



850nm 8mW Single Mode VCSEL Diode in TO-46 Package

Part No. VCTA-850H8A

Features

- TO-46 package
- Single longitudinal mode
- Low wavelength drift
- Oxide isolation technology
- Low threshold current
- Small emission area
- Easy to collimate
- 8mW 850nm VCSEL @ 11.2mA



TO-46 Package

Applications

- Proximity sensor
- Consumer electronics
- Active optical cables
- Medical application
- Range finder sensor
- Modulation and width >2GHz

Specifications

Absolute Maximum Ratings				
Parameters	Symbol	Rating	Unit	Conditions
Case Operating Temperature	Top	-40 to 70	°C	
Storage Temperature	Tstg	-40 to 85	°C	
Reflow Soldering Temperature	Tsol	260°C	°C	10 seconds
Reverse Voltage	Vr	5	V	
Maximum Continuous Current	I _{max}	20	mA	
ESD Exposure (Human Body) Model	ESD	2K	V	

Notes:

- Stresses greater than those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or other conditions above those indicated in the operations section for expanded periods of time may affect reliability.
- In its maximum rating diode laser operation could damage its performance or cause potential safety hazard such as equipment failure.
- Electrostatic discharge is the main reason for laser fault of the diode. Take effective precautions against ESD. When dealing with laser diodes, use wrist strap, grounding work surface and strict antistatic technology.

Electro-Optical Characteristics (T _{op} =25°C, CW mode)						
Parameters	Symbol	Min.	Typ.	Max.	Unit	Conditions
Optical Output Power	P _o	-	8	10	mW	I _F =11.2mA
Threshold Current	I _{th}	-	0.5	-	mA	
Power Conversion Efficiency	PCE	-	27.5	-	%	I _F =11.2mA
Slope Efficiency	η	-	0.6	-	mW/mA	P _o =8mW
Peak Wavelength	λ _P	840	850	860	nm	I _F =11.2mA
Forward Voltage	V _F	-	2.5	2.7	V	I _F =11.2mA
Series Resistance	R _S	-	60	-	Ohm	I _F =11.2mA
Original Beam Angle	Θ	-	25	-	Deg	I _F =11.2mA
Wavelength Temperature Drift	Δλ _P / ΔT	-	-	0.07	nm/°C	I _F =11.2mA
Soldering Temperature	Tsol			260	°C	10 seconds
Substrate					AlN	

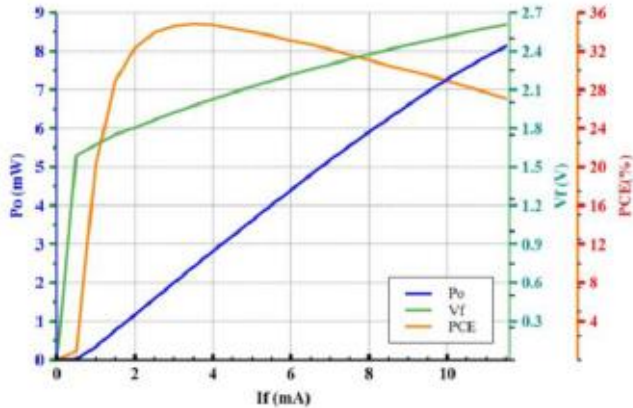
Note: Electro-optical characteristic with a package or diffuser would require further evaluation. Values are based on limited sample size and estimated values.



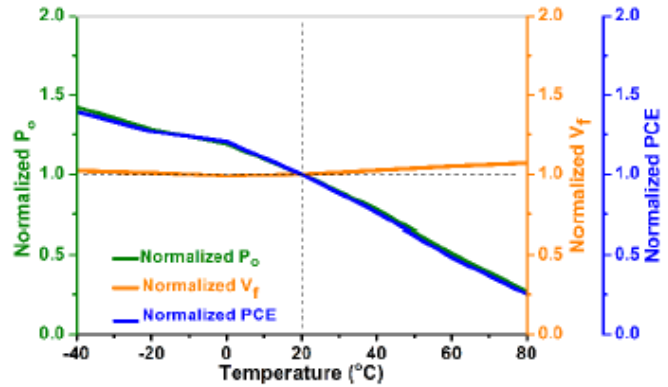
Environmental Specifications						
Parameters	Symbol	Min.	Typ.	Max.	Unit	Conditions
Case Operating Temperature	Top	-40	25	70	°C	
Storage Temperature	Tstg	-40	25	85	°C	

