

Description

The VPSL-0685-050-X-5-A/B is a 0.9 μm band, InGaInP laser diode with a multi-quantum well (MQW) structure. It is suitable as a light source for imaging, and various other types of optical equipment. Combined with an integrated, internal, beam correcting optic and encased in a hermetic sealed package, this is a high-performance, highly reliable, and long life laser diode available in 2 different pin outs configurations.

Features

- Single Longitudinal mode, visible 685nm light
- Integrated monitor photodiode
- 50mW CW optical power
- Standard 5.6 mm form factor

Absolute Maximum Ratings (T_C =case temperature=25°C) *

Item	Symbol	Min	Max	Unit
Optical output power (CW)	P_O	-	55	mW
LD reverse voltage	V_R (LD)	-	2	V
PD Reverse Voltage	V_R (PD)		30	V
Operating temperature	T_{opr}	-10	+70	°C
Storage temperature	T_{stg}	-40	+85	°C

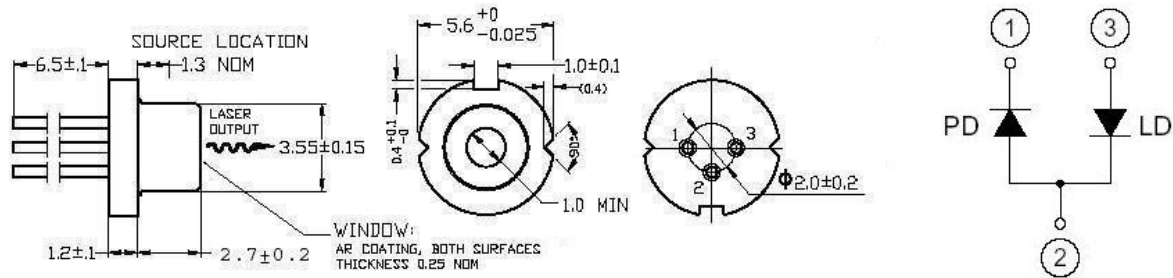
Optical and Electrical Characteristics (T_C =case temperature=25°C) *

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Optical output power	P_O	-	50	55	mW	Kink free
Threshold current	I_{th}		30	60	mA	
Operating current	I_{op}	-	75	120	mA	$P_O=50\text{mW}$
Operating voltage	V_{op}	-	2.3	3.0	V	$P_O=50\text{mW}$
Slope Efficiency	SE	-	1.16	-	mW/mA	25°C
Lasing wavelength	λ_p	675	685	695	nm	$P_O=50\text{mW}$
Monitor Current	I_m	0.08	0.15	0.35	mA	$P_O=50\text{mW}$
Circularity	ϕ		-	0.8:1.25	ratio	$P_O=50\text{mW}$
Beam divergence	θ	7	9	12	deg	$P_O=50\text{mW}$, FWHM

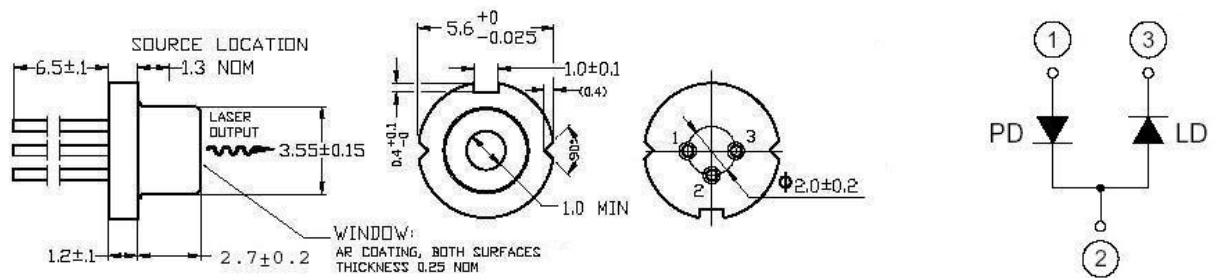
Specifications are subject to change without notice. Each purchased VPSL is provided with test data. Please refer to this data before using the VPSL.

Package Detail, Mechanical & Electrical – VPSL-0685-050-x-5-A/B

A PINOUT PACKAGE



B PINOUT PACKAGE



Handling Care and Precautions for Use of VPSL Diodes

1. Absolute Maximum Ratings

Do not exceed, *even momentarily*, the maximum ratings (see page 1, table). When a VPSL diode is driven in excess of its maximum ratings, it can cause at minimum a considerable reduction in reliability, and potentially instantaneous failure.

- VPSL diodes may be damaged by surge currents generated at power on-off operation. Check on the transient characteristics of the power supply to make sure that such surges do not exceed the maximum ratings.
- The maximum ratings are specified for a case temperature of 25°C. Designs should be made to work well within this temperature range. As the case temperature goes up, power dissipation as well as maximum light output power is reduced.

2. Soldering Conditions

Maximum solder-tip temperature is 260°C and soldering time must be within 3.0 seconds. A minimum solder clearance of 1.6mm should be maintained from the root of the lead.

3. Prevention of Breakdown due to Static Electricity

VPSL diodes may be adversely affected by static electricity and surge currents and, consequently, cause breakdown of the diode and reduction of reliability unless the following precautions are taken:

- Power supplies, installation and measuring equipment should be grounded. A noise filter or noise-cut transformer should be provided on any power supply inputs.
- Anyone working with a VPSL diode should be grounded through high resistance (500 K Ohm - 1M Ohm) by means of a ground strap and wrist band (for example).

BSR165 12/29/2014

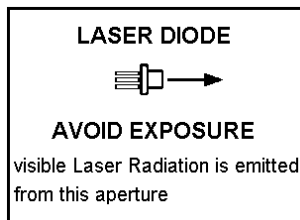
- c. Soldering irons should be grounded to protect laser diodes from voltage leaks.
- d. During operation of the VPSL diode, working clothes, hats, and shoes should be static-protected. Cotton-based clothing is preferred.
- e. Any container for carriage and storage should be static-protected.
- f. Avoid using laser diodes in an environment where high frequency surge currents may be generated by an inductive electric field (such as a fluorescent lamp). These fields can also cause breakdown or deterioration of the laser diode.

4. Package Handling

- a. The laser diode package should not be cut off, reworked, or deformed. Do not hold the cap of the VPSL diode tightly, otherwise it may induce cracks or damage to the window glass.
- b. Do not touch the surface of the window glass. Any scratch or contamination may result in reduction of optical characteristics.
- c. Remove small contaminates on the surface softly using a cotton tip stick with a small amount of methyl alcohol.

5. Safety

The output light from laser diodes is harmful to a human body even if it is invisible. Avoid looking at the output light of a VPSL diode directly, or even indirectly through a lens during operation. Observance of operation should be through an infrared TV camera or related equipment. Refer to IEC 825-1 and 21 CFR 1040.10-1040.11 as a radiation safety standard for laser products.



Description

The VPSL-0690-035-x-5-A Laser Device is a 0.68 μm band, AlGaInP index guided, laser diode with a multi-quantum well (MQW) structure. It is suitable as a light source for large capacity optical disc memories, such as magneto-optical, and various other types of optical equipment. Combined with an integrated, internal, beam correcting optic and encased in a hermetic sealed package, this is a high-performance, highly reliable, and long life laser diode.

Features

- Built-in monitor photodiode
- Circular, diverging beam, NA approximately 0.11
- Diffraction limited wavefront, aberration equal or better than $\lambda/4$ peak to valley
- 35mW (CW maximum) optical power, 50mW pulsed (50% duty, pulse < 1 μs)
- Standard 5.6 mm form factor

Absolute Maximum Ratings (T_C =case temperature=25°C) *

Item	Symbol	Min	Max	Unit
Optical output power	P_O	-	35	mW
LD reverse voltage	V_R (LD)	-	2	V
PD reverse voltage	V_R (PD)	-	30	V
Operating temperature	T_{opr}	-10	+70	°C
Storage temperature	T_{stg}	-40	+85	°C

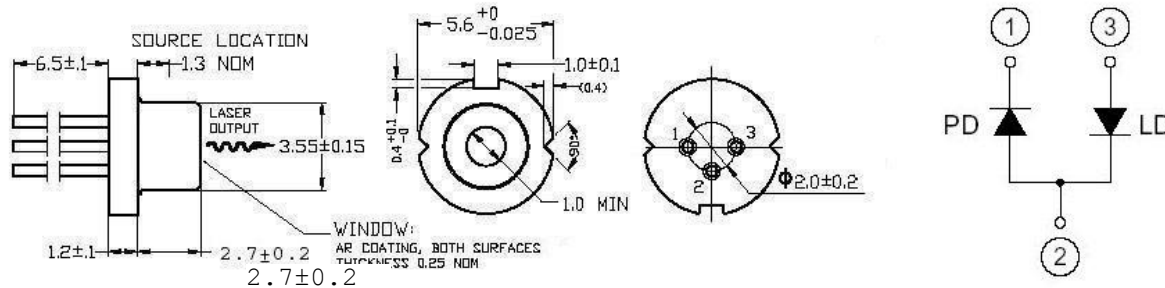
Optical and Electrical Characteristics (T_C =case temperature=25°C) *

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Threshold current	I_{th}	30	45	70	mA	
Operating voltage	V_{op}	2.1	2.5	2.8	V	$P_O=30\text{mW}$
Optical output power	P_O	-	-	35	mW	Kink free
Slope efficiency	DP_O/dI_{op}	0.5	0.7	0.9	mW/mA	$P_O=30\text{mW}$
Lasing wavelength	λ_p	680	690	695	nm	$P_O=30\text{mW}$
Circularity	ϕ		-	0.8:1.25	ratio	$P_O=30\text{mW}$
Beam divergence	θ	7	8.5	10.5	deg	$P_O=30\text{mW}$, FWHM
Off axis angle	$\Delta\theta$	-	-	± 3	deg	
Monitor current	I_s	0.02	0.1	0.45	mA	$P_O=30\text{mW}$, $V_r(pd)=5\text{V}$

Specifications are subject to change without notice. Each purchased VPSL is provided with test data. Please refer to this data before using the VPSL.

Package Detail, Mechanical & Electrical – VPSL-0690-035-x-5-A

A PINOUT PACKAGE



Handling Care and Precautions for Use of CircuLaser Diodes

1. Absolute Maximum Ratings

Do not exceed, *even momentarily*, the maximum ratings (see page 1, table). When a CircuLaser diode is driven in excess of its maximum ratings, it can cause at minimum a considerable reduction in reliability, and potentially instantaneous failure.

