



AMT8412

2.5 Gb/s 1310/1550nm PIN-TIA

FEATURES

- 2.5 Gb/s differential output TIA
- DC-1.9 GHz bandwidth
- +3.3V Operation
- -23dBm Typical sensitivity
- 1250-1620nm PIN Photodetector
- Automatic Gain Control (AGC)
- 2dBm Optical Overload

APPLICATIONS

- SONET OC-48 / SDH STM-16



TO-46 4 pin Ball Lens Package

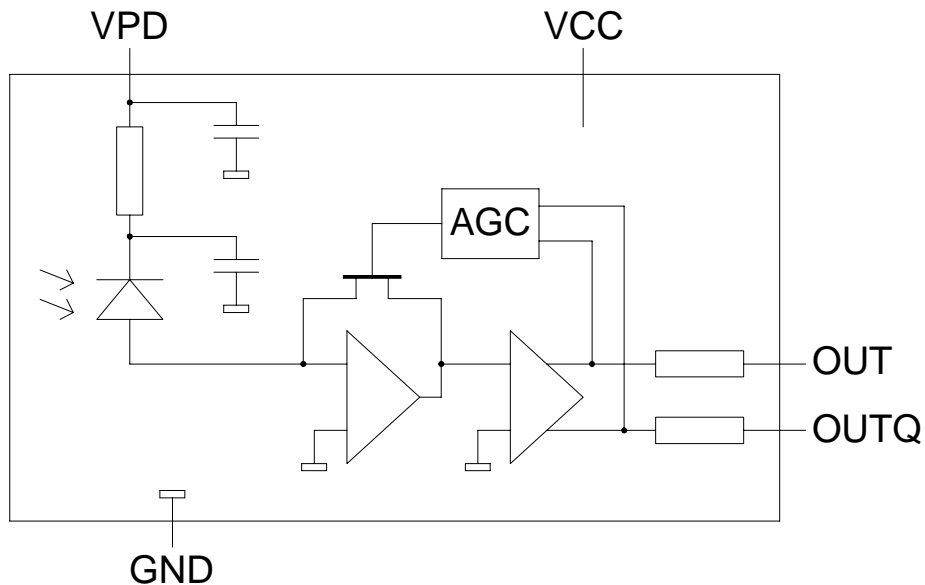


TO-46 5 pin Ball Lens Package

Product Description

The ANADIGICS AMT8412, packaged in a 4 or 5 pin TO-46 lens can, is a 3.3V integrated photodetector and transimpedance amplifier (TIA) used to convert a long wavelength (1250 to 1620nm) optical input signal into a differential output voltage. The AMT8412 has a typical

bandwidth of 1.9GHz and a dynamic range of over 25dB. The 5 pin package allows separate biasing and current monitoring of the photodiode. These devices are readily designed into receivers, transceivers and transponders for SONET OC-48 and SDH STM-16 applications.



(For the 4 pin header VPD and VCC are connected to the same pin)

Figure 1: Functional Block Diagram

AMT8412

ELECTRICAL CHARACTERISTICS



Table 1: Absolute Maximum Ratings

PARAMETER	MIN	MAX	UNIT
Supply Voltage	-0.5	+3.8	V
Optical Input Power	-	+ 5	dBm
Storage Temperature	- 40	+ 125	°C

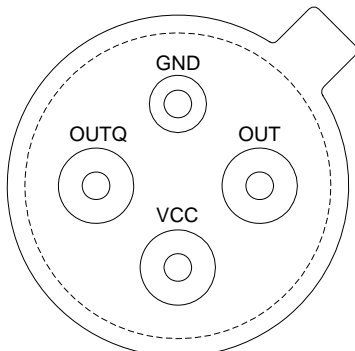
Stresses in excess of the absolute ratings may cause permanent damage. Functional operation is not implied under these conditions. Exposure to absolute ratings for extended periods of time may adversely affect reliability.

