



SANYO Semiconductors

DATA SHEET

LA8123TT

Monolithic Linear IC

For Digital CATV/Cable Modem Receiver
AGC Amplifier

Overview

LA8123TT is an AGC amplifier. It is ideally suited for use with Digital TV, Digital CATV, Cable modem receiver and IP Telephony receiver.

Functions

- IF AGC control
- IF AGC amplifier
- Driver amplifier

Specifications

Maximum Ratings at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	$V_{CC\ max}$	Pin 1	7.0	V
Input voltages	V_{in}	Pin 2, 3, 4	-0.3 to $V_{CC\ op+0.3}$	V
Circuit Current	I6	Pin 6 sink current	2	mA
	I7	Pin 7 sink current	2	mA
Allowable Power Dissipation	$P_d\ max$	$T_a \leq 85^\circ\text{C}^*$	310	mW
Operating Temperature Range	T_{opr}		-20 to 85	$^\circ\text{C}$
Storage Temperature Range	T_{stg}		-55 to 150	$^\circ\text{C}$

* : Specified board : 45.0mm × 43.0mm × 1.6mm, glass epoxy board.

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Recommended Operating Conditions at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage	V _{CC}	Pin 1	5.0	V
Operating supply voltage range	V _{CC op}	Pin 1	4.5 to 5.5	V
AGC control voltage range	V _{agc}	Pin 4	0 to 3.3	V

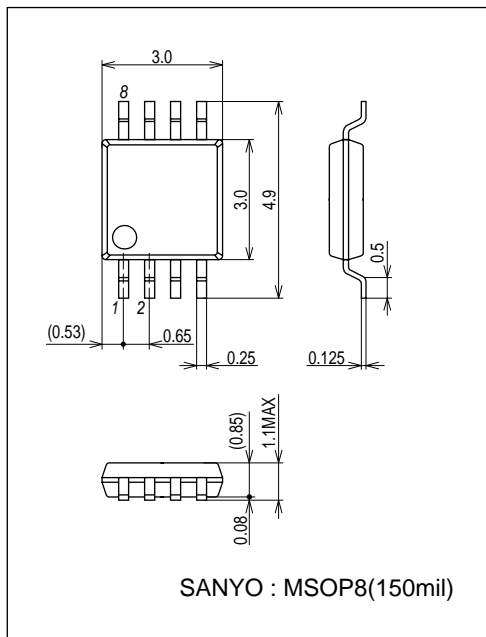
Electrical Characteristics at Ta = 25°C, V_{CC} = 5.0V

Parameter	Symbol	Pin No.	Conditions	Test circuit	Ratings			Unit
					min	typ	max	
Circuit current	I _{total}	1	No signal	1	33	38	43	mA
Input frequency range	f _{in}	2, 3	f _c : -3dB	1	30		70	MHz
Noise figure	NF	6, 7	V ₄ = 3.0V, f = 45MHz	2		5		dB
Inter modulation	IM3	6, 7	V ₄ = 3.0V, f ₁ = 44MHz, f ₂ = 45MHz, Output level = 104dBμV/tone	1	50			dBc
Total amplifier gain	G (AGC1)	6/2, 3 7/2, 3	V ₄ = 3.0V, f = 45MHz	1	57	60	63	dB
AGC range	GR (1)	6/2, 3 7/2, 3	Output level = 110dBμV V ₄ = 0.3V to 3.0V, f = 45MHz	1	40			dB
	GR (2)	6/2, 3 7/2, 3	Input level = 50dBμV V ₄ = 0.3V to 3.0V, f = 45MHz	1	45			dB
Maximum Output Level	V _O	6, 7	f = 45MHz	1	1.8			Vp-p
Output offset	dV _O	6, 7	V ₄ = 3.0V, f = 45MHz Output level = 110dBμV (Pin 7 output) - (Pin 6 output)	1	-0.5	0	0.5	dB
Maximum gain AGC control voltage	V _{4H}	4	Maximum gain	1	3.0		3.3	V
Minimum gain AGC control voltage	V _{4L}	4	Minimum gain	1	0		0.3	V
Input impedance	Z _{in}	2, 3	V ₄ = 0V, f = 45MHz	3		1/4.7		kΩ/pF

