TLC-P85A546-10M
10Gbps 850nm VCSEL LC-TOSA with Wide Operation Temperature

Data Sheet

Description

The Lasermate TLC-P85A546-10M is a high-performance 850nm Vertical Cavity Surface Emitting Laser (VCSEL) LC-type Transmitter Optical Sub-Assembly (LC-TOSA) designed for 10Gbps optical communication systems. Engineered to support data rates up to 10.3125Gbps, this module features an isolated pinout configuration between the laser diode (LD) and monitor photodiode (PD), ensuring signal integrity and compatibility with a variety of transceiver designs. With an extended operating temperature range of -40°C to +85°C, the TLC-P85A546-10M is ideal for demanding applications in data centers, networking equipment, and harsh environments.

Features

- 850nm wavelength VCSEL laser
- LC-type optical sub-module design
- Supports up to 10.3125Gbps data rate
- Isolated pinout for LD and monitor PD
- Optimized for multimode fiber optic applications
- Wide operating temperature range: -40°C to +85°C

Applications

- 10Gbps optical transceivers
- 10GBASE-SR short-reach links
- Industrial networking systems
- Harsh environment datacom
- High-speed interconnects

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	

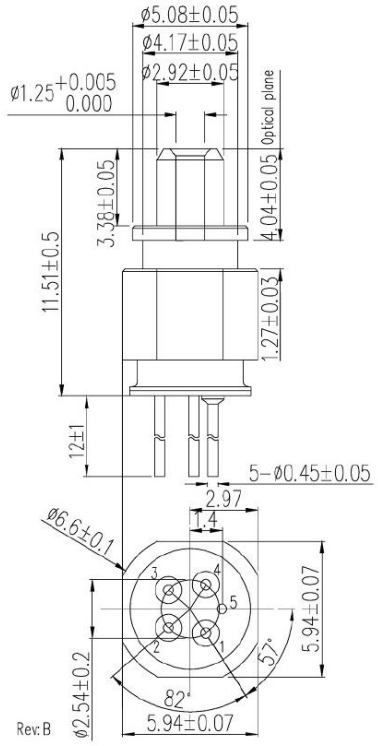
Electro-Optical Characteristics						
Parameters	Symbol	Min.	Typ.	Max.	Unit	Conditions (1)
Threshold Current	I_{th}		0.8	1.5	mA	T_A=25 ºC
			1.3	1.85		T_A=85 ºC
Slope Efficiency	η	0.09		0.17	mW/mA	I_F=6 mA
Wavelength	λ_P	840	850	860	nm	I_F=6 mA (2)
Fiber Output Power	P_f	0.4		0.95	mW	I_F=6 mA
Forward Voltage	V_F	1.5		2.6	V	I_F=6 mA
Series Resistance	R_s		100		Ω	I_F =6 mA, T_A= 25 ºC
Rise Time / Fall Time	Tr / Tf			50	ps	I_F=6 mA, ER= 4.5 dB
Spectral width (RMS)	Δλ			0.45	nm	I_F =6 mA, T_A= 25 ºC
Monitor Current	I_M	100		900	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

Thermal Characteristics						
Parameters	Symbol	Min.	Typ.	Max.	Unit	Conditions
I_{th} Temperature Variation	△Ith			1.5	mA	T_a=-40~85ºC
η Temperature Coefficient	△η/△T		-0.5		%/℃	T_a=-40~85ºC, I_F=6mA
λ_P Temperature Coefficient	△P/△T		0.07		nm/℃	T_a=-40~85ºC, I_F=6mA
Tracking Error	TE	-1.5		1.5	dB	T_a=-40~85ºC (4)

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	VCSEL Anode
2	PD Cathode
3	PD Anode
4	VCSEL Cathode
5	Case/Gnd

Note: Specifications are subject to change without notice.