Passiv gekühlter Diodenlaser-Barren, 50 W cw bei 915 nm
Passively Cooled Diode Laser Bar, 50 W cw at 915 nm

SPL MN91G2



Vorläufiges Datenblatt / Preliminary Data Sheet

Besondere Merkmale

- Laserbarren auf passiv gekühlter Wärmesenke, kein Kühlwasser erforderlich
- Für Dauerstrich- (CW) und quasi-kontinuierlichen Betrieb (QCW)
- Zuverlässiges Halbleiter-Material mit Mindest-Lebensdauer von 10.000 h, typischerweise >50.000 h
- Geringer thermischer Widerstand
- Geringer smile (< 2,5 µm), geringe mechanische Toleranzen

Features

- Laser bar mounted on passive mount, no water required
- For continuous wave (cw) and quasi continuous wave (qcw) operation
- Highly reliable semiconductor material with minimum life time of 10,000 h, typically >50,000 h
- Low thermal resistance
- Low smile (< 2.5 µm) and low mechanical tolerances

Anwendungen

- Pumpen von Festkörperlasern
- Direkte industielle Anwendungen (Löten, Oberflächenbehandlung,...)
- Medizinische Anwendungen
- Druckanwendungen

Applications

- Pumping of solid state lasers
- Direct industrial applications (soldering, surface treatment,…)
- Medical applications
- Printing applications

Sicherheitshinweise

Je nach Betriebsart emittieren diese Bauteile hochkonzentrierte, nicht sichtbare Infrarot-Strahlung, die gefährlich für das menschliche Auge sein kann. Produkte, die diese Bauteile enthalten, müssen gemäß den Sicherheits-richtlinien der IEC-Norm 60825-1 behandelt werden

Safety Advices

Depending on the mode of operation, these devices emit highly concentrated non visible infrared light which can be hazardous to the human eye. Products which incorporate these devices have to follow the safety precautions given in IEC 60825-1 “Safety of laser products”.

Typ Type	Anzahl Barren Bar count	Wellenlänge Wavelength	Bestellnummer Ordering Code
SPL MN91G2	1	915 nm	Q65110A4159

Grenzwerte
Maximum Ratings

Parameter Parameter	Symbol Symbol	Werte Values		Einheit Unit
		min.	max.	
Ausgangsleistung Optical output power	P_{max}	–	55	W
Tastverhältnis Duty cycle	*dc*	–	100	%
Wärmesenkentemperatur[1)] Mount temperature[1)]	T_{op}	5	40	°C

1) Betauung des Moduls muss ausgeschlossen werden.
Prevent moisture on the module.

Dioden-Kennwerte (25 °C Wärmesenkentemperatur)
Diode Characteristics (25 °C mount temperature)

Parameter **Parameter**	**Symbol** **Symbol**	**Werte** **Values**			**Einheit** **Unit**
		min.	**typ.**	**max.**	
Optische Ausgangsleistung[1)] Optical output power[1)]	P_{opt}	–	50	–	W
Emissonswellenlänge[1) 2)] Emission wavelength[1) 2)]	λ	912	915	918	nm
Spektrale Breite (Halbwertsbreite)[1)] Spectral width (FWHM)[1)]	$\Delta\lambda$	–	3	5	nm
Schwellstrom Threshold current	I_{th}	–	12	14	A
Kennliniensteigung Slope efficiency	$\Delta P/\Delta I$	–	1.10	–	W/A
Betriebsstrom[1)] Operating current[1)]	I_{op}	–	57	–	A
Betriebsspannung[1) 3)] Operating voltage[1) 3)]	V_{op}	–	1.6	–	V
Konversionseffizienz (elektrisch zu optisch)[1)] Conversion efficiency (electrical to optical)[1)]	η_{con}	–	55	–	%
Temperaturkoeffizient der Wellenlänge[1) 2)] Temperature coefficient of wavelength[1) 2)]	$\Delta\lambda/\Delta T$	–	0.28	–	nm/K
Strahldivergenz senkrecht (Vollwinkel,1/e^2) Beam divergence fast axis (full angle,1/e^2)	$\theta_{\perp}$	–	70	–	deg
Strahldivergenz parallel (Vollwinkel,1/e^2) Beam divergence slow axis (full angle,1/e^2)	$\theta_{\parallel}$	–	8	–	deg
TE Polarisation TE Polarization	P_{TE}	90	–	–	%
Thermischer Widerstand (pn-Übergang - Wärmesenke) Thermal resistance (junction to mount)	R_{th}	–	0.5	–	K/W
Strahlabmessungen am optischen Austritt Beam dimensions at optical output	*h x w*	–	0.001x10	–	mm^2

