ATA01501D1C
ATA01501S2C

AGC Transimpedance Amplifier
SONET OC-3

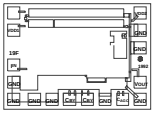
Preliminary Data Sheet - Rev 5

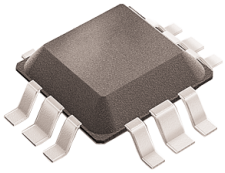
FEATURES

- Single +5 Volt Supply
- Automatic Gain Control
- Excellent Sensitivity
- 0 dBm Optical Overload

APPLICATIONS

- SONET OC-3 Receiver
- FDDIk Ethernet Fiber LAN
- Low Noise RF Amplifier





D1	S2 12 Pin 4 Sided SQFP Package

Electrical Characteristics [1] (T_A= 25°C, V_{DD}=+5.0V + 10%, C_{DIODE}+C_{STRAY} = 0.5 pF, Det. Cathode to I_{IN})

PARAMETER	MIN	TYP	MAX	UNIT
Transresistance (RL=∞,Idc<500nA)		17		KΩ
Transresistance (RL=50Ω) [1]	5.5	8	10	KΩ
Bandwidth -3dB (D1C)	150	175		MHz
Bandwidth -3dB (S2C)	130	75		MHz
Input Resistance [2]		500		Ω
Output Resistance	30	50	60	Ω
Supply Current		30	45	mA
Input Offset Voltage	1.4	1.6	1.9	Volts
Output Offset Voltage		1.8		Volts
AGC Threshold (I_{IN}) [3]	15	30		μA
Optical Overload [4]	-3	0		dBm
Input Noise Current [5]		14	20	nA
AGC Time Constant [6]		16		μsec
Offset Voltage Drift		1		mV/ °C
Optical Sensitivity -(D1C) [7]		-38		dBm
Optical Sensitivity - (S2C) [7]		-37		dBm
Operating Voltage Range	+ 4.5	+ 5.0	+ 6.0	Volts
Operating Temperature Range	- 40		85	°C

1. *f = 50 MHz*
2. *Measured with I_{IN} below AGC Threshold. During AGC, input impedance will decrease proportionally to I_{IN}*
3. *Defined as the I_{IN} where Transresistance has decreased by 50%.*
4. *See note on "Indirect Measurement of Optical Overload".*
5. *See note on "Measurement of Input Referred Noise Current".*
6. *C_{AGC} = 220 pF*
7. *Parameter is guaranteed (not tested) by design and characterization data @155Mb assuming detector responsivity of 0.9*

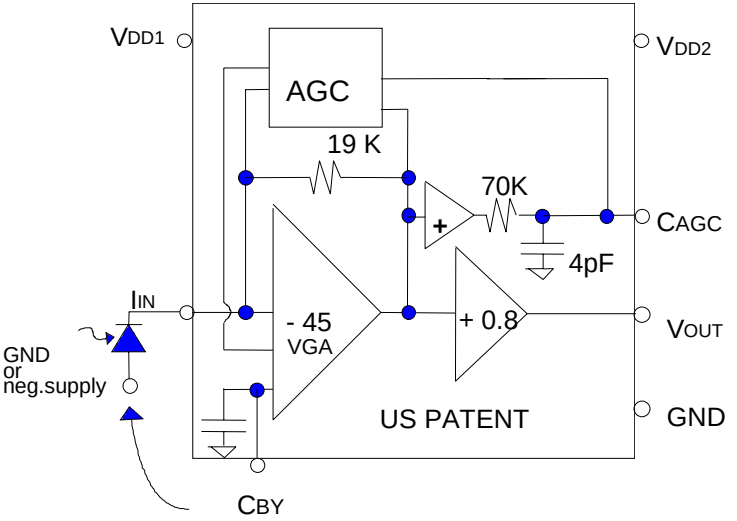
Absolute Maximum Ratings

V_{DD1}	7.0 V
V_{DD2}	7.0 V
I_{IN}	5 mA
T_A	Operating Temp. - 40 C to 125 C
T_S	Storage Temp. - 65 C to 150 C