- CircuLaser diodes may be damaged by surge currents generated at power on-off operation. Check on the transient characteristics of the power supply to make sure that such surges do not exceed the maximum ratings.
- The maximum ratings are specified for a case temperature of 25°C. Designs should be made to work well within this temperature range. As the case temperature goes up, power dissipation as well as maximum light output power is reduced.

2. Soldering Conditions

Maximum solder-tip temperature is 260°C and soldering time must be within 3.0 seconds. A minimum solder clearance of 1.6mm should be maintained from the root of the lead.

3. Prevention of Breakdown due to Static Electricity

CircuLaser diodes may be adversely affected by static electricity and surge currents and, consequently, cause breakdown of the diode and reduction of reliability unless the following precautions are taken:

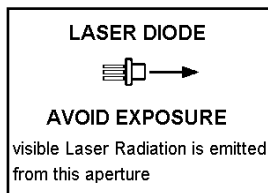
- Power supplies, installation and measuring equipment should be grounded. A noise filter or noise-cut transformer should be provided on any power supply inputs.
- Anyone working with a CircuLaser diode should be grounded through high resistance (500 K Ohm - 1M Ohm) by means of a ground strap and wrist band (for example).
- Soldering irons should be grounded to protect laser diodes from voltage leaks.
- During operation of the CircuLaser diode, working clothes, hats, and shoes should be static-protected. Cotton-based clothing is preferred.
- Any container for carriage and storage should be static-protected.
- Avoid using laser diodes in an environment where high frequency surge currents may be generated by an inductive electric field (such as a fluorescent lamp). These fields can also cause breakdown or deterioration of the laser diode.

4. Package Handling

- The laser diode package should not be cut off, reworked, or deformed. Do not hold the cap of the CircuLaser diode tightly, otherwise it may induce cracks or damage to the window glass.
- Do not touch the surface of the window glass. Any scratch or contamination may result in reduction of optical characteristics.
- Remove small contaminates on the surface softly using a cotton tip stick with a small amount of methyl alcohol.

5. Safety

The output light from laser diodes is harmful to a human body even if it is invisible. Avoid looking at the output light of a CircuLaser diode directly, or even indirectly through a lens during operation. Observance of operation should be through an infrared TV camera or related equipment. Refer to IEC 825-1 and 21 CFR 1040.10-1040.11 as a radiation safety standard for laser products.



Description

The VPSL-0785-005-X-5-A/B/E is a 0.9 μm band, InGaAs MOCVD grown laser diode with a multi-quantum well (MQW) structure. It is suitable as a light source for imaging, projection, range-finding, and various other types of optical equipment. Combined with an integrated, internal, beam correcting optic and encased in a hermetic sealed package, this is a high-performance, highly reliable, and long life laser diode available in 3 different pinouts (A, B or E).

Features

- Circular, diverging beam, NA approximately 0.19
- Diffraction limited wavefront
- 5mW CW optical power
- Standard 5.6 mm form factor

Absolute Maximum Ratings (T_C =case temperature=25°C) *

Item	Symbol	Min	Max	Unit
Optical output power (CW)	P_O	-	7	mW
LD reverse voltage	V_R (LD)	-	2	V
PD Reverse Voltage	V_R (PD)		30	V
Operating temperature	T_{opr}	-10	+60	°C
Storage temperature	T_{stg}	-40	+80	°C

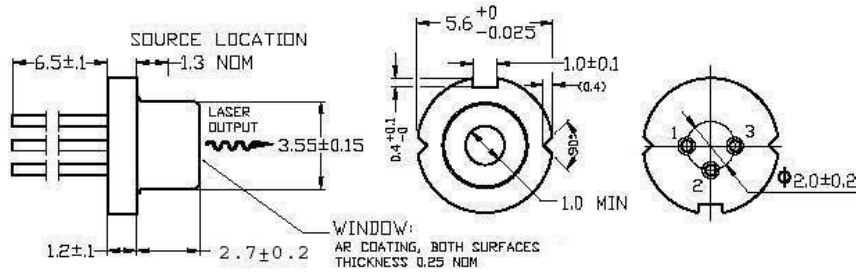
Optical and Electrical Characteristics (T_C =case temperature=25°C) *

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Optical output power	P_O	-	5	-	mW	Kink free
Threshold current	I_{th}		12	20	mA	
Operating current	I_{op}	-	20	35	mA	$P_O=5\text{mW}$
Operating voltage	V_{op}	1.5	1.8	2.4	V	$P_O=5\text{mW}$
Slope Efficiency	SE	0.55	0.75	0.95	mW/mA	$P_O= 3\sim 5\text{mW}$
Lasing wavelength	λ_p	770	785	800	nm	$P_O=5\text{mW}$
Monitor Current	I_m	0.1	0.4	1	mA	$P_O=5\text{mW}$
Circularity	ϕ		-	0.8:1.25	ratio	$P_O=5\text{mW}$
Beam divergence	θ	6	9	15	deg	$P_O=5\text{mW}$, FWHM

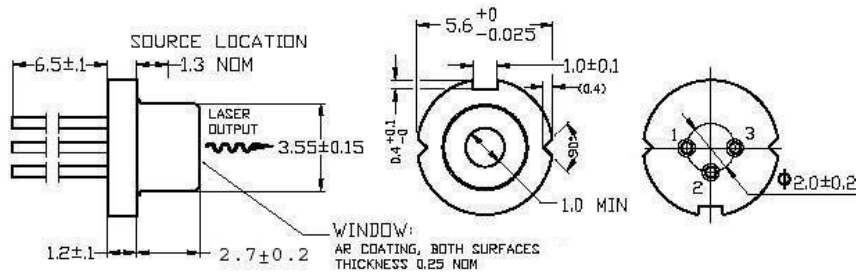
Specifications are subject to change without notice. Each purchased VPSL is provided with test data. Please refer to this data before using the VPSL. VPSL-0785-005-x-5-A/B/E operated in APC mode.

Package Detail, Mechanical & Electrical – VPSL-0785-005-x-5-A/B/E

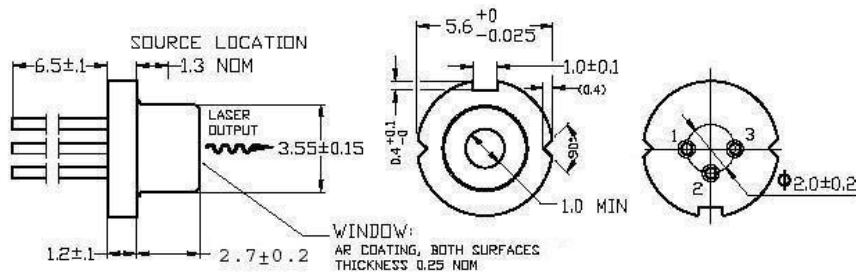
A PINOUT PACKAGE



B PINOUT PACKAGE



E PINOUT PACKAGE



Bottom view
 (side with pins)

Handling Care and Precautions for Use of VPSL Diodes

1. Absolute Maximum Ratings

Do not exceed, *even momentarily*, the maximum ratings (see page 1, table). When a VPSL diode is driven in excess of its maximum ratings, it can cause at minimum a considerable reduction in reliability, and potentially instantaneous failure.

- VPSL diodes may be damaged by surge currents generated at power on-off operation. Check on the transient characteristics of the power supply to make sure that such surges do not exceed the maximum ratings.
- The maximum ratings are specified for a case temperature of 25°C. Designs should be made to work well within this temperature range. As the case temperature goes up, power dissipation as well as maximum light output power is reduced.

2. Soldering Conditions

Maximum solder-tip temperature is 260°C and soldering time must be within 3.0 seconds. A minimum solder clearance of 1.6mm should be maintained from the root of the lead.

3. Prevention of Breakdown due to Static Electricity

VPSL diodes may be adversely affected by static electricity and surge currents and, consequently, cause breakdown of the diode and reduction of reliability unless the following precautions are taken:

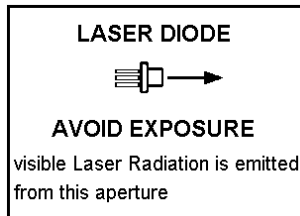
- Power supplies, installation and measuring equipment should be grounded. A noise filter or noise-cut transformer should be provided on any power supply inputs.
- Anyone working with a VPSL diode should be grounded through high resistance (500 K Ohm - 1M Ohm) by means of a ground strap and wrist band (for example).
- Soldering irons should be grounded to protect laser diodes from voltage leaks.
- During operation of the VPSL diode, working clothes, hats, and shoes should be static-protected. Cotton-based clothing is preferred.
- Any container for carriage and storage should be static-protected.
- Avoid using laser diodes in an environment where high frequency surge currents may be generated by an inductive electric field (such as a fluorescent lamp). These fields can also cause breakdown or deterioration of the laser diode.

4. Package Handling

- The laser diode package should not be cut off, reworked, or deformed. Do not hold the cap of the VPSL diode tightly, otherwise it may induce cracks or damage to the window glass.
- Do not touch the surface of the window glass. Any scratch or contamination may result in reduction of optical characteristics.
- Remove small contaminants on the surface softly using a cotton tip stick with a small amount of methyl alcohol.

5. Safety

The output light from laser diodes is harmful to a human body even if it is invisible. Avoid looking at the output light of a VPSL diode directly, or even indirectly through a lens during operation. Observance of operation should be through an infrared TV camera or related equipment. Refer to IEC 825-1 and 21 CFR 1040.10-1040.11 as a radiation safety standard for laser products.



Description

The VPSL-0785-025-Q-5-B is a 0.78 μm band, GaAlAs index guided laser diode with a multi-quantum well (MQW) structure. It is suitable as a light source for large capacity optical disc memories, such as magneto-optical, and various other types of optical equipment. Combined with an integrated, internal, beam correcting optic and encased in a hermetic sealed package, this is a high-performance, highly reliable, and long life laser diode.

