ATA121302D1C

1.25 Gb/s Transimpedance Amplifier
Advanced Product Information
Rev 0

FEATURES

- 1.25 Gb/s Differential Output TIA
- Automatic Gain Control

APPLICATIONS

- Gigabit Ethernet (1.250 Gb/s)
- Fibre Channel (1.064 Gb/s)

ELECTRICAL CHARACTERISTICS(1) (T_A= 25 ^{O}C, V_{DD} =+5.0V ± 10%)

PARAMETER	MIN	TYP	MAX	UNIT
Small Signal Differential (R_L = 100 Ω)Transresistance (2)	-	2.8	-	KΩ
Bandwidth	1000	1100	-	MHz
Low Frequency Cutoff	-	800	-	kHz
Input Resistance		100		Ω
Output Resistance	-	40	-	Ω
Input Offset Voltage	-	1.4	-	V
Output Offset Voltage	-	2.2	-	V
Photodiode Biasing Voltage (V_N)		-5	-	V
Optical Overload (1), (3)	-3		-	dBm
Optical Sensitivity (1), (3)	-	- 25		dBm
Differential Output Voltage (4), (5)	-	350	-	mV
T_{RISE} & T_{FALL} (20 - 80%) (5), (6)	-	280	-	ps
Duty Cycle Distortion (4), (7)	-	4	-	%
RMS Jitter (4), (7), (8)	-	20	-	ps
Total Jitter (pk-pk) (4), (7), (9)	-	100	-	ps
Supply Current	-	35	-	mA
Operating Voltage Range	+4.5	+5.0	+5.5	V
Operating Temperature Range	0	-	85	^{o}C
Input Noise Current	-	TBD	-	nA

1. Measured with a photodiode having a maximum capacitance of 0.6 pF and a minimum responsivity of 0.8 A/W.
2. f = 50 MHz
3. Measured at 10^{-10} BER with a 2^7-1 PRBS, 1.25 Gb/s.
4. Input optical power = -3 dBm, R_L = 100 Ω (differential)
5. Measured with a 625 MHz, 50% duty cycle square wave.
6. Measured differentially at -14dBm optical input power.
7. Measured with a 2^7-1 PRBS.
8. 1σ about the center eye crossing.
9. 6σ about the center eye crossing.

