

Multimode 850 nm 1X9 Fiber Optic Transceiver for Gigabit Ethernet

DC/DC (5V) **OPT-1250A1F1A**

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 + 5V Power Supply and PECL Logic Interface
- Class 1 FDA and IEC laser safety compliant (Laser Klasse 1 Produkt)

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Reference
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	Reference
Ambient Operating Temperature	T _A	0		70	°C	
Supply voltage	V _{cc}	4.75		5.25	V	
Transmitter Data input voltage-Low	V _{IL} - V _{CC}	-1.810		-1.475	V	
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	I _{cc}			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	I _{cc}			130	mA	
Data output voltage-Low	V _{OL} - V _{CC}	-1.950		-1.620	V _{CC}	
Data output voltage-High	V _{OH} - V _{CC}	-1.045		-0.740	V _{CC}	
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 1×10^{-12} , measured in the center of the eye opening with 2²³-1 NRZ PRBS

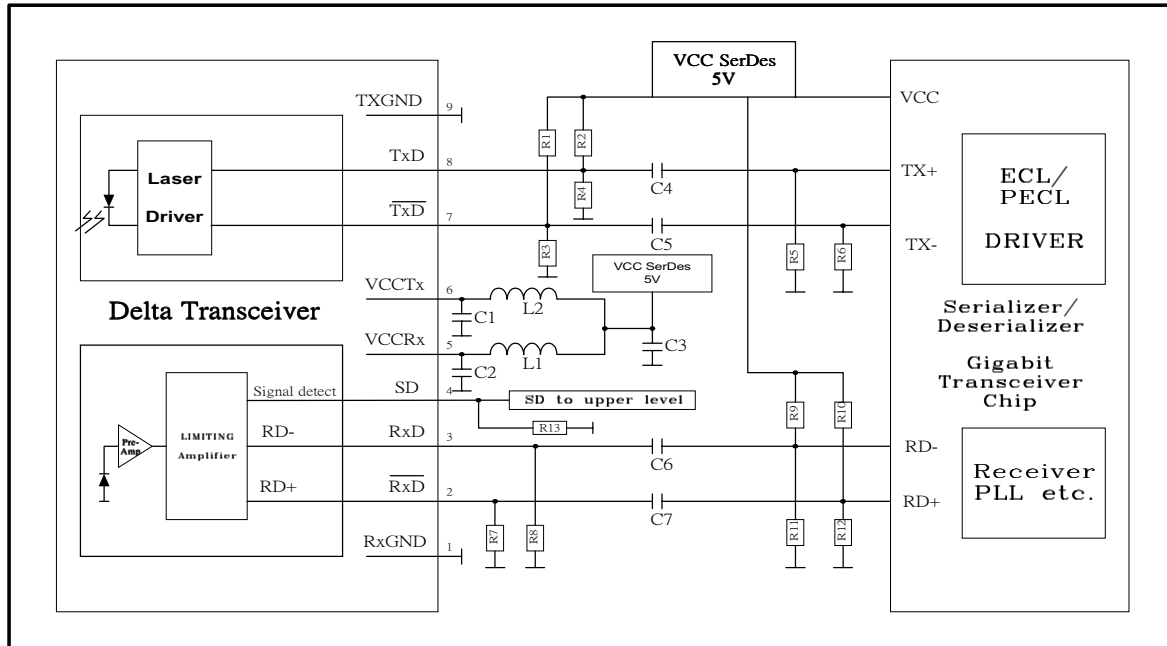
Note(2).These are 20%~80% values

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Recommended Circuit Schematic

Multimode 850nm Gigabit Ethernet 1x9 Transceiver , DC/DC , 5V Transceiver Version



C1/2/3 = 4.7 uF

C4/5/6/7 = 10 nF

L1/2 = 1 uH

R1/2 = 68 Ω

R3/4 = 191 Ω

R7/8 = 270 Ω

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

R13 =510 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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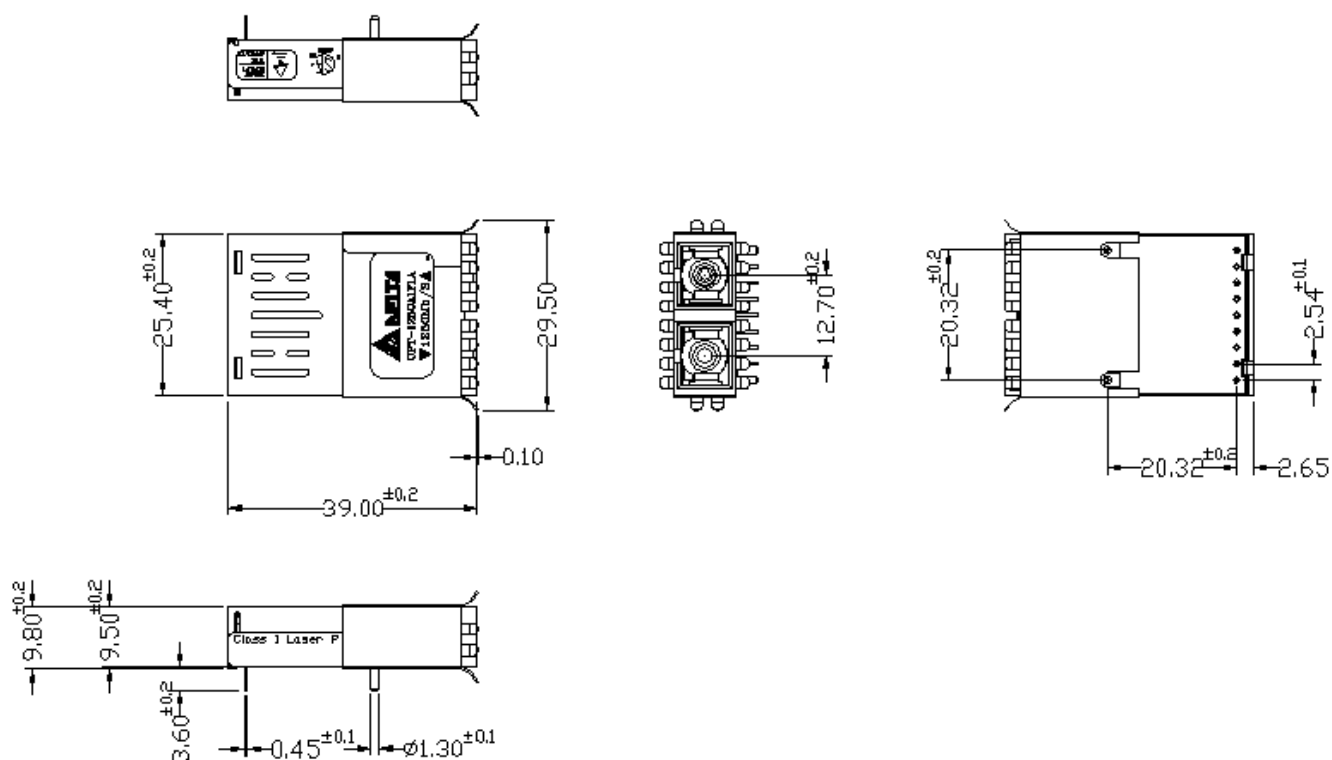
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TYPE : A (Flush Shield)

Mechanical Dimensions

Unit : mm



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Test Item	Reference	Qty'	Evaluation
(#1) Electromagnetic Interference EMI	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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