EXS210015-04

405nm UNCOOLED TO-56

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Confidentiality: None

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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
- Bellcore GR-468-CORE

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

Parameter	Symbol	Cond.	Min	Typ	Max	Unit
Power ex-window	P_{op}		25	40	55	mW
Operating Current	I_{op}	$P_{op} \leq P_{max}$			100	mA
Forward Voltage	V_{op}	$I_{op} \leq I_{max}$		4.5	6	nm
Centre Wavelength*	λc	P_{max}	400	405	410	nm
Bandwidth FWHM*	$\Delta\lambda$	P_{max}	2	3	-	nm
Spectral ripple [RB=0.1 nm]		P_{max}	-	0.2	-	dB
Vertical Far Field Angle FWHM		P_{max}	20	25	30	degrees
Horizontal Far Field Angle FWHM		P_{max}	6	10	14	degrees

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

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	$P_o \leq P_{max}$		100	mA
Reverse voltage	V_R			-2	V
Forward voltage	V_F	$I_{F,max}$		6.0	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}			55	mW
Soldering temperature				200	°C
ESD		human b.m		500	V

5. SCREENING

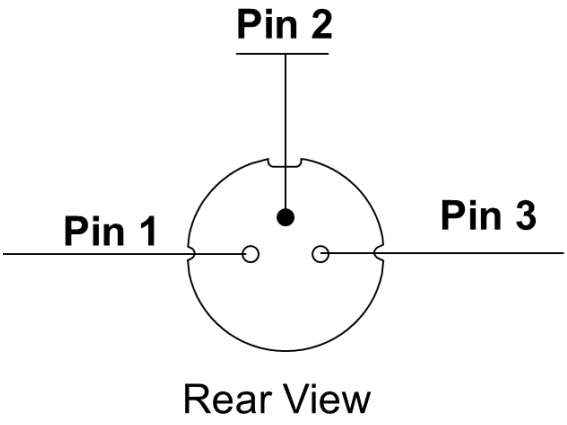
The 405nm SLED Module is required to meet all operating conditions specified in Table of section 3, after being subjected to the following screening tests.

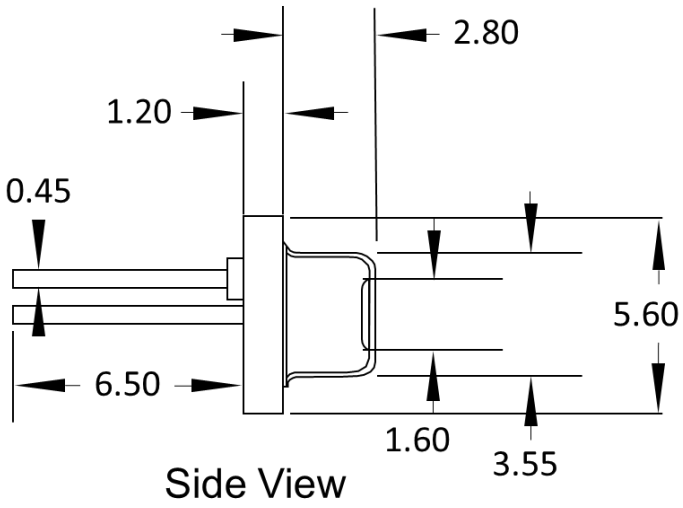
Test Item	Test Conditions	Reference	Sample
Hermetic Seal	Fine leak : Max. leak rate 5x10^{-8} atm.cc/sec Gross leak :	MIL-STD-883, Method 1014 Condition A MIL-STD-883, Method 1014 Condition C	100 % 100 %
Temperature Cycling	-40°C to +85°C, ramp rate >= 5°C/min 20 cycles	MIL-STD-883, Method 1010	100%

† 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 : .X ± 0.25 mm
.XX ± 0.05 mm





EXS210015-04	
Pin	**Function**
1	**SLED ANODE (+)**
2	**SLED CATHODE (-), CASE**
3	**NC**

SCHEMATIC PIN LAYOUT

7. IMPORTANT NOTES

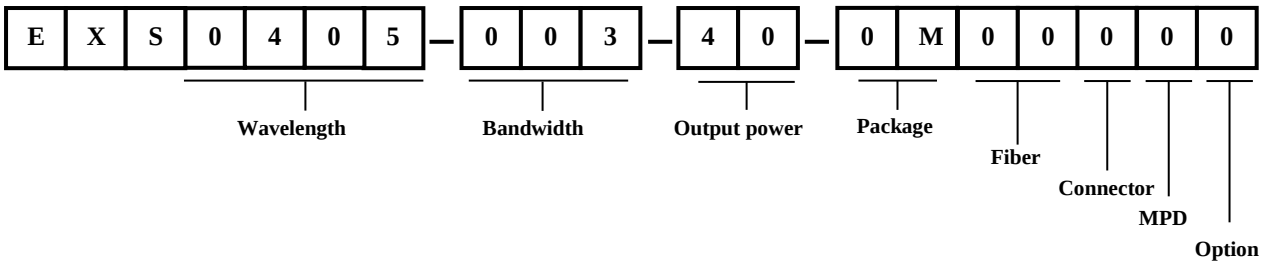
1. Avoid electrostatic discharges, which may destroy the SLED.
2. Never use the TO-CAN die without heat sinking.
3. Adequate eye protection against laser radiation should be used while handling and operating the module.
4. EXALOS declines any responsibility if the device is used in applications where 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	1	5	–	0	4

8.1 TECHNICAL DESCRIPTION



9. REVISION HISTORY

Revision History				
Rev.	**Description**	**ECN**	**Date**	**Released**
1.0	Original version		18.06.2015	Rossetti
2.0	Update the TO-56 package to 3 pins TO-56 and the pin layout	EC-01266	16.06.2020	Rezzonico
3.0	Power = 20mW, Current range = 75-100mA	EC-01638	09.07.2024	Rossetti
4.0	Increased power at 100mA (Typ 40mW, Max 55mW)	EC-01736	27.05.2025	Rossetti