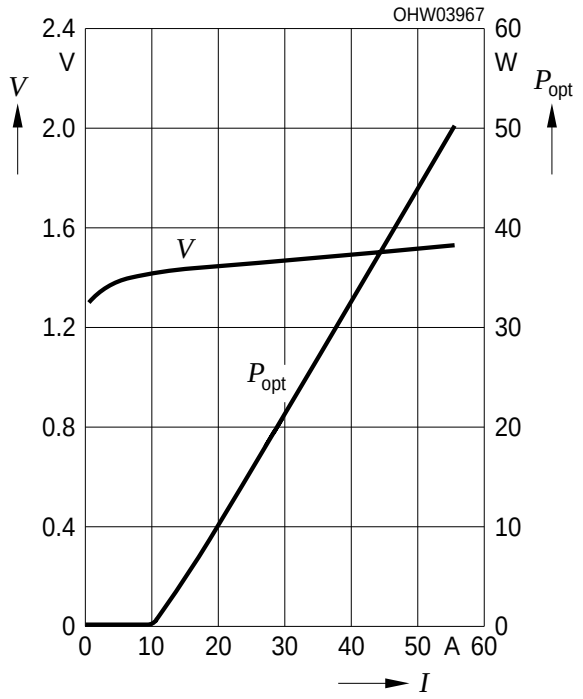
[1)] Werte beziehen sich auf die Standardbetriebsbedingung 50 W cw Ausgangsleistung, 25°C Wärmesenkentemperatur.
Values refer to standard operating conditions of 50 W cw output power, 25°C mount temperature.

[2] Die zentrale Emissionswellenlänge muss beim spezifizierten Strom kontrolliert werden. Liegt die Wellenlänge höher als im Testprotokoll spezifiziert, so weist dies auf einen schlechten thermischen Kontakt und eine thermische Überlastung der Laserdiode hin. Bevor der Laserbetrieb weitergeführt wird, muss der thermische Kontakt verbessert werden. Die zentrale Emissionswellenlänge schiebt mit 0,28 nm/K.
Check the emission wavelength at the specified current. A much longer wavelength than specified in the test protocol indicates inefficient or inadequate cooling and thermal overload of the diode laser. Then the cooling has to be improved before continuing laser operation. The emission wavelength shifts with 0.28 nm/K.

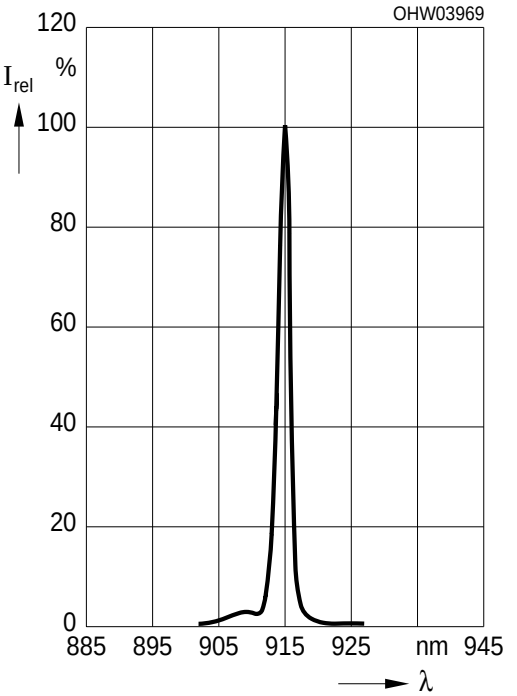
[3] Das Anlegen einer Spannung in Sperrrichtung der Laserdiode muss ausgeschlossen werden.
Reverse voltage has to be excluded.

Optische Kennwerte (cw, 25°C Wärmesenkentemperatur)
Optical Characteristics (cw, 25°C mount temperature)

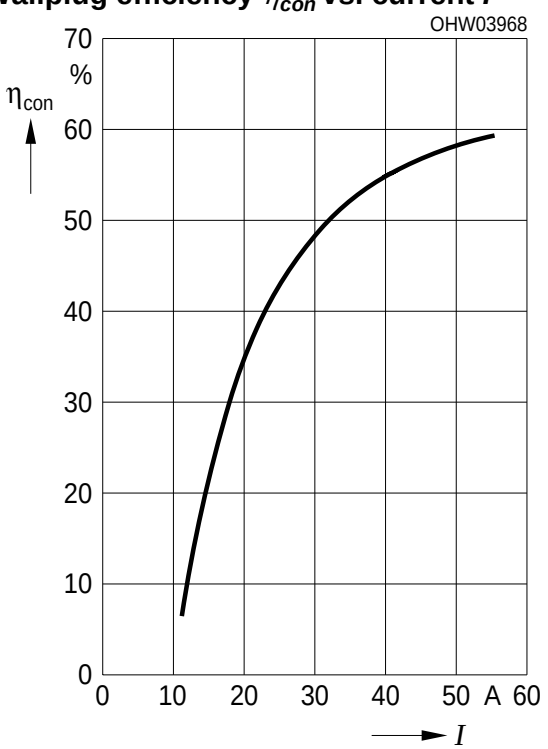
Optical power P_{opt} and voltage V vs. current I



