# EXS210086-01

## EXS0820-025-10-0B00030

## 820nm UNCOOLED TO-56

**Revision:** 1.0

**Date:** 05-12-2013

**Confidentiality:** None

**Prepared by:** Raffaele Rezzonico
(Product Support Technician)

**Checked by:** Chris Armistead
(Director of Product Engineering)

**Approved by:** Philippe Crépellière
(Quality Manager)

# CONTENTS

**1. SCOPE ..... 3**
1.1 PURPOSE ..... 3
1.2 RESPONSIBILITY ..... 3

**2. REFERENCE DOCUMENT ..... 3**

**3. ELECTRO-OPTICAL PERFORMANCE ($T_{SLED}$ = 25°C) ..... 3**

**4. ABSOLUTE MAXIMUM RATINGS ..... 4**

**5. SCREENING (EXS210086-01) ..... 4**

**6. PACKAGE DIMENSIONS [mm] ..... 5**
6.1 DETAILED DIMENSIONS [mm] ..... 5

**7. IMPORTANT NOTES ..... 7**

**8. ORDERING INFORMATION ..... 7**
8.1 TECHNICAL DESCRIPTION ..... 7

**9. REVISION HISTORY ..... 8**

# 1. SCOPE

## 1.1 PURPOSE

The purpose of this document is to specify the electro-optical performance and dimensions of superluminescent light emitting diode (SLED) TO-56.

## 1.2 RESPONSIBILITY

EXALOS is responsible for establishing, implementing and maintaining this procedure. The Quality representative shall ensure that a timely Engineering Change Notice (ECN) is issued in accordance with EXALOS procedure for any changes.

# 2. REFERENCE DOCUMENT

- EXS-WI-0001 Visual Inspection Criteria SLED Chip on Submount Procedure
- MIL STD 883 C method.
- Telcordia GR-468-CORE

# 3. ELECTRO-OPTICAL PERFORMANCE ($T_{SLED}$ = 25°C)

| Parameter | Symbol | Cond. | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Operating Current | $I_{op}$ | | | | 120 | mA |
| Power ex-window | $P_o$ | $I_{op,\ max}$ | 9 | 15 | - | mW |
| Centre Wavelength* | $\lambda_C$ | $I_{op,\ max}$ | 800 | 820 | 840 | nm |
| Bandwidth FWHM* | | $I_{op,\ max}$ | 20 | 25 | - | nm |
| Spectral ripple [RB=0.1 nm] | | $I_{op,\ max}$ | - | 0.1 | - | dB |
| Monitor Diode Current† | $I_{MPD}$ | $I_{op,\ max}$ | 0.1 | | | mA |
| Monitor diode bias voltage | $V_{Bias}$ | | 0 | | -12 | V |
| Vertical Far Field Angle | $VFF_{FWHM}$ | $I_{op,\ max}$ | - | 40 | - | degrees |
| Horizontal Far Field Angle | $HFF_{FWHM}$ | $I_{op,\ max}$ | - | 20 | - | degrees |

*Spectral verification is performed by sampling at the manufacturing batch level. Manufacturing batches are defined by epitaxial wafer growth run

† Measurement conditions:
- $I_{op} = I_{op}$ Max
- Monitor PD bias voltage: 0 Volts

Input resistance of the Monitor PD current measurement circuit 10 Ohm

## 4. ABSOLUTE MAXIMUM RATINGS

Stresses beyond the absolute maximum ratings may cause permanent damage to the device. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

| Parameter | Symbol | Cond. | Min | Max | Unit |
|---|---|---|---|---|---|
| Forward current | $I_F$ | $P_o \leq P_{max}$ | | 140 | mA |
| Reverse voltage | $V_R$ | | | -2 | V |
| Forward voltage | $V_F$ | $I_{F,max}$ | | 3 | V |
| Storage temperature | $T_{stg}$ | | -40 | 85 | °C |
| Operating temperature | $T_{op}$ | $P_o \leq P_{max}$ | -20 | 65 | °C |
| Max Power ex-window‡ | $P_{max}$ | | | 20 | mW |
| Lead soldering temperature | | | | 260 | °C |
| ESD | | human b.m | | 500 | V |

