AMT8310

2.5 Gb/s 850 nm PIN-TIA

PRELIMINARY DATA SHEET - Rev 1.0

FEATURES

- 2.5 Gb/s Differential Output TIA
- 3.3 V Operation
- 1800 MHz Bandwidth
- -23 dBm Typical Sensitivity
- 0 dBm Optical Overload
- 100 µm 850 nm PIN Photodetector
- Ambient Temperature Range: -40 to +85 °C



T46L
TO-46 Ball
Lens Package

APPLICATIONS

- SONET OC-48/SDH STM-16 (2.488 Gb/s)
- 2 x Fibre Channel (2.125 Gb/s)
- 2.5 Gb/s Infiniband
- Fibre Channel/Gigabit Ethernet (1.0625/1.25 Gb/s)

PRODUCT DESCRIPTION

The ANADIGICS AMT8310, packaged in a 4 pin TO-46 lens can, is a 3.3 V integrated photodetector and transimpedance amplifier (TIA) used to convert a short wavelength (850 nm) input optical signal into a differential output voltage. The AMT8310 has a bandwidth of 1.8 GHz, a dynamic range of over 23 dB and a sensitivity of -23 dBm. These devices are readily designed into receivers, transceivers and transponders for SONET, Fibre Channel and Infiniband applications.

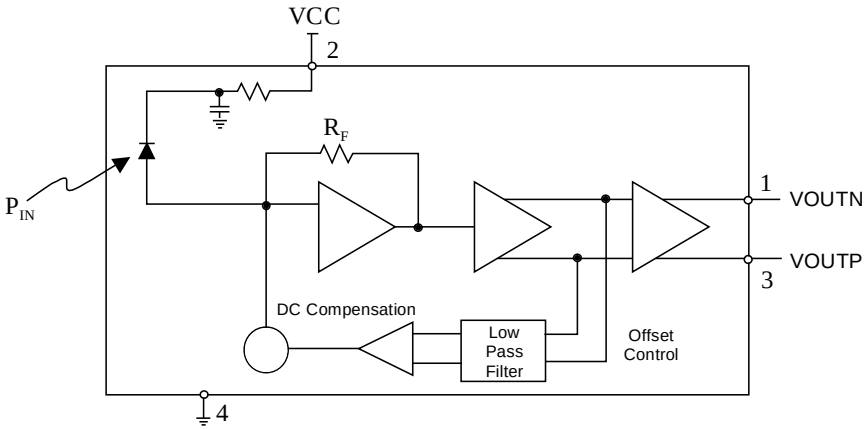


Figure 1: Functional Block Diagram

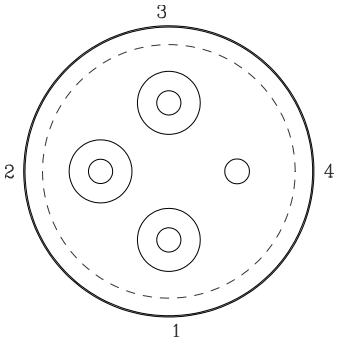


Figure 2 : T46L Pin Outline (Bottom View)

Table 1: TO-46 Package Pin Description

PIN	NAME	DESCRIPTION
1	VOUTN	Inverted Output Voltage. Logical '0' with an optical input. Needs to be AC coupled to the load.
2	VCC	Positive Supply Voltage: 3.0 to 3.6 V
3	VOUTP	Non-Inverted Output Voltage: Logical '1' with an optical input. Needs to be AC coupled to the load.
4	Ground	Ground: Case is grounded.

ELECTRICAL CHARACTERISTICS

Table 2: Absolute Maximum Ratings

PARAMETER	MIN	MAX	UNIT
Supply Voltage	-0.5	6.0	V
Optical Input Power	-	+ 4	dBm
Storage Temperature	- 40	+ 125	°C

Stresses in excess of the absolute ratings may cause permanent damage. Functional operation is not implied under these conditions. Exposure to absolute ratings for extended periods of time may adversely affect reliability.

