

Features
: Multi-mode 850nm VCSEL
: Data rates up to 10Gbps
: High reliability VCSEL
: Optional flex or lead type
: Differential, Cathode, Anode Driven available
: Complete isolation /VCSEL, m-PD, Case
: No Attenuation Coating
: LC/SC type housing available



Applications
: High speed Data Communications
: Fiber Channel
: 10G Gigabit Ethernet

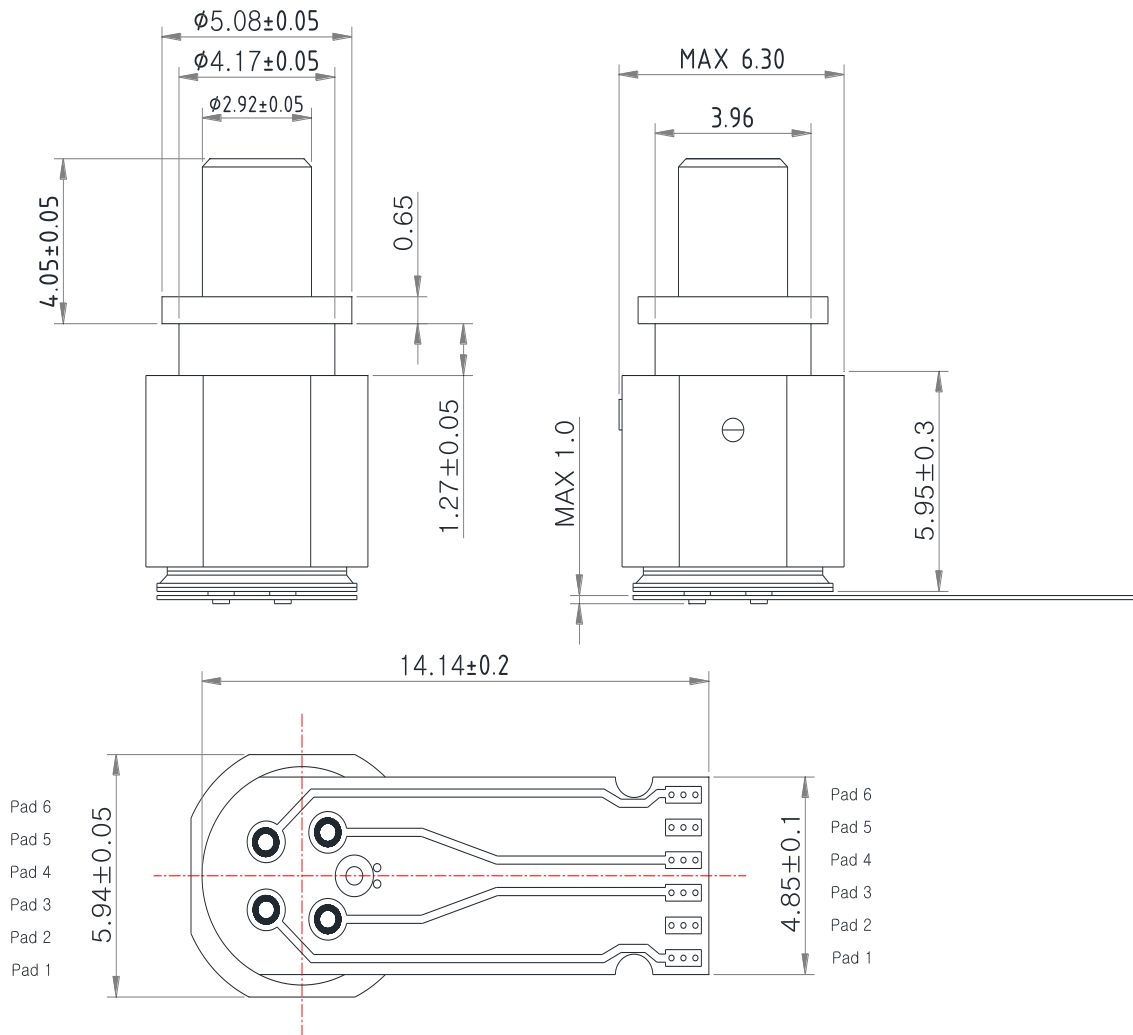
Absolute Maximum Ratings	
Parameter	Rating
Storage Temperature	-40 to 100 °C
Operating Temperature	-40 to 85 °C
Lead Solder Temperature	260 °C, 10 sec
Flex Attach Temperature	370 °C, 10 sec
Continuous Forward Current	10mA
Continuous Reverse Voltage	5V (@10µA)

