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SPECIFICATIONS

Low DOP ASE Broadband Source

DL-ASE-CW-CSU135A



A. PRODUCT DESCRIPTION

The DenseLight DL-ASE-CW-CSU135A 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-CW-CSU135A consists of a DenseLight standard ASE broadband source, a temperature controller and a built-in current driver capable for CW driving, which can be customized with various options to meet your specific needs.

B. FEATURES

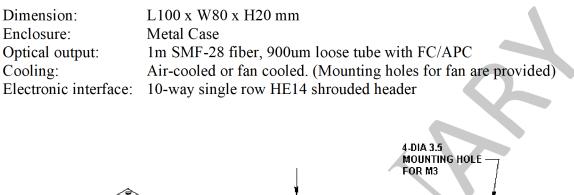
- Ex-fiber output power of >13dBm
- Spectral power density >-11dBm/nm over 1651-1691nm
- Low Degree of Polarization
- Single mode fiber output
- Integrated optical isolator
- Highly stable power output with active power control
- Built-in current driver and temperature controller
- Over temperature protection and internal PCB temperature monitor
- Single +5V power supply (optional power adapter)
- High wall-plug efficiency
- Compact size
- RoHS Compliance
- Telcordia Qualified broadband source (GR-468-CORE)

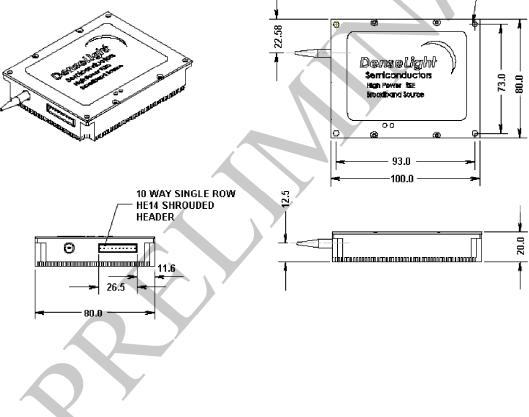
C. APPLICATIONS

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



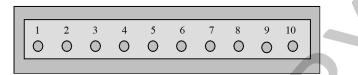
D. PHYSICAL DIMENSIONS AND MECHANICAL SPECIFICATION







E. PIN ASSIGMENT AND FUNCTION



HE14 Shrouded Header Pin Layout (Pin 1 near to SMF output)

Pin Assignment

Pin No.	Symbol	Power/Control /Monitor	Analog /Digital	Input /Output	Description	
1	$\mathbf{P}_{\mathrm{GND}}$	Р	-	-	Power Supply Ground	
2	$\mathbf{P}_{\mathrm{GND}}$	Р	-	-	Power Supply Ground	
3	Vs	Р	-	- /	+5V d.c.	
4	Vs	Р	-	-	+5V d.c.	
5	OVRT	М	D	0	To report PCB over temperature and internal self-protection shutdown in operation (Active high)	
6	T _{MON}	М	А	0	To monitor the temperature of PCB	
7	P _{MON1}	М	А	0	To monitor the PD current in ASE1	
8	P _{MON2}	М	А	0	To monitor the PD current in ASE2	
9	LO_EN	C	D	Ι	To enable Light output (active low or no connection to enable light driver)	
10	A _{GND}	-	-	-	Signal ground for control and monitor signals	



F. ABSOLUTE MAXIMUM RATINGS

Parameters	Symbol	Condition	Min	Max	Unit
Operating temperature (chassis)	T _{op}	Iop	0	60	°C
Operating Relative Humidity ¹	RH	I _{op}	-	85	%
Storage temperature	Tstg	Unbiased	-40	-85	°C
Input current	Is	-	-	6	А

¹⁾ Non condensing

G. ELECTRICAL SPECIFICATIONS²

Parameter	Symbol	Condition	Min	Тур	Max	Unit		
Input Power Supply	Vs	- /	4.75	5	5.5	V		
Input Current	I_S	-		-	3.0	А		
Total Power Consumption	Ps	-	7 -	-	15.0	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						
Over reinperature	Vol	Normal 0 - 0.45						
	VOL	Over-temp	2.0	-	3.0	V V		
Internal PCB Temperature	V OII	Analog voltage: T		- V + (6.2m)		•		
Monitor	T _{MON}	T = PC	mV					
Voltage	Vout	$R_{\rm X} = infinite$	0	-	2.5	V		
Output Impedance	R _{OUT}	-	-	150	-	Ω		
Source Current	I _{out}	$V_{OUT} = 2.5 V$	-	-	4	mA		
Power Output Monitor	P _{MON1}	Analog output	V					
	\mathbf{P}_{MON2}	Po						
Voltage	V _{OUT}	$R_{\rm X} = infinite$	0	-	3.0	V		
Output Impedance	R _{OUT}	-	-	150	-	Ω		
Source Current	Iout	$V_{OUT} = 3.0V$	-	-	4	mA		
	LO-EN	Digital input with internal 10K pull-down for light						
		output enable a						
Light Output Enable	V _{IL}	Normal	0	-	1	V		
	V _{IH}	Disable light output	1.7	-	3.3	V		