## 5. SCREENING (EXS210086-01)

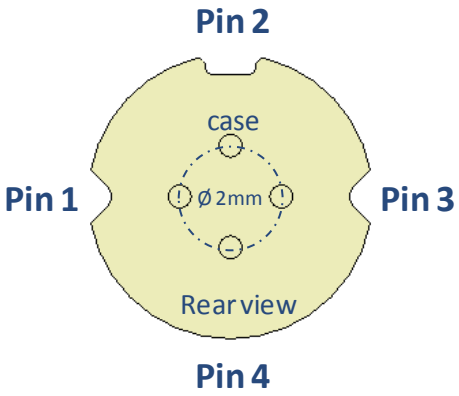
The produced 820m SLED Module is required to meet all operating conditions specified in Table 4.1, Electro-Optical Performance Specifications after being subjected to the following screening tests.

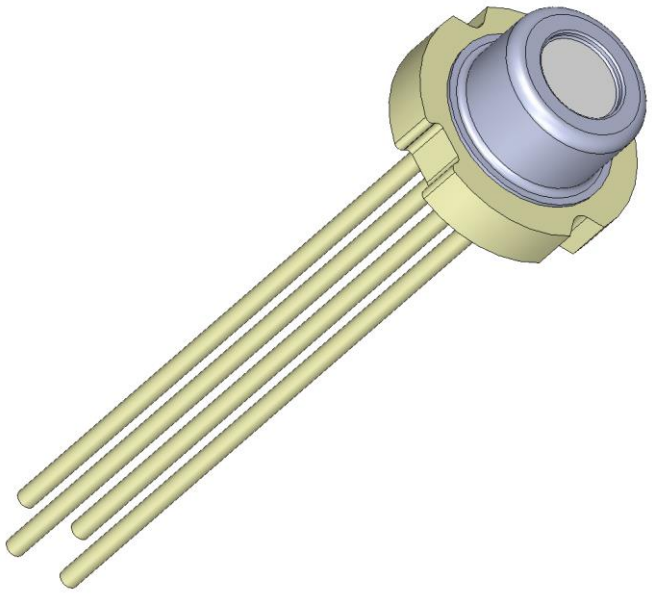
| Test Item | Test Conditions | Reference | Sample |
|---|---|---|---|
| Hermetic Seal | Fine leak :<br>Max. leak rate 5x10$^{-8}$ atm.cc/sec<br>Gross leak : | MIL-STD-883, Method 1014 Condition A<br>MIL-STD-883, Method 1014 Condition C | 100 %<br>100 % |
| Temperature Cycling | -40°C to +85°C, ramp rate >= 5°C/min<br>20 cycles | MIL-STD-883, Method 1010 | 100% |

‡ The drive current may need to be adjusted in order not to exceed the maximum power rating for low ambient temperature.

