Analog Coaxial Pigtailed Laser Module

Technical Data

LSA2825 - Analog Coaxial Laser
LSA3821 - Dual-in-Line Package

Features

- **Compact Coaxial Package**
- **Strained Multi Quantum Well (SMQW) Laser Chip**
- **Low Thresholds Current and Operating Currents**
- **Wide Operating Temperature –40°C to +85°C**
- **Optical Power May Be Customized up to 2 mW**
- **Convenient Variety of Pinout and Mounting Flange Options**

Applications

- **CATV/CCTV**
- **Return Path Links**
- **LANS/WANS**

Description

The LSAX82X is a compact analog coaxial pigtailed laser transmitter, operating in the 1300 nm wavelength region and coupling light to single mode fiber.

The device features a high reliability SMQW laser diode and rear facet monitor photodiode. These are electrically connected to four pins in an industry-standard configuration.

Environmental performance is designed to be compatible with the requirements of Bellcore's TA-NWT-000983 document.

If the specific arrangement or performance you require is not listed, please contact your local representative, as our highly flexible design and manufacturing processes allow both physical and electro-optical customization to meet your needs.

Laser Safety Warning

This device is a Class IIIb (3b) Laser Product. It may emit invisible laser radiation if operated with the fiber pigtail disconnected. To avoid possible eye damage do not look into an unconnected fiber pigtail during laser operation. Do not exceed specified operating limits.

Absolute Maximum Ratings

Absolute limiting (maximum) ratings mean that no catastrophic damage will occur if the product is subjected to these ratings for short periods, provided that each limiting parameter is in isolation and all other parameters have values within the performance specification. It should not be assumed that limiting values of more than one parameter can be applied to the product at the same time.

Parameter	Symbol	Test Condition	Limits		Units
			Min.	Max.	
Laser Forward Current	If	DC		120	mA
Laser Reverse Voltage	Vlr	DC		2	V
Photodiode Reverse Voltage	Vr	DC		20	V
Photodiode Forward Current	Ipf	DC		1	mA
Operating Temperature	Tc	Temperature measured at case	–40	+85	℃
Storage Temperature	Ts		–40	+85	℃
Relative Humidity	RH		noncondensing		%RH
Fiber Pull Strength		Three times; 10 sec.		10	N
Mechanical Shock		MIL-STD-883D, Method 2002, Condition A		500	G
Vibration		MIL-STD-883D, Method 2007, Condition A		20	G

Performance Specifications

Parameter	Symbol	Test Condition	LSA2825 LSA3821		Units
			Min.	Max.	
LASER		CW, Tc = –40℃ to +85℃, Po as noted below unless otherwise stated			
Rated Optical Power	Po	CW	1.0		mW
Threshold Current	Ith	Tc = +25℃	3.5	10	mA
Threshold Current	Ith		1	30	mA
Slope Efficiency	η	Tc = +25℃	30	80	μW/mA
Drive Current above Ith, for Im = Im (Po, +25℃)	Id	Tc = +25℃	12.5	33.3	mA
		Tc = –40℃ to +85℃	10	55	mA
Forward Voltage	Vf			1.6	V
Center Wavelength	λ	Tc = +25℃	1286	1336	nm
		Tc = –40℃ to +85℃	1260	1360	nm
Wavelength/Temperature Coefficient	Δλ/ΔT			0.4	nm/℃
Spectral Width	σ	One sigma, RMS		2.5	nm
MONITOR PHOTODIODE		Tc = +25℃, Vr = 5 V			
Photocurrent	Im		200	1000	μA
Dark Current	Id	Po = 0 μW		20	nA
Capacitance	C	1 MHz		10	pF
Tracking Error	DP	Im = Im (Po, +25℃) Tc + –40℃ to + 85℃	–1	+1	dB

Other Documentation

1. SMQW Laser Reliability Report – Publication Number 5965-1293E
2. LST282X/292X Characterization Report – Publication Number 5965-5374E

Analog Specifications

Parameter	Symbol	Test Conditions	Min.	Max.	Unit
Relative Intensity Noise (RIN)	RIN	Po = 1 mW, Tc = –40°C to +85°C		–135	dB/Hz
2nd Order Distortion	-	Tc = +25°C, Po = 1 mW, OMD = 35% Two tone test: F_1 = 13 MHz, F_2 = 19 MHz, 20 km fiber, Total loss = 9 dB, $F_1 \pm F_2$		–43	dBc
3rd Order Distortion	-	Tc = +25°C, Po = 1 mW, OMD = 35% Two tone test: F_1 = 13 MHz, F_2 = 19 MHz, 20 km fiber, Total loss = 9 dB, $2F_1 \pm F_2$, $2F_2 \pm F_1$		–50	dBc