Features

- Built-in monitor photodiode
- Circular, diverging beam, NA approximately 0.11
- Diffraction limited wavefront, aberration equal or better than $\lambda/4$ peak to valley
- 25mW CW optical power
- Standard 5.6 mm form factor

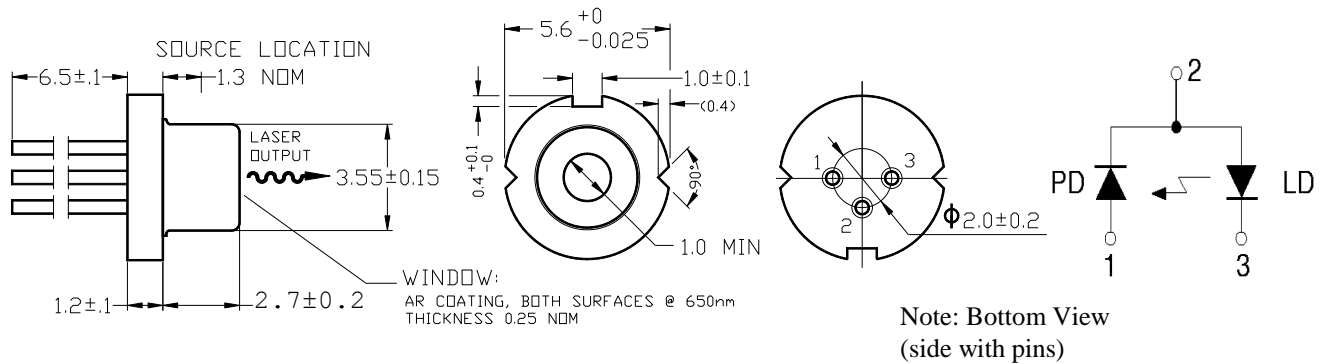
Absolute Maximum Ratings (T_C =case temperature=25°C) *

Item	Symbol	Min	Max	Unit
Optical output power	P_O	-	30	mW
LD reverse voltage	V_R (LD)	-	2	V
PD reverse voltage	V_R (PD)	-	30	V
Operating temperature	T_{opr}	-10	+60	°C
Storage temperature	T_{stg}	-40	+85	°C

Optical and Electrical Characteristics (T_C =case temperature=25°C) *

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Optical output power	P_O	-	25	30	mW	
Threshold current	I_{th}	-	15	25	mA	
Operating current	I_{op}	30	45	60	mA	$P_O=25\text{mW}$
Operating voltage	V_{op}	1.6	1.9	2.3	V	$P_O=25\text{mW}$
Lasing wavelength	λ_p	770	785	800	nm	$P_O=25\text{mW}$
Circularity	ϕ		-	0.8:1.2	ratio	$P_O=25\text{mW}$
Beam divergence	θ	6	8	13	deg	$P_O=25\text{mW}$, FWHM
Off axis angle	$\Delta\theta$	-	-	± 3	deg	
Monitor current	I_s	0.5	-	1.5	mA	$P_O=25\text{mW}$, $V_r(\text{pd})=5\text{V}$

Specifications are subject to change without notice. Each purchased VPSL is provided with test data. Please refer to this data before using the VPSL.



Handling Care and Precautions for Use of VPSL Diodes

1. Absolute Maximum Ratings

Do not exceed, *even momentarily*, the maximum ratings (see page 1, table). When a VPSL diode is driven in excess of its maximum ratings, it can cause at minimum a considerable reduction in reliability, and potentially instantaneous failure.

- VPSL diodes may be damaged by surge currents generated at power on-off operation. Check on the transient characteristics of the power supply to make sure that such surges do not exceed the maximum ratings.
- The maximum ratings are specified for a case temperature of 25°C. Designs should be made to work well within this temperature range. As the case temperature goes up, power dissipation as well as maximum light output power is reduced.

2. Soldering Conditions

Maximum solder-tip temperature is 260°C and soldering time must be within 3.0 seconds. A minimum solder clearance of 1.6mm should be maintained from the root of the lead.

3. Prevention of Breakdown due to Static Electricity

VPSL diodes may be adversely affected by static electricity and surge currents and, consequently, cause breakdown of the diode and reduction of reliability unless the following precautions are taken:

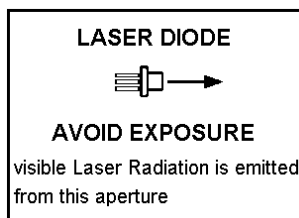
- Power supplies, installation and measuring equipment should be grounded. A noise filter or noise-cut transformer should be provided on any power supply inputs.
- Anyone working with a VPSL diode should be grounded through high resistance (500 K Ohm - 1M Ohm) by means of a ground strap and wrist band (for example).
- Soldering irons should be grounded to protect laser diodes from voltage leaks.
- During operation of the VPSL diode, working clothes, hats, and shoes should be static-protected. Cotton-based clothing is preferred.
- Any container for carriage and storage should be static-protected.
- Avoid using laser diodes in an environment where high frequency surge currents may be generated by an inductive electric field (such as a fluorescent lamp). These fields can also cause breakdown or deterioration of the laser diode.

4. Package Handling

- The laser diode package should not be cut off, reworked, or deformed. Do not hold the cap of the VPSL diode tightly, otherwise it may induce cracks or damage to the window glass.
- Do not touch the surface of the window glass. Any scratch or contamination may result in reduction of optical characteristics.
- Remove small contaminates on the surface softly using a cotton tip stick with a small amount of methyl alcohol.

5. Safety

The output light from laser diodes is harmful to a human body even if it is invisible. Avoid looking at the output light of a VPSL diode directly, or even indirectly through a lens during operation. Observance of operation should be through an infrared TV camera or related equipment. Refer to IEC 825-1 and 21 CFR 1040.10-1040.11 as a radiation safety standard for laser products.



Description

The VPSL-0808-150-X-9-B is an 0.808 μm band, MOCVD grown, circularized, laser diode with a multi-quantum well (MQW) structure. It is suitable as a light source for DPSS pumping, imaging, projection, and various other types of optical equipment. Combined with an integrated, internal beam correcting optic and encased in a hermetically sealed package, this is a high-performance, highly reliable, and long life laser diode available with an integral photodiode.

Features

- Circular, diverging beam, NA approximately 0.11
- Diffraction limited wave front
- 150mW (CW maximum) optical power
- Standard 9 mm form factor

Absolute Maximum Ratings (T_C =case temperature=25°C) *

Item	Symbol	Min	Max	Unit
Optical output power (CW)	P_O	-	150	mW
LD reverse voltage	V_R (LD)	-	2	V
Operating temperature	T_{opr}	-10	+50	°C
Storage temperature	T_{stg}	-40	+85	°C

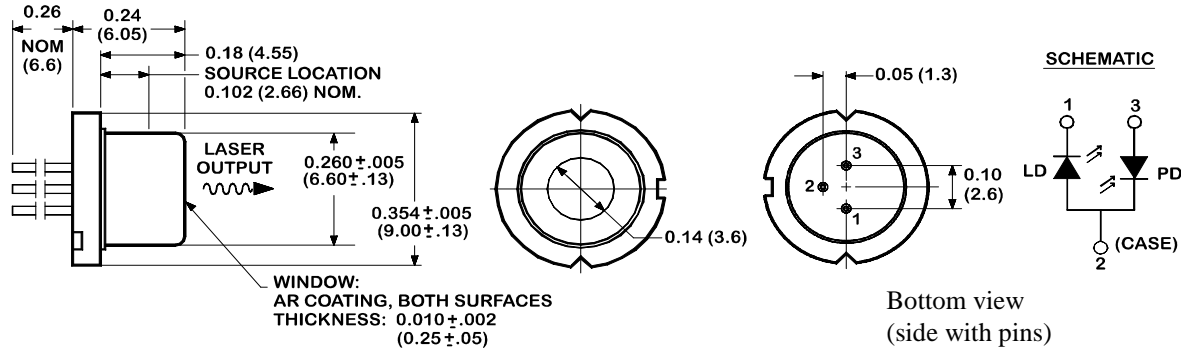
Optical and Electrical Characteristics (T_C =case temperature=25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Threshold current	I_{th}	-	35	55	mA	
Operating current - CW	I_{op}	160	190	220	mA	$P_O=150\text{mW}$
Operating voltage	V_{op}	-	2.1	2.4	V	$P_O=150\text{mW}$
Optical output power	P_O	130	-	150	mW	
Lasing wavelength	λ_p	800	808	815	nm	$P_O=150\text{mW}$
Circularity	ϕ		-	0.8:1.25	ratio	$P_O=150\text{mW}$
Beam divergence	θ	10	12	12	deg	$P_O=150\text{mW}$, FWHM
Monitor Current	I_{mon} ($\mu\text{A}/\text{mW}$)	0.05	-	1.0	mA	$P_O=150\text{mW}$

Specifications are subject to change without notice. Each purchased VPSL is provided with test data.

Package Detail, Mechanical & Electrical – VPSL-0808-150-X-9-B

B PINOUT PACKAGE



Handling Care and Precautions for Use of VPSL™ Diodes

1. Absolute Maximum Ratings

Do not exceed, *even momentarily*, the maximum ratings (see page 1, table). When a VPSL diode is driven in excess of its maximum ratings, it can cause at minimum a considerable reduction in reliability, and potentially instantaneous failure.

- VPSL diodes may be damaged by surge currents generated at power on-off operation. Check on the transient characteristics of the power supply to make sure that such surges do not exceed the maximum ratings.
- The maximum ratings are specified for a case temperature of 25°C. Designs should be made to work well within this temperature range. As the case temperature goes up, power dissipation as well as maximum light output power is reduced.

2. Soldering Conditions

Maximum solder-tip temperature is 260°C and soldering time must be within 3.0 seconds. A minimum solder clearance of 1.6mm should be maintained from the root of the lead.

3. Prevention of Breakdown due to Static Electricity

VPSL diodes may be adversely affected by static electricity and surge currents and, consequently, cause breakdown of the diode and reduction of reliability unless the following precautions are taken:

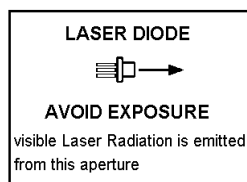
- Power supplies, installation and measuring equipment should be grounded. A noise filter or noise-cut transformer should be provided on any power supply inputs.
- Anyone working with a VPSL diode should be grounded through high resistance (500 K Ohm - 1M Ohm) by means of a ground strap and wrist band (for example).
- Soldering irons should be grounded to protect laser diodes from voltage leaks.
- During operation of the VPSL diode, working clothes, hats, and shoes should be static-protected. Cotton-based clothing is preferred.
- Any container for carriage and storage should be static-protected.
- Avoid using laser diodes in an environment where high frequency surge currents may be generated by an inductive electric field (such as a fluorescent lamp). These fields can also cause breakdown or deterioration of the laser diode.

4. Package Handling

- The laser diode package should not be cut off, reworked, or deformed. Do not hold the cap of the VPSL diode tightly, otherwise it may induce cracks or damage to the window glass.
- Do not touch the surface of the window glass. Any scratch or contamination may result in reduction of optical characteristics.
- Remove small contaminants on the surface softly using a cotton tip stick with a small amount of methyl alcohol.

5. Safety

The output light from laser diodes is harmful to a human body even if it is invisible. Avoid looking at the output light of a VPSL diode directly, or even indirectly through a lens during operation. Observance of operation should be through an infrared TV camera or related equipment. Refer to IEC 825-1 and 21 CFR 1040.10-1040.11 as a radiation safety standard for laser products.



