EXS210005-03

SLED Butterfly λ=830nm

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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).

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
Operating Current	I_{op}				150	mA
Power in SMF	P_o	$I_{op,\ max}$	9	12		mW
Center Wavelength	λ_c	$I_{op,\ max}$	825	835	845	nm
Bandwidth FWHM		$I_{op,\ max}$	20	25		nm
Secondary coherence peak suppression*	SPSR	$I_{op,\ max}$	28			dB
Monitor PD Current†	I_{MPD}	$I_{op,\ max}$	50			µA
Monitor PD bias voltage			0		-12	V

* SPSR is the difference in dB (on a 10-log scale) of the DC peak and the amplitude of the secondary peak of the coherence function. The coherence function is calculated through a Fourier transform of the optical spectrum, measured from 800nm to 880nm (80nm span) with a sampling bandwidth of max. 20 pm (optical resolution) and an oversampling factor of at least 2.0 (max. numerical resolution 10 pm), and resampled with equidistant steps in the frequency domain (k-space).

† 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			160	mA
Reverse voltage	V_R			-2	V
Forward voltage	V_F	$I_{F,max}$		3.0	V
Storage temperature	T_{stg}		-40	85	°C
Operating temperature	T_{op}	$I_{F,max}$	-20	65	°C
Storage humidity		<30°C >30°C	5	95 85	% r.h. % r.h.
Thermoelectric cooler voltage	V_{tec}	**		4.0	V
Thermoelectric cooler current	I_{tec}	**		1.8	A
Thermistor Resistance	R_{th}	25°C	10		KΩ
Thermistor constant	B		3892		K
Lead soldering temperature				260	°C
Lead soldering duration				10	s
ESD		human b.m		500	V

** Performance values with hot side temperatures 50°C

5. SCREENING

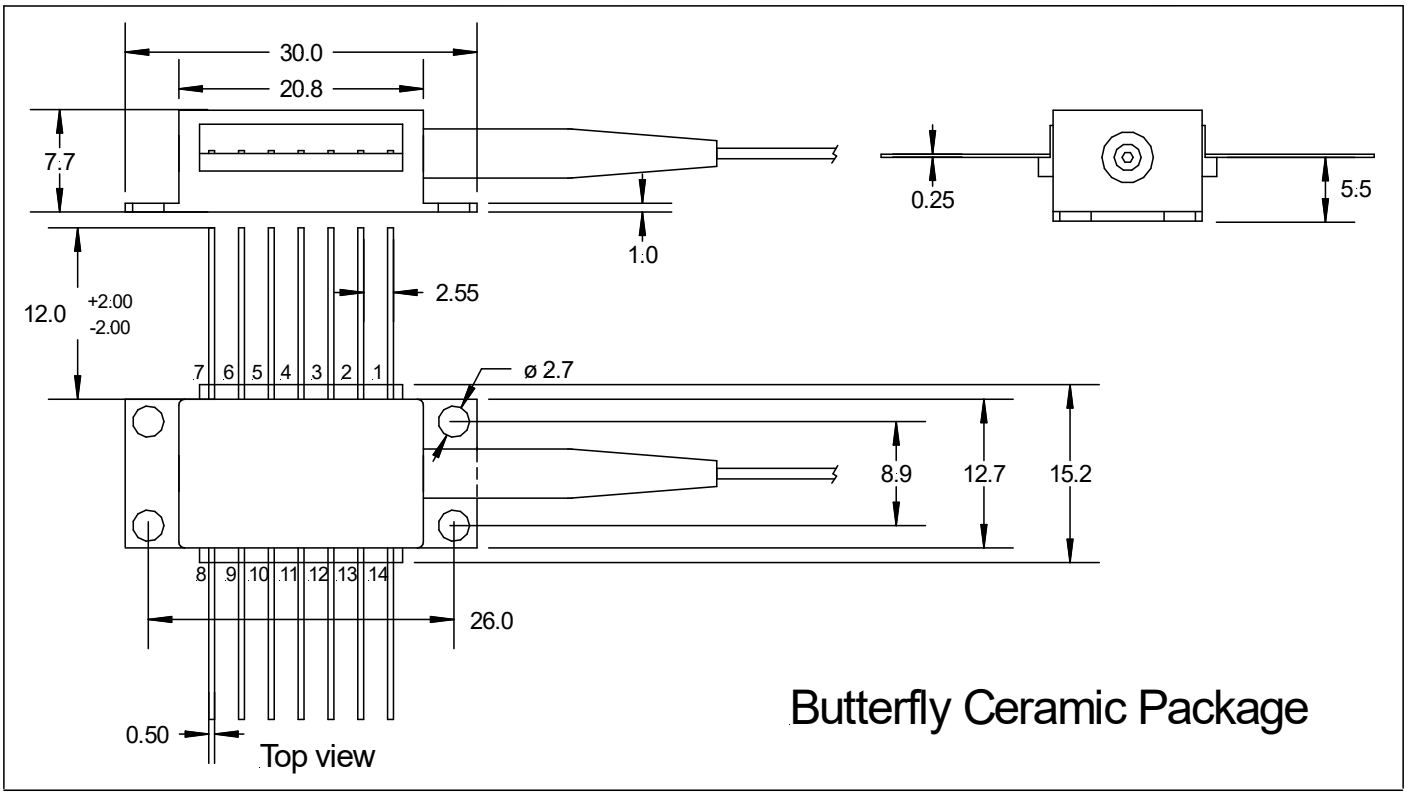
The produced 830nm SLED Module is required to meet all operating conditions specified in Table 3, Electro-Optical Performance Specifications after being subjected to the following screening tests.