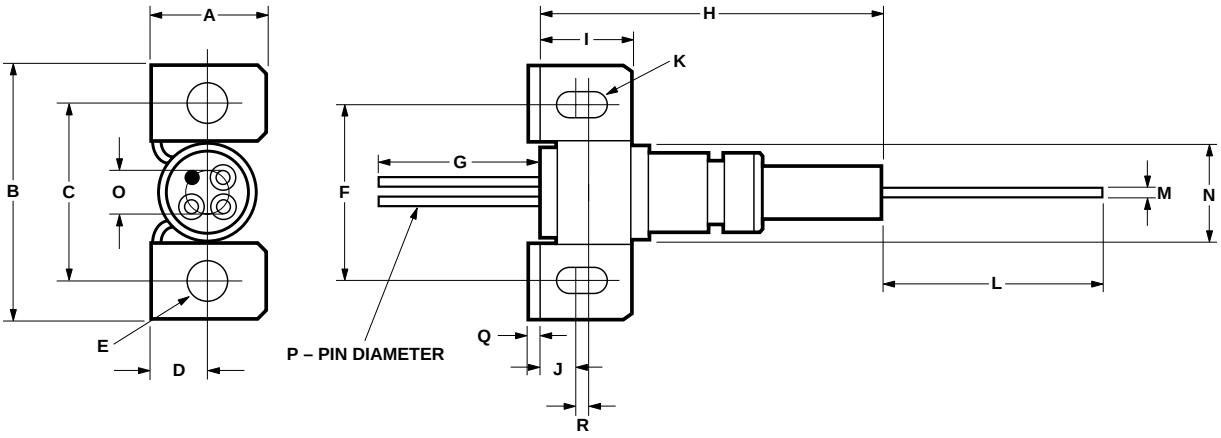
Fiber Pigtail

Parameter	Minimum	Maximum	Units
Fiber Pigtail Length	1000		mm
Spot Size (Mode Radius)	4.5	5.5	µm
Cladding Diameter	122	128	µm
Core/Cladding Concentricity		1	µm
Secondary Jacket Diameter	0.8	1	mm
Effective Cutoff Wavelength	1150	1240	nm

Reliability Target

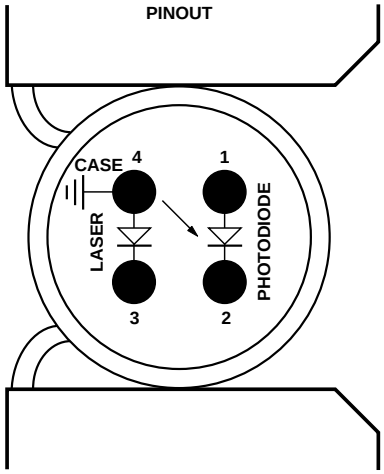
Parameter	Condition	Min.	Max.	Units
Median Life	50% inc. in total drive current, Tc = +25°C	$2x10^5$		hours

Example of LSA2825-T – All dimensions in mm.



DIM.	MIN.	TYP.	MAX.	DIM.	MIN.	TYP.	DIM.	MIN.	TYP.	MAX.
A		7.4		G	12.0		M		0.9	
B		17.0		H			N		5.3	
C	11.8		12.2	I		5.3	O		2.0	
D		3.7		J		2.0	P	0.4		0.5
E	2.4		2.6	K	2.1		Q		0.5	
F	12.5		12.9	L		1000	R		1.25	

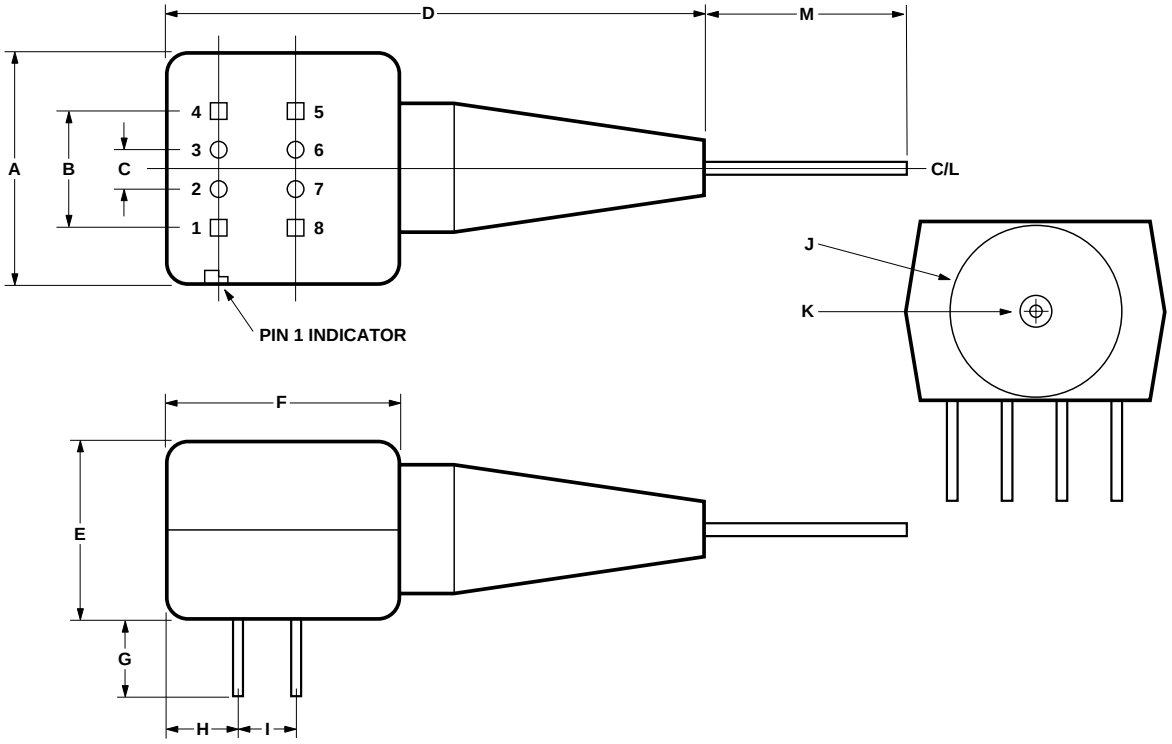
OTHER FLANGE OPTIONS ARE AVAILABLE.