**NOTICE**  
 Conditions exceeding those listed may cause permanent damage to the device. Devices subjected to conditions beyond the limits specified for extended periods of time may adversely affect reliability

Part Number :	Description :
TP85-LCP1HA-FA-Os	850nm 10Gbps Plastic LC type TOSA, Differential drive, with flex, normal type
TP85-LCP1HA-FK-Os	850nm 10Gbps Plastic LC type TOSA, Differential drive, with flex, Inverted type
TP85-LCP1HA-LA-Os	850nm 10Gbps Plastic LC type TOSA, Differential drive, without flex, normal type
TP85-LCP1HA-LK-Os	850nm 10Gbps Plastic LC type TOSA, Differential drive, without flex, Inverted type

Dimensions

Unit :mm



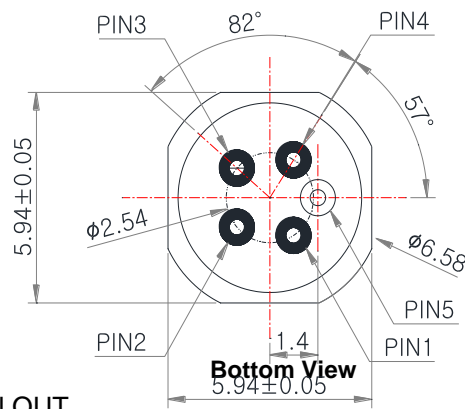
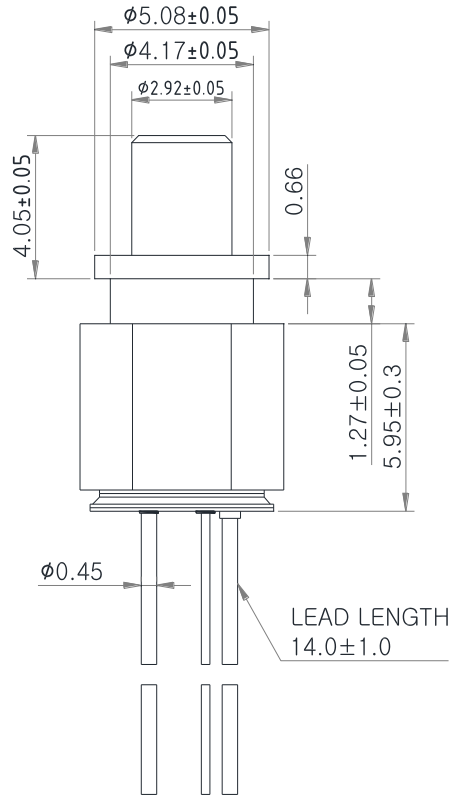
Bottom View

PIN OUT

TP85-LCP1HA-FA-Os		TP85-LCP1HA-FK-Os	
Number	Function	Number	Function
1	$K_m$ -PD	1	$K_m$ -PD
2	Case	2	Case
3	$A_{VCSEL}$	3	$K_{VCSEL}$
4	$K_{VCSEL}$	4	$A_{VCSEL}$
5	Case	5	Case
6	$A_m$ -PD	6	$A_m$ -PD