Test Item	Test Conditions	Reference
Seal	Fine: Condition A1 Gross: Condition C	MIL-STD-883, Method 1014 Temperature max 85°C
Temperature Cycling	-40°C to +85°C, ramp rate >= 5°C/min 10 cycles	MIL-STD-883, Method 1010

3rd Angle projection

6. PACKAGE DIMENSIONS [mm]

Tolerances : .X ± 0.25 mm
.XX ± 0.05 mm



Butterfly Package			
Pin	**Function**	**Pin**	**Function**
1	TEC (+)	8	NC
2	THERMISTOR	9	NC
3	MONITOR DIODE ANODE	10	SLED ANODE (+)
4	MONITOR DIODE CATHODE	11	SLED CATHODE (-)
5	THERMISTOR	12	NC
6	NC	13	CASE GROUND
7	NC	14	TEC (-)

7. FIBRE AND CONNECTOR

Part	Description
SM Fibre	SM 5/125 Corning HI780
Loose tube secondary coating	900 µm
Fiber pigtail length [min]	1 m
Optical connector	FC/APC Narrow Key (2.0mm)

8. IMPORTANT NOTES

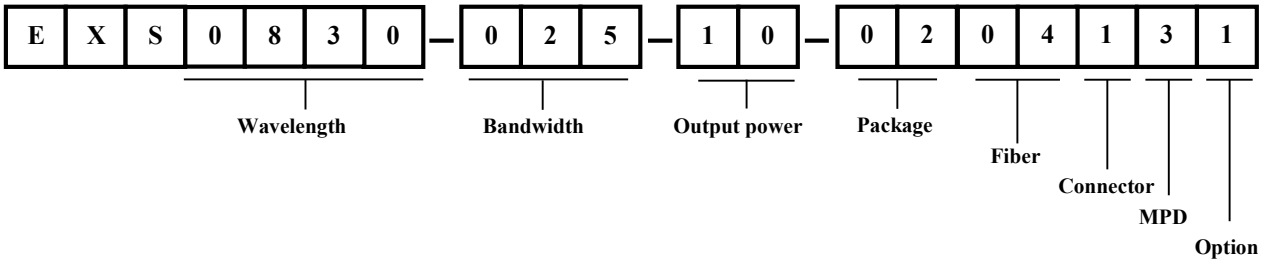
1. Avoid electrostatic discharges, which may destroy the SLED.
2. Never use the SLED module without heat sinking.
3. Adequate eye protection against laser radiation should be used while handling and operating the module.
4. EXALOS declines any responsibility if the device is used in applications where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

9. ORDERING INFORMATION

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

E	X	S	2	1	0	0	0	5	–	0	3

9.1 TECHNICAL DESCRIPTION



10. REVISION HISTORY

Revision History				
Rev.	**Description**	**ECN**	**Date**	**Released**
1.0	Original version		08.12.2010	Rezzonico
1.1	Change min output power to 7mW and ripple resolution 0.02nm	EC-00552	01.10.2012	Rezzonico
2.0	Change operating current to 200mA and min output power 8mW	EC-00635	06.06.2013	Rezzonico
2.1	Updated specification by removing technical description on the front page	EC-01326	04.05.2021	Rezzonico
2.2	Changed the ripple screening with Secondary peak suppression min 28dB	EC-01342	22.06.2021	Rezzonico
2.3	Updated the PD Monitor Current to ≥ 50µA	EC-01589	18.12.2023	Rezzonico
3.0	Changed operating current to 160mA and min output power 9mW	EC-01592	04.01.2024	Rezzonico
3.1	Changed operating current to 130mA instead of 160mA	EC-01642	25.07.2024	Rezzonico
3.2	Operating current to 150mA	EC-01752	16.07.2025	Poretti