Multimode 850 nm 1X9 Fiber Optic Transceiver for Gigabit Ethernet

DC/DC (3.3V) OPT-1250A4F1A

FEATURES

•Compliant with IEEE802.3z/D2 Gigabit Ethernet (1000BASE-SX) Specification

•SC Duplex Multimode Transceiver

•Industrial Standard 1x9 Footprint, Cost Effective Design

•850 nm Vertical Cavity Surface Emitting Laser (VCSEL) Source Technology

•Data Link up to 500 Meters in 50/125 MMF, 220 Meters in 62.5/125 MMF.

•Single + 3.3V Power Supply and PECL Logic Interface

•Signal detection function (TTL output)

•Class 1 FDA and IEC laser safety compliant

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Reference
Storage temperature	Ts	-40		85	℃	
Lead soldering temperature	T_{SOLD}			260	℃	
Lead soldering time	t_{SOLD}			10	sec.	
Supply voltage	Vcc	0		6	V	

Recommended Operating Conditions:

Parameter	Symbol	Min.	Typ.	Max.	Unit	Reference
Ambient Operating Temperature	T_A	0		70	℃	
Transmitter Data input voltage-High	V_{IH}- V_{CC}	-1.165		-0.880	V	
Transmitter Differential Input Voltage	V_D	0.3		1.6	V	
Data Output Load	R_{DL}		50		Ω	

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Transmitter Electro-Optical Performance Specifications:

Parameter	Symbol	Min.	Typ.	Max.	Unit	Reference
Supply current	Icc			180	mA	
Launched power(avg.)	P_O	-9.5		-4	dBm	Note(1)
Optical extinction ratio		9			dB	Note(1)
Center wavelength	λ c	830	850	860	nm	
Spectral width(RMS)	σ			0.85	nm rms	
Optical risetime	t_r			0.26	ns	Note(2)
Optical falltime	t_f			0.26	ns	Note(2)
Relative Intensity Noise	RIN			-117	DB/Hz	

Note(1).The maximum optical output power complies with the IEEE 802.3z/D2 specification, and is class 1 laser eye safe.

Note(2).These are unfiltered 20-80% values.

Receiver Electro-Optical Performance Specifications:

Parameter	Symbol	Min.	Typ.	Max.	Unit	Reference
Supply current	Icc			130	mA	
Data output differential voltage	V_D	0.5	0.7	1.23	V	
Optical input sensitivity(avg.)	P_{IN}			-17	dBm	Note(1)
Optical input saturation(avg.)	P_{SAT}	-3			dBm	Note(1)
Optical wavelength	λ		850		nm	
Output Data risetime	t_r			0.4	ns	Note(2)
Output Data falltime	t_f			0.4	ns	Note(2)
Signal detect-Assert	P_A			-18	dBm	
Signal detect-Deassert	P_D	-30			dBm	
Signal detect-Hysteresis	P_A -P_D	0.5			dB	

Note(1).With BER better than or equal to $1x10^{-12}$,measured in the center of the eye opening with 2^{23}-1 NRZ PRBS

Note(2).These are 20%~80% values

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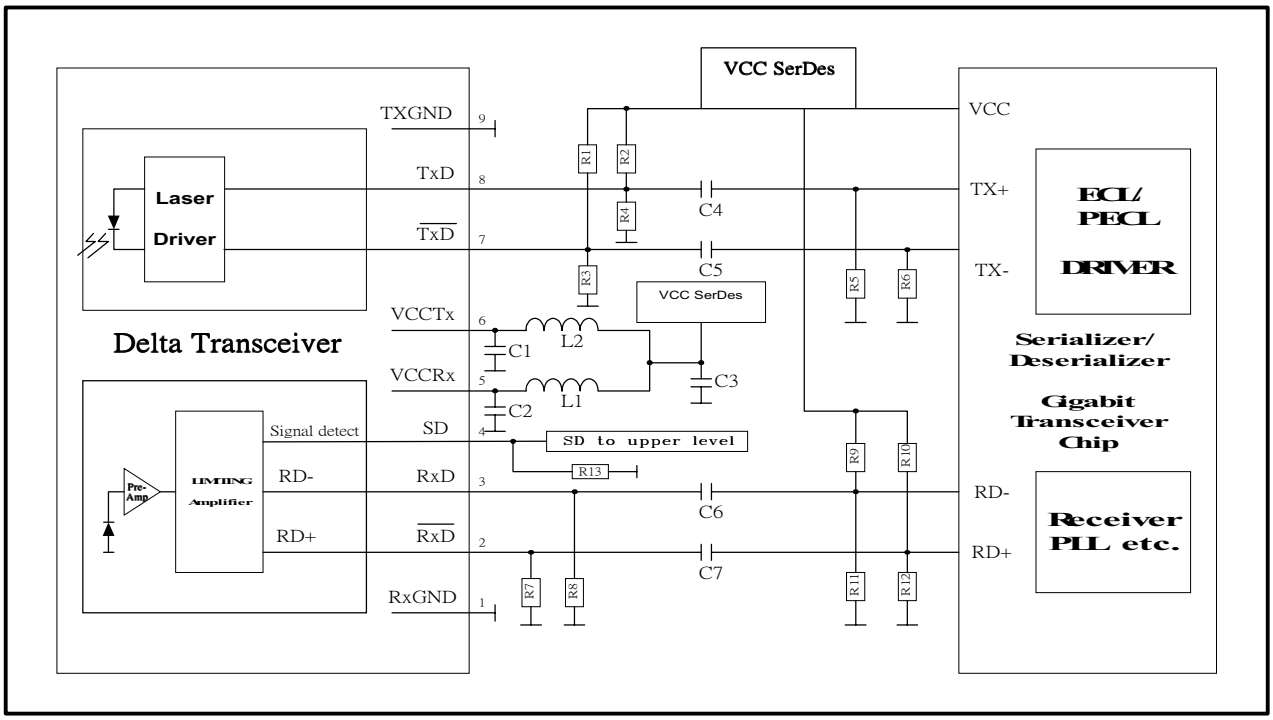
Recommended Circuit Schematic