Description

The VPSL-0830-050-x-5-A/B is an 830nm GaALAs laser diode useful for applications such as laser printers, measurement equipment, free space optical communications, and other laser based optical systems. A diffraction- limited and circular wavefront is accomplished through the integration of an internal, beam correcting optic. Hermetic sealing of the package assures high reliability.

Features

- Built-in monitor photodiode.
- Single longitudinal mode
- Diffraction limited performance
- 50mW CW optical power
- Standard 5.6mm form factor

Absolute Maximum Ratings (T_C =case temperature=25°C) *

Item	Symbol	Rated Value	Unit
Optical output power	P_O	50	mW
LD reverse voltage	V_R (LD)	2	V
PD Breakdown voltage	V_R (PD)	30	V
Operating Temperature	T_{opr}	-20 ~ +60	°C
Storage Temperature	T_{stg}	-40 ~ +85	°C

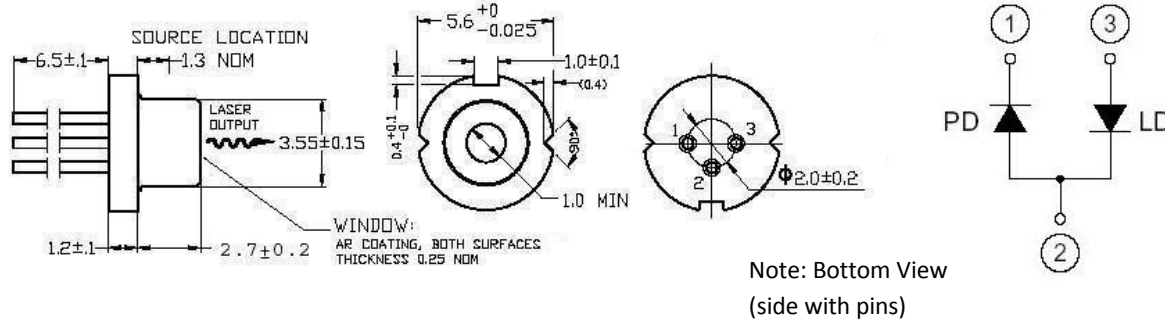
Optical and Electrical Characteristics (T_C =case temperature=25°C) *

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Optical output power	P_O	-	-	50	mW	$P_O=50mW$
Threshold current	I_{th}	-	20	40	mA	
Slope Efficiency	SE	0.7	0.9	-	mA/mW	
Operating current	I_{op}	-	75	100	mA	$P_O=50mW$
Operating voltage	V_{op}	-	1.9	2.4	V	$P_O=50mW$
Lasing wavelength	λ_p	820	830	840	nm	$P_O=50mW$
Circularity	ϕ	-	-	0.8:1.25	ratio	$P_O=50mW @e^{-2}$
Beam divergence	θ	6	9	12	deg	$P_O=50mW$, FWHM
Monitor Current	I_{mon}	-	0.25	-	mA	

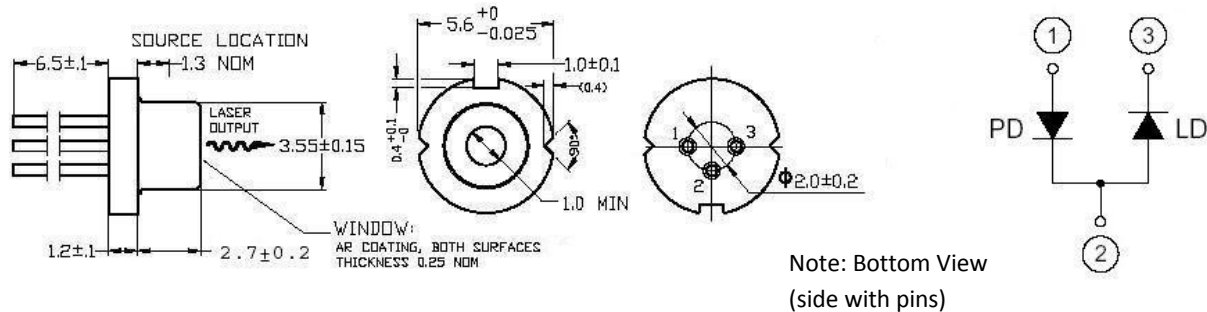
Specifications are subject to change without notice. Each purchased VPSL is provided with test data. Please refer to this data before using the VPSL.

Package Detail, Mechanical & Electrical – VPSL-0830-050-x-5-A/B

A PINOUT PACKAGE



B PINOUT PACKAGE



Handling Care and Precautions for Use of VPSL Diodes

1. Absolute Maximum Ratings

Do not exceed, *even momentarily*, the maximum ratings (see page 1, table). When a VPSL diode is driven in excess of its maximum ratings, it can cause at minimum a considerable reduction in reliability, and potentially instantaneous failure.

- VPSL diodes may be damaged by surge currents generated at power on-off operation. Check on the transient characteristics of the power supply to make sure that such surges do not exceed the maximum ratings.
- The maximum ratings are specified for a case temperature of 25°C. Designs should be made to work well within this temperature range. As the case temperature goes up, power dissipation as well as maximum light output power is reduced.

2. Soldering Conditions

Maximum solder-tip temperature is 260°C and soldering time must be within 3.0 seconds. A minimum solder clearance of 1.6mm should be maintained from the root of the lead.

3. Prevention of Breakdown due to Static Electricity

VPSL diodes may be adversely affected by static electricity and surge currents and, consequently, cause breakdown of the diode and reduction of reliability unless the following precautions are taken:

- Power supplies, installation and measuring equipment should be grounded. A noise filter or noise-cut transformer should be provided on any power supply inputs.
- Anyone working with a VPSL diode should be grounded through high resistance (500 K Ohm - 1M Ohm) by means of a ground strap and wrist band (for example).
- Soldering irons should be grounded to protect laser diodes from voltage leaks.
- During operation of the VPSL diode, working clothes, hats, and shoes should be static-protected. Cotton-based clothing is preferred.

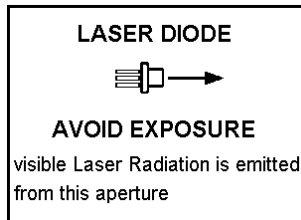
- e. Any container for carriage and storage should be static-protected.
- f. Avoid using laser diodes in an environment where high frequency surge currents may be generated by an inductive electric field (such as a fluorescent lamp). These fields can also cause breakdown or deterioration of the laser diode.

4. Package Handling

- a. The laser diode package should not be cut off, reworked, or deformed. Do not hold the cap of the VPSL diode tightly, otherwise it may induce cracks or damage to the window glass.
- b. Do not touch the surface of the window glass. Any scratch or contamination may result in reduction of optical characteristics.
- c. Remove small contaminates on the surface softly using a cotton tip stick with a small amount of methyl alcohol.

5. Safety

The output light from laser diodes is harmful to a human body even if it is invisible. Avoid looking at the output light of a VPSL diode directly, or even indirectly through a lens during operation. Observance of operation should be through an infrared TV camera or related equipment. Refer to IEC 825-1 and 21 CFR 1040.10-1040.11 as a radiation safety standard for laser products.



Description

The VPSL-0830-200-x-5-B is an 830nm laser diode useful for applications such as laser printers, measurement equipment, free space optical communications, and other laser based optical systems. A diffraction- limited and circular wavefront is accomplished through the integration of an internal, beam correcting optic. Hermetic sealing of the package assures high reliability.

Features

- Built-in monitor photodiode.
- Circular, diverging beam, NA approximately 0.11
- Diffraction limited performance, wavefront equal or better than $\lambda/4$ peak to valley
- 200mW CW optical power
- Standard 5.6mm form factor

Absolute Maximum Ratings (T_C =case temperature=25°C) *

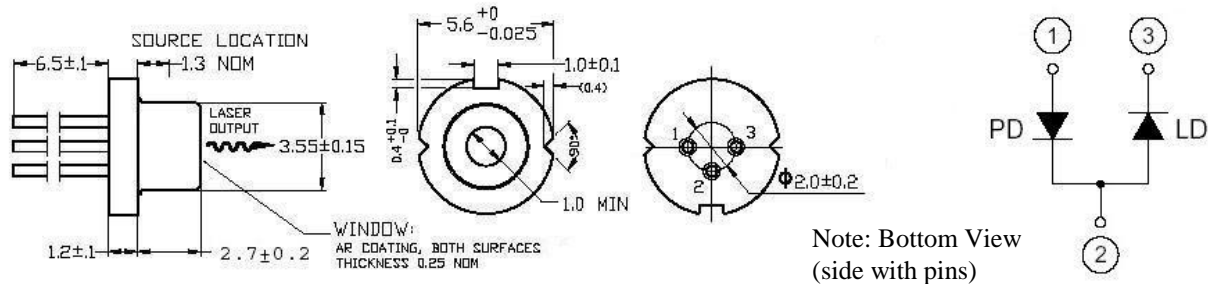
Item	Symbol	Rated Value	Unit
Optical output power	P_O	220	mW
LD reverse voltage	V_R (LD)	2	V
PD Breakdown voltage	V_R (PD)	30	V
Operating Temperature	T_{opr}	0 ~ +60	°C
Storage Temperature	T_{stg}	-40 ~ +85	°C

Optical and Electrical Characteristics (T_C =case temperature=25°C) *

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Optical output power	P_O	-	200	220	mW	
Threshold current	I_{th}	-	35	50	mA	
Operating current	I_{op}	-	240	280	mA	$P_O=200mW$
Operating voltage	V_{op}	-	1.9	2.2	V	$P_O=200mW$
Lasing wavelength	λ_p	815	825	835	nm	$P_O=200mW$
Circularity	ϕ	-	-	0.8:1.25	ratio	$P_O=200mW @e^{-2}$
Beam divergence	θ	-	8	-	deg	$P_O=200mW$, FWHM
Off axis angle	$\Delta\theta$	-	-	± 3	deg	
Monitor PD Sensitivity	I_{mon}	0.8	4.0	10.8	$\mu A/mW$	

Specifications are subject to change without notice. Each purchased VPSL is provided with test data. Please refer to this data before using the VPSL.

Package Detail, Mechanical & Electrical – VPSL-0830-200-x-5-B



Handling Care and Precautions for Use of VPSL Diodes

1. Absolute Maximum Ratings

Do not exceed, *even momentarily*, the maximum ratings (see page 1, table). When a VPSL diode is driven in excess of its maximum ratings, it can cause at minimum a considerable reduction in reliability, and potentially instantaneous failure.

- a. VPSL diodes may be damaged by surge currents generated at power on-off operation. Check on the transient characteristics of the power supply to make sure that such surges do not exceed the maximum ratings.
- b. The maximum ratings are specified for a case temperature of 25°C. Designs should be made to work well within this temperature range. As the case temperature goes up, power dissipation as well as maximum light output power is reduced.