Table 2: Electrical Specifications

PARAMETER	MIN	TYP	MAX	UNIT
Wavelength	1250	-	1620	nm
Detector Active Area	-	70	-	um
Sensitivity ⁽¹⁾		-23	-	dBm
Overload		2	-	dBm
Responsivity 1550nm		0.95		A/W
Responsivity 1310nm		0.85		A/W
Vpd resistance	240	270	340	Ω
Small signal transimpedance gain (50 Ω)	1.8	3.5	5.0	KΩ
Small signal transimpedance gain (∞ Ω)	3.6	7	10	KΩ
Small signal 3dB bandwidth	1.7	1.9		MHz
Output resistance	40	53	65	Ω
Output voltage swing (differential 50 Ω)	90	220	400	mV _{P-P}
Rise/Fall times 20% / 80%	-	200	-	ps
TIA supply voltage	3.0	3.3	3.6	V
TIA supply current	-	26	38	mA
Power consumption (3.3V)	-	86	134	mW
Operating temperature	-40	25	+85	°C

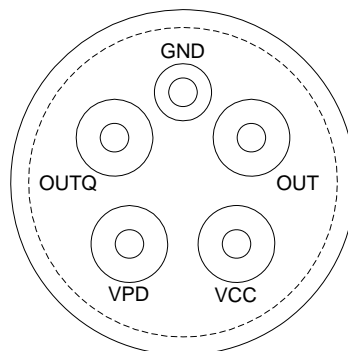
2.5Gb/s PRBS 2³¹-1, 1550nm, ER >12dB, BER 10⁻¹⁰

Figure 2: Pin location (4-pin)



(Bottom View)

Figure 3: Pin location (5-pin)



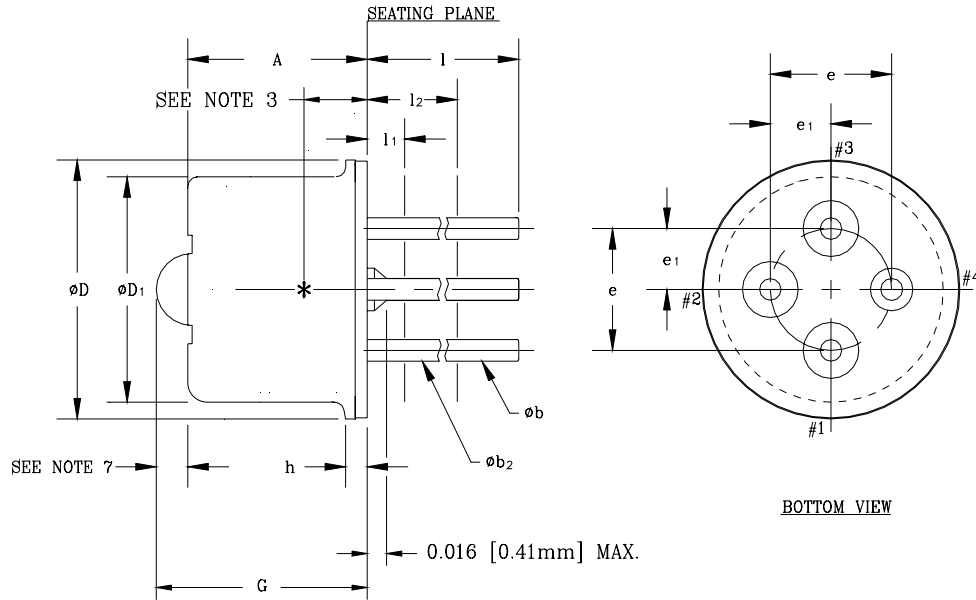
(Bottom View)

Table 3: Pin description

NAME	DESCRIPTION
OUT	TIA Output (Non-Inverted)
VCC	Supply Voltage (+3.3V)
OUTQ	TIA Output (Inverted)
GND	Ground

