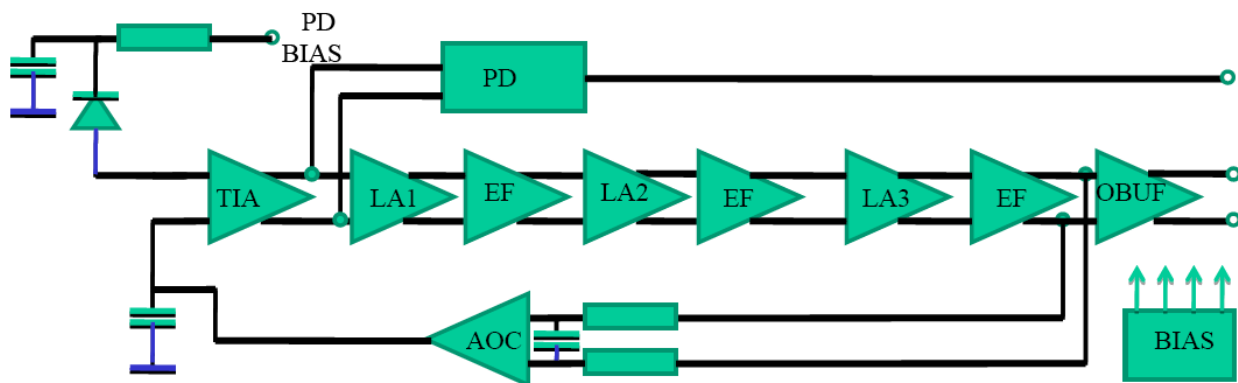




## ASNT6121 43Gbps Transimpedance Amplifier

- Broadband transimpedance amplifier for low noise receiver side applications.
- Features automatic input offset control and a peak detector.
- 35.0GHz of analog bandwidth for limiting of input data.
- 72.0dBΩ of transimpedance differential gain.
- 23.0pA/sqrtHz of input referred noise density (0.1 to 35GHz).
- CML output interface with 50Ω termination and 300mVp-p single-ended swing.
- Single +3.3V power supply.
- Power consumption: 475mW.
- Exhibits low jitter and limited temperature variation over industrial temperature range.
- Fabricated in SiGe for high performance, yield, and reliability.

### DESCRIPTION



*Functional Block Diagram*

The temperature stable ASNT6121 SiGe IC provides low jitter broadband current to voltage conversion and amplification between its input and output signal ports and is intended for use in high-speed communication systems. The low noise ASNT6121 can process an up to 43Gbps data signal and deliver a limited 600mVp-p differential signal for single ended input current levels as low as 80μA. Automatic offset control (AOC) is included to adjust the indirect input signal port to compensate for the average value of the photodiode current on the direct input port and any internal DC offsets. AOC's low frequency corner is 5.0KHz with an off chip capacitor value of 100nF. The part's output supports the CML logic interface with on chip 50Ω termination and may be used differentially, AC/DC coupled, single-ended, or in any combination. It operates from a single +3.3V power supply and includes a temperature sensor.



## TERMINAL FUNCTIONS

TERMINAL NAME (NO.)	TYPE	DESCRIPTION
vee 1,5,7,9,11 13,17,19,21,23	PS	Power Supply: 0V
vcc 6,12,18,24	PS	Power Supply: 3.3V
inp 20	Input	High-speed data signal input
inn 22	Input	Automatic offset control input
outp 10	Output	Differential CML high-speed data signal outputs
outn 8	Output	
cfilt 2	Output	100nF off chip capacitor connection
pkadj 3	Input	Optimum output jitter adjustment
pkdet 15	Output	Low speed peak detection output
dtemp 16	Output	Temperature sensor output
dcoutp 14	Output	Output DC level monitor through 1.0KΩ resistors (outp)
dcoutn 4	Output	Output DC level monitor through 1.0KΩ resistors(outn)

## ELECTRICAL CHARACTERISTICS

PARAMETER	MIN	TYP	MAX	UNIT	COMMENTS
<b>VEE</b>		0.0		V	
<b>VCC</b>	3.1	3.3	3.5	V	±6%
<b>IEE</b>		145		mA	
<b>Power</b>		475		mW	
<b>Junction Temp.</b>	-25	50	125	°C	
<b>Input (in)</b>					
Frequency	0.0		43	Gb/s	
Current level	80		2000	μA	
<b>Output (out)</b>					
Frequency	0.0		43	Gb/s	
CM Level		V <sub>cc</sub> -0.15		V	
SE Swing	280	300	320	mV	Peak-to-peak
Rise/Fall Times	10	12	14	ps	20%-80%
Additive Jitter			2.0	ps	Peak-to-peak
<b>Tuning Port (pkadj)</b>					
Input Signal Range	2.3		3.3	V	
Bandwidth	0.0		100	MHz	
<b>Output Offset (dcout)</b>					
Input Signal Range	0.0		3.3	V	
<b>Peak Detect (pkdet)</b>					
Output Signal Range	2.3		3.3	V	80-2000μA
Bandwidth	0.0		1.0	KHz	
<b>Temperature (dtemp)</b>					
Output Signal Range	2.3		3.3	V	0 - 100°C