2. Soldering Conditions

Maximum solder-tip temperature is 260°C and soldering time must be within 3.0 seconds. A minimum solder clearance of 1.6mm should be maintained from the root of the lead.

3. Prevention of Breakdown due to Static Electricity

VPSL diodes may be adversely affected by static electricity and surge currents and, consequently, cause breakdown of the diode and reduction of reliability unless the following precautions are taken:

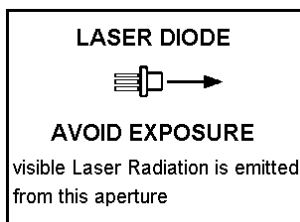
- a. Power supplies, installation and measuring equipment should be grounded. A noise filter or noise-cut transformer should be provided on any power supply inputs.
- b. Anyone working with a VPSL diode should be grounded through high resistance (500 K Ohm - 1M Ohm) by means of a ground strap and wrist band (for example).
- c. Soldering irons should be grounded to protect laser diodes from voltage leaks.
- d. During operation of the VPSL diode, working clothes, hats, and shoes should be static-protected. Cotton-based clothing is preferred.
- e. Any container for carriage and storage should be static-protected.
- f. Avoid using laser diodes in an environment where high frequency surge currents may be generated by an inductive electric field (such as a fluorescent lamp). These fields can also cause breakdown or deterioration of the laser diode.

4. Package Handling

- a. The laser diode package should not be cut off, reworked, or deformed. Do not hold the cap of the VPSL diode tightly, otherwise it may induce cracks or damage to the window glass.
- b. Do not touch the surface of the window glass. Any scratch or contamination may result in reduction of optical characteristics.
- c. Remove small contaminants on the surface softly using a cotton tip stick with a small amount of methyl alcohol.

5. Safety

The output light from laser diodes is harmful to a human body even if it is invisible. Avoid looking at the output light of a VPSL diode directly, or even indirectly through a lens during operation. Observance of operation should be through an infrared TV camera or related equipment. Refer to IEC 825-1 and 21 CFR 1040.10-1040.11 as a radiation safety standard for laser products.



Description

The VPSL-0850-005-x-5-A/B is an 850nm laser diode useful for applications such as laser printers, measurement equipment, free space optical communications, and other infrared based optical systems. A diffraction- limited and circular wavefront is accomplished through the integration of our beam correcting optic that creates a Virtual Point Source. Hermetic sealing of the package assures high reliability.

Features

- Built-in monitor photodiode.
- Typically 9 degree Circular, diverging beam, NA approximately 0.11
- Diffraction limited performance
- 5mW CW optical power
- Standard 5.6mm form factor

Absolute Maximum Ratings (T_C =case temperature=25°C)

Item	Symbol	Rated Value	Unit
Optical output power	P_O	7	mW
LD reverse voltage	V_R (LD)	2	V
PD reverse voltage	V_R (PD)	30	V
Operating Temperature	T_{opr}	-10 ~ +60	°C
Storage Temperature	T_{stg}	-40 ~ +85	°C

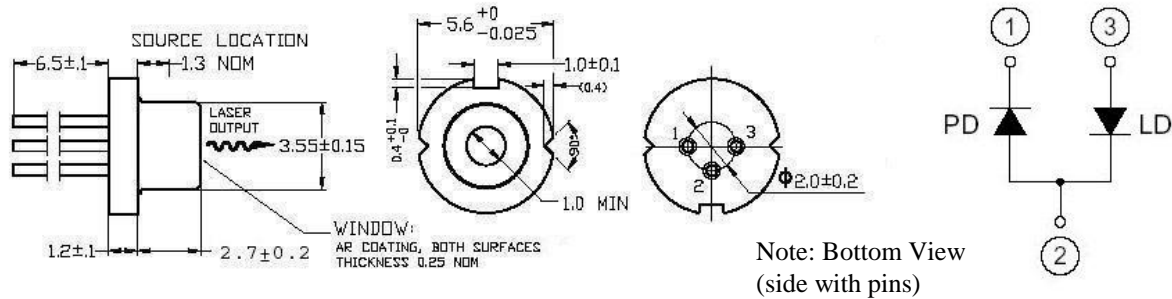
Optical and Electrical Characteristics (T_C =case temperature=25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Optical output power	P_O	-	-	5	mW	
Threshold current	I_{th}	5	10	20	mA	
Operating current	I_{op}	15	20	30	mA	$P_O=5mW$
Operating voltage	V_{op}	-	1.9	2.5	V	$P_O=5mW$
Slope Efficiency	dP_O/dI_{op}	0.4	0.7	0.9	mW/m	$P_O=2-5mW$
Lasing wavelength	λ_p	845	850	855	nm	
Circularity	ϕ		-	0.8:1.25	ratio	$P_O=5mW @e^{-2}$
Beam divergence	θ	7	9	12	deg	
Off axis angle	$\Delta\theta$	-	-	± 3	deg	
Monitor current	I_S	0.2	0.4	0.6	mA	mA/mW

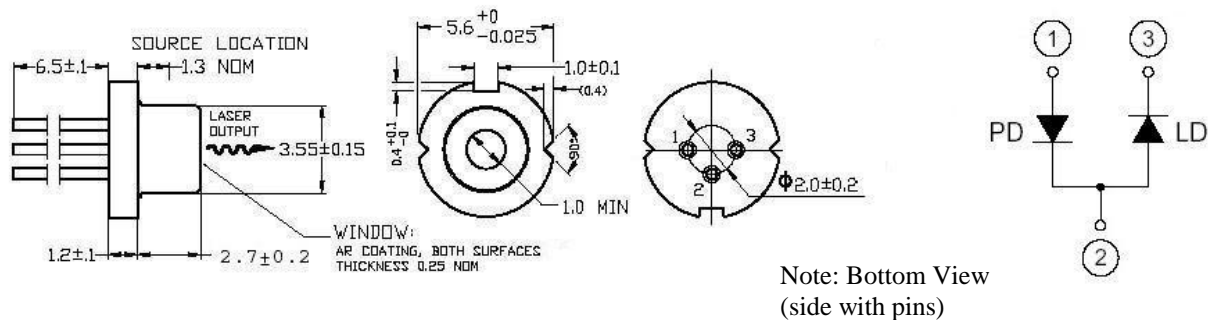
Specifications are subject to change without notice. Each purchased CircuLaser is provided with test data. Please refer to this data before using the CircuLaser.

Package Detail, Mechanical & Electrical – VPSL-0850-005-x-5-A/B

A PINOUT PACKAGE



B PINOUT PACKAGE



Handling Care and Precautions for Use of VPSL Diodes

1. Absolute Maximum Ratings

Do not exceed, *even momentarily*, the maximum ratings (see page 1, table). When a VPSL diode is driven in excess of its maximum ratings, it can cause at minimum a considerable reduction in reliability, and potentially instantaneous failure.

- VPSL diodes may be damaged by surge currents generated at power on-off operation. Check on the transient characteristics of the power supply to make sure that such surges do not exceed the maximum ratings.
- The maximum ratings are specified for a case temperature of 25°C. Designs should be made to work well within this temperature range. As the case temperature goes up, power dissipation as well as maximum light output power is reduced.

2. Soldering Conditions

Maximum solder-tip temperature is 260°C and soldering time must be within 3.0 seconds. A minimum solder clearance of 1.6mm should be maintained from the root of the lead.

3. Prevention of Breakdown due to Static Electricity

VPSL diodes may be adversely affected by static electricity and surge currents and, consequently, cause breakdown of the diode and reduction of reliability unless the following precautions are taken:

- Power supplies, installation and measuring equipment should be grounded. A noise filter or noise-cut transformer should be provided on any power supply inputs.
- Anyone working with a VPSL diode should be grounded through high resistance (500 K Ohm - 1M Ohm) by means of a

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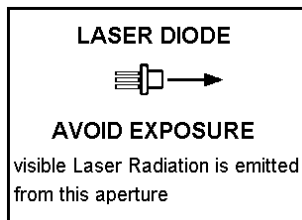
- ground strap and wrist band (for example).
- c. Soldering irons should be grounded to protect laser diodes from voltage leaks.
- d. During operation of the VPSL diode, working clothes, hats, and shoes should be static-protected. Cotton-based clothing is preferred.
- e. Any container for carriage and storage should be static-protected.
- f. Avoid using laser diodes in an environment where high frequency surge currents may be generated by an inductive electric field (such as a fluorescent lamp). These fields can also cause breakdown or deterioration of the laser diode.

4. Package Handling

- a. The laser diode package should not be cut off, reworked, or deformed. Do not hold the cap of the VPSL diode tightly, otherwise it may induce cracks or damage to the window glass.
- b. Do not touch the surface of the window glass. Any scratch or contamination may result in reduction of optical characteristics.
- c. Remove small contaminates on the surface softly using a cotton tip stick with a small amount of methyl alcohol.

5. Safety

The output light from laser diodes is harmful to a human body even if it is invisible. Avoid looking at the output light of a VPSL diode directly, or even indirectly through a lens during operation. Observance of operation should be through an infrared TV camera or related equipment. Refer to IEC 825-1 and 21 CFR 1040.10-1040.11 as a radiation safety standard for laser products.



Description

The VPSL-0850-010-x-5-A/B is an 850nm laser diode useful for applications such as laser printers, measurement equipment, free space optical communications, and other infrared based optical systems. A diffraction- limited and circular wavefront is accomplished through the integration of our beam correcting optic that creates a Virtual Point Source. Hermetic sealing of the package assures high reliability.

