



## RLTCM – 2310D

Mid Infrared Emitting Laser Diode

Rev. 1  
20081030  
Certified by RB

### Description

The RLTCM – 2310D are MQW laser diodes using a novel AlInGaAsSb pentenary material structure with room temperature emission around 2.3 $\mu$ m at 10 mW optical power. The lasers are suitable as a Mid-IR optical source for thermal imaging calibration, night vision non-visible applications, hydrocarbon gas detection, alcohol liquid measurement and a range of other uses.

### Features

- Mid-Infrared output: 2.33 $\mu$ m Typ.
- Optical output power: 10.0 mW CW at 20°C
- Low Threshold 110 mA Typ
- Low Operating current 370 mA Typ
- Low Operating voltage 2.1 V Typ
- Operating temperature: +20°C
- Integrated photodiode
- Long lifetime: >50000 device-hours at 20°C

### Maximum rating

Item	Symbol	Rating	Unit
Optical output power	P <sub>O</sub>	10.0	mW
LD reverse voltage	V <sub>R</sub>	2	V
Operating temperature	T <sub>OP</sub>	0 to +70	°C
Storage temperature	T <sub>ST</sub>	-20 to +85	°C
PD reverse voltage	V <sub>PD</sub>	2	V

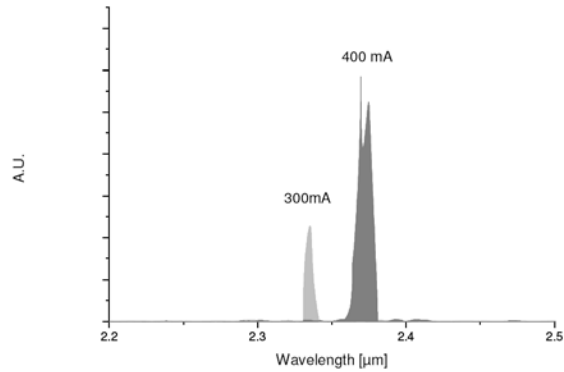
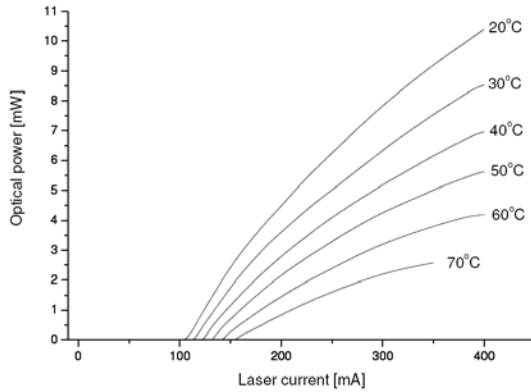
### Electrical and Optical Characteristics

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Threshold current	I <sub>TH</sub>	90	110	130	mA	20°C
Operating current	I <sub>OP</sub>	340	370	400	mA	P <sub>O</sub> =10.0 mW, 20°C
Operating voltage	V <sub>OP</sub>	1.8	2.0	2.2	V	P <sub>O</sub> =10.0 mW, 20°C
Slope efficiency	$\eta_s$	30	45	60	mW/A	P <sub>O</sub> =0.5 to 10.0 mW
Beam Divergence	$\theta_{//}$		<5		deg	FWHM
	$\theta_{\perp}$		<5		deg	FWHM
Lasing wavelength	$\lambda_{OP}$	2.32	2.33	2.34	$\mu$ m	P <sub>O</sub> =10.0 mW
Operating temperature	T <sub>OP</sub>	0	20	70	°C	P <sub>O</sub> >2.0 mW
Maximum output power	P <sub>MAX</sub>		10.0		mW	20°C, I <sub>OP</sub>
Photodiode response	I <sub>PD</sub>	2.0	3.0	4.0	mA	V <sub>PD</sub> =0, P <sub>O</sub> =10.0mW



