EXS210194-01

SLED Butterfly λ=633nm PMF

Polarized light aligned to the slow axis of fibre

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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).

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}				130	mA
Power in PMF*	P_o	$I_{op,\,max}$	5	6		mW
Center Wavelength	λ_c	$I_{op,\,max}$	631	633	635	nm
Bandwidth FWHM		$I_{op,\,max}$	5	6		nm
Spectral ripple [RB=0.1nm] †		$I_{op,\,max}$		0.2	0.5	dB
Polarization Extinction Ratio	PER	$I_{op,\,max}$	18	20		dB
Sidelobe Suppression ratio‡	SLSR	$I_{op,\,max}$	20			dB
2nd Peak suppression ratio§	SPSR	$I_{op,\,max}$	30			dB
Monitor PD Current **	I_{MPD}	$I_{op,\,max}$	100			µA
Monitor PD bias voltage			0		-12	V

* Polarized light aligned to **Slow axis** of fibre.
† Spectral ripple is intrinsic to the chip and not applying to any slow period ripple induced by polarization misalignment in the fibre.
‡ Sidelobes in the coherence function are near-range local maxima for OPD values up to 0.2mm
§ Suppression of secondary peaks in the coherence function from 0.8mm to 300mm. Due to the birefringence B of the PM fiber and due to the length L of the fiber pigtail, a secondary coherence peak at an OPD of ~0.5mm (B*L) is expected whose relative power level depends on the angular alignment accuracy of the PM fiber. A PER of 20 dB should correspond to a relative suppression of this PMF peak of 20 dB.
** Measured at $I_{op} = I_{op,max}$ and at bias voltage = 0. Input resistance of MPD measurement circuit = 10 Ω.

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			135	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 temperature = 50ºC.

5. SCREENING

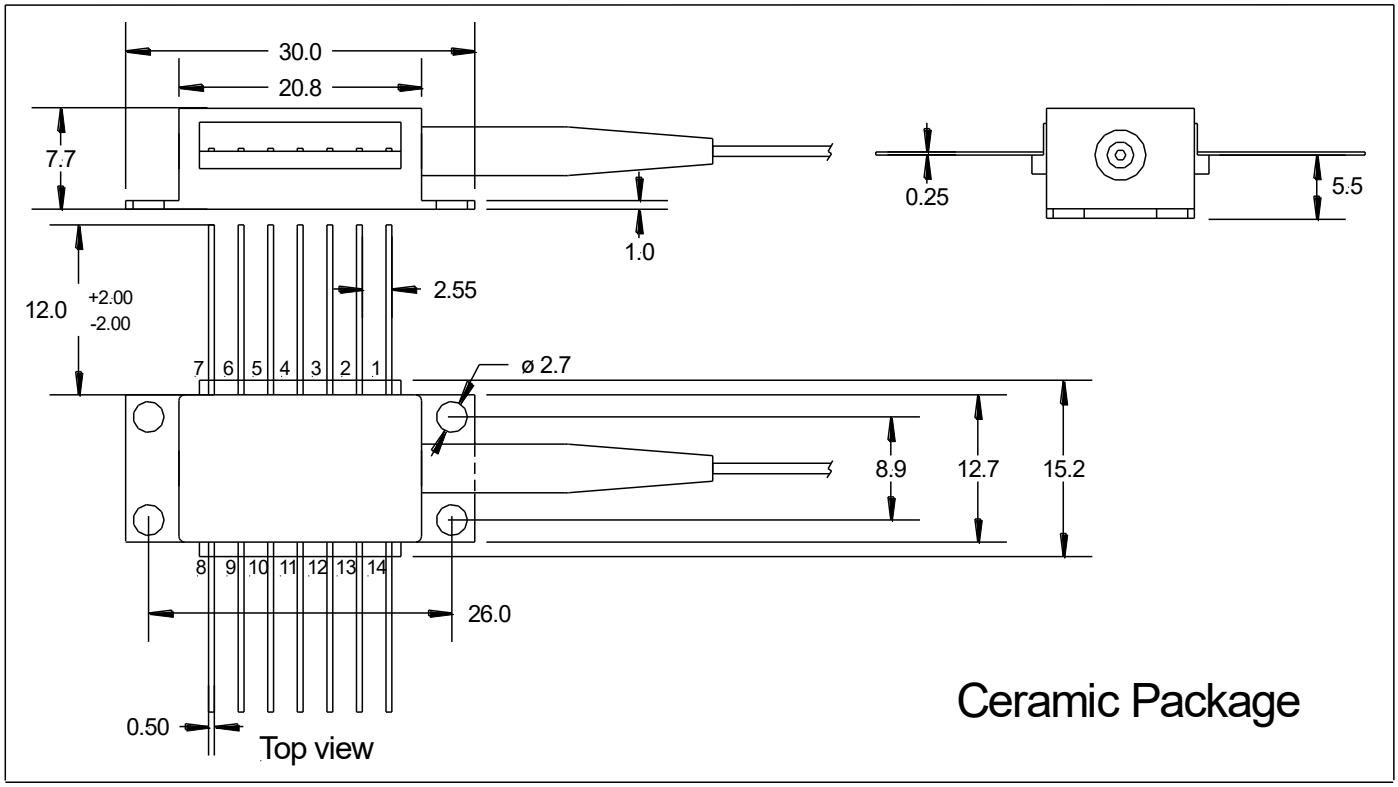
The 633nm SLED Module meets all operating conditions specified in the table of section 3, after being subject to the following screening tests.