Features

- Built-in monitor photodiode.
- Diffraction limited performance, NA approximately 0.11
- 10mW optical power
- Standard 5.6mm form factor

Absolute Maximum Ratings (T_C =case temperature=25°C)

Item	Symbol	Rated Value	Unit
Optical output power	P_O	10	mW
LD reverse voltage	V_R (LD)	2	V
PD reverse voltage	V_R (PD)	30	V
Operating Temperature	T_{opr}	-10 ~ +60	°C
Storage Temperature	T_{stg}	-40 ~ +85	°C

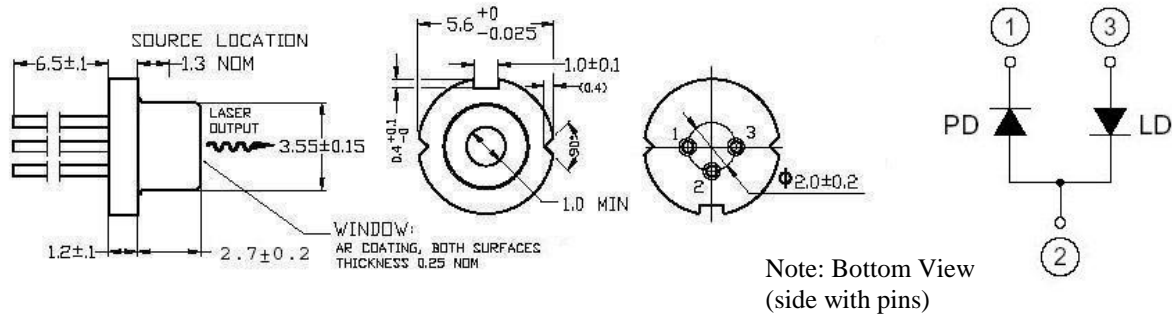
Optical and Electrical Characteristics (T_C =case temperature=25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Optical output power	P_O	-	10	12	mW	
Threshold current	I_{th}	5	10	20	mA	
Operating current	I_{op}	15	25	35	mA	$P_O=10mW$
Operating voltage	V_{op}	-	1.9	2.5	V	$P_O=10mW$
Slope Efficiency	dP_O/dI_{op}	0.4	0.7	0.9	mW/mA	$P_O=10mW$
Lasing wavelength	λ_p	845	850	855	nm	
Circularity	ϕ		-	0.8:1.25	ratio	$P_O=10mW @e^{-2}$
Beam divergence	θ	7	9	12	deg	
Off axis angle	$\Delta\theta$	-	-	±3	deg	
Monitor current	I_s	0.1	0.3	0.5	mA	mA/mW

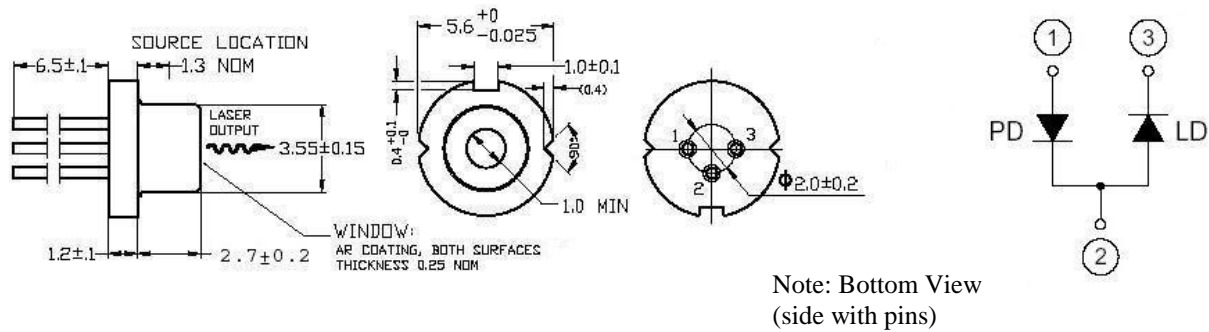
Specifications are subject to change without notice. Each purchased VPSL is provided with test data.

Package Detail, Mechanical & Electrical – VPSL-0850-010-x-5-A/B

A PINOUT PACKAGE



B PINOUT PACKAGE



Handling Care and Precautions for Use of VPSL Diodes

1. Absolute Maximum Ratings

Do not exceed, *even momentarily*, the maximum ratings (see page 1, table). When a VPSL diode is driven in excess of its maximum ratings, it can cause at minimum a considerable reduction in reliability, and potentially instantaneous failure.

- VPSL diodes may be damaged by surge currents generated at power on-off operation. Check on the transient characteristics of the power supply to make sure that such surges do not exceed the maximum ratings.
- The maximum ratings are specified for a case temperature of 25°C. Designs should be made to work well within this temperature range. As the case temperature goes up, power dissipation as well as maximum light output power is reduced.

2. Soldering Conditions

Maximum solder-tip temperature is 260°C and soldering time must be within 3.0 seconds. A minimum solder clearance of 1.6mm should be maintained from the root of the lead.

3. Prevention of Breakdown due to Static Electricity

VPSL diodes may be adversely affected by static electricity and surge currents and, consequently, cause breakdown of the diode and reduction of reliability unless the following precautions are taken:

- Power supplies, installation and measuring equipment should be grounded. A noise filter or noise-cut transformer should be provided on any power supply inputs.
- Anyone working with a VPSL diode should be grounded through high resistance (500 K Ohm - 1M Ohm) by means of a ground strap and wrist band (for example).

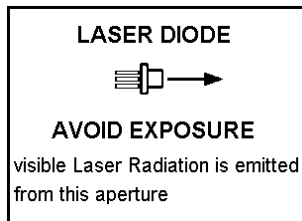
- c. Soldering irons should be grounded to protect laser diodes from voltage leaks.
- d. During operation of the VPSL diode, working clothes, hats, and shoes should be static-protected. Cotton-based clothing is preferred.
- e. Any container for carriage and storage should be static-protected.
- f. Avoid using laser diodes in an environment where high frequency surge currents may be generated by an inductive electric field (such as a fluorescent lamp). These fields can also cause breakdown or deterioration of the laser diode.

4. Package Handling

- a. The laser diode package should not be cut off, reworked, or deformed. Do not hold the cap of the VPSL diode tightly, otherwise it may induce cracks or damage to the window glass.
- b. Do not touch the surface of the window glass. Any scratch or contamination may result in reduction of optical characteristics.
- c. Remove small contaminates on the surface softly using a cotton tip stick with a small amount of methyl alcohol.

5. Safety

The output light from laser diodes is harmful to a human body even if it is invisible. Avoid looking at the output light of a VPSL diode directly, or even indirectly through a lens during operation. Observance of operation should be through an infrared TV camera or related equipment. Refer to IEC 825-1 and 21 CFR 1040.10-1040.11 as a radiation safety standard for laser products.



Description

The VPSL-0850-050-X-5-A/B is a high power, 850nm laser diode useful for applications such as laser printers, measurement equipment, free space optical communications, and other infrared based optical systems. A diffraction- limited and circular wavefront is accomplished through the integration of our beam correcting optic that creates a Virtual Point Source. Hermetic sealing of the package assures high reliability.

Features

- Integrated monitor photodiode.
- Single Transverse mode
- Diffraction limited performance
- 50mW optical power
- Standard 5.6mm form factor

Absolute Maximum Ratings (T_C =case temperature=25°C) *

Item	Symbol	Rated Value	Unit
Optical output power	P_O	50	mW
LD reverse voltage	V_R (LD)	2	V
PD reverse voltage	V_R (PD)	30	V
Operating Temperature	T_{opr}	-10 ~ +60	°C
Storage Temperature	T_{stg}	-40 ~ +85	°C

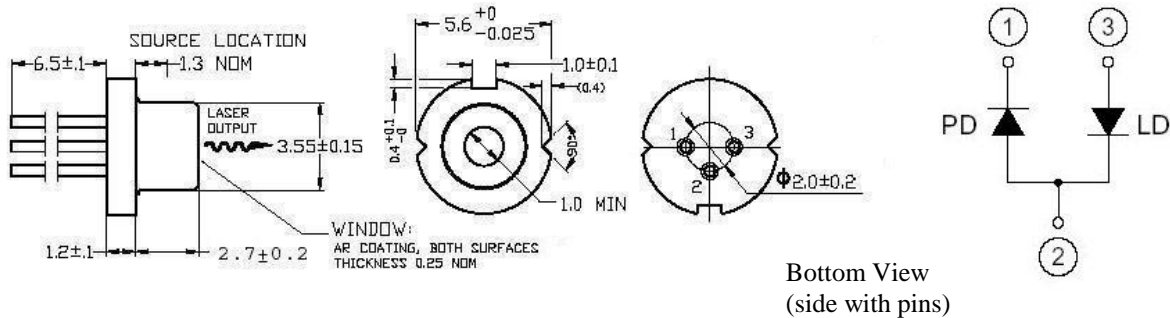
Optical and Electrical Characteristics (T_C =case temperature=25°C) *

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Threshold current	I_{th}		20	40	mA	
Operating current	I_{op}	-	75	100	mA	Po= 50mW
Operating voltage	V_{op}	-	1.9	2.4	V	Po= 50mW
Optical output power	P_O	-	-	50	mW	
Slope Efficiency	dP_O/dI_{op}	-	0.95	-	mW/mA	@25°C
Lasing wavelength	λ_p	848	852	862	nm	Po= 50mW
Circularity	ϕ		-	0.8:1.25	ratio	Po= 50mW @e ⁻²
Beam divergence	θ	6	9	12	deg	Po= 50mW, FWHM
Off axis angle	$\Delta\theta$	-	-	±3	deg	
Monitor current	I_S	0.1	0.25	0.5	mA	mA/mW

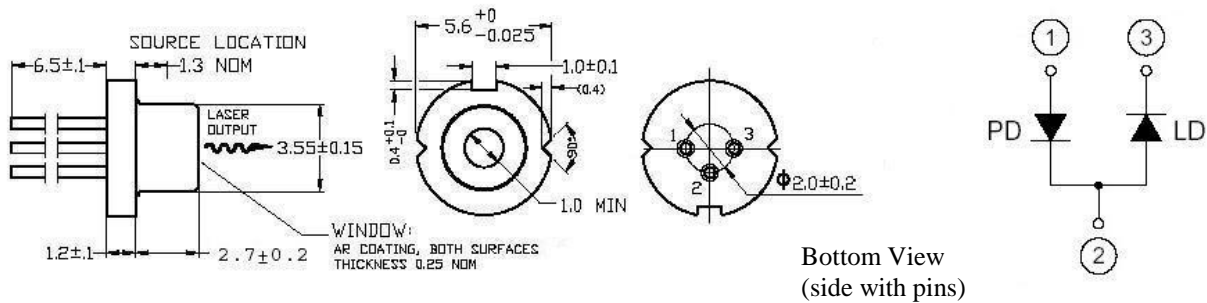
Specifications are subject to change without notice. Each purchased VPS is provided with test data. Please refer to this data before using the VPS.

Package Detail, Mechanical & Electrical – VPSL-850-050-x-5-A/B

A PINOUT PACKAGE



B PINOUT PACKAGE



Handling Care and Precautions for Use of VPS Diodes

1. Absolute Maximum Ratings

Do not exceed, *even momentarily*, the maximum ratings (see page 1, table). When a FiberMax module is driven in excess of its maximum ratings, it can cause at minimum a considerable reduction in reliability, and potentially instantaneous failure.

- a. FiberMax modules may be damaged by surge currents generated at power on-off operation. Check on the transient characteristics of the power supply to make sure that such surges do not exceed the maximum ratings.
- b. The maximum ratings are specified for a case temperature of 25°C. Designs should be made to work well within this temperature range. As the case temperature goes up, power dissipation as well as maximum light output power is reduced.

