EXC250023-00

EXC-1220-1260-1300-1360-20-0208130

1300nm Combi-4 SLED 14-pin BTF Module 180nm

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1. SCOPE

PURPOSE

The purpose of this document is to specify the electro-optical performance and dimensions of a module with combined superluminescent light emitting diodes (SLEDs).

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 DOCUMENTS

- MIL STD 883 C method
- Bellcore GR-468-CORE

3. ELECTRO-OPTICAL PERFORMANCE (T_{SLED} = 20°C)

Parameter	Symbol	Cond.	Min	Typ	Max	Unit
Combined Wavelengths: SLED B SLED C1 SLED C2 SLED D	 λ_B λ_{C1} λ_{C2} λ_D			 1360 1300 1260 1220		nm
Operating current: SLED B SLED C1,C2[1] SLED D	 $I_{op,\ B}$ $I_{op,\ C1,C2}$ $I_{op,\ D}$			 310 550 330	 400 550 400	mA
Total power ex-fiber	P_{tot}	$I_{op,max}$	18	23		mW
3dB center wavelength	λ_c	$I_{op,max}$	1285	1300	1315	nm
3dB bandwidth	BW_{3dB}	$I_{op,max}$	170	180		nm
10dB bandwidth	BW_{10dB}	$I_{op,max}$	200	210		nm
Secondary peak suppression 0.3-4.0mm[2]	$SPSR_{4mm}$	$I_{op,max}$	25	30		dB
Secondary peak suppression 4-8mm[3]	$SPSR_{8mm}$	$I_{op,max}$	20	25		dB
Polarization extinction ratio	PER	$I_{op,max}$	15	25		dB
Monitor PD current[4]	I_{MPD}	$I_{op,max}$	100	400		µA
Monitor PD bias voltage	V_{MPD}		0		-10	V

Table 1: Electrical-optical characteristics

[1] SLED C1 (1300nm) and SLED C2 (1450nm) are internally wired in series and can therefore only be driven with one and the same current through pins 12 and 13. The forward voltage seen on those pins is accumulated from both SLEDs.
[2] Suppression of residual peaks of the coherence function (point spread function, PSF) on a 10-log vertical scale when plotted versus optical path length difference (OPD) in air from 0.3 mm to 4.0 mm
[3] Suppression of residual peaks of the coherence function (point spread function, PSF) on a 10-log vertical scale when plotted versus optical path length difference (OPD) in air from 4.0 mm to 8.0 mm
[4] Measured with 0V bias voltage on monitor photodiode (PD) and termination resistance of 10-50 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: SLED B SLED C1,C2 SLED D	$I_{F,\,B}$ $I_{F,\,C1,C2}$ $I_{F,\,D}$			450 600 500	mA
Reverse voltage: SLED B SLED C1,C2 SLED D	$V_{R,\,B}$ $V_{R,\,C1,C2}$ $V_{R,\,D}$			-2.0 -4.0 -2.0	V
Forward voltage: SLED B SLED C1,C2 SLED D	$V_{F,\,B}$ $V_{F,\,C1,C2}$ $V_{F,\,D}$			2.0 4.0 2.0	V
Operating temperature	T_{op}	$I_{F,max}$	-20	50	°C
Storage temperature	T_{stg}		-40	85	°C
Storage humidity	<30°C >30°C		5	85 95	% r.h. % r.h.
Thermoelectric cooler voltage	V_{tec}	50°C[5]		4.0	V
Thermoelectric cooler current	I_{tec}	50°C		1.8	A
Thermistor Resistance	R_{th}	25°C	9.5	10.5	kΩ
Thermistor constant	B		3892		K
Lead soldering temperature				260	°C
Lead soldering duration				10	s
ESD		human b.m.		500	V