Dimensions

Unit :mm



PIN OUT

TP85-LCP1HA-LA-Os		TP85-LCP1HA-LK-Os	
Number	Function	Number	Function
1	A <sub>VCSEL</sub>	1	K <sub>VCSEL</sub>
2	K <sub>m-PD</sub>	2	K <sub>m-PD</sub>
3	A <sub>m-PD</sub>	3	A <sub>m-PD</sub>
4	K <sub>VCSEL</sub>	4	A <sub>VCSEL</sub>
5	GND	5	GND

**Electro-Optics Characteristics (  $T_a=25^{\circ}\text{C}$  unless otherwise stated)**

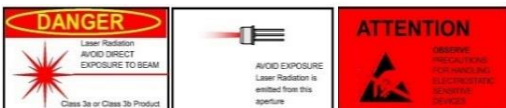
Parameters	Symbol	Specified			Unit	Test Conditions
		Min.	Typ.	Max.		
Peak Fiber Coupled Optical Output Power	$P_{OC}$		500		$\mu\text{W}$	$I_f = 6 \text{ mA}, 50/125 \mu\text{m fiber NA}=0.20$
Threshold Current	$I_{th}$		1.0	2.0	mA	CW
$I_{th}$ Temperature Variation	$\Delta I_{th}$		1.0		mA	$T_a=-40 \text{ to } 85^{\circ}\text{C}$
Slope Efficiency	$\eta$	0.04		0.16	W/A	$I_f = 6 \text{ mA}$
$\eta$ Temperature Variation	$\Delta \eta / \Delta T$		-4000		PPM/ $^{\circ}\text{C}$	$T_a=-40 \text{ to } 85^{\circ}\text{C}$ at 6 mA
Coupling efficiency	$E_{FCE}$		75		%	$I_f = 6 \text{ mA}$
Peak Wavelength	$\lambda_p$	840	850	860	nm	$I_f = 6 \text{ mA}$
$\lambda_p$ Temperature Coefficient	$\Delta \lambda / \Delta T$		0.06		nm/ $^{\circ}\text{C}$	$T_a=-40 \text{ to } 85^{\circ}\text{C}$ at 6mA
Spectral Bandwidth (RMS)	$\Delta \lambda$			0.45	nm	$I_f = 6 \text{ mA}$
Forward Voltage	$V_f$		2.2	2.5	V	$I_f = 6 \text{ mA}$
Breakdown Voltage	$V_b$		-10		V	$I_f = 10 \mu\text{A}$
Small Signal Bandwidth	GHz	8				$I_f = 6 \text{ mA}$
Rise and Fall Times	$t_r$		40		ps	Prebias Above Threshold, 20%~80%
	$t_f$		50			
Relative Intensity Noise	RIN			-130	dB/Hz	10GHz BW, $I_f = 6 \text{ mA}$
Series Resistance	$R_s$		80		Ohm	$I_f = 6 \text{ mA}$
$R_s$ Temperature Coefficient	$dR_s/dT$		-2000		PPM/ $^{\circ}\text{C}$	

Parameters	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Monitor Current	$I_{PD}$	0.2		0.7	mA	$P_{OC}=0.5 \text{ mW}$
Dark current	$I_D$			10	nA	$P_o=0 \text{ mW}, V_f=3 \text{ V}$
PD Reverse Voltage	$BVR_{PD}$	40			V	$P_o=0 \text{ mW}, I_f=100 \mu\text{A}$
PD Capacitance	C			50	pF	$V_f=0 \text{ V}, \text{Freq}=1 \text{ MHz}$
				20		$V_f=3 \text{ V}, \text{Freq}=1 \text{ MHz}$

**Notes**

\* These specifications are subject to change without notice



<b>NOTICE</b>	The inherent design of this component causes it to be sensitive to electrostatic discharge(ESD). To prevent ESD-induced damage and/or degradation to equipment, take normal ESD precautions when handling this product
<b>DANGER</b>	The VCSEL is a class IIIb laser and should be treated as a potential eye hazard. Due to the size of the component, the applicable warning logotype, aperture label, and certification / identification label cannot be placed on the component itself.