

Draft Target Product Datasheet

35 GHz Optical Transmitter

AO-TOPO1A-32

PRODUCT FEATURES

- DC to 35 GHz typical bandwidth
- Single mode 1.3 μm laser
- Analog optical transmission
- High dynamic range
- High optical output power



Product illustration,
actual product might look
different

APPLICATIONS

- Satellite Communications
- Remote antenna
- Phased array
- Test&Measurement

The AO-TOPO1A-32 is an analog optical transmitter module operating at 1.3 μm in single mode fiber connected with a FC/PC pigtail. The externally modulated laser operates at frequencies from DC up to 35 GHz and can be used in analog optical links but also in digital links for example for 100Gbit/s PAM4 transmission. The uncooled device offers low power consumption of 250 mW (tbc) and is suited for use in space applications. The hermetic optics are best suited for harsh environments while delivering leading edge performance.

PRODUCT SELECTION

AO-TOPO1A-32

I. Pinout

Table 1 Pinout

#Pin	Symbol	Description
1,2,3,4,9-16	NC	Not connected, recommended to set to Ground
5	GND	Ground
6	V _{EAM}	EAM Bias voltage
7	I _{LASER}	Laser Bias current
8	NTC	Thermistor

II. Functional Block Diagram

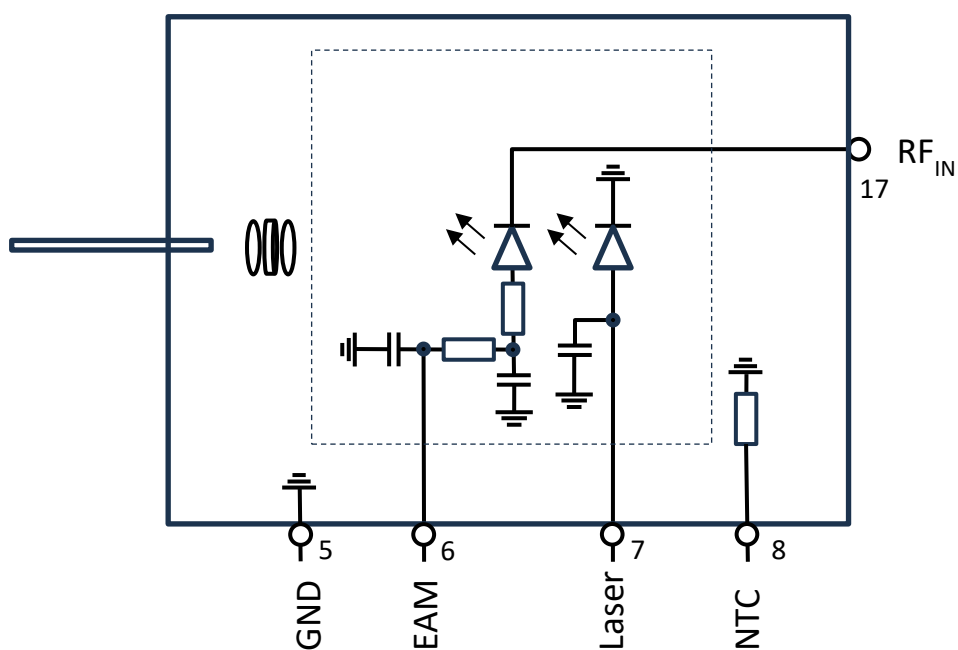


Figure 1 Functional Block Diagram

III. Absolute Maximum Ratings

Stress beyond the absolute maximum ratings specified in the table below may cause permanent damage to the product. Functional operation of the device at these or any other conditions beyond those indicated in the operation conditions is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability. Each parameter considered individually and needs to stay within its quoted limits.

Table 2 Max Ratings

ID#	Specification Parameter	Symbol	Condition	Min	Typ	Max	Unit
121	Laser current	I_{LASER}				200	mA
123	EAM photocurrent	I_{EAM}		-15			mA
124	EAM voltage	V_{EAM}		-5		1	V
126	RF input power	P_{RF_in}				12	dBm
127	ESD			-250		250	V

IV. Environmental Specifications

Table 3 Environmental Specifications

ID#	Specification Parameter	Symbol	Condition	Min	Typ	Max	Unit
201	Storage temperature	T_{STORE}		-40		95	°C
203	Operating case temperature range	T_{CASE}		10		65	°C
205	Operating relative humidity	RH_{OP}	non-condensing	0		85	%
206	Transport and storage relative humidity	RH_{STORE}	non-condensing	0		95	%

