



2x5 SFF LC Duplex VCSEL 850nm Fiber Optical Transceiver Modules for Gigabit Ethernet

TTL (5V) LC-1250A1F
PECL (5V) LC-1250A3F



Features

- Compliant with IEEE802.3z/D2 Gigabit Ethernet (1000BASE-SX) specification
- Small Form Factor RJ-45 style LC™ connector system
- 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
- Signal detection function (TTL/PECL output)
- 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	-65		150	°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	-40		85	°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	

DELTA ELECTRONICS, INC.

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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	1			dB	

Note (1). With BER better than or equal to 1x10⁻¹², measured in the center of the eye opening with 2²³-1 NRZ PRBS

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

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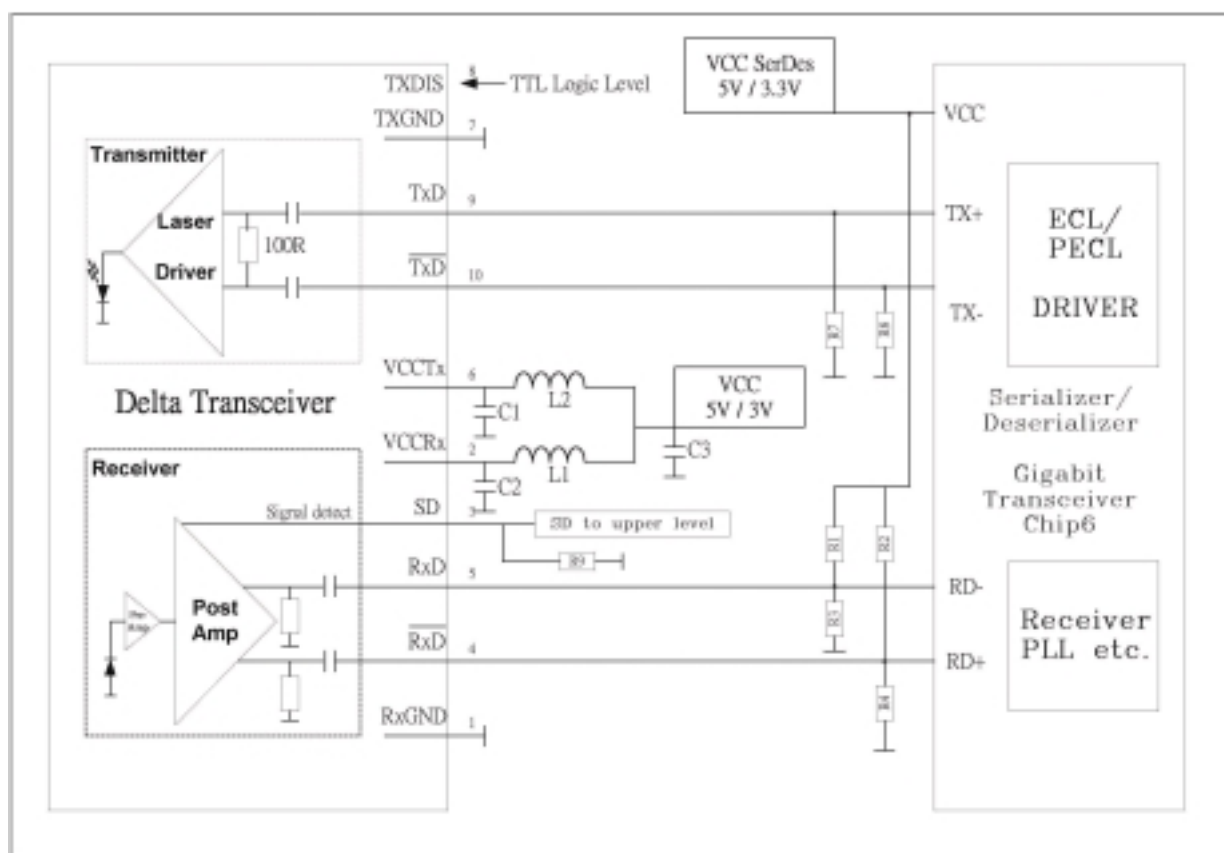
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Recommended Circuit Schematic
 Small Form Factor Multimode 850nm Gigabit Ethernet 2x5 Transceiver AC/AC 5V Transceiver Version



C1/2/3 = 4.7 uF

L1/2 = 1 uH

R1/2/3/4/7/8 Depend on SerDes chip used and desired line termination (50Ω Strip line)

R9 = 510Ω When we want PECL output in SD pin we use R9=510, and no connector
 When we want TTL output.