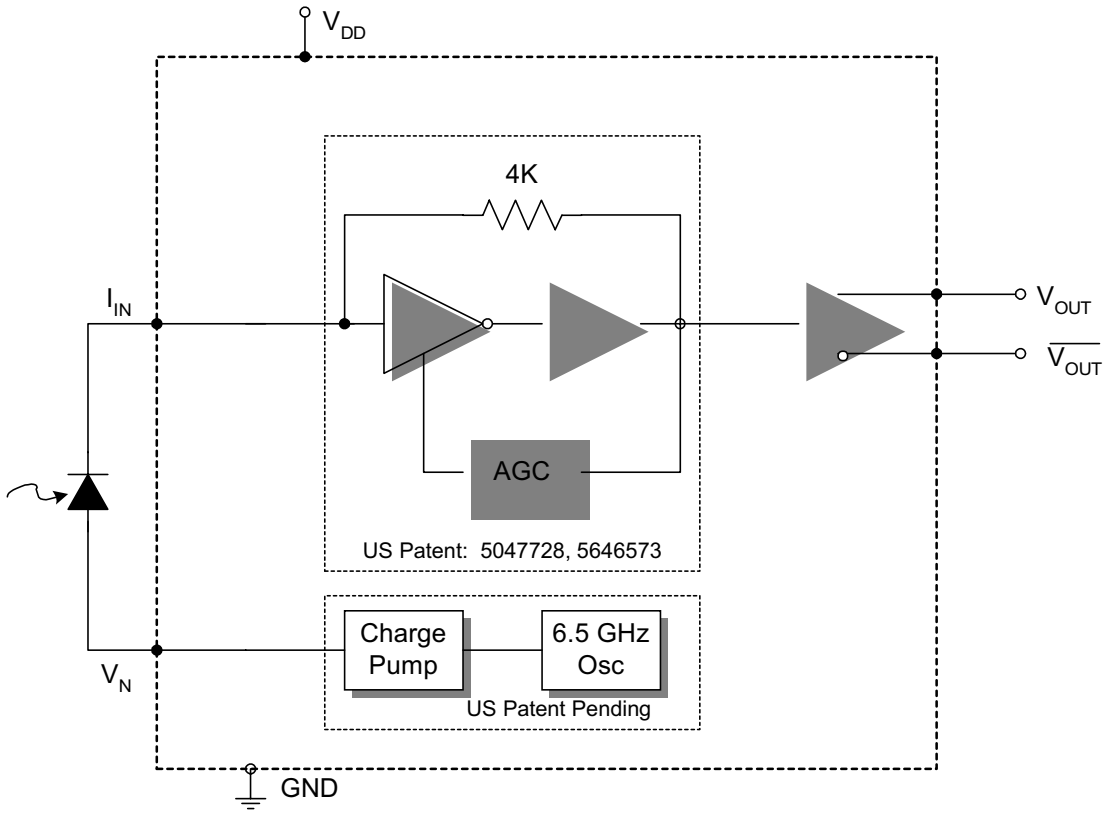
ABSOLUTE MAXIMUM RATINGS

V_{DD}	7.0 V
I_{IN}	3.5 mA
T_S	Storage Temp. - 65 °C to 125 °C

ATA121302D1C PAD DESCRIPTION

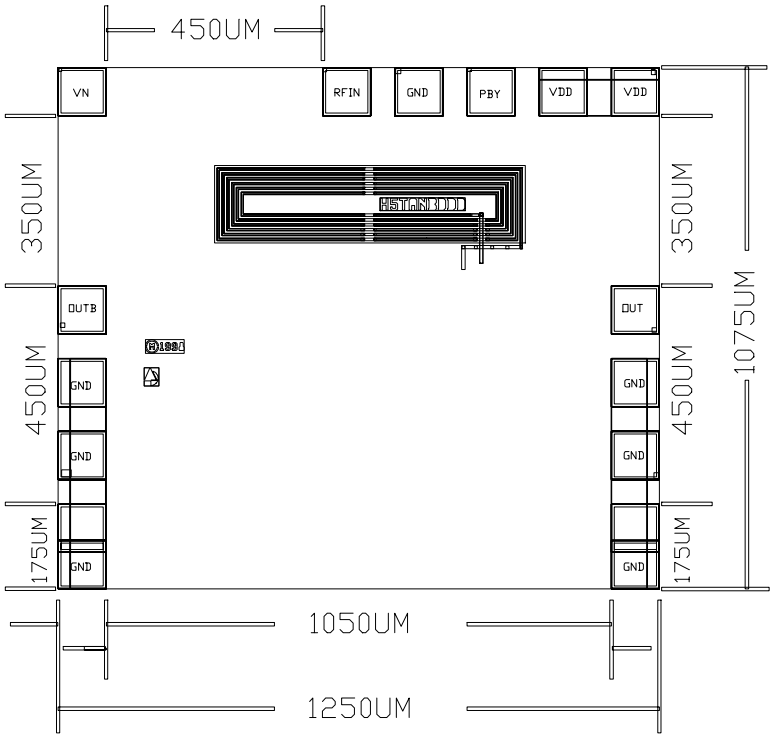
PAD	Description	Comment
V_{DD}	Positive Supply Voltage	+ 5 Volts
I_{IN}	TIA Input	Connect to detector cathode for proper operation
V_N	Negative Voltage for Photodiode Biasing	Connect to detector anode for optimum performance
V_{OUT}	TIA Output Voltage (Non-Inverted)	Logical '1' with optical input
$\overline{V_{OUT}}$	TIA Output Voltage (Inverted)	Logical '0' with optical input