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

6. PACKAGE DIMENSIONS [mm]

3rd Angle projection

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
PM Fibre	4/125 PM630-HP Nufern
Loose tube secondary coating	900 μm
Fiber pigtail length [min]	1 m
Optical connector	FC/APC*, PMF Keyed aligned to slow axis +/- 5° tolerance

*Narrow Key (2.0mm)

8. IMPORTANT NOTES

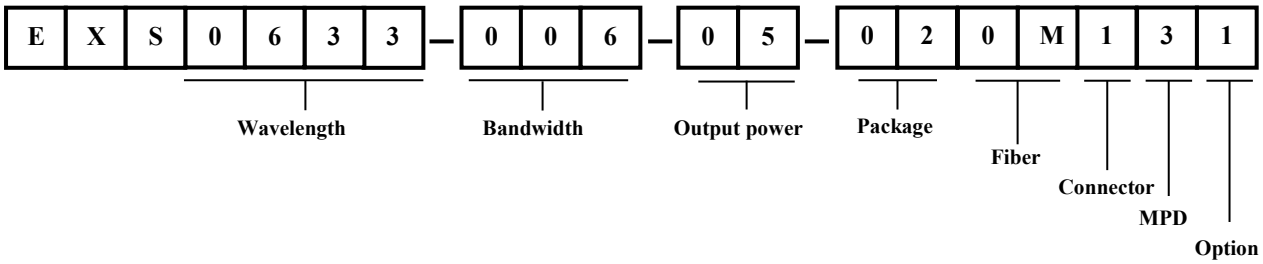
1. Avoid electrostatic discharges, which may destroy the SLED.
2. Never use the SLED module die without heat sinking.
3. Adequate eye protection against laser radiation should be used while handling and operating the module.
4. EXALOS declines any responsibility if the device is used in applications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

9. ORDERING INFORMATION

The following **part number** should be used to order this product from EXALOS:

E	X	S	2	1	0	1	9	4	–	0	1

9.1 TECHNICAL DESCRIPTION



10. REVISION HISTORY

Revision History				
Rev.	**Description**	**ECN**	**Date**	**Released**
0.0	Draft specification		22.11.2024	Rossetti
1.0	Released specification	EC-01814	06.03.2026	Dahdah
1.1	Update drive current to 130mA instead of 125mA	EC-01867	26.06.2026	Dahdah