TLC-P85A646-10M
10Gbps 850nm VCSEL LC-TOSA with Flexible Circuit

Data Sheet

Description

The Lasermate TLC-P85A646-10M is an 850nm Vertical Cavity Surface Emitting Laser (VCSEL) LC-type Transmitter Optical Sub-Assembly (LC-TOSA) featuring an integrated flexible printed circuit (FPC) and wide operating temperature range. Designed to support data rates up to 10.3125Gbps, it provides an isolated pinout between the laser diode (LD) and the monitor photodiode (PD) for enhanced signal integrity and EMI suppression. The module is optimized for rugged or industrial-grade transceivers requiring -40°C to +85°C operating temperature.

Features

- 850nm VCSEL LC-TOSA
- LC-type optical sub-module with attached FPC
- Supports data rates up to 10.3125Gbps
- Isolated pinout between LD and monitor PD
- Wide operating temperature: -40°C to +85°C
- Optimized for high-speed fiber optic transmission

Applications

- 10Gbps optical transceivers
- 10GBASE-SR short-reach communication
- Active optical cables (AOC)
- Industrial and rugged fiber optic applications

Specifications

Absolute Maximum Ratings				
Parameters	Min.	Max.	Unit	Conditions
Storage Temperature	-40	100	°C	
Operating Temperature	-40	85	°C	
Lead Solder Temperature		260	°C	10 seconds
Continuous Forward Current		10	mA	
Continuous Reverse Voltage		10	V	

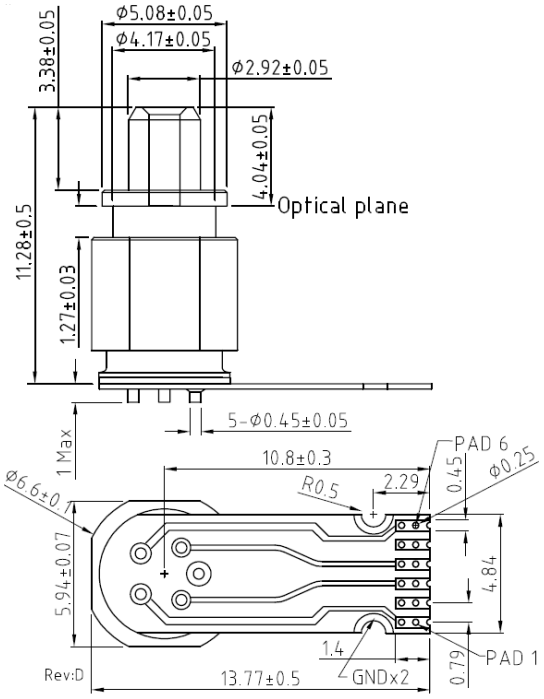
Electro-Optical Characteristics						
Parameters	Symbol	Min.	Typ.	Max.	Unit	Conditions
Threshold Current	I_{th}		1.0	1.5	mA	T_A=25 ºC
			2.0	2.5		T_A=85 ºC
Slope Efficiency	η	0.09		0.17	mW/mA	I_F=6 mA
Wavelength	λ_P	840	850	860	nm	I_F=6 mA (2)
Forward Voltage	V_F	1.7		2.4	V	I_F=6 mA
Rise Time / Fall Time	Tr / Tf		50		ps	I_F=6 mA, ER= 5 dB
Relative Intensity Noise	RIN			-128	dB/Hz	I_F =6 mA, f= 1GHz
Spectral width (RMS)	$\Delta\lambda$			0.45	nm	I_F =6 mA, T_A= -10~85 ºC
Monitor Current	I_M	30		500	uA	V_R=5 V, P_{OC} =600uW (3)
PD Dark Current	I_d			20	nA	V_R=5 V, T_A=25 ºC
PD Capacitance	C_M		12		pF	V_R=3 V, f= 1MHz

Thermal Characteristics						
Parameters	Symbol	Min.	Typ.	Max.	Unit	Conditions
I_{th} Temperature Variation	△Ith			1.5	mA	T_a=-40~85°C
η Temperature Coefficient	△η/△T		-0.4		%/℃	T_a=-40~85°C, I_F=6mA
λ_P Temperature Coefficient	△P/△T		0.07		nm/℃	T_a=-40~85°C, I_F=6mA
Tracking Error	TE	-1.5		1.5	dB	T_a=-40~85°C (4)
Series Resistance	R_S		70	85	Ohm	T_a=25°C, I_F=6mA
			60			T_a=85°C, I_F=6mA

Notes:

1. All parameters except mentioned are measured at I_F=6mA, 25°C, unless otherwise stated.
2. Minimum and Maximum values are valid over the entire ambient temperature range.
3. Poc=Coupled Optical Power, be measured with a multi-mode 50/125μm fiber and ambient temperature 25°C.
4. CW, I_M = Constant (@Po= I_{th}+4mA, 25°C), TE=10log[(Po@T_A)/(Po@25°C)]

Outline Dimensions (unit: mm)



Pin Configuration

Number	Function
1	PD Cathode
2	Case / Gnd
3	VCSEL Anode
4	VCSEL Cathode
5	Case / Gnd
6	PD Anode

Note: Specifications are subject to change without notice.