2. Soldering Conditions

Maximum solder-tip temperature is 260°C and soldering time must be within 3.0 seconds. A minimum solder clearance of 1.6mm should be maintained from the root of the lead.

3. Prevention of Breakdown due to Static Electricity

FiberMax modules may be adversely affected by static electricity and surge currents and, consequently, cause breakdown of the module and reduction of reliability unless the following precautions are taken:

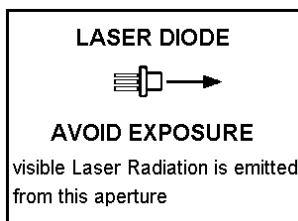
- Power supplies, installation and measuring equipment should be grounded. A noise filter or noise-cut transformer should be provided on any power supply inputs.
- Anyone working with a FiberMax module should be grounded through high resistance (500 K Ohm - 1M Ohm) by means of a ground strap and wrist band (for example).
- Soldering irons should be grounded to protect laser modules from voltage leaks.
- During operation of the FiberMax module, working clothes, hats, and shoes should be static-protected. Cotton-based clothing is preferred.
- Any container for carriage and storage should be static-protected.
- Avoid using laser modules in an environment where high frequency surge currents may be generated by an inductive electric field (such as a fluorescent lamp). These fields can also cause breakdown or deterioration of the laser module.

4. Package Handling

- The laser module package should not be cut off, reworked, or deformed. Care should be taken when handling the fiber to avoid kinking it.
- Do not touch the ferrule end. Any scratch or contamination may result in reduction of optical characteristics.
- Remove small contaminates on the ferrule surface carefully using a soft cotton tip stick with a small amount of methyl alcohol.

5. Safety

The output light from laser modules is harmful to a human body even if it is invisible. Avoid looking at the output light of a FiberMax module directly, or even indirectly through a lens during operation. Observance of operation should be through an infrared TV camera or related equipment. Refer to IEC 825-1 and 21 CFR 1040.10-1040.11 as a radiation safety standard for laser products.



Description

The VPSL-0850-150-X-5-B is a high power, 850nm laser diode useful for applications such as laser printers, measurement equipment, free space optical communications, and other infrared based optical systems. A diffraction- limited and circular wavefront is accomplished through the integration of our beam correcting optic that creates a Virtual Point Source. Hermetic sealing of the package assures high reliability.

Features

- Integrated monitor photodiode.
- Single Transverse mode
- Diffraction limited performance
- 150mW optical power
- Standard 5.6mm form factor

Absolute Maximum Ratings (T_C =case temperature=25°C) *

Item	Symbol	Rated Value	Unit
Optical output power	P_O	150	mW
LD reverse voltage	V_R (LD)	3	V
PD breakdown voltage	V_R (PD)	25	V
Operating Temperature	T_{opr}	-20 ~ +50	°C
Storage Temperature	T_{stg}	-40 ~ +80	°C

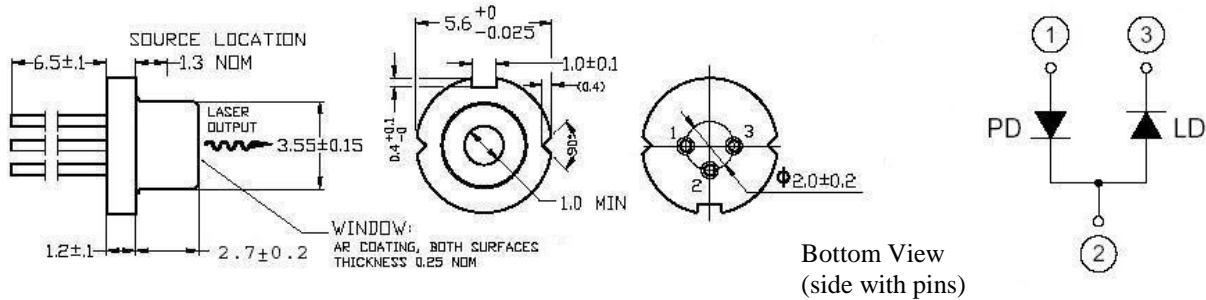
Optical and Electrical Characteristics (T_C =case temperature=25°C) *

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Threshold current	I_{th}		35	45	mA	
Operating current	I_{op}	-	210	230	mA	Po= 150mW
Operating voltage	V_{op}	-	*	-	V	* = 1.5V + $I_{op} * R_s$
Optical output power	P_O	-	-	150	mW	
Slope Efficiency	dP_O/dI_{op}	0.75	0.85	-	mW/mA	@25°C
Lasing wavelength	λ_p	842	852	862	nm	Po= 150mW
Circularity	ϕ		-	0.8:1.25	ratio	Po= 150mW @e ⁻²
Beam divergence	θ	-	9	-	deg	Po= 150mW, FWHM
Off axis angle	$\Delta\theta$	-	-	±3	deg	
Monitor current	I_s	0.1	-	20	uA/mW	

Specifications are subject to change without notice. Each purchased VPS is provided with test data. Please refer to this data before using the VPS.

Package Detail, Mechanical & Electrical – VPSL-850-150-x-5-A/B

B PINOUT PACKAGE



Handling Care and Precautions for Use of VPS Diodes

1. Absolute Maximum Ratings

Do not exceed, *even momentarily*, the maximum ratings (see page 1, table). When a FiberMax module is driven in excess of its maximum ratings, it can cause at minimum a considerable reduction in reliability, and potentially instantaneous failure.

- a. FiberMax modules may be damaged by surge currents generated at power on-off operation. Check on the transient characteristics of the power supply to make sure that such surges do not exceed the maximum ratings.
- b. The maximum ratings are specified for a case temperature of 25°C. Designs should be made to work well within this temperature range. As the case temperature goes up, power dissipation as well as maximum light output power is reduced.

2. Soldering Conditions

Maximum solder-tip temperature is 260°C and soldering time must be within 3.0 seconds. A minimum solder clearance of 1.6mm should be maintained from the root of the lead.

3. Prevention of Breakdown due to Static Electricity

FiberMax modules may be adversely affected by static electricity and surge currents and, consequently, cause breakdown of the module and reduction of reliability unless the following precautions are taken:

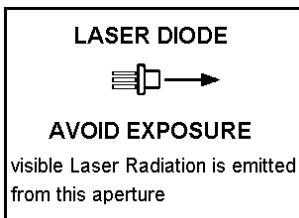
- a. Power supplies, installation and measuring equipment should be grounded. A noise filter or noise-cut transformer should be provided on any power supply inputs.
- b. Anyone working with a FiberMax module should be grounded through high resistance (500 K Ohm - 1M Ohm) by means of a ground strap and wrist band (for example).
- c. Soldering irons should be grounded to protect laser modules from voltage leaks.
- d. During operation of the FiberMax module, working clothes, hats, and shoes should be static-protected. Cotton-based clothing is preferred.
- e. Any container for carriage and storage should be static-protected.
- f. Avoid using laser modules in an environment where high frequency surge currents may be generated by an inductive electric field (such as a fluorescent lamp). These fields can also cause breakdown or deterioration of the laser module.

4. Package Handling

- a. The laser module package should not be cut off, reworked, or deformed. Care should be taken when handling the fiber to avoid kinking it.
- b. Do not touch the ferrule end. Any scratch or contamination may result in reduction of optical characteristics.
- c. Remove small contaminates on the ferrule surface carefully using a soft cotton tip stick with a small amount of methyl alcohol.

5. Safety

The output light from laser modules is harmful to a human body even if it is invisible. Avoid looking at the output light of a FiberMax module directly, or even indirectly through a lens during operation. Observance of operation should be through an infrared TV camera or related equipment. Refer to IEC 825-1 and 21 CFR 1040.10-1040.11 as a radiation safety standard for laser products.



Description

The VPSL-0905-010-X-5-A/B/E is a 0.9 μm band, InGaAs MOCVD grown laser diode with a multi-quantum well (MQW) structure. It is suitable as a light source for imaging, projection, range-finding, and various other types of optical equipment. Combined with an integrated, internal, beam correcting optic and encased in a hermetic sealed package, this is a high-performance, highly reliable, and long life laser diode available in 3 different pinouts (A, B or E).

Features

- Circular, diverging beam, NA approximately 0.19
- Diffraction limited wavefront,
- 10mW CW optical power
- Standard 5.6 mm form factor

Absolute Maximum Ratings (T_C =case temperature=25°C) *

Item	Symbol	Min	Max	Unit
Optical output power (CW)	P_O	-	12	mW
LD reverse voltage	V_R (LD)	-	2	V
PD Reverse Voltage	V_R (PD)		30	V
Operating temperature	T_{opr}	-10	+70	°C
Storage temperature	T_{stg}	-40	+85	°C

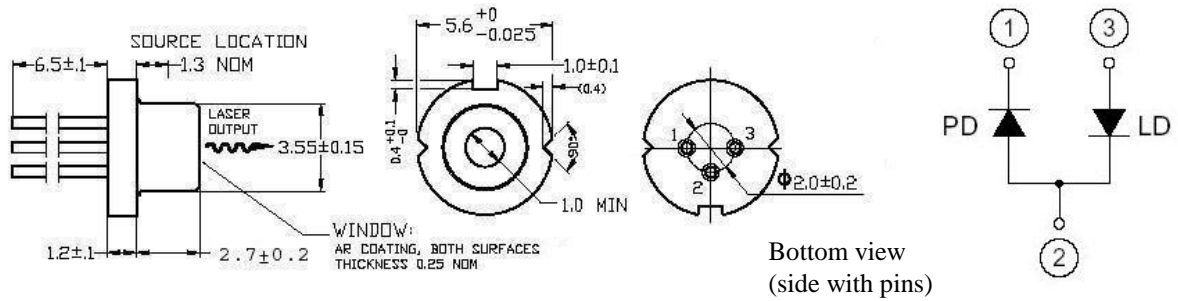
Optical and Electrical Characteristics (T_C =case temperature=25°C) *

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Optical output power	P_O	-	10	12	mW	Kink free
Threshold current	I_{th}		15	25	mA	
Operating current	I_{op}	-	40	60	mA	$P_O=10\text{mW}$
Operating voltage	V_{op}	1.6	2.0	2.5	V	$P_O=10\text{mW}$
Slope Efficiency	SE	0.3	0.5	0.7	mW/mA	
Lasing wavelength	λ_p	890	905	915	nm	$P_O=10\text{mW}$
Monitor Current	I_m	0.1	0.4	0.6	mA	$P_O=10\text{mW}$
Circularity	ϕ		-	0.8:1.25	ratio	$P_O=10\text{mW}$
Beam divergence	θ	9	13	15	deg	$P_O=10\text{mW}$, FWHM

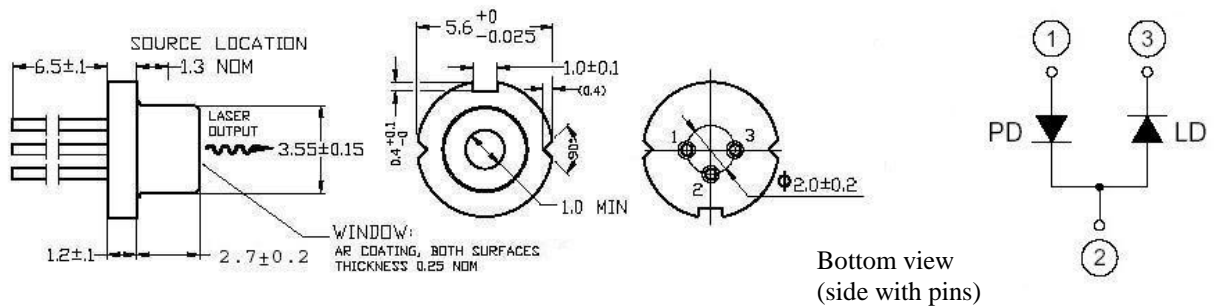
Specifications are subject to change without notice. Each purchased VPSL is provided with test data. Please refer to this data before using the VPSL.

