

# Multimode 850 nm 1X9 Fiber Optic Transceiver for Gigabit Ethernet

DC/DC (3.3V) OPT-1250A4F1AS

## 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	T <sub>S</sub>	-40		85	°C	
Lead soldering temperature	T <sub>SOLD</sub>			260	°C	
Lead soldering time	t <sub>SOLD</sub>			10	sec.	
Supply voltage	V <sub>CC</sub>	0		6	V	

## Recommended Operating Conditions:

Parameter	Symbol	Min.	Typ.	Max.	Unit	Reference
Ambient Operating Temperature	T <sub>A</sub>	0		70	°C	
Transmitter Data input voltage-High	V <sub>IH</sub> - V <sub>CC</sub>	-1.165		-0.880	V	
Transmitter Differential Input Voltage	V <sub>D</sub>	0.3		1.6	V	
Data Output Load	R <sub>DL</sub>		50		Ω	

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## Transmitter Electro-Optical Performance Specifications:

Parameter	Symbol	Min.	Typ.	Max.	Unit	Reference
Supply current	I <sub>cc</sub>			180	mA	
Launched power(avg.)	P <sub>O</sub>	-9.5		-4	dBm	Note(1)
Optical extinction ratio		9			dB	Note(1)
Center wavelength	$\lambda_c$	830	850	860	nm	
Spectral width(RMS)	$\sigma$			0.85	nm rms	
Optical risetime	t <sub>r</sub>			0.26	ns	Note(2)
Optical falltime	t <sub>f</sub>			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	I <sub>cc</sub>			130	mA	
Data output differential voltage	V <sub>D</sub>	0.5	0.7	1.23	V	
Optical input sensitivity(avg.)	P <sub>IN</sub>			-17	dBm	Note(1)
Optical input saturation(avg.)	P <sub>SAT</sub>	-3			dBm	Note(1)
Optical wavelength	$\lambda$		850		nm	
Output Data risetime	t <sub>r</sub>			0.4	ns	Note(2)
Output Data falltime	t <sub>f</sub>			0.4	ns	Note(2)
Signal detect-Assert	P <sub>A</sub>			-18	dBm	
Signal detect-Deassert	P <sub>D</sub>	-30			dBm	
Signal detect-Hysteresis	P <sub>A</sub> -P <sub>D</sub>	0.5			dB	

Note(1).With BER better than or equal to  $1 \times 10^{-12}$ , measured in the center of the eye opening with  $2^{23}-1$  NRZ PRBS

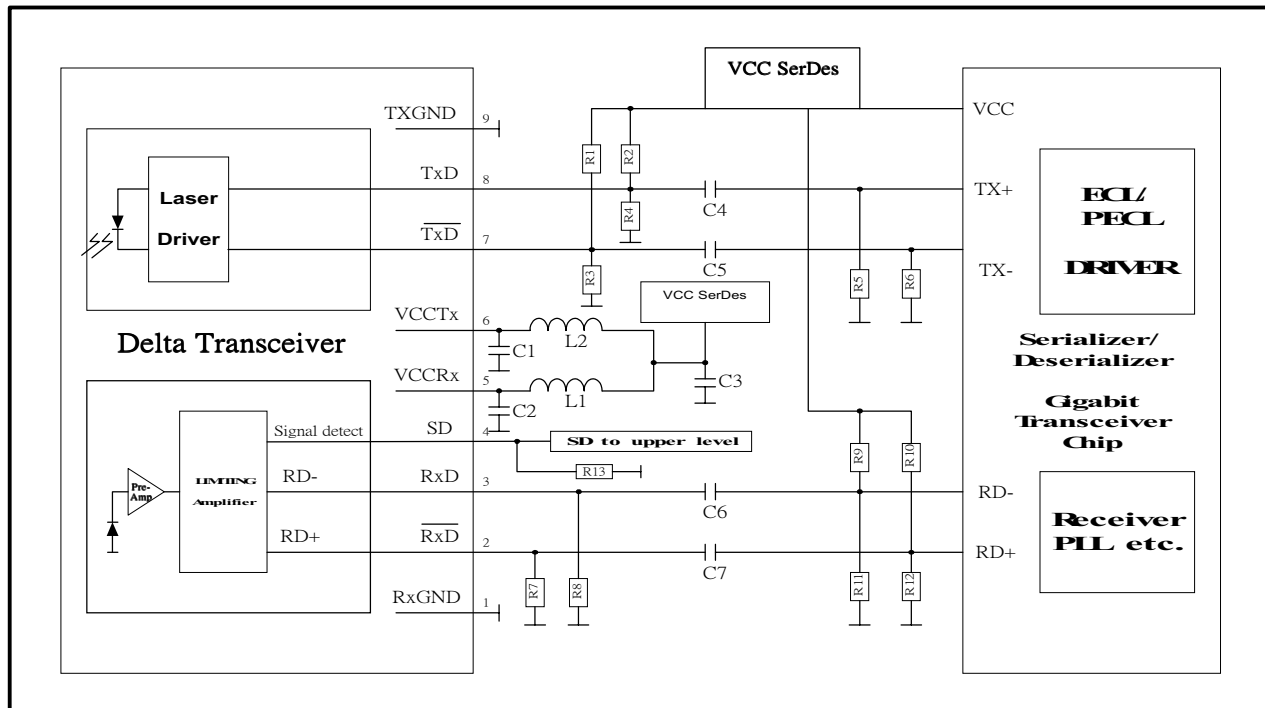
Note(2).These are 20%~80% values

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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  $\Omega$