Pad Description

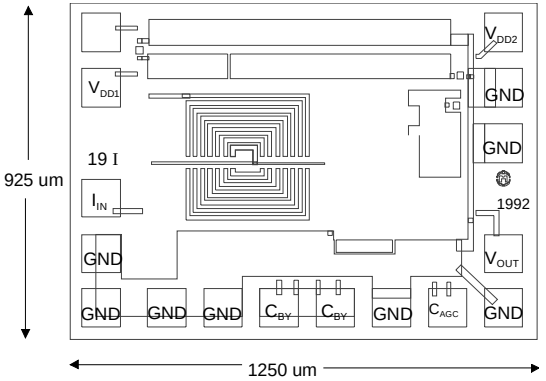
PAD	Description	Comment
V_{DD1}	V_{DD1}	Positive supply for input gain stage
V_{DD2}	V_{DD2}	Positive supply for second gain stage
I_{IN}	TIA Input Current	Connect detector cathode for proper operation
V_{OUT}	TIA Output Voltage	Requires external DC block
C_{AGC}	External AGC Capacitor	70K * CAGC= AGC time constant
C_{BY}	Input gain stage bypass capacitor	>56 pF

Equivalent Circuit

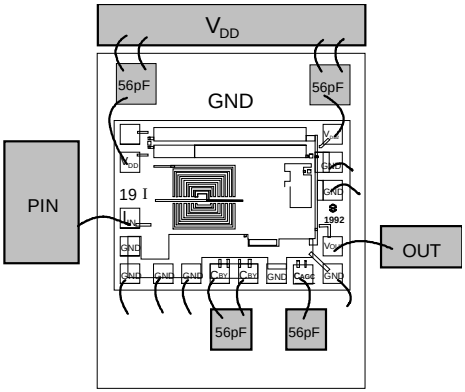


Photodector cathode must be connected to Iin for proper AGC operation

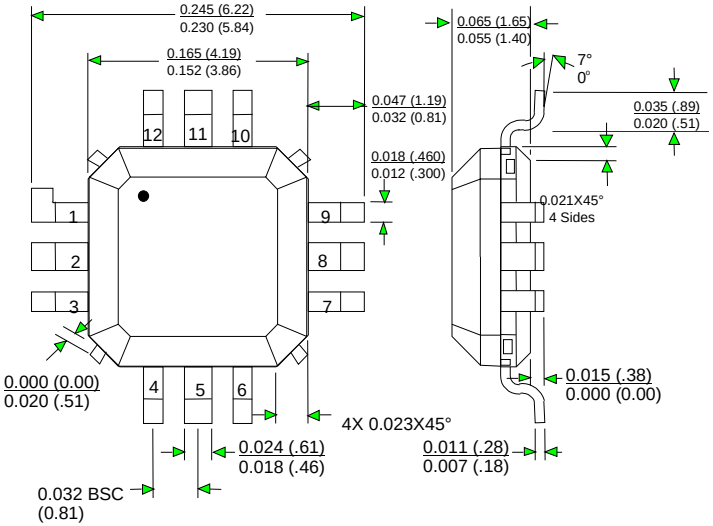
ATA01501D1C Die Bonding Pads



ATA01501D1C Die Typical Bonding

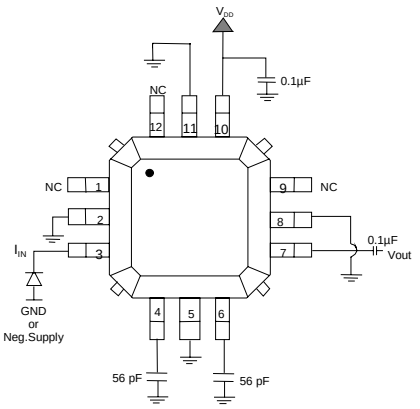


ATA01501DS2C SQFP Package Outline



PIN NO.	FUNCTION
1	NC
2	GND
3	I_{IN}
4	C_{BY}
5	GND
6	C_{AGC}
7	V_{OUT}
8	GND
9	NC
10	V_{DD}
11	GND
12	NC

ATA01501DS2C Typical SQFP Connection Package



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