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PRODUCT DATASHEET

1280 nm Superluminescent LED DL-CS2089A

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DenseLight reserves the right to make product design or specifications changes without notice.

A. PRODUCT DESCRIPTION

The DenseLight DL-CS2089A 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 Bellcore Document GR-468-CORE.

Enabled by 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: sales@denselight.com

B. FEATURES

- Ex-fiber output power of >8mW
- 3dB bandwidth of >70nm
- Typical spectral modulation of 0.15dB
- 14-pin BTF package
- Single mode fiber

C. APPLICATIONS

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

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D. ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Condition	Min	Max	Unit
Reverse voltage	V_R	-	-	2	V
Forward current	I_F	-	-	450	mA
Forward voltage	V_F	I_{op}	-	2.8	V
Case temperature	T_C	I_{op}	-40	65	°C
SLED temperature ⁽¹⁾	T_{SLED}	I_{op}	0	70	°C
Thermoelectric cooler voltage	V_{TEC}	-	-	3.56	V
Thermoelectric cooler current	I_{TEC}	-	-	2.6	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. ELECTRICAL AND OPTICAL CHARACTERISTICS ($T_{SLED}=25^{\circ}C$ ⁽¹⁾)

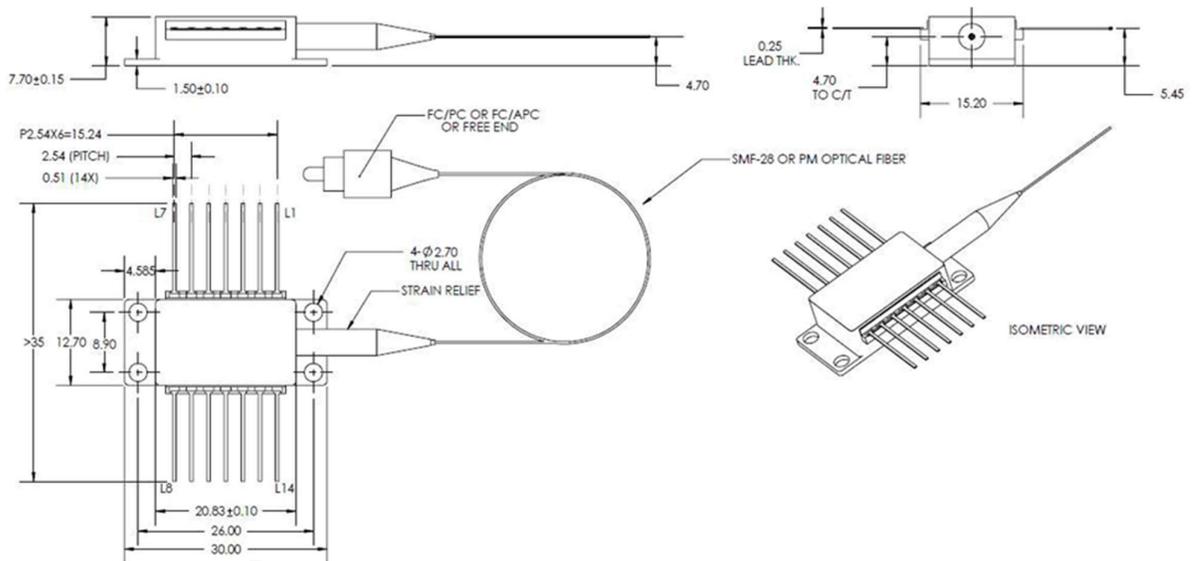
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Operating current	I_{op}	-	-	-	400	mA
Forward voltage	V_F	I_{op}	-	-	2.4	V
Power in SMF	P_o	I_{op}	8	-	-	mW
Central wavelength	λ	I_{op}	1260	1275	1290	nm
Bandwidth	B_{FWHM}	I_{op}	70	-	-	nm
Spectrum modulation	R	I_{op}	-	0.15	0.4	dB
Thermistor resistance	R_{therm}	I_{op}	9.5	10	10.5	k Ω
Thermoelectric cooler voltage	V_{TEC}	I_{op}	-	-	2.9	V
Thermoelectric cooler current	I_{TEC}	I_{op}	-	-	1.6	A

(1) T_{SLED} is monitored by internal thermistor with external pin out (Note Test Conditions applies)

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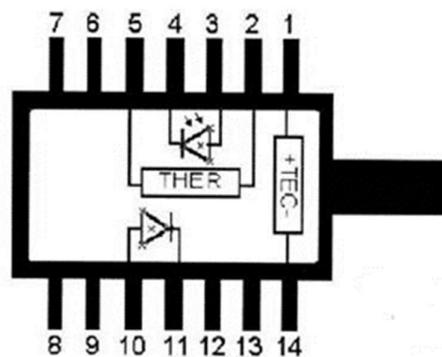
F. PHYSICAL CHARACTERISTICS

Part	Description
Package type	BTF
Fiber:	SMF-28
MFD	10 μ m
Cladding	125 μ m
Coating diameter	245 μ m
Jacket	900 μ m loose tube (yellow)
Fiber pigtail length	1m
Fiber bending radius	>40mm
Connector	FC/APC
Dimensions	See figure



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

+&- refer to biasing polarity

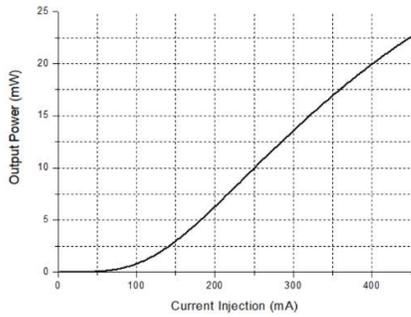


Top view

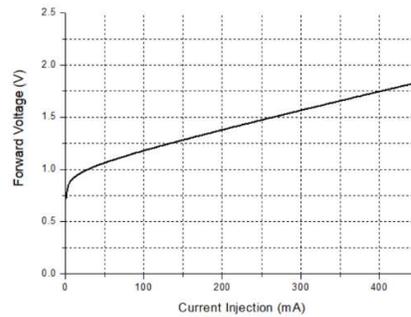
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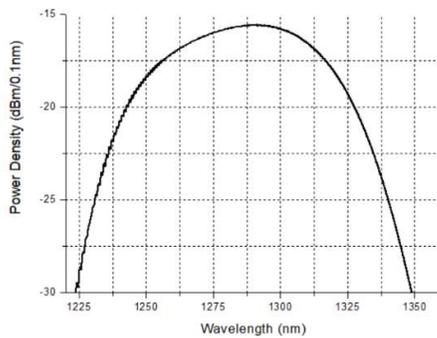
G. TYPICAL PERFORMANCE CHARACTERISTICS



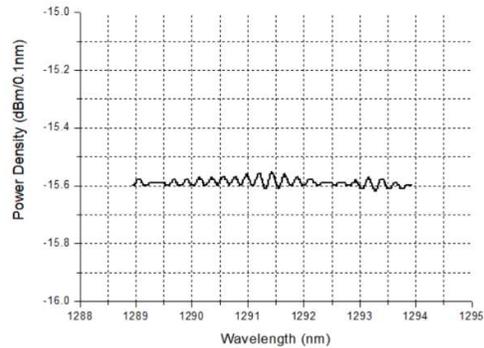
P-I Curve



I-V Curve



Spontaneous Emission Spectrum



Spectrum Modulation

H. PRODUCT NAMING

DL-CS2089A

DL – Denselight

CS – Cooled SLED

2 – 1280 nm Center wavelength

08 – 8 mW Power

9 – 70 nm Bandwidth

A – 14 pin BTF

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