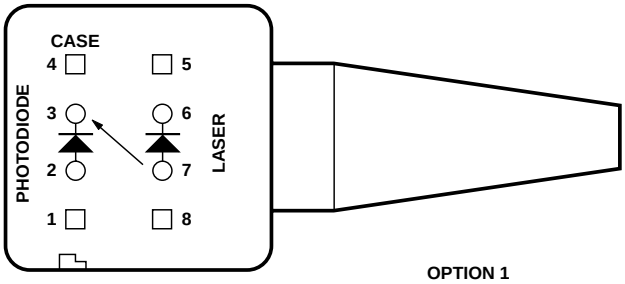


LST2825

PIN	FUNCTION
1	MONITOR ANODE (-VE)
2	MONITOR CATHODE (+VE)
3	LASER CATHODE (-VE)
4	LASER ANODE (+VE)

LSA3821 Specification – All dimensions in mm.





OPTION 1

PIN	FUNCTION
1	NO CONNECTION
2	MONITOR ANODE (-VE)
3	MONITOR CATHODE (+VE)
4	NO CONNECTION
5	NO CONNECTION
6	LASER CATHODE (-VE)
7	LASER ANODE (+VE) (CONNECTED TO HEADER)
8	NO CONNECTION

NOTE:
PINS 1, 4, 5, AND 8 ARE ISOLATED FROM THE INTERNAL CIRCUITRY, BUT ARE ELECTRICALLY CONNECTED TO EACH OTHER.

PINS 1, 4, 5, & 8 – 0.51 x 0.38 NOM.
PINS 2, 3, 6, & 7 – 0.4/0.5 DIA.

DIM.	TYP.	DIM.	TYP.	DIM.	TYP.
A	12.60	E	10.20	I	2.54
B	7.62	F	12.60	J	8.60
C	2.54	G	4.26	K	3.20
D	30.00	H	3.53	M	1000

ALL DIMENSIONS IN MILLIMETERS

Ordering Information

Coaxial Package

LSA2825 - Y - ZZ

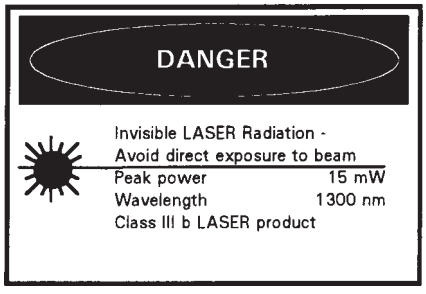
Connector Type:
AP = Angle polished FC/PC
AS = Angle polished SC/PC
US = Ultra polished SC/PC
SF = Superpolished FC/PC

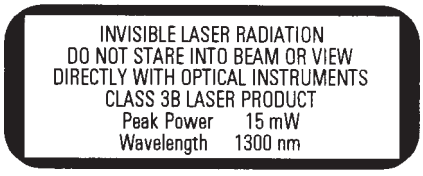
Flange:
B = Without mounting flange
T = Universal flange

LSA3821 - ZZ

Connector Type:
AP = Angle polished FC/PC
AS = Angle polished SC/PC
US = Ultra polished SC/PC
SF = Superpolished FC/PC

Laser Warning





IEC825-1 1993

CDRH Certification

Hewlett-Packard Ltd.
Whitehouse Road
Ipswich, Suffolk IP1 5PB
England

Manufactured:_____ Serial No:_____

Model No: _____

This product conforms to the applicable requirements of 21 CFR 1040 at the date of manufacture.