R3/4 = 130  $\Omega$

R7/8 = 150  $\Omega$

R5/6/9/10/11/12 Depend on SerDes chip used .

R13 = 270  $\Omega$  (For PECL output).

R13 = Open (For TTL output).

Values of R5/6/9/10/11/12 may vary as long as proper 50  $\Omega$  termination to VEE or 100  $\Omega$  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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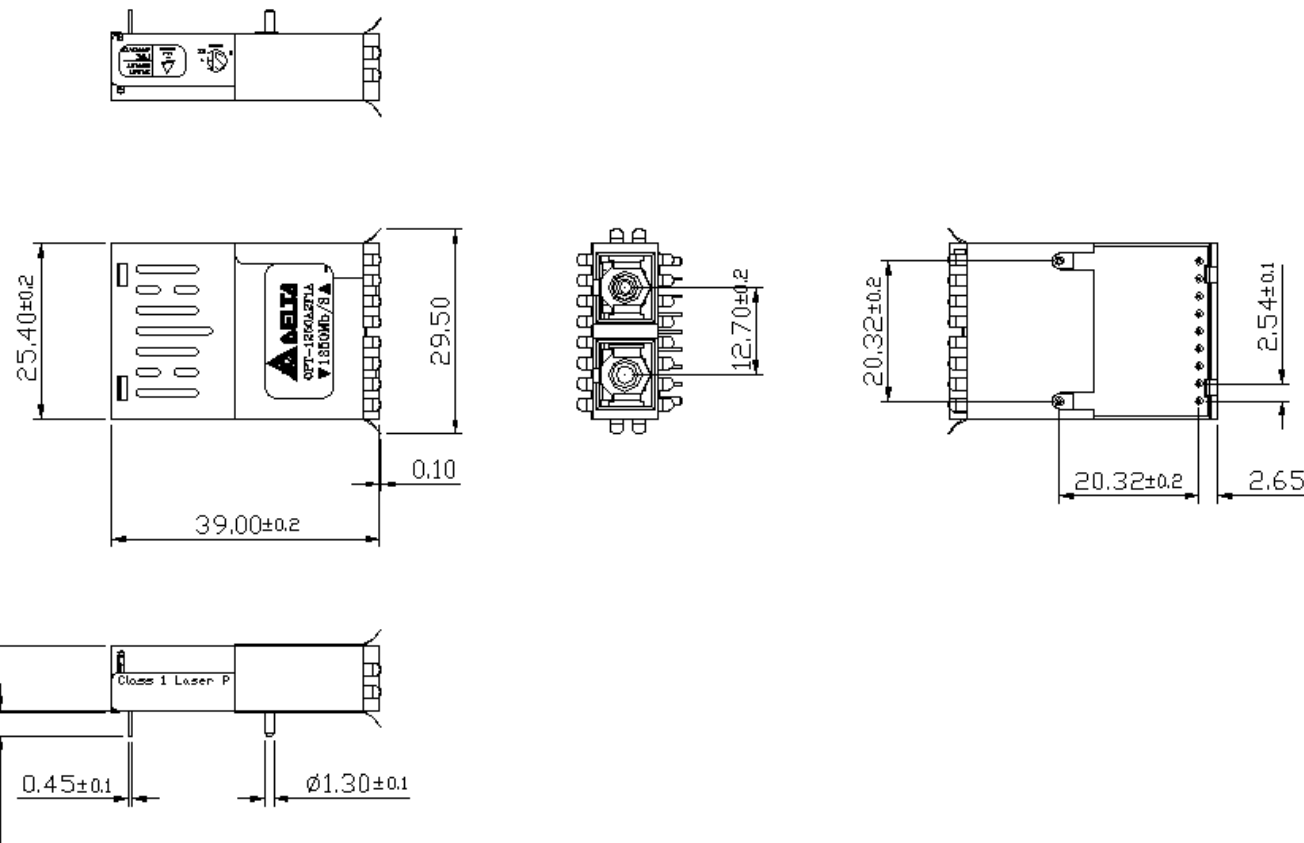
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# Multimode 850 nm 1X9 Fiber Optic Transceiver for Gigabit Ethernet

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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