



# TSC-P85A4x6-2

## 1.25Gbps 850nm VCSEL SC-TOSA with Monitor PD



### Description

The Lasermate TSC-P85A4x6-2 is an 850nm Vertical Cavity Surface Emitting Laser (VCSEL) SC-TOSA featuring a pre-aligned SC-type receptacle compatible with both 50/125 $\mu$ m and 62.5/125 $\mu$ m multi-mode fiber. Designed for data rate operation up to 1.25Gbps, this module is packaged with an attenuating coating and includes a monitor photodiode (PD) for performance monitoring. It supports common cathode or common anode pin configurations to fit various system designs.

### Features

- Pre-aligned SC-type receptacle for 50/125 $\mu$ m and 62.5/125 $\mu$ m multi-mode fibers
- Packaged with attenuating coating and monitor photodiode (PD)
- Data rate operation from DC to 1.25Gbps
- Common cathode or common anode pin configuration

### Applications

- 1.25Gbps fiber optic communication systems
- Multi-mode fiber data transmission
- Telecom and LAN networks

### Ordering Information

Part Number	Description
TSC-P85A416-2	1.25Gbps 850nm VCSEL SC-TOSA with Monitor PD, Common Cathode Pin
TSC-P85A426-2	1.25Gbps 850nm VCSEL SC-TOSA with Monitor PD, Common Anode Pin

## Specifications

Absolute Maximum Ratings				
Parameters	Min.	Max.	Unit	Conditions
Storage Temperature	-40	85	°C	
Operating Temperature	-10	70	°C	
Lead Solder Temperature		260	°C	10 seconds
Laser Continuous Forward Current		20	mA	
Laser Continuous Reverse Voltage		5	V	

Electro-Optical Characteristics						
Parameters	Symbol	Min.	Typ.	Max.	Unit	Conditions
Threshold Current	$I_{th}$		1.7	3	mA	
Slope Efficiency	$\eta$	0.04	0.07	0.12	mW/mA	$I_F=6$ mA
Wavelength	$\lambda_P$	830	850	860	nm	$I_F=6$ mA
Forward Voltage	$V_F$	1.6	1.8	2.1	V	$I_F=6$ mA
Breakdown Voltage	$V_{BD}$	5	14		V	$I_R=10$ uA
Rise Time (20%~80%)	$T_r$		0.15	0.25	ns	@ $I_{bias}=6$ mA
Fall Time (20%~80%)	$T_f$		0.15	0.25	ns	@ $I_{bias}=6$ mA
Series Resistance	$R_s$	35	45	65	$\Omega$	$I_F=6$ mA
Spectral Width (RMS)	$\Delta\lambda$			0.85	nm	$I_F=6$ mA
Relative Intensity Noise	RIN		-130	-120	dB/Hz	$I_F=6$ mA, $f=1$ GHz
Monitor Current	$I_M$	200		800	uA	$V_R=5$ V, $P_{OC}=350$ uW <sup>(2)</sup>

### Notes:

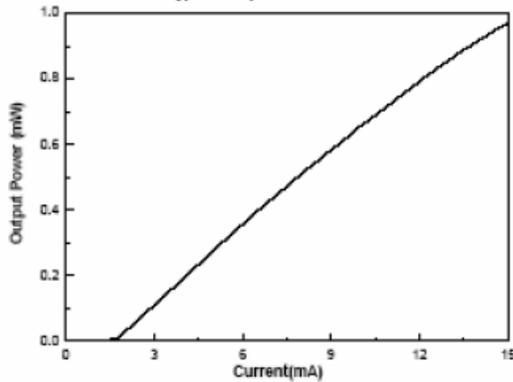
1. All parameters except mentioned are measured at  $I_F=6$  mA, 25°C, CW.
2.  $P_{OC}$ =Coupled Optical Power, measured with a multi-mode 50/125um fiber and ambient temperature 25°C.

Thermal Characteristics						
Parameters	Symbol	Min.	Typ.	Max.	Unit	Conditions
$I_{th}$ Temperature Variation	$\Delta I_{th}$	-1.5		1.5	mA	$T_A=0\sim 70^\circ\text{C}$
$\eta$ Temperature Coefficient	$\Delta\eta/\Delta T$	-0.1		-0.5	%/°C	$T_A=0\sim 70^\circ\text{C}$ , $I_F=6$ mA
$\lambda_P$ Temperature Coefficient	$\Delta\lambda_P/\Delta T$		0.06		nm/°C	$T_A=0\sim 70^\circ\text{C}$ , $I_F=6$ mA