## 6. PACKAGE DIMENSIONS [mm]

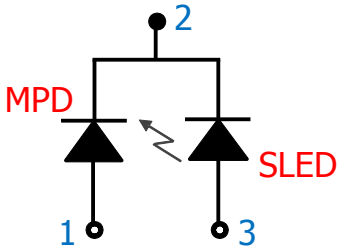
**Tolerances:** **See section 6.1**



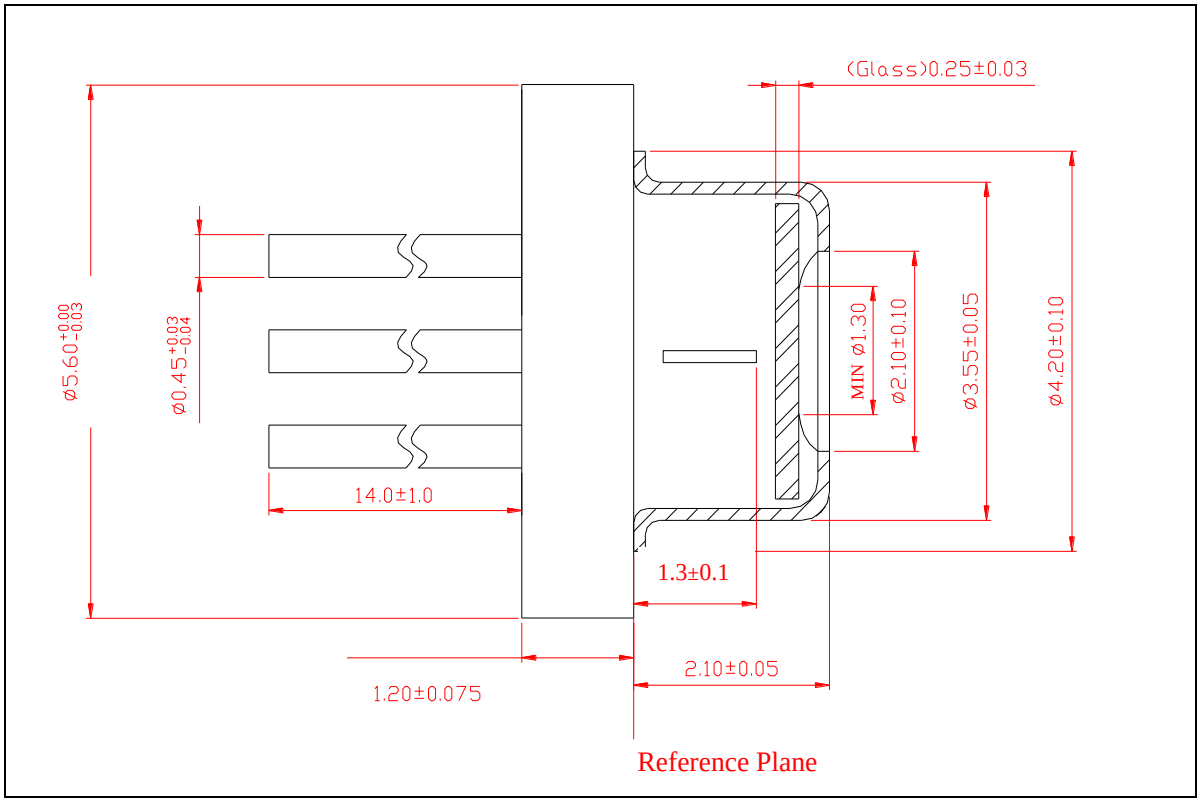
| TO-56 | |
|---|---|
| **Pin** | **Function** |
| 1 | MONITOR DIODE ANODE |
| 2 | SLED CATHODE (-), MONITOR DIODE CATHODE , CASE |
| 3 | SLED ANODE (+) |
| 4 | NC |

