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SPECIFICATIONS

Direct Modulation Low DOP ASE Broadband Source

DL-ASE-IM-CSC107A

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

A. PRODUCT DESCRIPTION

The DenseLight DL-ASE-IM-CSC107A 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-CSC107A 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

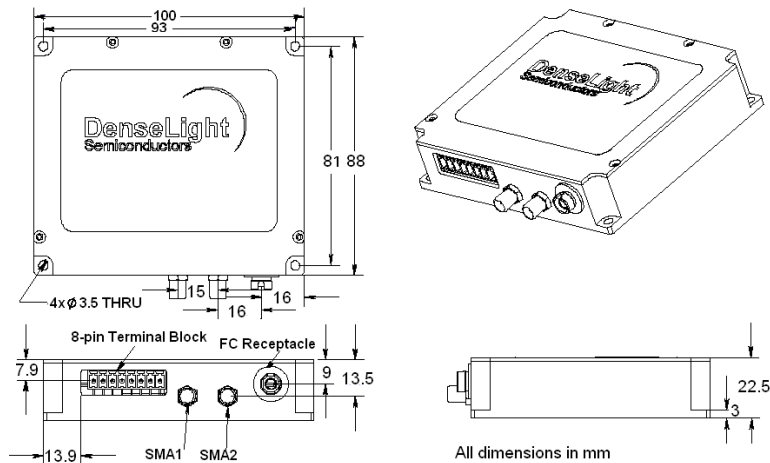
- Ex-fiber output power of >10mW
- Spectral power density >-12dBm/nm over 1525 to 1565nm
- Low Degree of Polarization
- FC receptacle
- Integrated optical isolator
- Single +5V power supply (optional power adapter)
- Built-in current driver and temperature controller
- Operating temperature 0 to 65 °C (<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

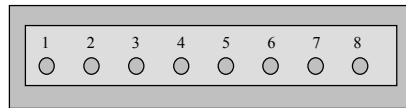
- Fiber Optic Gyroscope
- Optical Test Instrument
- Fiber Optic Sensors
- Fiber Optic Communications
- Optical Coherence Tomography
- Biomedical Imaging Device
- Clinical Healing Equipment

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 _{GND}	P			Power Supply Ground
2	V _S	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 _{MON}	M	A	O	To monitor the temperature of PCB
5	P _{MON}	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 _{GND}				Signal ground for control and monitor signals

F. ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Condition	Min	Max	Unit
Operating temperature (chassis) ¹	T _{op}	I _{op}	0	65	°C
Operating Relative Humidity ²	RH	I _{op}		85	%
Storage temperature	T _{stg}	Unbiased	-40	85	°C
Input current	I _s			6	A
Input Power Supply	V _s			6	V

¹) Depending on product selection

²) Non condensing

G. ELECTRICAL SPECIFICATIONS ³

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Input Power Supply	V _s		4.75	5	5.5	V
Input Current ⁴	I _s				1.5	A
Total Power consumption ⁴	P _s				7.5	W
Over Temperature	OVRT	Open-drain digital output with internal 1K pull-up to 3V for V _H and 8mA current sink for V _L				
	V _{OL}	Normal	0		0.45	V
	V _{OH}	Over-temp	2.0		3.0	V
Internal PCB Temperature Monitor	T _{MON}	Analog voltage: T _{MON} = 395mV + (6.2mV/°C x T), T = PCB temperature in °C				mV
Voltage	V _{OUT}	R _x = infinite	0		2.5	V
Output Impedance	R _{OUT}			150		Ω
Source Current	I _{OUT}	V _{OUT} = 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 _{IL}	Normal	0		1	Normal
	V _{IH}	Disable light output	2.5		3.3	Disable light output

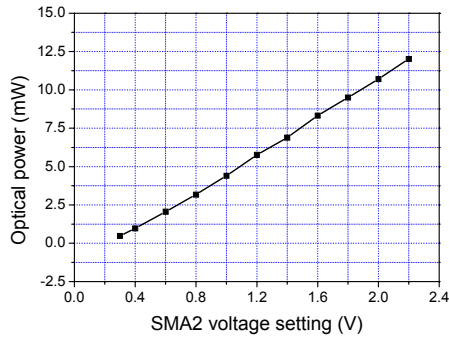
³) Unless otherwise specified. Tests are performed at T_{op} = 25°C

⁴) Depending on product selection

Operating mode ³	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 ⁴	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 ⁴	Logic High, $2V \leq V_{IH} \leq 5V$	Transconductance amplifier operating on positive polarity analog input signal

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

⁵) 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.



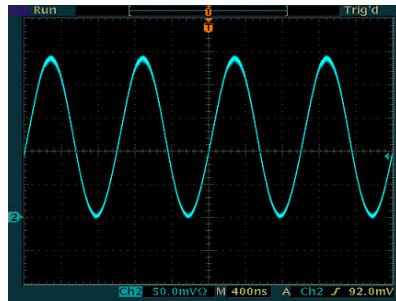
Optical power vs SMA2 voltage setting

Digital modulation:



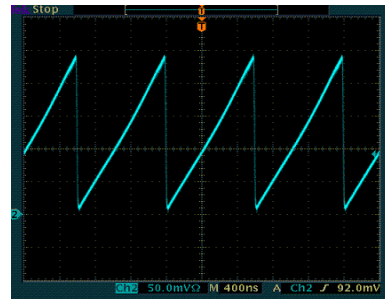
SMA1: Pulse waveform
 Frequency= 100kHz
 Amplitude= 2V
 SMA2: DC voltage 2V

Analog modulation



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

Analog modulation



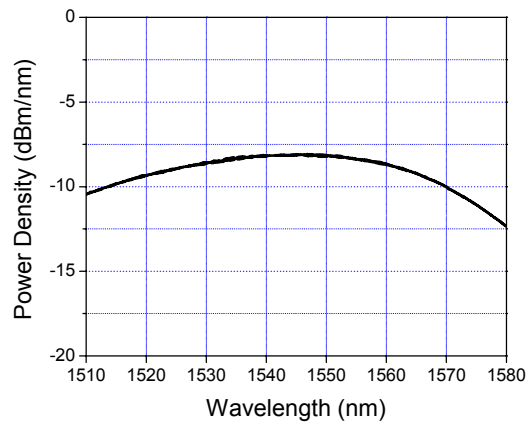
SMA1: Logic high ($V_{IH} = 2V$)
 SMA2: Ramp wave
 Frequency: 1MHz
 Amplitude= 0.3 to 2.3V

H. OPTICAL SPECIFICATIONS

Parameter	Condition	Symbol	Min	Typ	Max	Unit
Power output	CW	P_o	10			mW
Power density @ 1525 to 1565nm	CW	P_{density}	-12			dBm/nm
Bandwidth @ 3dB	CW	B_{FWHM}	55			nm
Degree of polarization	CW	DOP			5	%
Output stability ⁽⁴⁾ 1 hour	CW	Stb			± 0.05	dB
8 hour					± 0.1	dB

⁴⁾ 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