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## **SPECIFICATIONS**

### **Direct Modulation Low DOP ASE Broadband Source**

#### **DL-ASE-IM-CSCL107A**

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

## **A. PRODUCT DESCRIPTION**

The DenseLight DL-ASE-IM-CSCL107A is a series Low DOP ASE broadband source for fiber optic gyroscope, fiber optic sensor, optical test instrument and optical coherence tomography. This DL-ASE-IM-CSCL107A consists of a DenseLight standard ASE broadband source, a temperature controller and a built-in current driver capable for digital or analog modulation input, which can be customized with various options to meet your specific needs. The broadband source covers over a wide wavelength range include O, E, S, C and L bands.

## **B. FEATURES**

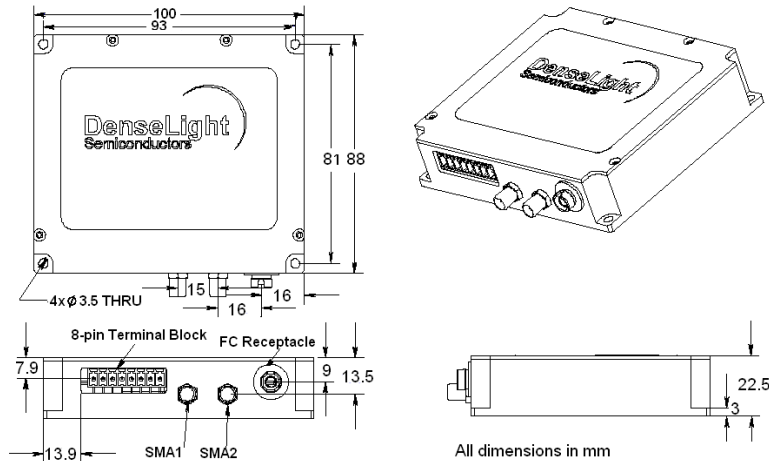
- Ex-fiber output power of >10mW
- Spectral power density >-18dBm/nm over 1525 to 1610nm
- Low Degree of Polarization
- FC receptacle
- Integrated optical isolator
- Single +5V power supply (optional power adapter)
- Built-in current driver and temperature controller
- Operating temperature 0 to 65 °C (<0°C or >65°C extended range available)
- Over temperature protection and internal PCB temperature monitor
- Analog intensity modulation upto 20MHz (transconductance amplifier performance)
- Pulse or digital modulation upto 200MHz
- High wall-plug efficiency
- Compact size
- RoHS Compliance
- Telcordia Qualified broadband source (GR-468-CORE)

## **C. APPLICATIONS**

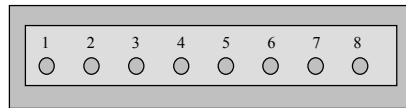
- Fiber Optic Gyroscope
- Optical Test Instrument
- Fiber Optic Sensors
- Fiber Optic Communications
- Optical Coherence Tomography
- Biomedical Imaging Device
- Clinical Healing Equipment

## D. PHYSICAL DIMENSIONS AND MECHANICAL SPECIFICATION

Dimension: L100 x W88 x H22.5 mm  
 Enclosure: Metal Case  
 Optical output: FC receptacle  
 Cooling: Air-cooled.  
 Electronic interface: 8-pin terminal block



## E. PIN ASSIGNMENT AND FUNCTION



8-pin terminal block (Pin 8 near to SMA1)

Pin No.	Symbol	Power/Control /Monitor	Analog /Digital	Input /Output	Description
1	P <sub>GND</sub>	P			Power Supply Ground
2	V <sub>S</sub>	P			+5V d.c.
3	OVRT	M	D	O	To report PCB over temperature and internal self-protection shutdown in operation (Active high)
4	T <sub>MON</sub>	M	A	O	To monitor the temperature of PCB
5	P <sub>MON</sub>	M	A	O	To monitor the PD current in SLED
6	N/C				
7	LO_EN	C	D	I	To enable Light output (active low or no connection to enable SLED light driver)
8	A <sub>GND</sub>				Signal ground for control and monitor signals

## F. ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Condition	Min	Max	Unit
Operating temperature (chassis) <sup>1</sup>	T <sub>op</sub>	I <sub>op</sub>	0	65	°C
Operating Relative Humidity <sup>2</sup>	RH	I <sub>op</sub>		85	%
Storage temperature	T <sub>stg</sub>	Unbiased	-40	85	°C
Input current	I <sub>s</sub>			6	A
Input Power Supply	V <sub>s</sub>			6	V

<sup>1</sup>) Depending on product selection

<sup>2</sup>) Non condensing

## G. ELECTRICAL SPECIFICATIONS <sup>3</sup>

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Input Power Supply	V <sub>s</sub>		4.75	5	5.5	V
Input Current <sup>4</sup>	I <sub>s</sub>				1.5	A
Total Power consumption <sup>4</sup>	P <sub>s</sub>				7.5	W
Over Temperature	OVRT	Open-drain digital output with internal 1K pull-up to 3V for V <sub>H</sub> and 8mA current sink for V <sub>L</sub>				
	V <sub>OL</sub>	Normal	0		0.45	V
	V <sub>OH</sub>	Over-temp	2.0		3.0	V
Internal PCB Temperature Monitor	T <sub>MON</sub>	Analog voltage: T <sub>MON</sub> = 395mV + (6.2mV/°C x T), T = PCB temperature in °C				mV
Voltage	V <sub>OUT</sub>	R <sub>x</sub> = infinite	0		2.5	V
Output Impedance	R <sub>OUT</sub>			150		Ω
Source Current	I <sub>OUT</sub>	V <sub>OUT1</sub> = 2.5V			4	mA
Light Output Enable	LO-EN	Digital input with internal 10K pull-down for light output enable at logic low or no connection				
	V <sub>IL</sub>	Normal	0		1	Normal
	V <sub>IH</sub>	Disable light output	2.5		3.3	Disable light output

