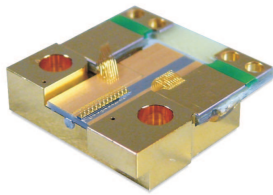


## LU1010F140

1010nm Multi Emitter Laser Diode on Flat\_mount

**Up to 14W c.w. or 23W Pulsed Power**



### Description:

The LU1010F140 series offers high optical output power of up to 14W in c.w. operation from a multi emitter. Long lifetime is ensured due to the Lumics proprietary laser diode facet passivation technology. This performance makes them a valuable tool for the highly efficient medical laser treatment. Further important applications are micro material processing with exceptional power densities and illumination applications.

### Features & Functions:

- Wavelength 1010nm
- Up to 14W c.w. operation
- Up to 23W peak power
- 190µm emitter
- Screw holes for mounting
- Mounted on copper base
- Electrically isolated
- Option: FAC lens mounted

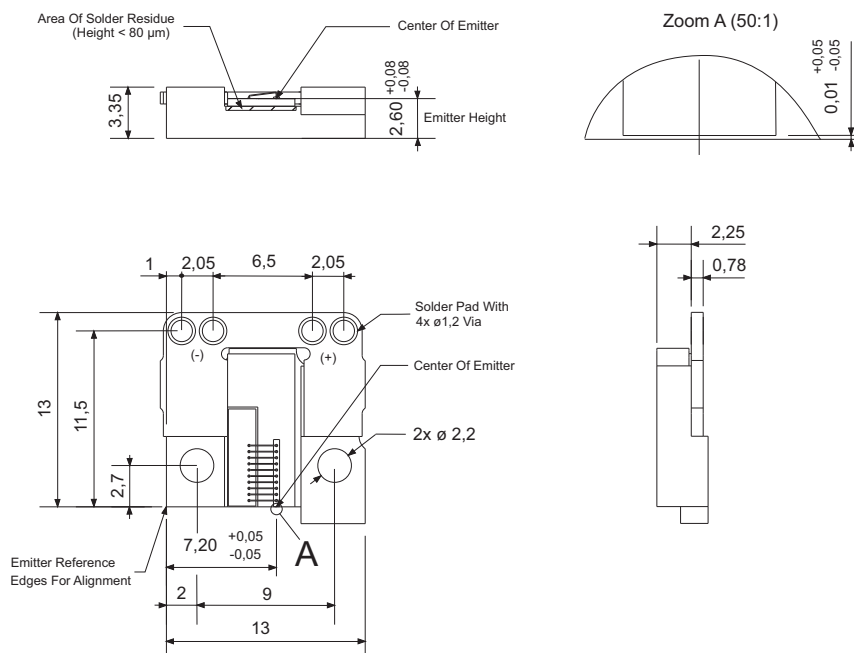
### Benefits:

- Small footprint
- High reliability
- Field proven reliability

### Applications:

- Illumination
- Medical treatment
- Plastic welding

### Drawing (dimensions in mm)

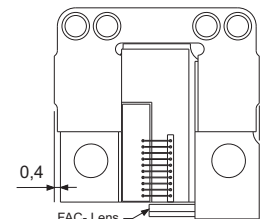


### Connections

Contact Pad	Function
(+)	LD Anode (+)
(-)	LD Cathode (-)