Package Detail, Mechanical & Electrical – VPSL-0905-010-x-5-A/B/E

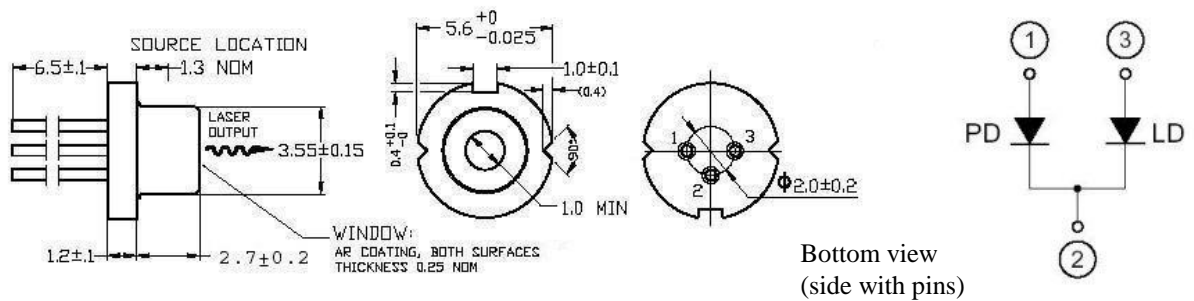
A PINOUT PACKAGE



B PINOUT PACKAGE



E PINOUT PACKAGE



Handling Care and Precautions for Use of VPSL Diodes

1. Absolute Maximum Ratings

Do not exceed, *even momentarily*, the maximum ratings (see page 1, table). When a VPSL diode is driven in excess of its maximum ratings, it can cause at minimum a considerable reduction in reliability, and potentially instantaneous failure.

- VPSL diodes may be damaged by surge currents generated at power on-off operation. Check on the transient characteristics of the power supply to make sure that such surges do not exceed the maximum ratings.
- The maximum ratings are specified for a case temperature of 25°C. Designs should be made to work well within this temperature range. As the case temperature goes up, power dissipation as well as maximum light output power is reduced.

2. Soldering Conditions

Maximum solder-tip temperature is 260°C and soldering time must be within 3.0 seconds. A minimum solder clearance of 1.6mm should be maintained from the root of the lead.

3. Prevention of Breakdown due to Static Electricity

VPSL diodes may be adversely affected by static electricity and surge currents and, consequently, cause breakdown of the diode and reduction of reliability unless the following precautions are taken:

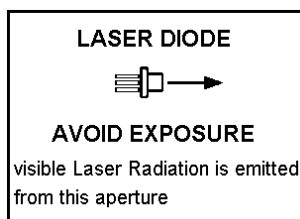
- Power supplies, installation and measuring equipment should be grounded. A noise filter or noise-cut transformer should be provided on any power supply inputs.
- Anyone working with a VPSL diode should be grounded through high resistance (500 K Ohm - 1M Ohm) by means of a ground strap and wrist band (for example).
- Soldering irons should be grounded to protect laser diodes from voltage leaks.
- During operation of the VPSL diode, working clothes, hats, and shoes should be static-protected. Cotton-based clothing is preferred.
- Any container for carriage and storage should be static-protected.
- Avoid using laser diodes in an environment where high frequency surge currents may be generated by an inductive electric field (such as a fluorescent lamp). These fields can also cause breakdown or deterioration of the laser diode.

4. Package Handling

- The laser diode package should not be cut off, reworked, or deformed. Do not hold the cap of the VPSL diode tightly, otherwise it may induce cracks or damage to the window glass.
- Do not touch the surface of the window glass. Any scratch or contamination may result in reduction of optical characteristics.
- Remove small contaminates on the surface softly using a cotton tip stick with a small amount of methyl alcohol.

5. Safety

The output light from laser diodes is harmful to a human body even if it is invisible. Avoid looking at the output light of a VPSL diode directly, or even indirectly through a lens during operation. Observance of operation should be through an infrared TV camera or related equipment. Refer to IEC 825-1 and 21 CFR 1040.10-1040.11 as a radiation safety standard for laser products.



Description

The VPSL-0980-050-X-5-B is a 0.9 μm band, InGaAs MOCVD grown laser diode with a multi-quantum well (MQW) structure. It is suitable as a light source for imaging, projection, range-finding, and various other types of optical equipment. Combined with an integrated, internal, beam correcting optic and encased in a hermetic sealed package, this is a high-performance, highly reliable, and long life laser diode.

Features

- Circular, diverging beam, NA approximately 0.19
- Monitor Photodiode
- 50mW (CW maximum) optical power
- Standard 5.6 mm form factor

Absolute Maximum Ratings (T_C =case temperature=25°C) *

Item	Symbol	Min	Max	Unit
Optical output power (CW)	P_O	-	50	mW
LD reverse voltage	V_R (LD)	-	2	V
Operating temperature	T_{opr}	-10	+40	°C
Storage temperature	T_{stg}	-15	+85	°C

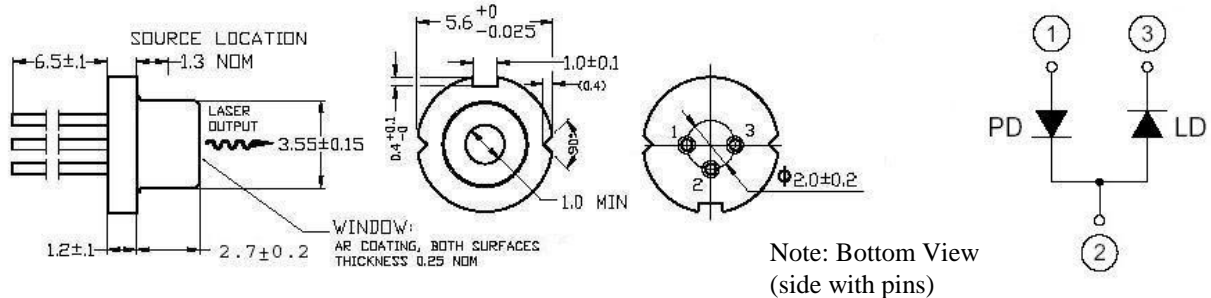
Optical and Electrical Characteristics (T_C =case temperature=25°C) *

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Optical output power	P_O	-	-	50	mW	
Threshold current	I_{th}		12	20	mA	
Operating current	I_{op}	-	75	100	mA	$P_O=50mW$
Operating voltage	V_{op}	1	1.5	2.1	V	$P_O=50mW$
Slope Efficiency	SE	0.5	0.8	-	mW/m	
Lasing wavelength	λ_p	970	980	990	nm	$P_O=50mW$
Monitor Current	I_m	0.1	0.3	0.5	mA	$P_O=50mW$
Circularity	ϕ		-	0.8:1.25	ratio	$P_O=50mW$
Beam divergence	θ	8	13	18	deg	$P_O=50mW$, FWHM

Specifications are subject to change without notice. Each purchased VPSL is provided with test data.

Package Detail, Mechanical & Electrical – VPSL-980-050-X-5-B

B PINOUT PACKAGE



Handling Care and Precautions for Use of CircuLaser Diodes

1. Absolute Maximum Ratings

Do not exceed, *even momentarily*, the maximum ratings (see page 1, table). When a CircuLaser diode is driven in excess of its maximum ratings, it can cause at minimum a considerable reduction in reliability, and potentially instantaneous failure.

- CircuLaser diodes may be damaged by surge currents generated at power on-off operation. Check on the transient characteristics of the power supply to make sure that such surges do not exceed the maximum ratings.
- The maximum ratings are specified for a case temperature of 25°C. Designs should be made to work well within this temperature range. As the case temperature goes up, power dissipation as well as maximum light output power is reduced.

2. Soldering Conditions

Maximum solder-tip temperature is 260°C and soldering time must be within 3.0 seconds. A minimum solder clearance of 1.6mm should be maintained from the root of the lead.

3. Prevention of Breakdown due to Static Electricity

CircuLaser diodes may be adversely affected by static electricity and surge currents and, consequently, cause breakdown of the diode and reduction of reliability unless the following precautions are taken:

- Power supplies, installation and measuring equipment should be grounded. A noise filter or noise-cut transformer should be provided on any power supply inputs.
- Anyone working with a CircuLaser diode should be grounded through high resistance (500 K Ohm - 1M Ohm) by means of a ground strap and wrist band (for example).
- Soldering irons should be grounded to protect laser diodes from voltage leaks.
- During operation of the CircuLaser diode, working clothes, hats, and shoes should be static-protected. Cotton-based clothing is preferred.
- Any container for carriage and storage should be static-protected.
- Avoid using laser diodes in an environment where high frequency surge currents may be generated by an inductive electric field (such as a fluorescent lamp). These fields can also cause breakdown or deterioration of the laser diode.

4. Package Handling

- The laser diode package should not be cut off, reworked, or deformed. Do not hold the cap of the CircuLaser diode tightly, otherwise it may induce cracks or damage to the window glass.
- Do not touch the surface of the window glass. Any scratch or contamination may result in reduction of optical characteristics.
- Remove small contaminates on the surface softly using a cotton tip stick with a small amount of methyl alcohol.

5. Safety

The output light from laser diodes is harmful to a human body even if it is invisible. Avoid looking at the output light of a CircuLaser diode directly, or even indirectly through a lens during operation. Observance of operation should be through an infrared TV camera or related equipment. Refer to IEC 825-1 and 21 CFR 1040.10-1040.11 as a radiation safety standard for laser products.