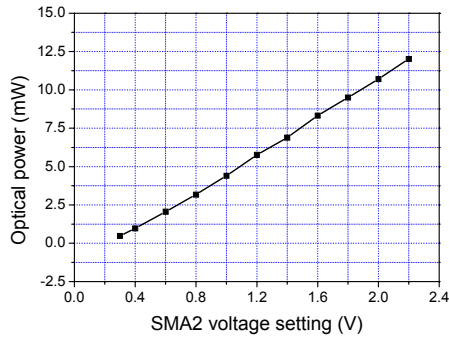
<sup>3</sup>) Unless otherwise specified. Tests are performed at T<sub>op</sub> = 25°C

<sup>4</sup>) Depending on product selection

Operating mode <sup>3</sup>	Operation Setting	
	SMA1 connector (50Ω)	SMA2 connector (50Ω)
CW	Logic High, $2V \leq V_{IH} \leq 5V$	DC Voltage (User to set optical peak power through DC voltage to SMA2)
Digital modulation <sup>4</sup>	External Trigger Input (CMOS/TTL compatible), $0 \leq V_{IL} \leq 0.8V$ and $2V \leq V_{IH} \leq 5V$	DC Voltage (User to set optical peak power through DC voltage to SMA2)
Analog modulation <sup>4</sup>	Logic High, $2V \leq V_{IH} \leq 5V$	Transconductance amplifier operating on positive polarity analog input signal

<sup>4</sup>) There will be no optical output power if SMA1 or SMA2 is left unconnected

<sup>5</sup>) Pre-bias setting on SLED can be factory preset. Please specify the amount of pre-set bias (in terms of X% of optical power). Note: Factory default setting is zero.



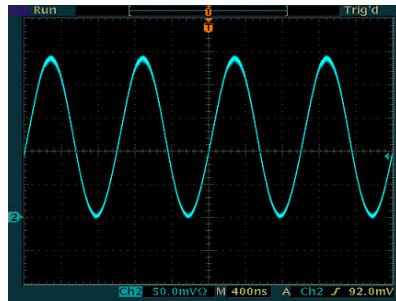
Optical power vs SMA2 voltage setting

### Digital modulation:



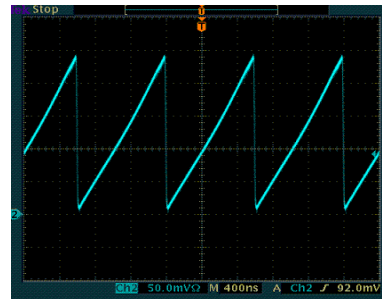
SMA1: Pulse waveform  
 Frequency= 100kHz  
 Amplitude= 2V  
 SMA2: DC voltage 2V

### Analog modulation



SMA1: Logic high ( $V_{IH} = 2V$ )  
 SMA2: Sine wave  
 Frequency: 1MHz  
 Amplitude= 0.3 to 2.3V

### Analog modulation



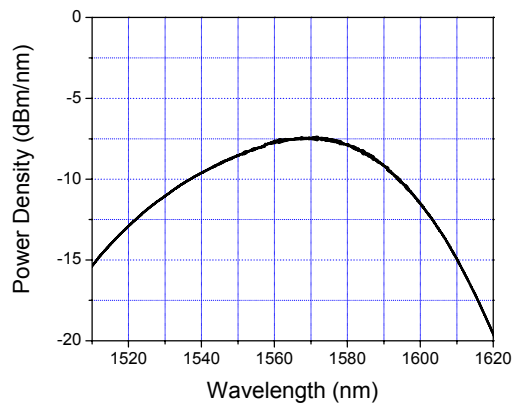
SMA1: Logic high ( $V_{IH} = 2V$ )  
 SMA2: Ramp wave  
 Frequency: 1MHz  
 Amplitude= 0.3 to 2.3V

## H. OPTICAL SPECIFICATIONS

Parameter	Condition	Symbol	Min	Typ	Max	Unit
Power output	CW	$P_o$	10			mW
Power density @ 1525 to 1610nm	CW	$P_{\text{density}}$	-18			dBm/nm
Bandwidth @ 3dB	CW	$B_{\text{FWHM}}$	55			nm
Degree of polarization	CW	DOP			5	%
Output stability <sup>(4)</sup> 1 hour	CW	Stb			$\pm 0.05$	dB
8 hour					$\pm 0.1$	dB

<sup>4)</sup> After 1 hour warm-up

## I. TYPICAL OPTICAL PERFORMANCE



**Spontaneous Emission Spectrum**

## J. REVISION CONTROL

Authorized Personnel	Rev	Description of Change	Date
OTK	A	Initial: Prelim Production Release	18 June 2007