Package Dimensions

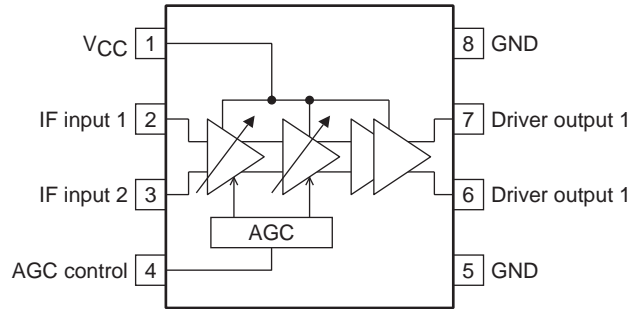
unit : mm (typ)

3245B

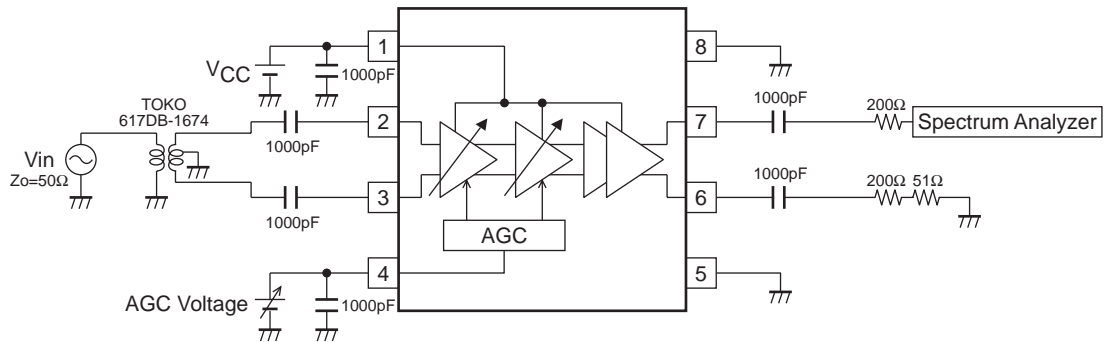


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Block Diagram

