

## **SPECIFICATIONS**

# **1550 nm High Power Superluminescent LED**

## **DL-CS5203A-FP**

## A. PRODUCT DESCRIPTION

The DenseLight DL-CS5203A-FP series is a broadband SLED that operates in a true inherent superluminescent mode. This superluminescent property generates broader band at higher drive currents in contrast to other conventional SLEDs which are ASE-based, where high drive tends to give narrower band. Its low coherence reduces Rayleigh backscattering noise. Coupled with high power and large spectral width, it offsets photoreceiver noise and improves spatial resolution (in OCT) and measurand sensitivity (in sensors). The SLED is available in 14-pin BTF package. It is compliance with the requirements of Telcodia GR-468-CORE.

Enabled by DensePIC™ spread spectra bandgap engineering technology, future generations of DenseLight SLEDs promise higher chip powers (up to 50mW possible), and broader spectral bands (beyond 120nm). Higher levels of integration may feature integrated SLEDs with phase modulators, optical couplers and photodetectors into a complete optical sensor chipset.

For responsive prototyping enquiries please email: [info@denselight.com](mailto:info@denselight.com)

## B. FEATURES

- Ex-fiber output power of >20mW
- 3dB bandwidth of >35nm
- Typical spectral modulation of 0.25dB
- 14-pin BTF package
- PM fiber

## C. APPLICATIONS

- Fiber Optic Gyroscope
- Optical Test Instrument
- Fiber Optic Sensors
- Fiber Optic Communications
- Optical Coherence Tomography
- Biomedical Imaging Device
- Clinical Healing Equipment

## D. ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Condition	Min	Max	Unit
Reverse voltage	$V_R$	-	-	2	V
Forward current	$I_F$	-	-	400	mA
Forward voltage	$V_F$	$I_{op}$	-	2.5	V
Case temperature	$T_c$	$I_{op}$	-40	70	°C
SLED temperature <sup>1</sup>	$T_{SLED}$	$I_{op}$	0	70	°C
Thermoelectric cooler voltage	$V_{TEC}$	-	-	3.0	V
Thermoelectric cooler current	$I_{TEC}$	-	-	1.8	A
Storage temperature	$T_{stg}$	Unbiased	-40	85	°C
Storage humidity			5	85	%RH
Electro static discharge (ESD)	$V_{ESD}$	Human body model	-	500	V
Lead soldering temperature	$S_{temp}$	-	-	260	°C
Lead soldering time	$S_{time}$	-	-	10	sec

## E. SPECIFICATIONS ( $T_{SLED} = 25\text{ °C}$ )

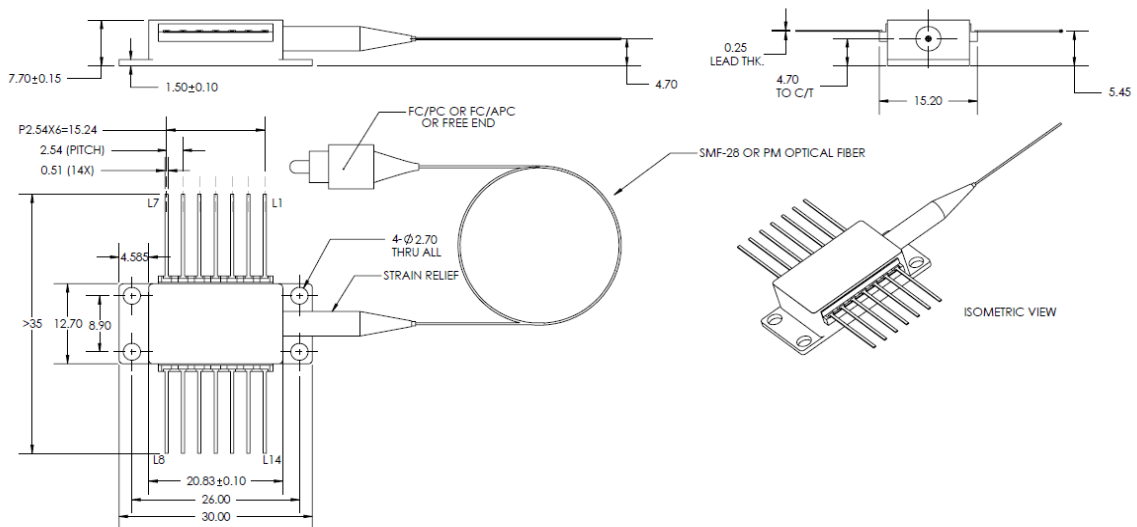
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Operating current	$I_{op}$	-	-	-	450	mA
Forward voltage	$V_F$	$I_{op}$	-	-	2	V
Power in PMF	$P_o$	$I_{op}$	20	-	-	mW
Central wavelength	$\lambda_c$	$I_{op}$	1530	1550	1570	nm
Bandwidth	$B_{FWHM}$	$I_{op}$	35	-	-	nm
Spectrum modulation	R	$I_{op}$	-	0.25	0.5	dB
Polarization extinction ratio	PER	$I_{op}$	12	-	-	dB
Monitor PD Current	$I_{pd}$	$I_{op}$	0.1	-	-	mA
Monitor PD Bias Voltage	$V_{pd}$	-	-	-5	-	V
Monitor PD Dark Current	$I_{pd-dark}$	-	-	-	10	nA
Thermistor resistance	$R_{therm}$	$T = 25\text{ °C}$	9.5	10	10.5	k $\Omega$
Thermoelectric cooler voltage	$V_{TEC}$	$I_{op}$	-	-	2.8	V
Thermoelectric cooler current	$I_{TEC}$	$I_{op}$	-	-	1.2	A