Multimode 850nm Gigabit Ethernet 1x9 Transceiver , DC/DC , 3.3V Transceiver Version



C1/2/3 = 4.7 uF
C4/5/6/7 = 10 nF
L1/2 = 1 uH
R1/2 =82 Ω
R3/4 =130 Ω
R7/8 =150 Ω
R5/6/9/10/11/12 Depend on SerDes chip used .
R13 =270 Ω (For PECL output).
R13 =Open (For TTL output).

Values of R5/6/9/10/11/12 may vary as long as proper 50 Ω termination to VEE or 100 Ω differential is provided. For good EMI performance, the power supply filter is required. Use short tracks from the inductor L1/L2 to the module VccTx/VccRx.

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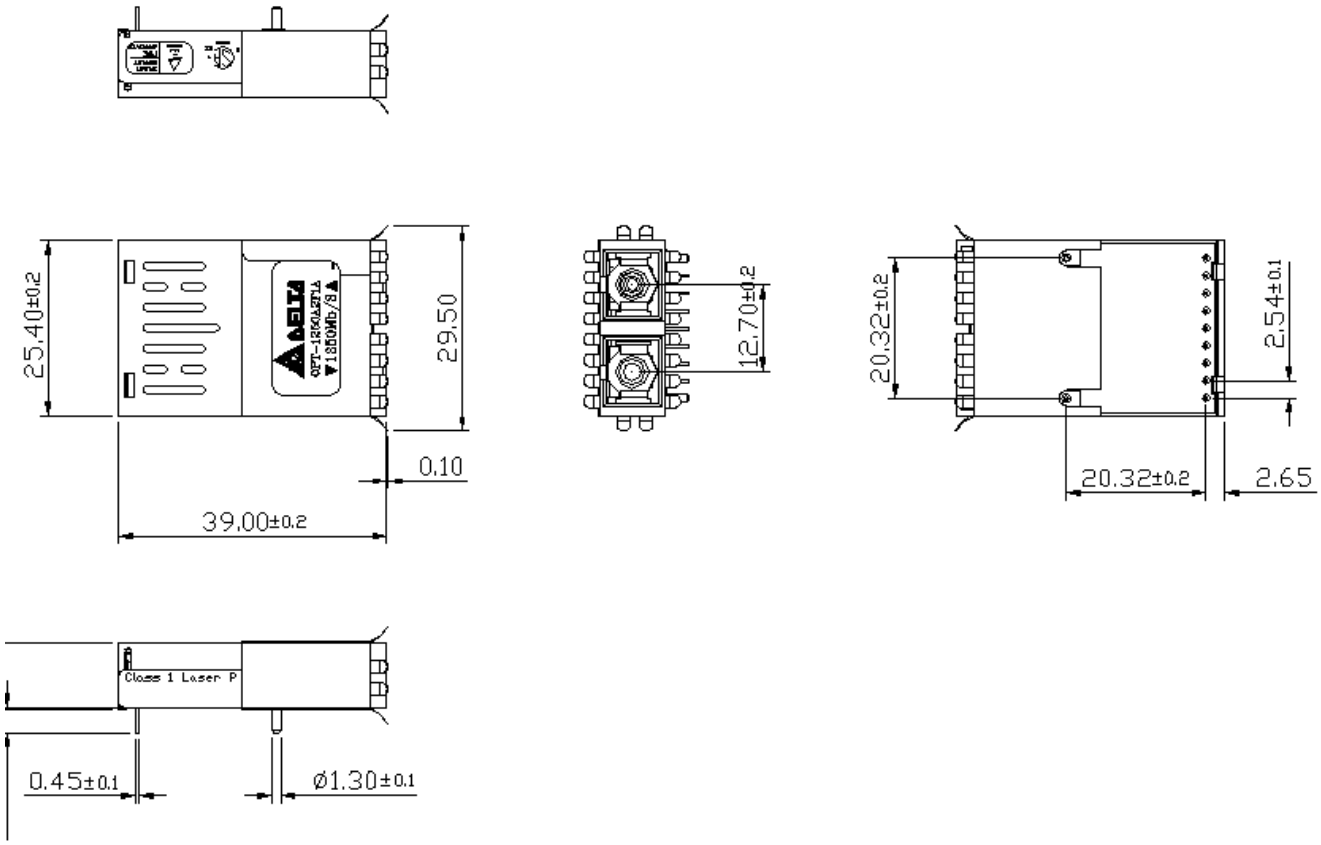
TYPE ： A (Flush Shield)

Mechanical Dimensions

Unit : mm



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Test Item	Reference	Qty'	Evaluation
(#1) Electromagnetic Interference EMC	FCC Class B EN 55022 Class B CISPR 22	5	(1) Satisfied with electrical characteristics of product spec. (2) No physical damage
(#2) Immunity : Radio Frequency Electromagnetic Field	EN 61000-4-3 IEC 1000-4-3	5	
(#3) Immunity : Electrostatic Discharge to the Duplex SC Receptacle	EN 61000-4-2 IEC 1000-4-2 IEC 801.2	5	
(#4) Electrostatic Discharge to the Electrical Pins	MIL-STD-883C Method 3015.4 EIAJ#1988.3.2B Version 2, Machine model	5	

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