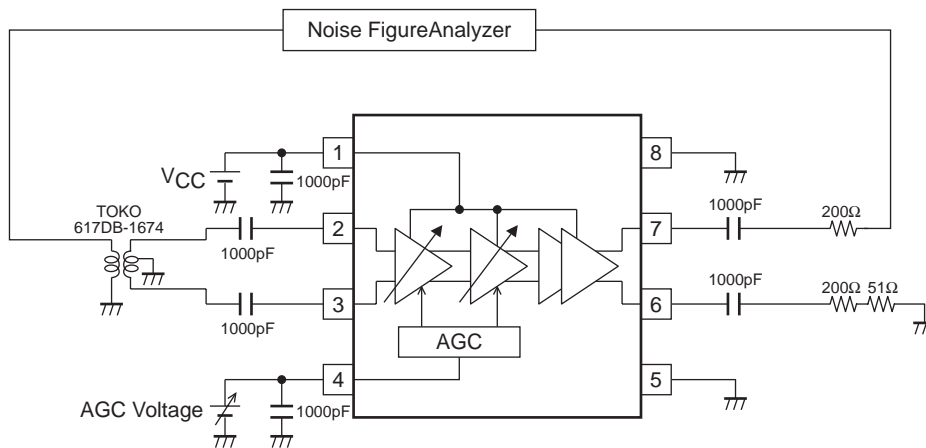


Test Circuit 1

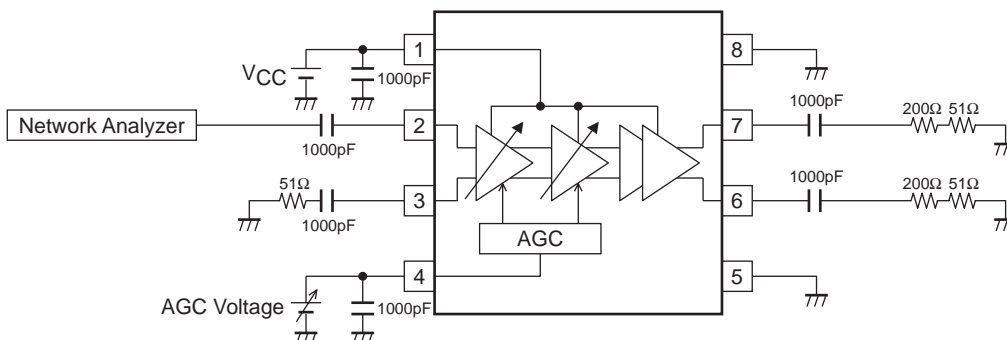


Output Voltage is divided by $50\Omega / (200+50)\Omega$

Test Circuit 2



Test Circuit 3

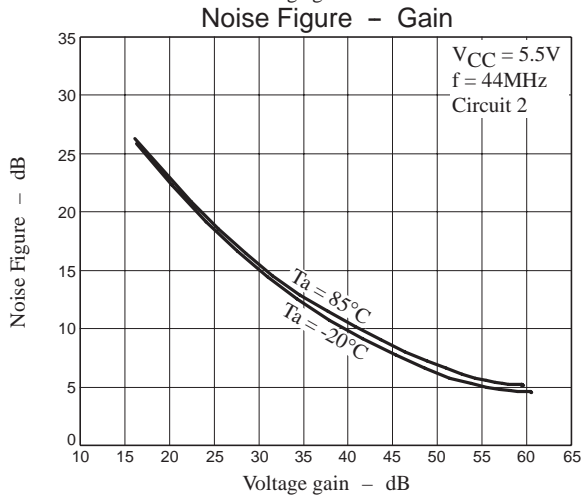