Table 3: Electrical Specifications

PARAMETER	MIN	TYP	MAX	UNIT
Wavelength (λ)		850	-	nm
Detector Diameter	-	100	-	μm
Small Signal Differential Responsivity (@ 100 MHz) (1)	10000	15000	-	V/W
Bandwidth (1)	1500	1800	-	MHz
Low Frequency Cutoff	-	30	-	kHz
Output Resistance	-	50	-	Ω
Optical Overload (2)	0		-	dBm
Optical Sensitivity (2)	-21	-23	-	dBm
Maximum Differential Output Voltage	-	550	700	mV
T_{RISE} and T_{FALL} (20-80%) (3)	-	140	-	ps
Duty Cycle Distortion (4)	-	5	-	%
Total Jitter (4), (5)		60		ps
Supply Current	-	40	60	mA
Operating Voltage Range	+3.0	+3.3	+3.6	Volts
Operating Case Temperature	-30	-	+105	°C

Notes:

(1) Measured at -20 dBm optical input power with output connected into R_L = 100Ω (differential)

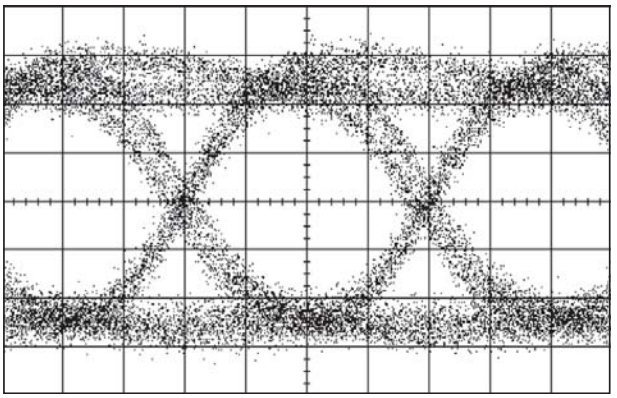
(2) Measured at 10^{-10} BER with a 2^{23}-1 PRBS at 2.5 Gb/s

(3) Measured with a 2^{23}-1 PRBS at 2.5 Gb/s, an input optical power of –20 dBm and R_L = 100Ω (differential)

(4) Measured with a 2^{23}-1 PRBS at 2.5 Gb/s, an input optical power of –3 dBm and R_L = 100Ω (differential)

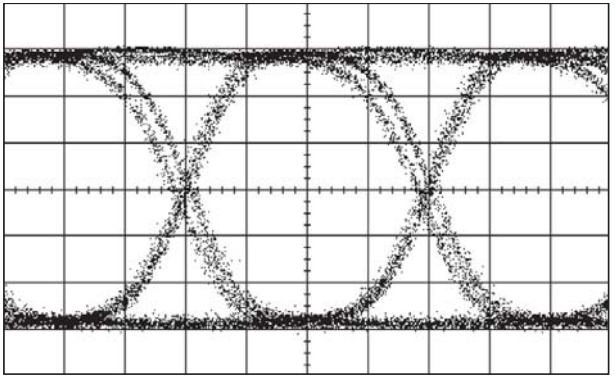
(5) 6 σ about the center eye crossing.

PERFORMANCE DATA



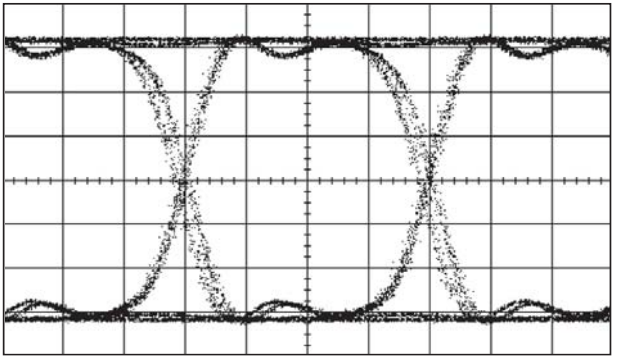
100 ps/Div. 50 mV/Div.