<sup>1</sup>  $T_{SLED}$  is monitored by internal thermistor with external pin out.

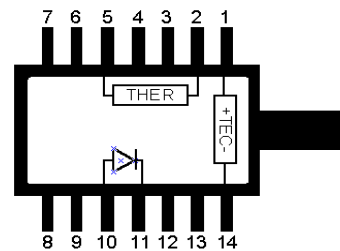
## F. PACKAGE

### BTF package

Part	Description
Package type	BTF
Fiber:	PM Panda
MFD	10.5 $\mu$ m
Cladding	125 $\mu$ m
Coating diameter	245 $\mu$ m
Fiber pigtail length	1m
Fiber bending radius	>40mm
Connector	FC/APC
Dimensions	See figure

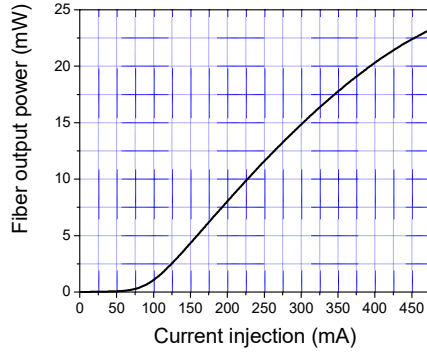


Pin Assignment	
1	TEC+
2	THERMISTOR
3	-
4	-
5	THERMISTOR
6	-
7	-
8	-
9	-
10	SLED ANODE +
11	SLED CATHODE -
12	-
13	CASE
14	TEC -

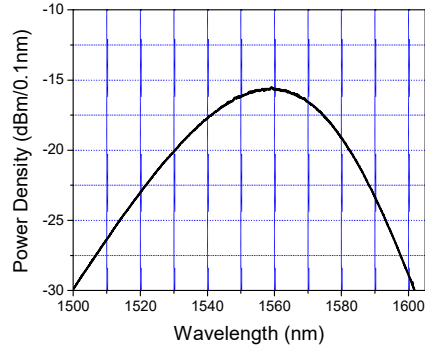


## G. TYPICAL PERFORMANCE CHARACTERISTICS

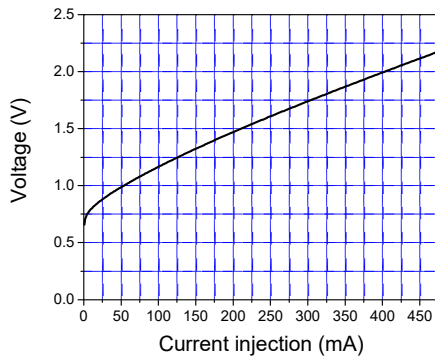
Operating condition:  $T_{SLED} = 25\text{ }^{\circ}\text{C}$



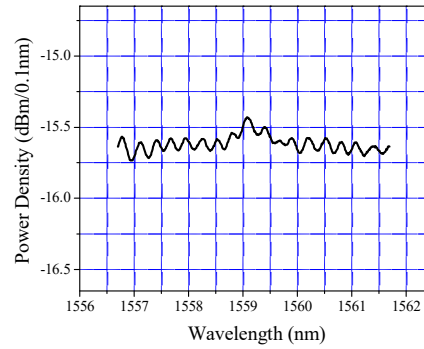
**P-I Curve**



**Spontaneous Emission Spectrum**



**I-V Curve**



**Spectrum Modulation**

## **H. DISCLAIMER FOR CUSTOMER SPECIFIC APPLICATIONS**

Denselight product is not intended for use other than stated on the application note or as defined in the product specification. The performance of the product should always be tested in the actual application conditions. As our products are used in conditions beyond our control, we cannot assume any liability for damage caused through their use. Users of DenseLight products are solely responsible to thoroughly test and qualify their system and / or application for their intended application and have determined such at their sole discretion. DenseLight cannot assume any liability for the use of our products in conjunctions with other. Customer assumes the sole risk and liability of the product performance other than specified by the product specific data sheet or application notes without DenseLight's specific written consent.