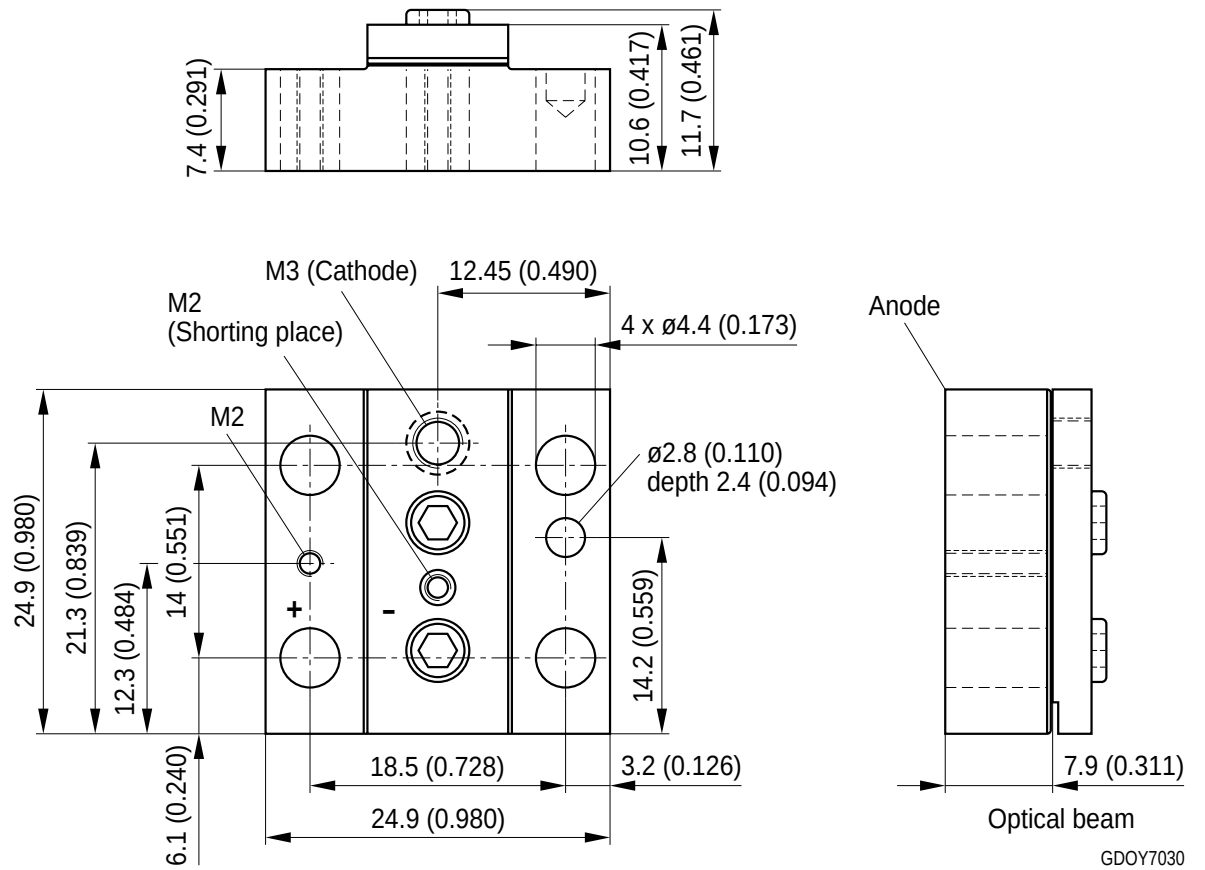
Optical Spectrum @ 50 W



Wallplug efficiency η_{con} vs. current I



Maßzeichnung
Package Outlines



Maße in mm (Zoll) / Dimensions in mm (inch).

Allgemeintoleranz / General Tolerance: +/- 0.2 mm (0.008 inch)

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[1] A critical component is a component usedin a life-support device or system whose failure can reasonably be expected to cause the failure of that life-support device or system, or to affect its safety or effectiveness of that device or system.

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