Value of R1/2/3/4/7/8 may vary as long as proper 50Ω termination to VEE, it depend on SerDes chip used and desired line termination. All the transceiver of Delta contains an automatic shutdown circuit. Reset depends on power OFF and then ON. For Good EMI performance the power supply filter is require. Use short tracks from the inductor L1/2 to the module VccTx/VccRx. This recommended Circuit assume Gigabit Ethernet / Fiber Channel usies 3.3V power supply and SerDes Chip usies 3.3 / 5 V power supply.

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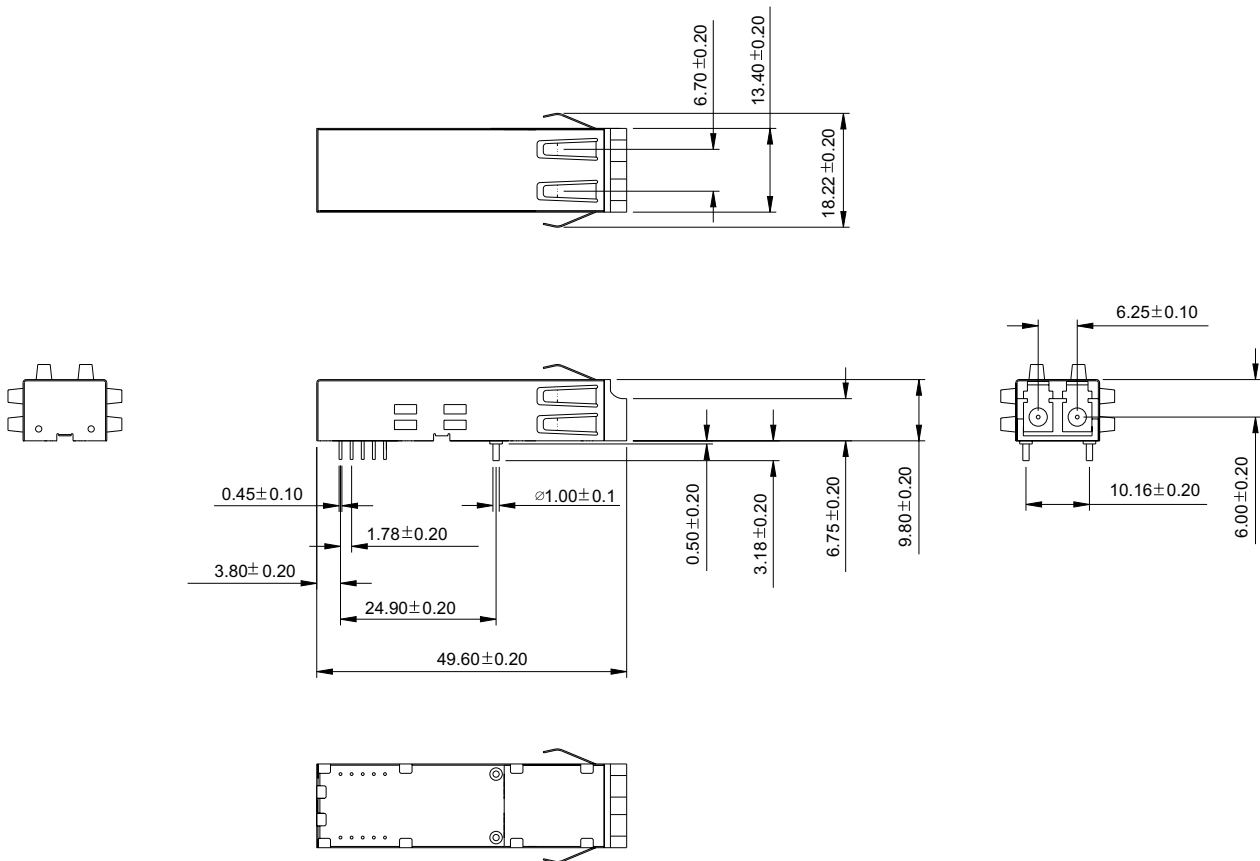
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Mechanical Dimensions
Unit : mm



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