Typical Characteristics

LIV Graph (25°C)



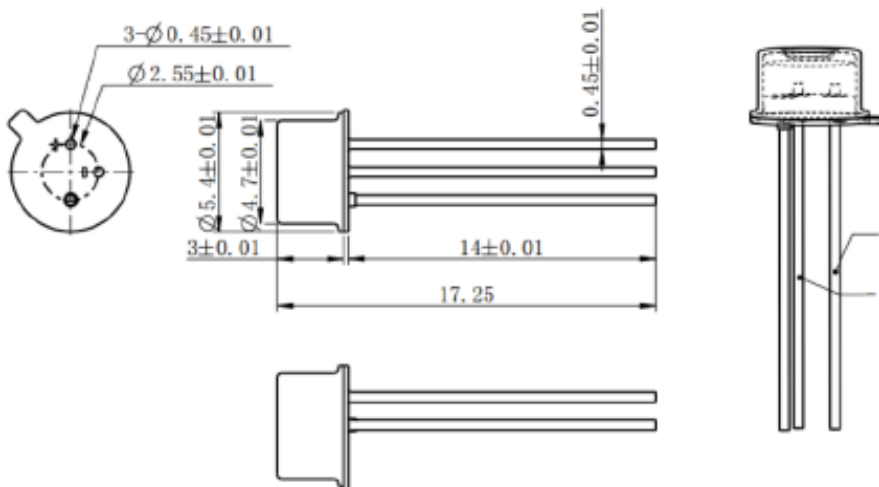
LIV Graph

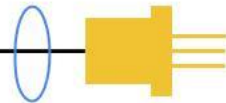


Notes:

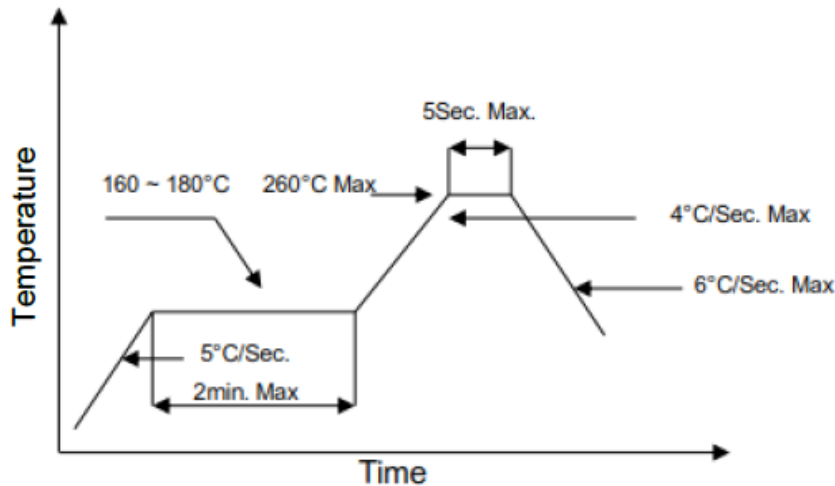
- LIV graph was measured at 25°C (left); power output, voltage, and power conversion efficiency variation trend with changed operating temperature (right, normalized).
- Forward Voltage (V_F) measurement allowance is ±0.1V.
- Peak Wavelength (λ_P) measurement allowance is ±1.5nm.
- Others measurement allowance is ±10%.

Outline Dimensions (unit: mm)





SMT Reflow Soldering Curve



Note: Reflow soldering can be operated only one time. During the temperature ramp-up, no forces may be exerted on the LD which would deform or damage them. After soldering is completed, please do not process until the product temperature ramps down to room temperature.

Additional Notes

1. Please use solder paste to cure the laser diode.
2. Please make sure that the heat of VCSEL diode has been completely conducted to metal shell to avoid affecting the optical power output.
3. This VCSEL diode can be only used in constant voltage and current.
4. Please do not aim the laser at people or animals.
5. You may observe the laser spot through an image monitoring equipment.
6. Please do not touch VCSEL diode surface by naked hands or squeeze the sealant on VCSEL diode surface. It may cause wrong optical angle and distorted laser spot, and even damage the VCSEL diode.
7. Please use ceramic suction nozzle to absorb the VCSEL diode, so as to avoid VCSEL diode sticking to the nozzle.
8. Please add a 0.02s blowing action after locating the laser diode to aluminum substrate.
9. Specifications are subject to change without notice.