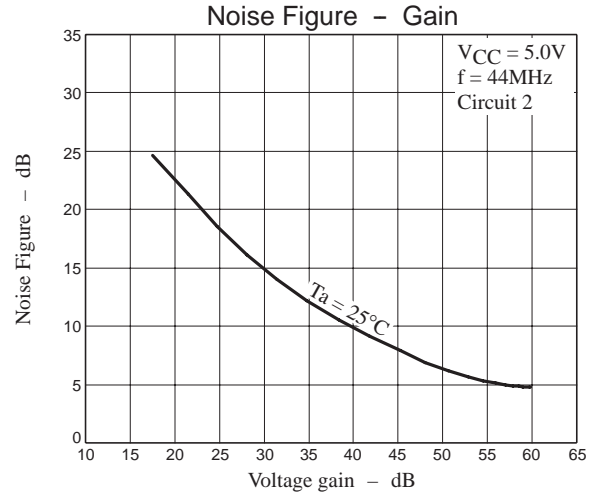
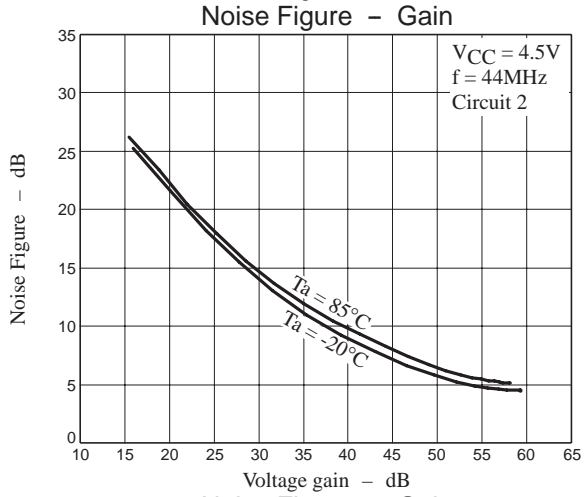
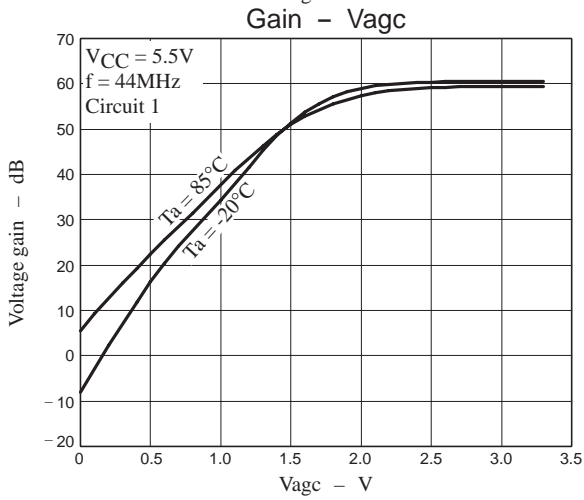
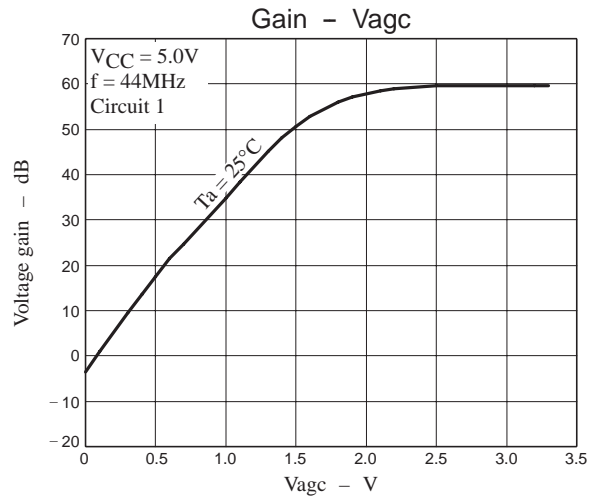
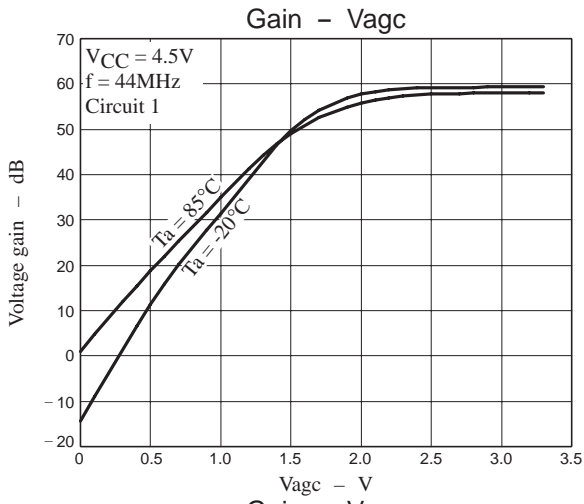