Table 2: Absolute maximum ratings

5. SCREENING

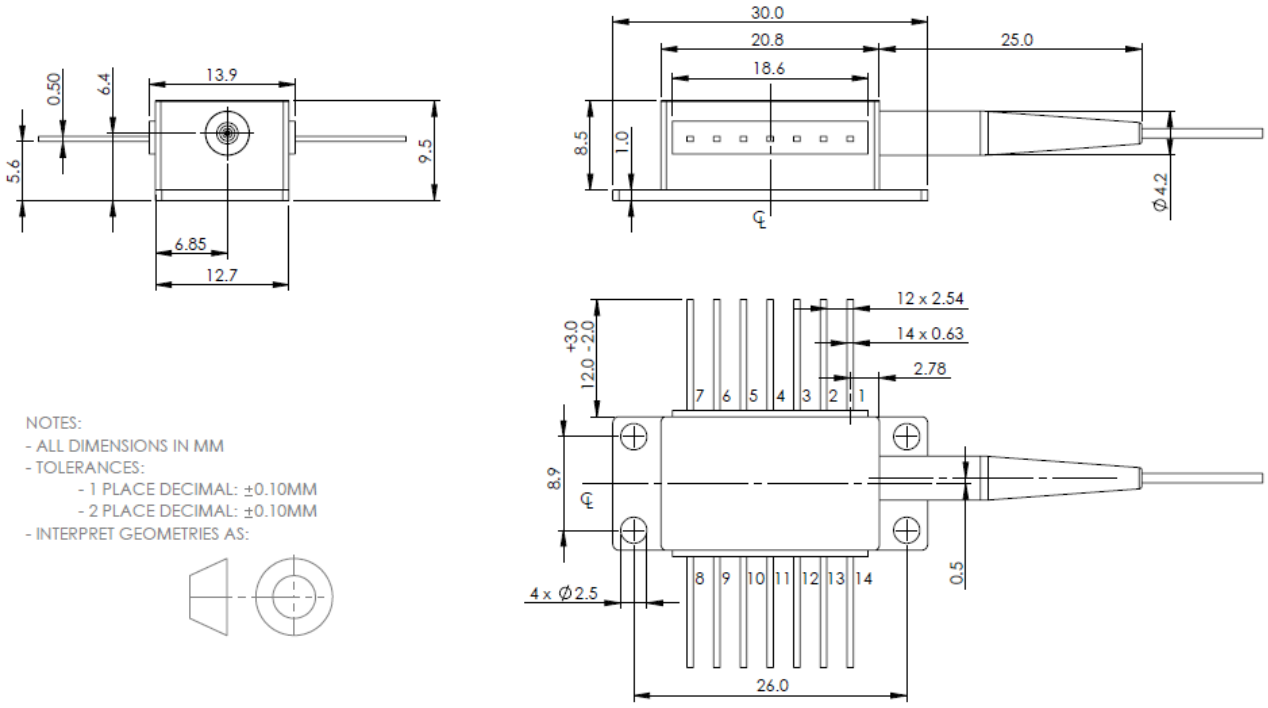
The produced Module is required to meet all operating conditions specified in Table 3, Electro-Optical Performance Specifications after being subjected to the following screening tests:

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

Table 3: Screening tests

[5] Performance values with hot side temperatures of 50°C (housing base)

6. PACKAGE DIMENSIONS AND PINOUT



Butterfly Package			
Pin	**Function**	**Pin**	**Function**
1	**TEC (+)**	**8**	**SLED B ANODE (+)**
2	**NC**	**9**	**SLED B CATHODE (-)**
3	**MONITOR DIODE ANODE (+)**	**10**	**SLED C1,C2 ANODE (+)**
4	**MONITOR DIODE CATHODE (-)**	**11**	**SLED C1,C2 CATHODE (-)**
5	**THERMISTOR (+)**	**12**	**SLED D ANODE (+)**
6	**THERMISTOR (-)**	**13**	**SLED D CATHODE (-)**
7	**NC**	**14**	**TEC (-)**

Table 4: 14pin Butterfly Pinout

7. FIBER AND CONNECTOR

Part	Description
SM Fiber	SMF-28, 9/125 um
Tight buffer 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 SLEDs.
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. Backreflections may influence the output power and spectral characteristics of the SLEDs. An optical return loss of less than -30 dB is recommended.

9. ORDERING INFORMATION

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

E	X	C	2	5	0	0	2	3	–	0	0

Description of technical code:

E	X	C	-	1	2	2	0	-	1	2	6	0	-	1	3	0	0	-	1	3	8	0	-	2	0	-	0	2	0	8	1	3	0
				Wavelength D					Wavelength C2					Wavelength C1					Wavelength B					Total output power			Package			Fiber		Connector		MPD		Option

10. REVISION HISTORY

Revision History				
Rev.	**Description**	**ECN**	**Date**	**Released**
0.1	Preliminary version EXC250023-00	-	05.05.2021	SGL