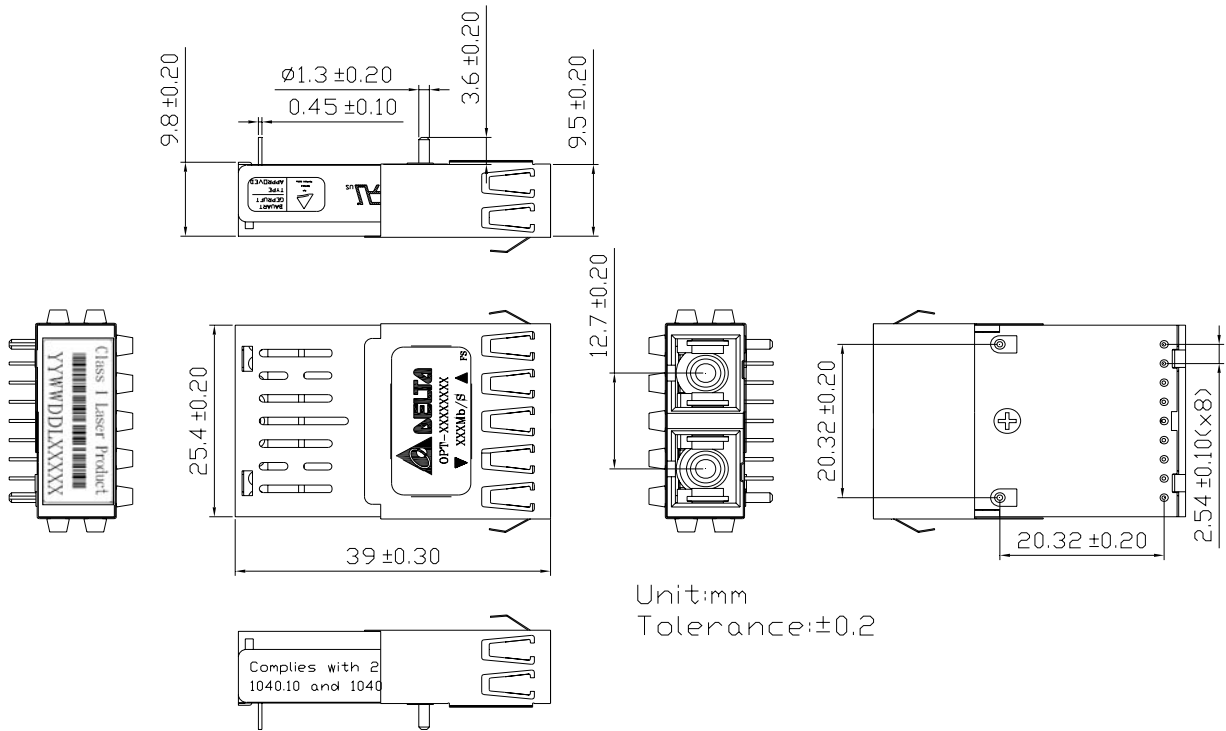
Directly connect these pins to the ground plane.

Recommend Circuit Schematic



R1=R3=82 ohm (3.3V),68 ohm(5V)
 R2=R4=130 ohm (3.3V),191 ohm (5V)
 R5=R6=150 ohm (3.3V),270 ohm (5V)
 R7=130 ohm (3.3V PECL),82 ohm(5V),NC (TTL)
 R8=82 ohm (3.3V PECL),130 ohm(5V),NC (TTL)
 C1=C2=C3=C4=C5=C6=C7=100 nF
 C8=C9=10uF
 L1=L2=1uH

Package Outline



Regulatory Compliance

Feature	Reference	Performance
Electromagnetic Interference (EMI)	FCC Class B EN 55022 Class B (CISPR 22A)	(1) Satisfied with electrical characteristics of product spec. (2) No physical damage
Radio Frequency Electromagnetic Field	EN 61000-4-3 IEC 1000-4-3	
Electrostatic Discharge to the Duplex LC Receptacle	EN 61000-4-2 IEC 1000-4-2 IEC 801.2	
Electrostatic Discharge to the Electrical Pins	MIL-STD-883E Method 3015.7	
Eye Safety	US FDA CDRH AEL Class 1 EN 60950: 2000 EN 60825-1: 1994+A11+A2 EN 60825-2: 2000	CDRH File # 0321539-00 TUV Certificate No. R50032471
Component Recognition	Underwriters Laboratories and Canadian Standards Association Joint Component Recognition for Information Technology Equipment Including Electrical Business Equipment	UL File # E239394

Order information

OPT- 622X₁X₂X₃X₄X₅X₆

X₁: Fiber
A: MMF, 1310nm

X₄: Data Coupling
1: 1x9SC, DC/DC

X₂: Power Supply Voltage and SD Level
1: 5.0V, PECL SD Level

X₅: RoHS Compliant
R: RoHS Compliant

X₃: Distance
F: 500m

X₆: Temperature
Blank: 0 to +70 degree C

Appendix A · Document Revision

Version No.	Date	Description
0C	2006-11	Release
0D	2008-01	Correct SD Output Voltage 、 Overload symbol、 Pin Definition、 Package Outline、 Recommended Circuit Schematic