**SCHEMATIC PIN LAYOUT**

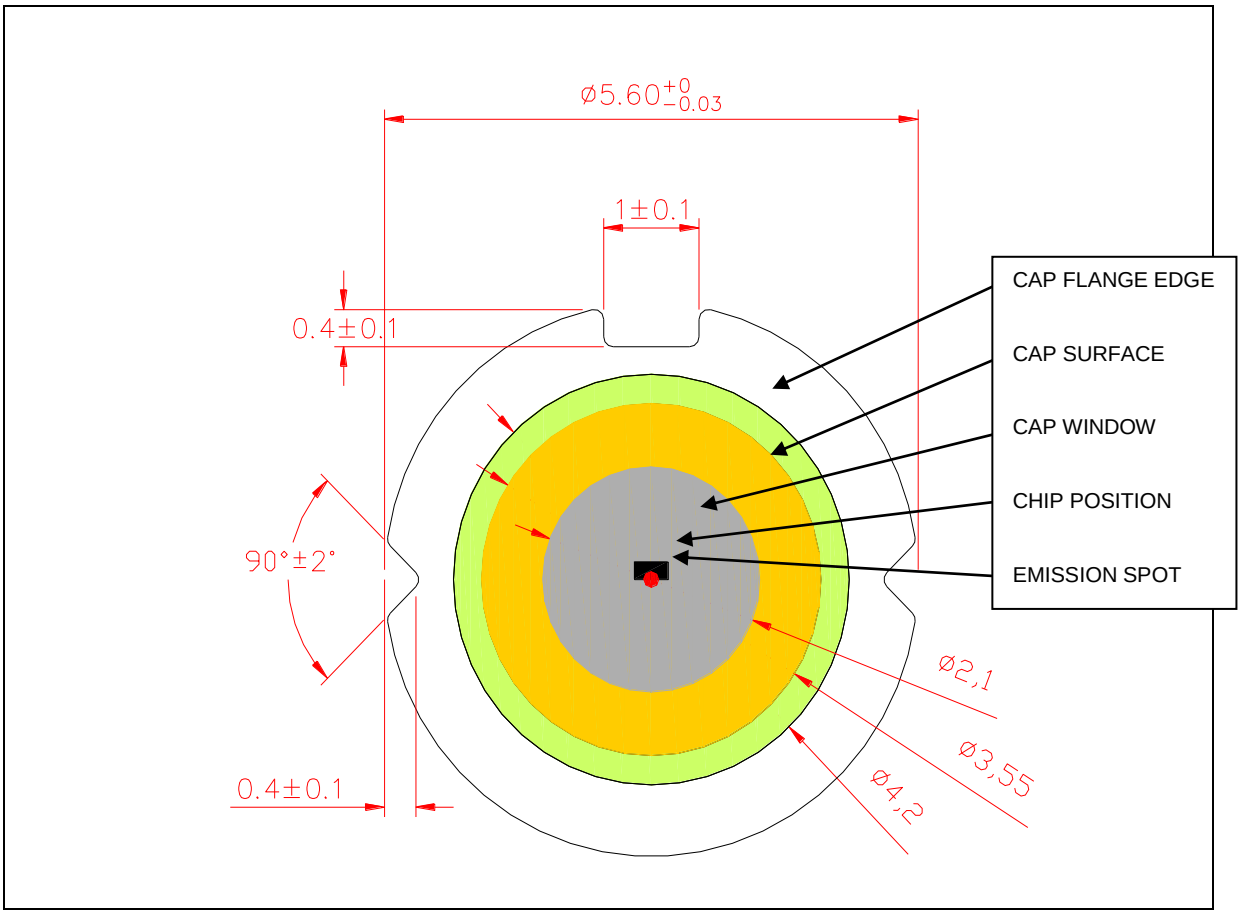


## 6.1 DETAILED DIMENSIONS [mm]

**Side View Cross-section**




**Top View**



## 7. IMPORTANT NOTES

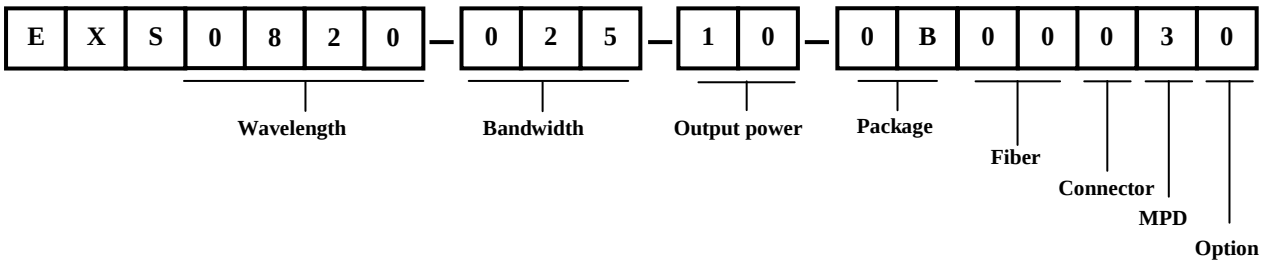
1. Avoid electrostatic discharges, which may destroy the SLED.
2. Never use the TO-CAN die without heat sinking.
3. Adequate eye protection against laser radiation should be used while handling and operating the module.
4. EXALOS declines any responsibility if the device is used in applications where human life may be endangered.
5. Back reflections may influence the output power and spectral characteristics of the SLED. The use of optical isolators and/or angled connectors is recommended. Back reflections of less than -30dB are recommended.

## 8. ORDERING INFORMATION

Please use the following **part number** to order product from EXALOS:

| E | X | S | 2 | 1 | 0 | 0 | 8 | 6 | – | 0 | 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|

### 8.1 TECHNICAL DESCRIPTION



## 9. REVISION HISTORY

| Revision History | | | | |
|---|---|---|---|---|
| **Rev.** | **Description** | **ECN** | **Date** | **Released** |
| 1.0 | Original version | | 05.12.2013 | Rezzonico |
| | | | | |
| | | | | |
| | | | |