²⁾ Unless otherwise specified, tests are performed at $T_{op} = 25^{\circ}C$.



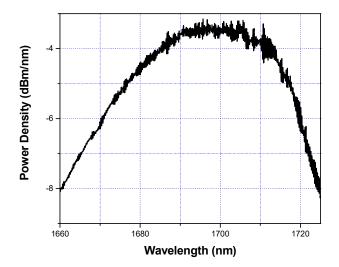
H. OPTICAL SPECIFICATIONS³

Parameter	Symbol	Condition	Min	Тур	Max	Unit
Power	Po	-	13	-	-	dBm
Power density @ 1651 to 1691nm	P _{density}	1651nm to 1691nm	-11		-	dBm/ nm
Degree of polarization	DOP	-	-	-	5	%
Output stability ⁴ 1 hour 8 hour	Stb	-	-	-	$\begin{array}{c}\pm \ 0.05 \\\pm \ 0.1\end{array}$	dB dB

³⁾ Unless otherwise specified, tests are performed at $T_{op} = 25^{\circ}C$.

⁴⁾ After 1 hour warm-up

I. TYPICAL OPTICAL PERFORMANCE

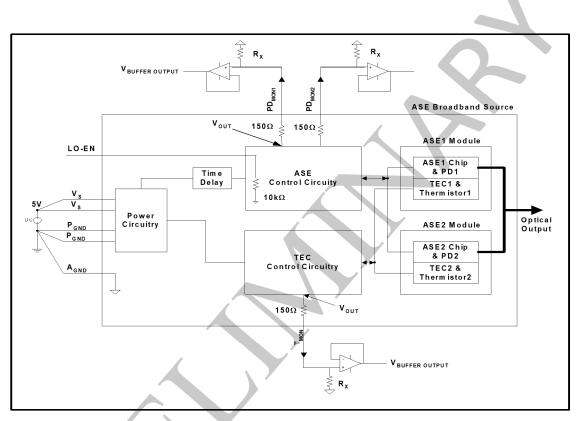


Spontaneous Emission Spectrum



J. APPLICATION INFORMATION

J.1 Typical Application Circuit



J.2 Power Supply Requirement and Connections

The power supply must be capable of supplying the maximum input current (I_S) as given in the electrical specification table at all times during operation. This is because during transients (eg. switching on the light source or with a sudden change in operating ambient temperature), the ASE broadband Source will require a momentary higher current from the power supply compared to its steady-state operation.

The two cables to the two V_s pins (Pin 3 and Pin 4) should be shorted at the positive terminal of the power supply as shown in the Typical Application Circuit. This is to divide the total current load to the broadband source between the two cables. Similarly, the two cables to the P_{GND} pins (Pin 1 and Pin 2), as well as the cable to the A_{GND} pin (Pin 10) should be shorted at the ground of the power supply terminal.



J.3 Selection of Resistance Rx for Analog Monitor Signals

In the Typical Application Circuit given, the function of R_X is to increase the current in the signal cables so as to reduce the effect of environmental noise on the analog monitor signals. In a noisy environment, the value of R_X is recommended to be $1k\Omega$. By choosing R_X to be $1k\Omega$, the actual voltage measured at the buffer output will be reduced due to loading effect, as compared to when R_X is infinite.

$$V_{\text{BUFFER OUTPUT}} = \frac{R_{x}}{R_{x} + 150} \times V_{\text{out}}$$

where R_X is resistance in Ω

In a non-noisy environment, the value of R_X can be increased to reduce loading effect. It is not recommended to choose R_X less than $1k\Omega$.

For further technical information, please refer to DenseLight Semiconductor Low DOP ASE Broadband Source User Operation Manual.



K. 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.

L. SAFETY INFORMATION

The DL-ASE-CW-CSU135A is classified as Class 3R products per IEC 60825-1 laser safety requirements.