ATA121302D1C BLOCK DIAGRAM

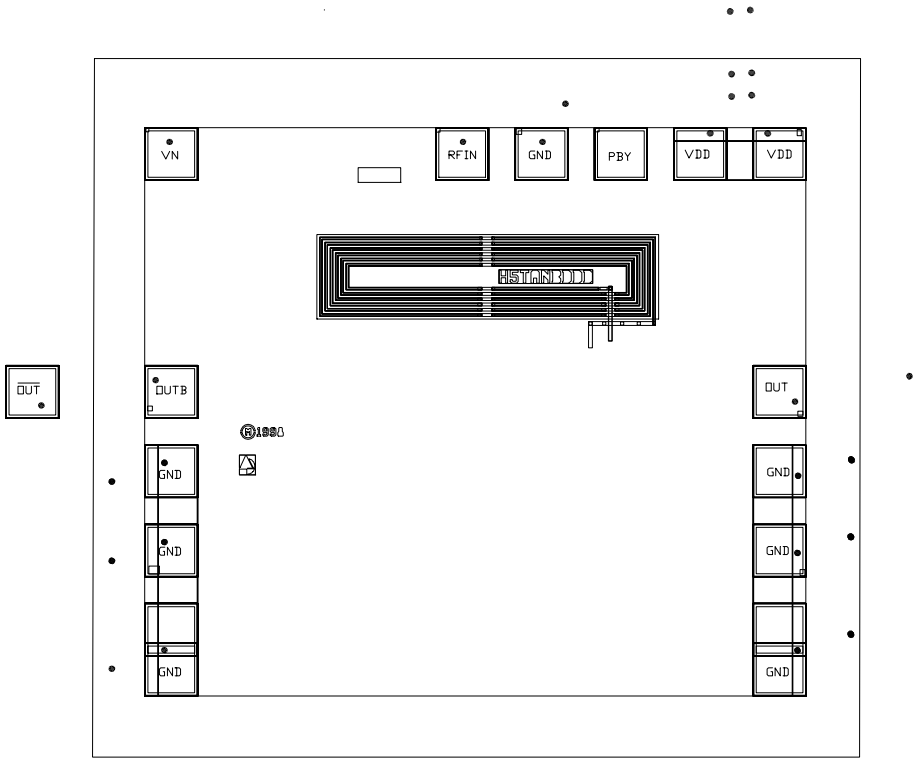


The photodetector cathode must be connected to I_{IN} and the anode can be connected to V_N or ground for proper AGC operation.

BONDING PADS



TYPICAL BONDING DIAGRAM



Scribe streets are 37.5μm wide

Typical Charateristics (measured with a photodiode)