AMT8412

PACKAGE DIMENSIONS – 4 Pin TO-46



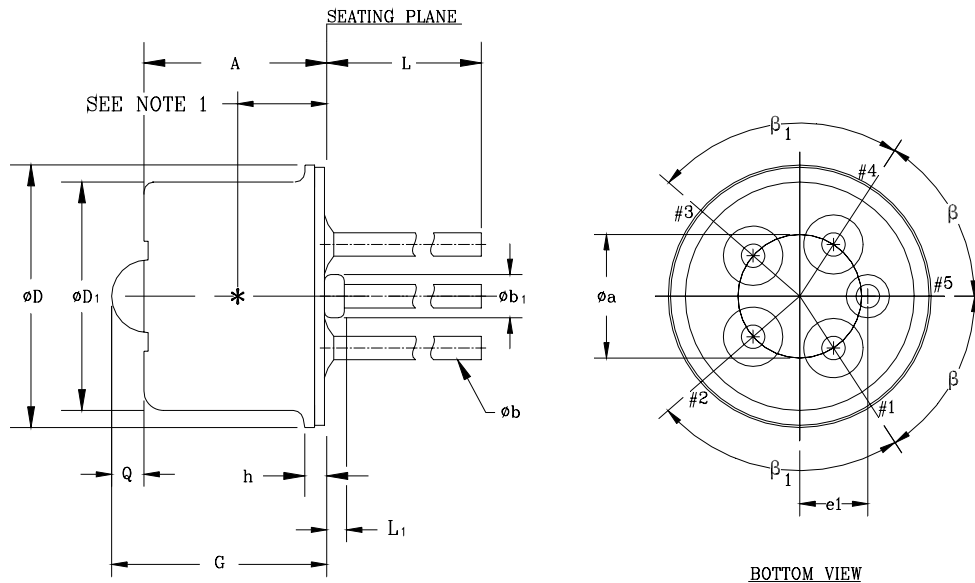
MM CONTROLLING DIMENSIONS

SYMBOL	INCHES		MILLIMETERS		NOTE
	MIN.	MAX.	MIN.	MAX.	
A	--	0.160	--	4.00	
ϕb	0.016	0.020	0.41	0.51	1
ϕb_2	0.012	0.019	0.30	0.48	1
ϕD	0.212	0.218	5.38	5.54	
ϕD_1	0.181	0.187	4.60	4.75	
e	0.100	T.P.	2.54	T.P.	2
e_1	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
l_1	--	0.050	--	1.27	1
l_2	0.250	--	6.35	--	1
G	--	0.190	--	4.66	7

NOTES:

- (FOUR LEADS) ϕb_2 APPLIES BETWEEN l_1 AND l_2 . ϕb APPLIES BETWEEN l_2 AND 0.5 [12.70mm] FROM SEATING PLANE. DIAMETER IS UNCONTROLLED IN l_1 AND BEYOND 0.5 [12.70mm] TO END OF PIN.
- 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.
- INTERNAL OPTICAL HEIGHT = $0.065 \pm 0.005 [1.65 \pm 0.1]$
- BENT LEADS SHOULD NOT EXTEND OUTSIDE DIAMETER (ϕD) OF CAP OR TOUCH EACH OTHER.
- ALL DIMENSIONS ARE REFERENCE ONLY—EXCEPT A, D & h.
- DETECTOR DIODE PLACEMENT ACCURACY: $\phi 0.15\text{MM} [0.006]$ WITH RESPECT TO CENTER OF HEADER: REFERENCE ONLY
- LENS HEIGHT = $0.65 \pm 0.1 [0.026 \pm 0.004]$

AMT8412 PACKAGE DIMENSIONS



MM CONTROLLING DIMENSIONS

SYMBOL	MILLIMETERS		INCHES		NOTE
	MIN.	MAX.	MIN.	MAX.	
øa	2.54 T.P.		0.100 T.P.		-
A	3.55	4.00	0.140	0.157	-
øb	0.40	0.50	0.016	0.020	-
øb1	-	1.20	-	0.047	-
øD	5.38	5.54	0.212	0.218	-
øD1	4.60	4.75	0.181	0.187	-
e1	1.40 T.P.		0.055 T.P.		-
G	4.10	4.75	0.161	0.187	-
h	0.35	0.56	0.014	0.022	-
L	12.50	14.50	0.490	0.570	-
L1	-	0.40	-	0.016	-
Q	0.55	0.75	0.022	0.030	-
β	57° NOMINAL		57D NOMINAL		-
β1	82° NOMINAL		82° NOMINAL		-

NOTES:

- INTERNAL OPTICAL HEIGHT = 1.27±0.08mm[0.050±0.003in.]
- DETECTOR DIODE PLACEMENT ACCURACY: ϕ 0.15mm[ϕ 0.006in.] WITH RESPECT TO CENTER OF HEADER.
- BENT LEADS SHOULD NOT EXTEND OUTSIDE DIAMETER (øD) OF CAP OR TOUCH EACH OTHER.

ORDERING INFORMATION

Part Number	PACKAGE DESCRIPTION
AMT8412T46L4	4 pin TO-46 Lens Package
AMT8412T46L5	5 pin TO-46 Lens Package

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