V. Electro-Optical Specifications

Table 4 Electro-optical specifications

ID#	Specification Parameter	Symbol	Condition	Min	Typ	Max	Unit
311	Laser Current	I_{LASER}			100	120	mA
312	Laser Voltage	V_{LASER}			1.4	1.8	V
313	EAM Voltage	V_{EAM}		-3	-2.5	-1.5	V
314	Optical Modulation Amplitude	OMA	at typical conditions	3	4	5	dBm
316	Maximum cw Optical Output Power	$P_{\text{O_max}}$	$V_{\text{EAM}}=\text{max}$	7	8		dBm
317	Wavelength	WL			1310		nm
319	Side Mode Suppression Ratio	SMSR	typical conditions	38	50		dB
320	EAM Modulation Voltage	V_{PP}			1		V
321	RF Input Power	$P_{\text{RF_in}}$			4	10	dBm
322	P1dB		typ. condition		10		dBm
323	Input Impedance				50		Ohm
337	RF input Reflection coefficient s11	s11	$f \leq 35 \text{ GHz}$			-7	dB
325	Upper -3dB Cutoff Frequency			32			GHz
326	Relative Intensity Noise	RIN			-146	-140	dB/Hz
327	Input IP3	IIP3	30 GHz		15		dBm
328	Spurious Free Dynamic Range	SFDR	30 GHz		70		dB
331	Laser/Modulator Temperature Sensor				10k NTC		
336	Power Consumption	$P_{\text{DISS_te}}$			tbd	250 (tbc)	mW