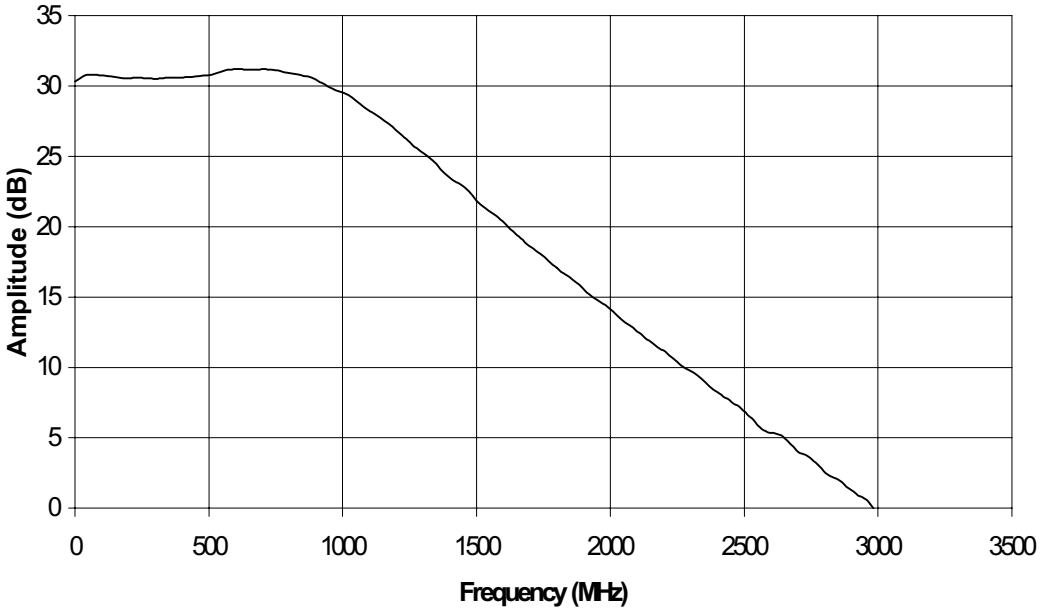


Figure 1. Frequency Response

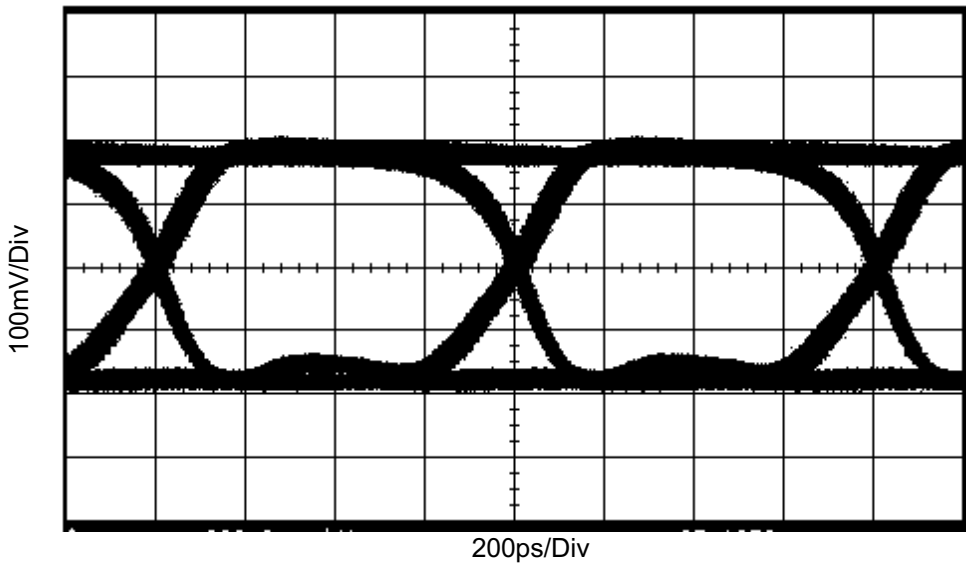


Figure 2. Eye Diagram with an Optical Input Power of –3dB

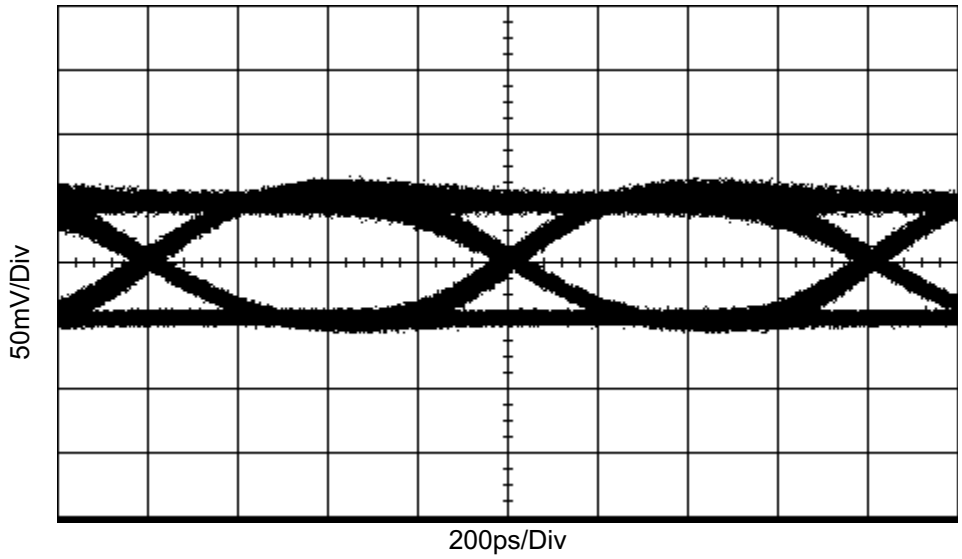


Figure 3. Eye Diagram with an Optical Input Power of –17 dBm

ANADIGICS, Inc.
35 Technology Drive
Warren, New Jersey 07059
Tel: (908) 668-5000 Fax: (908) 668-5132
Mktg@anadigics.com