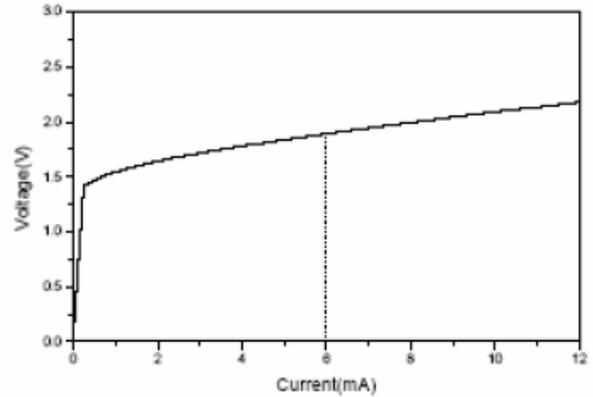


### Typical Characteristics

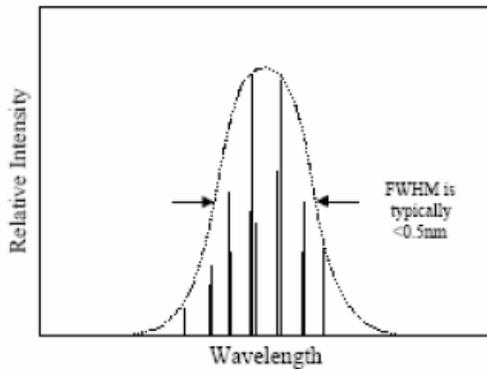
Typical Output Characteristics



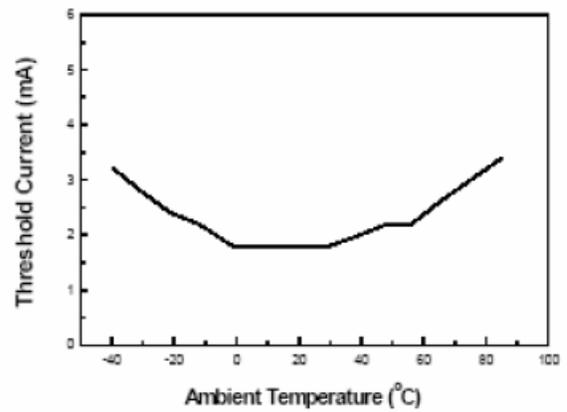
Typical Electrical Characteristics



Spectrum at Driving Current 6mA

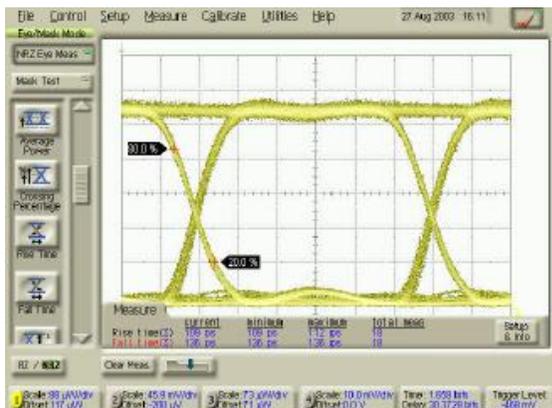


Temperature Dependence of Threshold Current

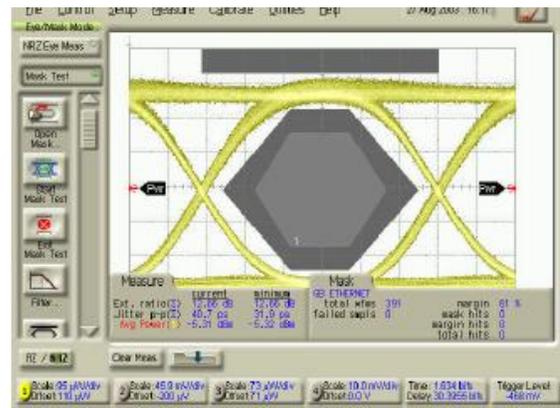


### Illustration of Eye Performance at 1.25Gbps

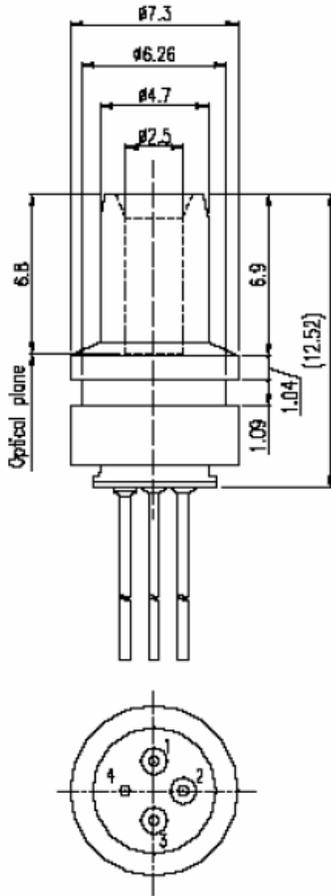
Without Filter



With Filter



**Outline Dimensions (unit: mm)**



**Pin Configuration**

TSC-P85A416-2		TSC-P85A426-2	
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

Note: Specifications are subject to change without notice.