Figure 3: Eye Diagram with an Optical Input Power of –20 dBm



100 ps/Div. 90 mV/Div.

Figure 4: Eye Diagram with an Optical Input Power of –15 dBm



100 ps/Div. 90 mV/Div.

Figure 5: Eye Diagram with an Optical Input Power of –10 dBm

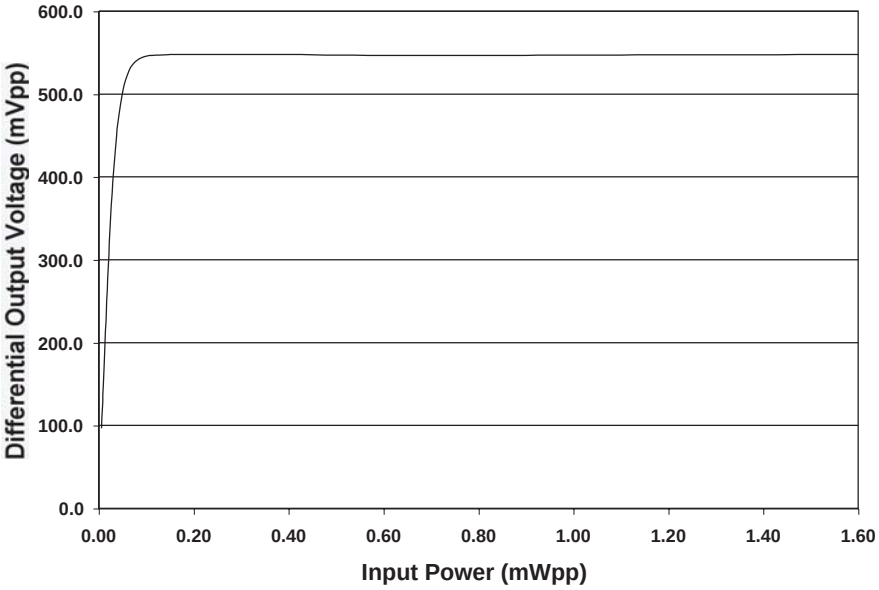
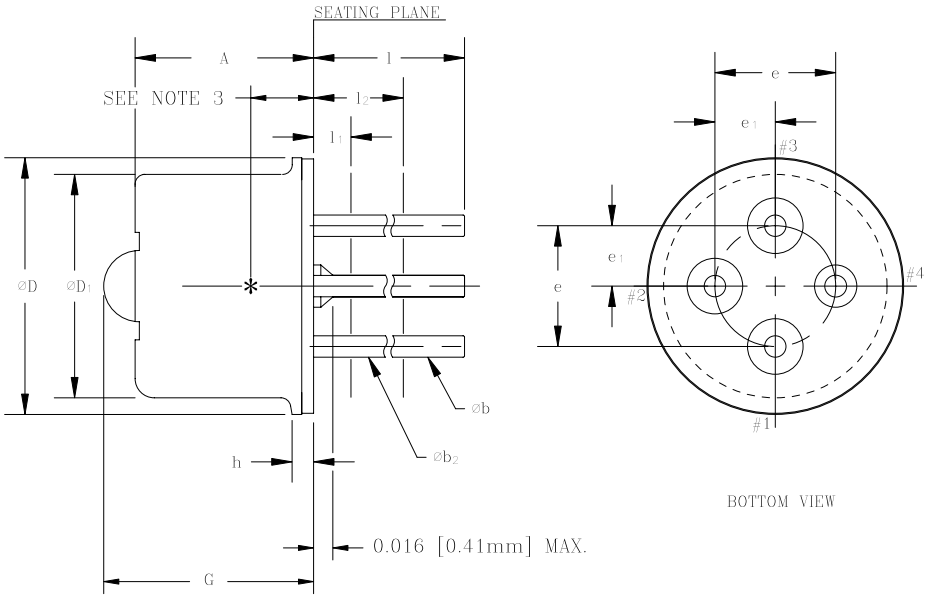


