



## 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 penternary 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    |

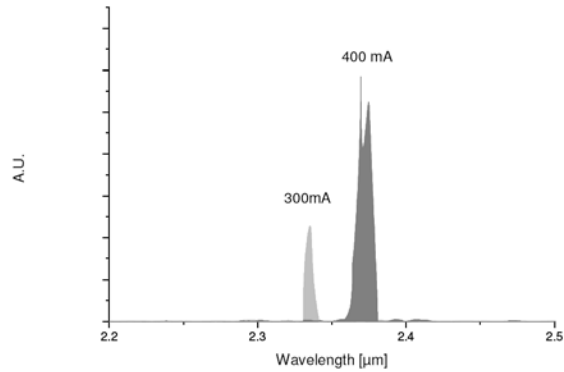
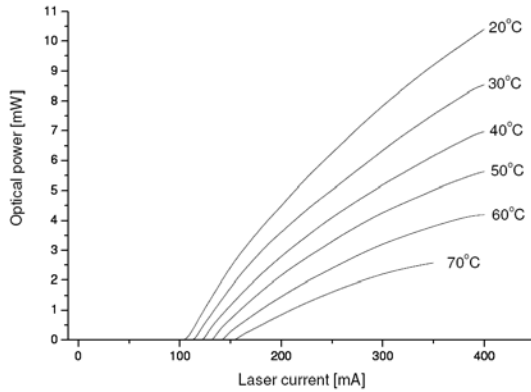
### Electrical and Optical Characteristics

| 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 |



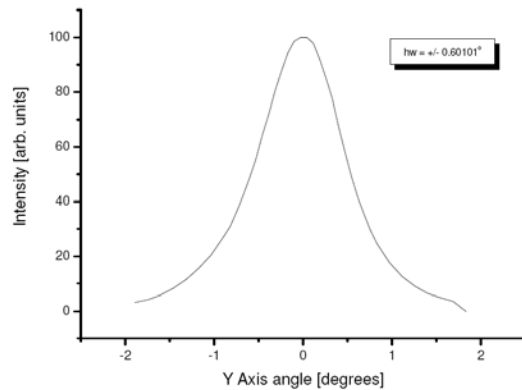
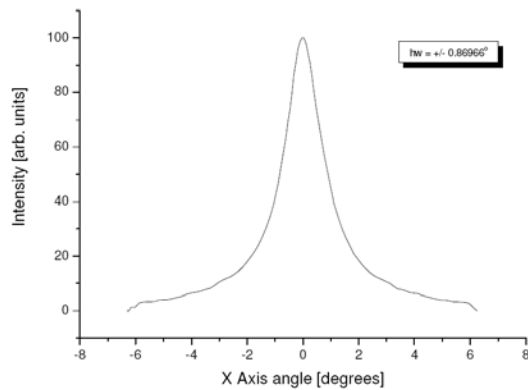
## Engineering Data

### Typical Laser Emission Characteristics



### Optical Power vs. Laser Current

### Optical Emission Spectrum vs. Laser Current



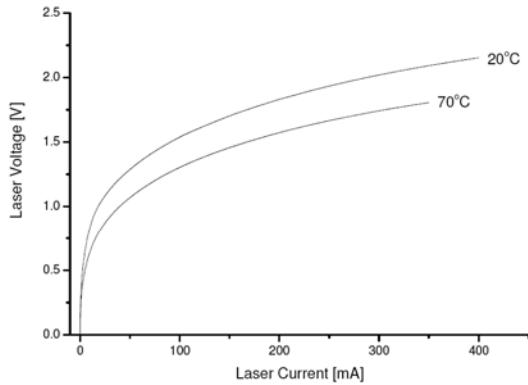
### Optical Emission Far Field Fast Axis\*

### Optical Emission Far Field Slow Axis\*

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

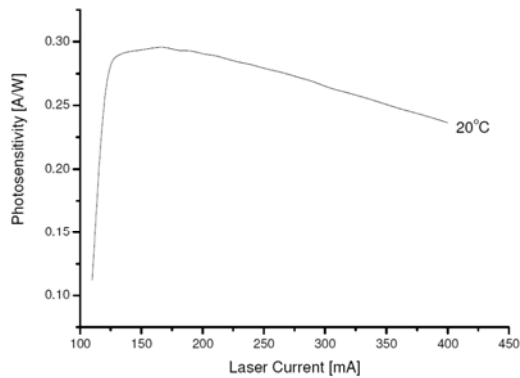


## Typical Laser Electrical Characteristics

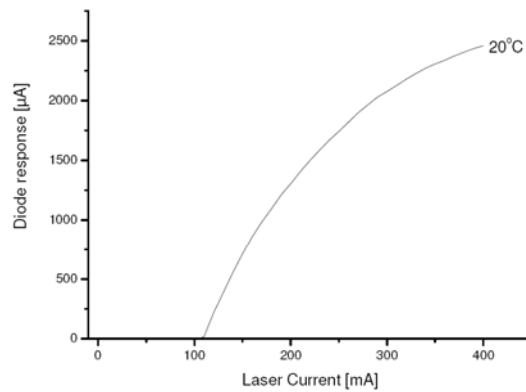


## Laser Voltage vs. Current at different temperatures

## 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