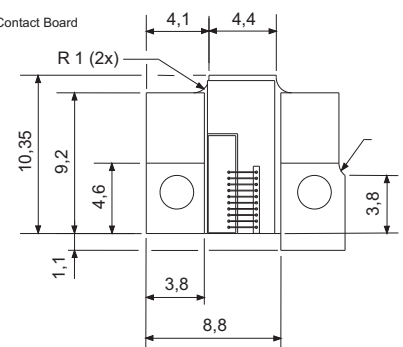
#### Option

Additional FAC-Lens



#### Option

Without Contact Board



**We manufacture diode lasers.**

## Typical Electrical and Optical Characteristics

Parameter	Symbol	LU1010F140	Unit
Emitter Width	W	190	µm
c.w. Operating Power	P <sub>op (c.w.)</sub>	14	W
c.w. Operating Current	I <sub>op (c.w.)</sub>	16	A
Pulsed (1) Operating Power	P <sub>op (&lt; 100µsec pulse / &lt; 10% d.c.)</sub>	23	W
Pulsed (1) Operating Current	I <sub>op (&lt; 100µsec pulse / &lt; 10% d.c.)</sub>	28	A
Threshold Current	I <sub>th</sub>	<1	A
Forward Voltage	V <sub>op</sub>	1.6	V
Slope Efficiency	λ <sub>diff</sub>	0.95	W / A
Peak Wavelength	λ <sub>peak</sub>	1010+/-10	nm
Spectral Width (FWHM)	λ <sub>FWHM</sub>	4	nm
Beam Divergence (horizontal) <sub>(2)</sub>	FWHM, 90% energy inclusion at I <sub>op</sub>	7	deg
Beam Divergence (vertical) <sub>(2)</sub>	FWHM, Gaussian beam at I <sub>op</sub>	25	deg
AR Reflectivity <sub>(3)</sub>	r <sub>f</sub>	2	%
HR Reflectivity	r <sub>r</sub>	95	%
Spectral Shift with Temp.	λ <sub>T-Shift</sub>	0.3	nm / K
Spectral Shift with Current	λ <sub>P-Shift</sub>	0.5	nm / A
Operating Temp.	T <sub>op</sub>	20-30	°C
<b>Option: FAC lens</b>			
Fast axis (vertical) divergence	NA	< 3	mrad
Vertical width of the beam		< 0.8	mm

### Important Notes:

- (1) Typical pulse condition: pulse <100µsec / d.c. 5%
- (2) The Intensity I(α,G,SG) of the far field in vertical and horizontal plane versus deflection angle (α) can be approximated with a Zemax Super-Gaussian Diode model by two parameters (first) Gaussian(G) width describing the beam width by the Full Width Half Maximum (FWHM) of the beam intensity in measurement plane and (second) Super Gauss (SG) describing the deviation from a Gaussian shape of the beam whereas:  

$$I(\alpha,G,SG)=\exp(-2((\alpha/G)^2)^{SG})$$
with  $G(\text{FWHM}) = \text{FWHM}/(2*\sqrt[SG]{0.346573})$   
Lateral far field: Typical parameter values are SG = 3-4 and G(7°) ~ 6. Due to the non - gaussian shape the FWHM of the beam includes app. 90% of the energy. The beam width increase by current with app. 0.4° / A.  
Vertical far field: Typical parameter values are SG = 1 and G(25°) ~ 21. The beam width does not change by current.
- (3) Optionally other coatings are offered on request

## Absolute Maximum Ratings

Parameter	Symbol	LU1010F140	Unit
LD c.w. Forward Current	I <sub>op, (c.w.) max</sub>	20	A
LD pulsed (<100µsec, <10% d.c.) Forward Current	I <sub>op, (pulsed) max</sub>	30	A
LD Reverse Voltage	V <sub>R, max</sub>	2	V
Maximum Processing Temperatures:			
Solder pads for LD contacts / max 5sec.	T <sub>Op max, solder pad</sub>	250	°C
Soldering of Cu base block / max 5sec.	T <sub>Op max, Cu base</sub>	150	°C
Rel. Humidity, Storage Temperature and Operating Heat Sink Temperature <sub>(1)</sub>			

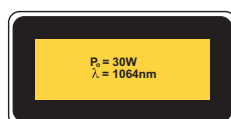
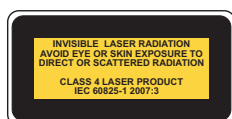
### Note:

Absolute Maximum Ratings may be applied to the laser module for short period of time only. Exposure to maximum ratings for extended period of time or exposure above one or more max ratings may cause damage or affect the reliability of the device.

Operating Temperature and Rel. Humidity must be chosen such that the dewpoint of humid air around the laser diode is below the operating heat sink temperature to avoid condensing of water on the laser diode facet.

This product may contain 1.5% BeO as solid fully metallized ceramic (CAS Number 1304-56-9), 0.05% of solid metallized InAlGaAsP crystal, as well as 0.05% Pb (CAS Nummer 7439-92-1)

## User Safety



**We manufacture diode lasers.**