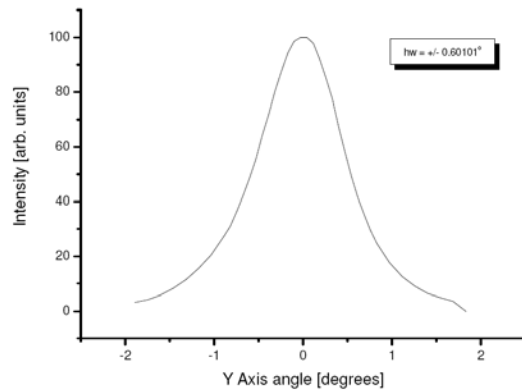
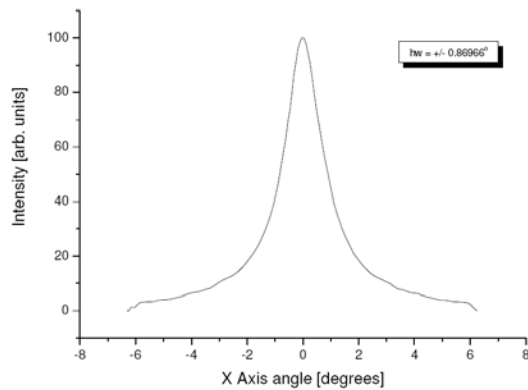
## Engineering Data

### Typical Laser Emission Characteristics



Optical Power vs. Laser Current

Optical Emission Spectrum vs. Laser Current



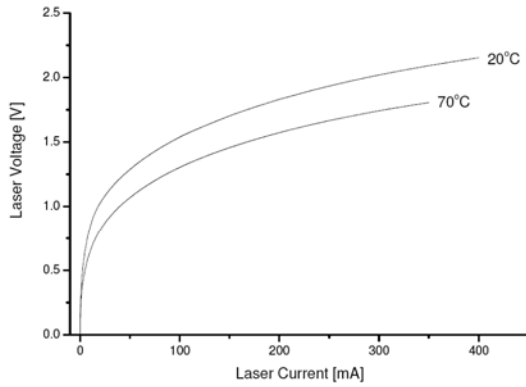
Optical Emission Far Field Fast Axis\*

Optical Emission Far Field Slow Axis\*

\*Note: HW emission angle varies and is mode dependent

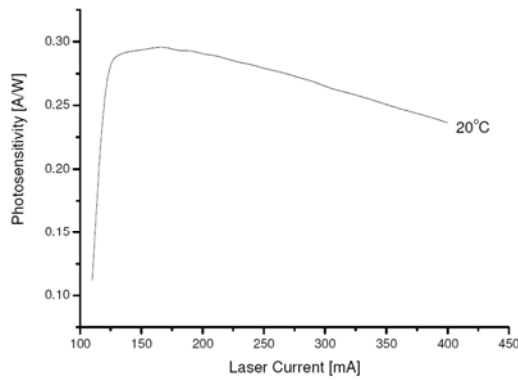


## Typical Laser Electrical Characteristics

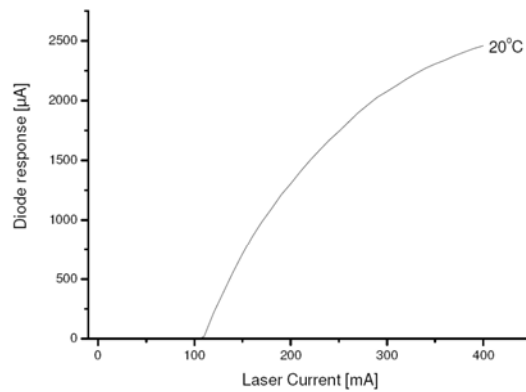


## Laser Voltage vs. Current at different temperatures

## Monitor Diode Characteristics



## Monitor Diode Sensitivity vs. Laser Current [V<sub>PD</sub>=0 V]



## Monitor Diode Response vs. Laser Current [V<sub>PD</sub>=0 V]



## Package