VI. Typical Performance (results w/o LGA interface)

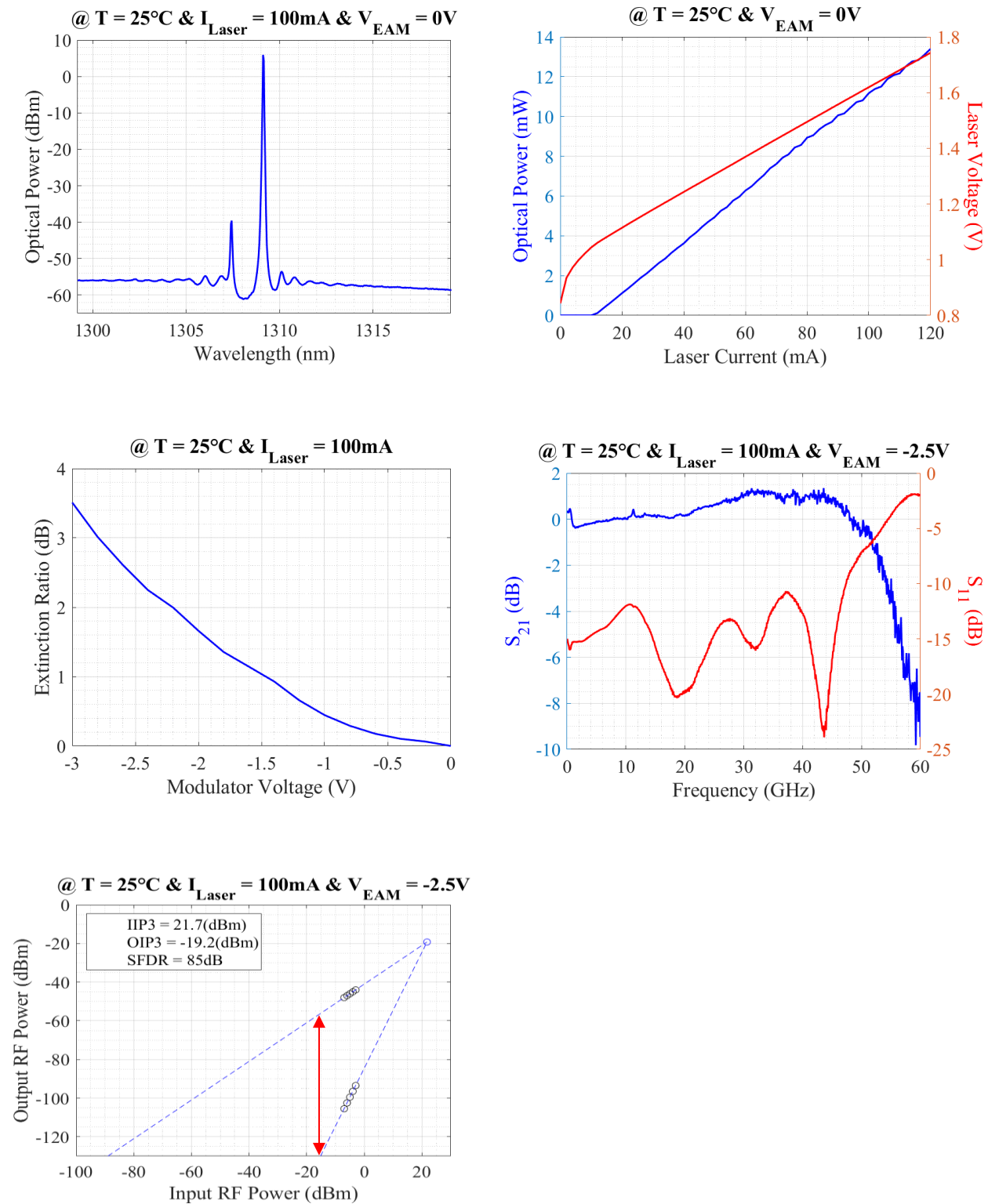


Figure 2 Typical Characteristics

VII. Mechanical Specifications

All Dimensions in mm

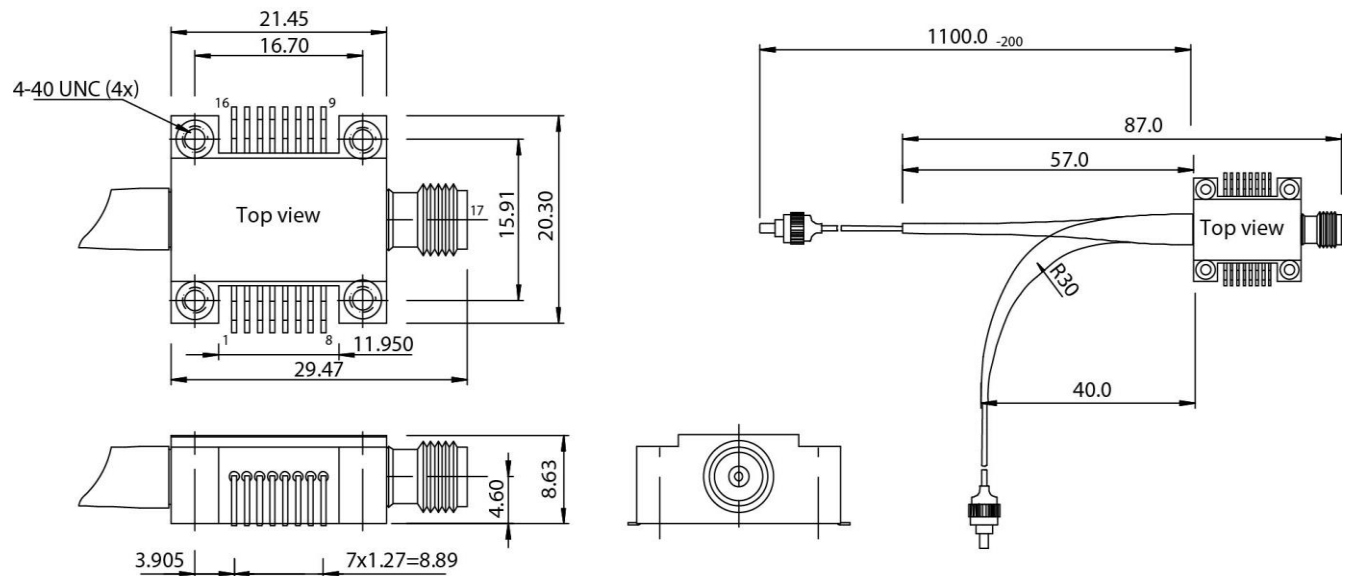


Figure 3 Mechanical dimensions

VIII. Accessories

A. Evaluation Kit

An evaluation kit is offered with evaluation board and fitting cabling to easily connect to common power supplies or other equipment.

ORDERING INFORMATION

EVA-AO-TO1-35

Product Handling

- Please read supporting documentation such as the Manual carefully before using the product. Damages because of mishandling are not covered by warranty.

Notes

- Any trademarks used in this document are properties of their respective owners.
- Coherent Incorporated reserves the right to make changes without notice.

IX. Revision History

Revision	Date	Description
D00	2023-07-20	First public draft
D01	2023-07-21	Deletion max EAM current, update functional diagram (fig.1)
D02	2023-09-27	Updated applications and text