Preliminary

TTR-1F43-106/-206

Connectorized high speed VCSEL with monitor PD

FEATURES:

- Pre-aligned LC-type receptacle for multi-mode fiber communication.
- Packaged with attenuating coating and monitoring PD.
- Design for 1.06/1.25Gbps and above data rate operation.
- Common cathode (-106) or common anode (-206) configuration.
- Design for small form factor transceivers.

ELECTRO-OPTICAL CHARACTERISTICS:

PARAMETERS	SYMBOL	MIN	TYP	MAX	UNIT	TEST CONDITIONS(1)
Threshold Current	I_{th}		3	5	mA	
Slope Efficiency	η	0.02	0.036	0.12	mW/mA	I_F=12 mA
Coupling efficiency	CE		70		%	I_F=12 mA
Wavelength	λ_P	830	850	860	nm	I_F=12 mA
Forward Voltage	V_F	1.7	1.9	2.2	V	I_F=12 mA
Breakdown voltage	V_{BD}	5	14		V	I_R=10 μA
Rise Time(20%~80%)	Tr		0.15	0.26	ns	Pre-biased above Ith
Fall Time(20%~80%)	Tf		0.2		ns	Pre-biased above Ith
Series Resistance	R_S	18	25	35	Ω	I_F =12 mA
Spectral width (RMS)	$\Delta\lambda$			0.85	nm	I_F =12 mA
Relative Intensity Noise	RIN		-130	-122	dB/Hz	I_F =12 mA ,f=1 GHz
Monitor Current	I_M	200	500	800	uA	V_R=5 V, Poc=350uW(2)

Notes:

1. All parameters except mentioned are measured at I_F=12 mA, 25°C, CW.
2. Poc is defined as 50/125 um fiber coupled output power.

THERMAL CHARACTERISTICS:

PARAMETERS	SYMBOL	MIN	TYP	MAX	UNIT	TEST CONDITIONS
Thermal Resistance	R_{th}		1100		°C /W	T_A=25°C
I_{th} Temperature Variation	ΔI_{th}	-1.0		2.0	mA	T_A=0~70°C
V_F Temperature Coefficient	$\Delta V_F/\Delta T$	-3.5	-2.5	-1.5	mV/°C	T_A=0~70°C, I_F=12 mA
η Temperature Coefficient	$\Delta\eta/\Delta T$		-0.35	-0.6	%/°C	T_A=0~70°C, I_F=12 mA
λ_P Temperature Coefficient	$\Delta\lambda_P/\Delta T$		0.06		nm/°C	T_A=0~70°C, I_F=12 mA

ABSOLUTE MAXIMUM RATINGS:

PARAMETERS	MIN	MAX	UNIT	CONDITIONS
Storage Temperature	-40	125	°C	
Operating Temperature	0	70	°C	
Lead Solder Temperature		260	°C	10 seconds
Continuous Forward Current		40	mA	
Continuous Reverse Voltage		10	V	

Fig. 1 Typical Optical Characteristics

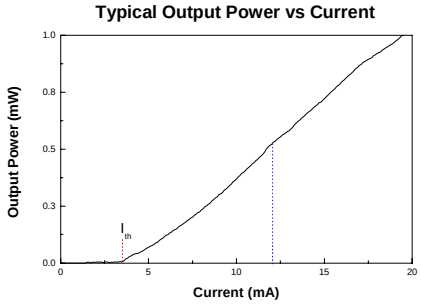


Fig. 2 Typical Electrical Characteristics

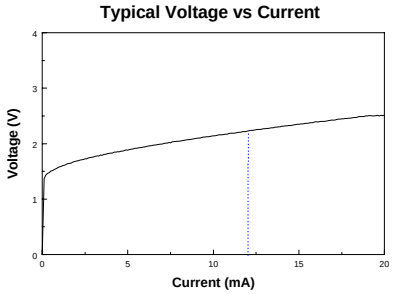


Fig. 3 Spectrum When Driving Current 12 mA

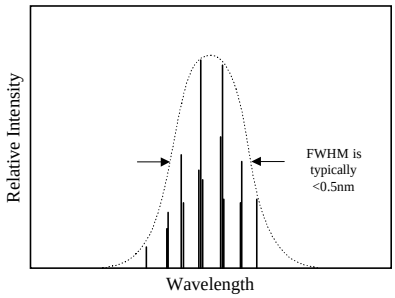
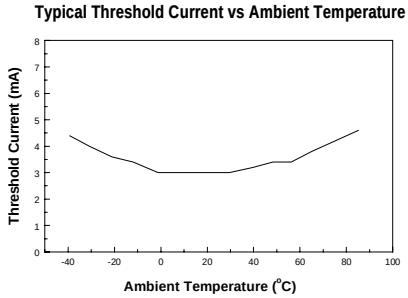
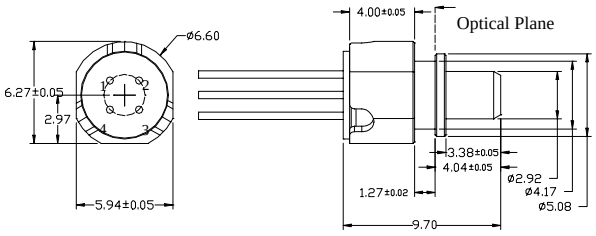


Fig. 4 Temperature Dependence of Threshold Current



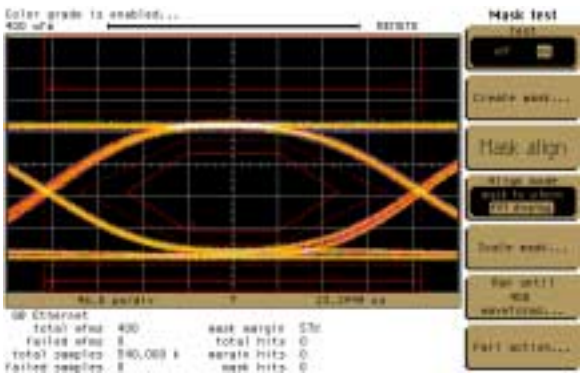
OUTLINE DIMENSIONS:



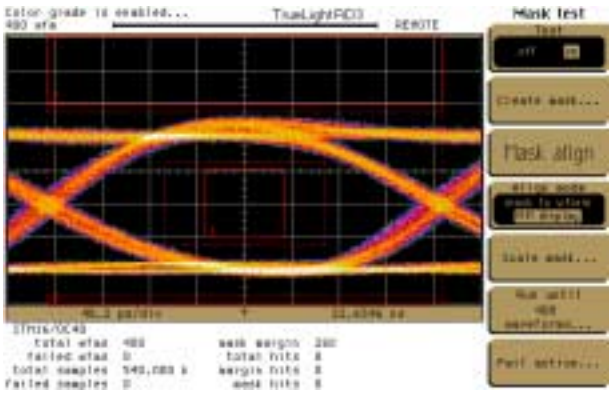
Pinout:

TTR-1F43-106		TTR-1F43-206	
Number	**Function**	**Number**	**Function**
1	**VCSEL Anode**	**1**	**VCSEL Cathode**
2	**VCSEL Cathode/ PD Anode**	**2**	**VCSEL Anode/ PD Cathode**
3	**PD Cathode**	**3**	**PD Anode**
4	**Case**	**4**	**Case**

ILLUSTRATION OF EYE PERFORMANCE:



1.25 Gbps, GbE, filtered



2.5Gbps, OC-48, filtered

WARNING:

The VCSEL is a class IIIb laser in the safety standard

ANSI Z136.1 and should be treated as a potential eye hazard.