Figure 6: Differential Output Voltage vs. Input Power



MM CONTROLLING DIMENSIONS

SYMBOL	INCHES		MILLIMETERS		NOTE
	MIN.	MAX.	MIN.	MAX.	
A	--	0.160	--	4.00	
øb	0.016	0.020	0.41	0.51	1
øb2	0.012	0.019	0.30	0.48	1
øD	0.212	0.218	5.38	5.54	
øD1	0.181	0.187	4.60	4.75	
e	0.100 T.P.		2.54 T.P.		2
e1	0.050 T.P.		1.27 T.P.		2
h	0.014	0.022	0.36	0.56	
l	0.500	0.540	12.70	13.70	1
l1	–	0.050	–	1.27	1
l2	0.250	–	6.35	–	1
G	--	0.190	--	4.66	7

NOTES:

1. (FOUR LEADS) øb2 APPLIES BETWEEN l1 AND l2 . øb APPLIES BETWEEN l2 AND 0.5 [12.70mm] FROM SEATING PLANE. DIAMETER IS UNCONTROLLED IN l1 AND BEYOND 0.5 [12.70mm] TO END OF PIN.
2. MAXIMUM DIAMETER LEADS AT A GAGING PLANE 0.054 [1.37mm]+0.001 [0.025mm] −0.000 [0.000mm] BELOW SEATING PLANE TO BE WITHIN 0.007 [0.178mm] OF THEIR TRUE POSITION RELATIVE TO MAXIMUM−WIDTH TAB AND TO THE MAXIMUM 0.212 [5.40mm] DIAMETER MEASURED WITH A SUITABLE GAGE. WHEN GAGE IS NOT USED, MEASUREMENT WILL BE MADE AT 0.250 [6.35mm] FROM SEATING PLANE.
3. INTERNAL OPTICAL HEIGHT = 0.052±0.003[1.32±0.08] DIE PLACEMENT ACCURACY FOR REF. ONLY.
4. BENT LEADS SHOULD NOT EXTEND OUTSIDE DIAMETER (ØD) OF CAP OR TOUCH EACH OTHER.
5. ALL DIMENSIONS ARE REFERENCE ONLY−EXCEPT A, D & h.
6. DETECTOR DIODE PLACEMENT ACCURACY ⌖ ±0.15MM[0.006] ALL DIRECTIONS
7. LENS HEIGHT = 0.65±0.1 [0.026±0.004]

Figure 7: T46L Package Outline Diagram

NOTES

ORDERING INFORMATION

ORDER NUMBER	PACKAGE OPTION	PACKAGE DESRIPTION
AMT8310T46L	TO-46L	Lens Package

ANADIGICS, Inc.
141 Mount Bethel Road
Warren, New Jersey 07059, U.S.A.
Tel: +1 (908) 668-5000
Fax: +1 (908) 668-5132

URL: http://www.anadigics.com
E-mail: Mktg@anadigics.com

IMPORTANT NOTICE

ANADIGICS, Inc. reserves the right to make changes to its products or to discontinue any product at any time without notice. The product specifications contained in Advanced Product Information sheets and Preliminary Data Sheets are subject to change prior to a product's formal introduction. Information in Data Sheets have been carefully checked and are assumed to be reliable; however, ANADIGICS assumes no responsibilities for inaccuracies. ANADIGICS strongly urges customers to verify that the information they are using is current before placing orders.

WARNING

ANADIGICS products are not intended for use in life support appliances, devices or systems. Use of an ANADIGICS product in any such application without written consent is prohibited.