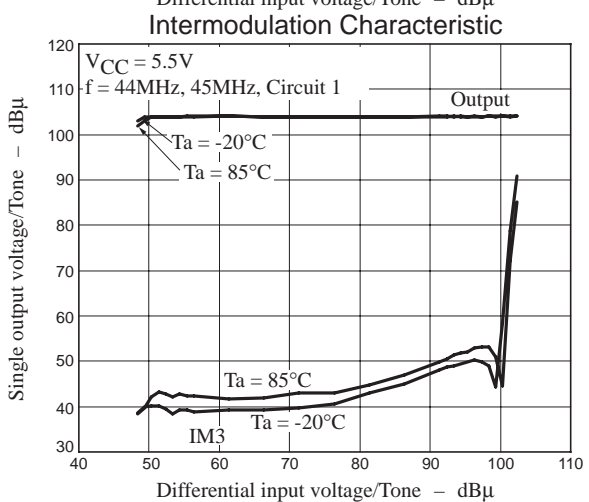
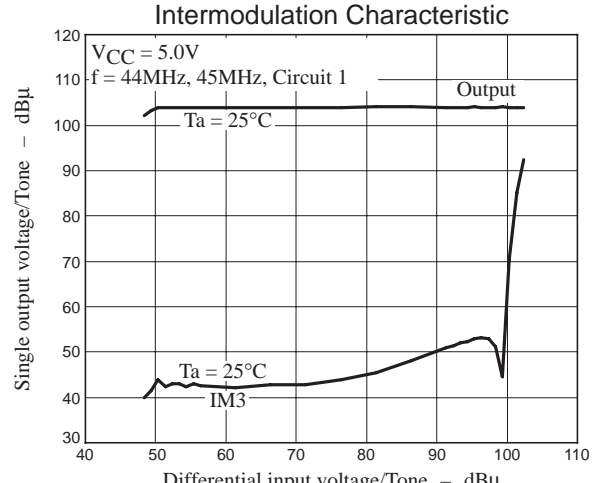
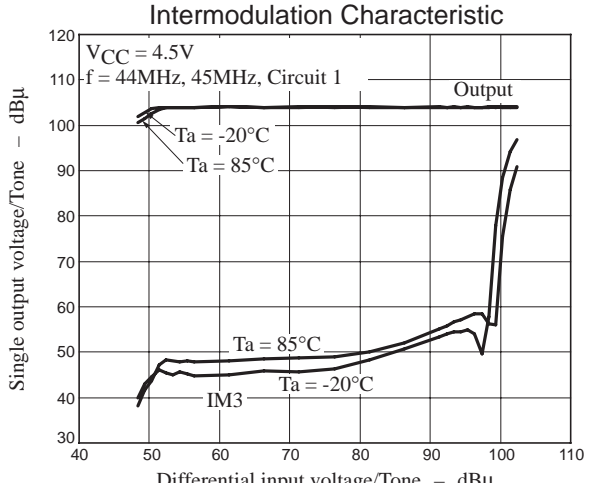
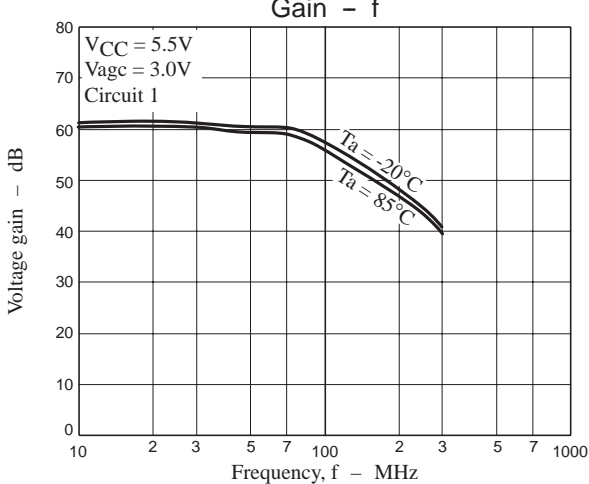
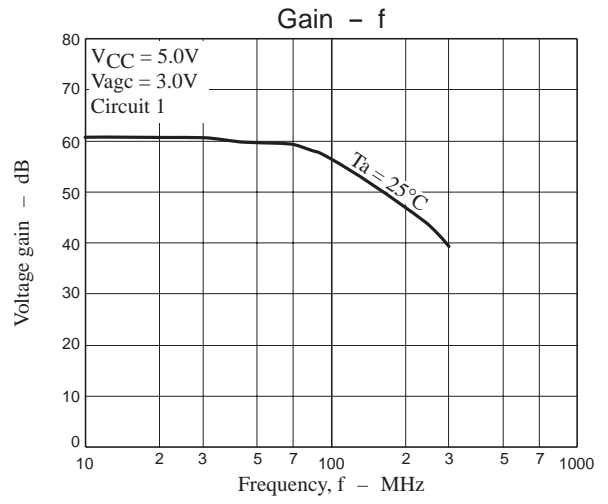
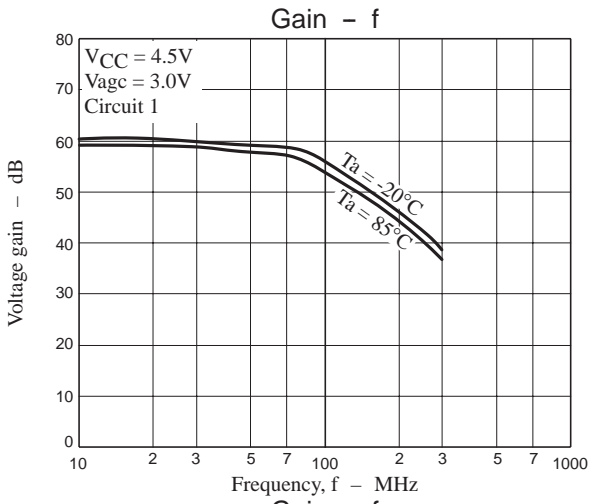
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Pin Function

Pin No.	Function	Equivalent circuit
1	V _{CC}	
2 3	IF input.	
4	AGC control.	
5	Gain control Switch.	
6 7	Driver output.	
8	GND	

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