Ordering number : ENA1273

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 Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V_{CC} max	Pin 1	7.0	V
Input voltages	Vin	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	Pd max	Ta ≤ 85°C *	310	mW
Operating Temperature Range	Topr		-20 to 85	°C
Storage Temperature Range	Tstg		-55 to 150	°C

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

Recommended Operating Conditions at Ta = 25°C

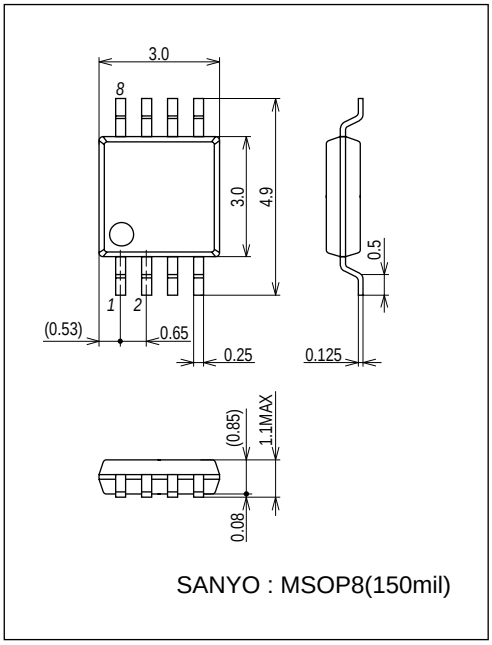
Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage	V_{CC}	Pin 1	5.0	V
Operating supply voltage range	V_{CC} op	Pin 1	4.5 to 5.5	V
AGC control voltage range	Vagc	Pin 4	0 to 3.3	V

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	fin	2, 3	fc : -3dB	1	30		70	MHz
Noise figure	NF	6, 7	V4 = 3.0V, f = 45MHz	2		5		dB
Inter modulation	IM3	6, 7	V4 = 3.0V, f1 = 44MHz, f2 = 45MHz, Output level = 104dBμV/tone	1	50			dBc
Total amplifier gain	G (AGC1)	6/2, 3 7/2, 3	V4 = 3.0V, f = 45MHz	1	57	60	63	dB
AGC range	GR (1)	6/2, 3 7/2, 3	Output level = 110dBμV V4 = 0.3V to 3.0V, f = 45MHz	1	40			dB
	GR (2)	6/2, 3 7/2, 3	Input level = 50dBμV V4 = 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	V4 = 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	Zin	2, 3	V4 = 0V, f = 45MHz	3		1//4.7		kΩ//pF

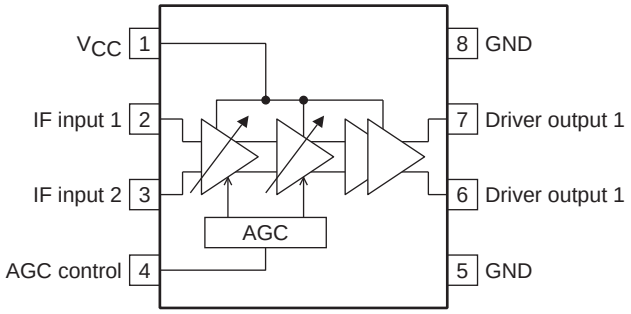
Package Dimensions

unit : mm (typ)
3245B

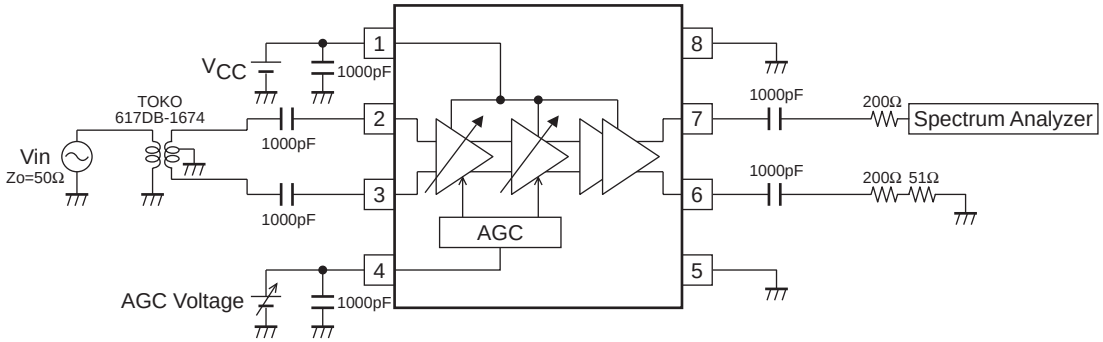


SANYO : MSOP8(150mil)

Block Diagram

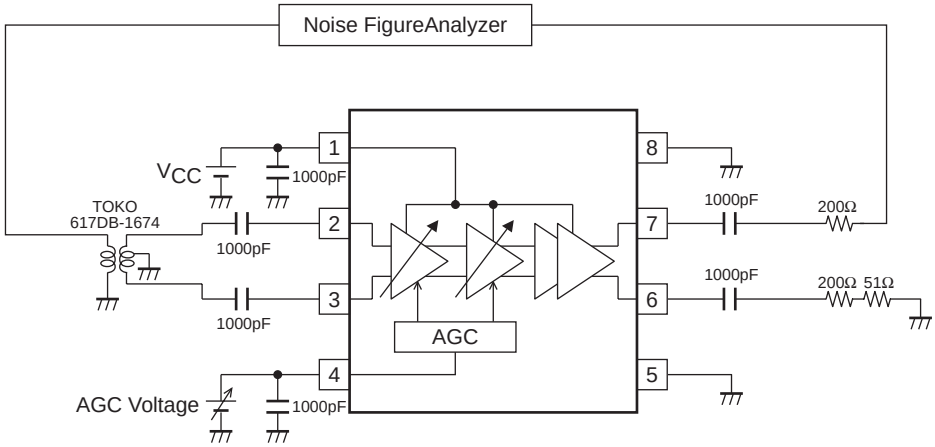


Test Circuit 1

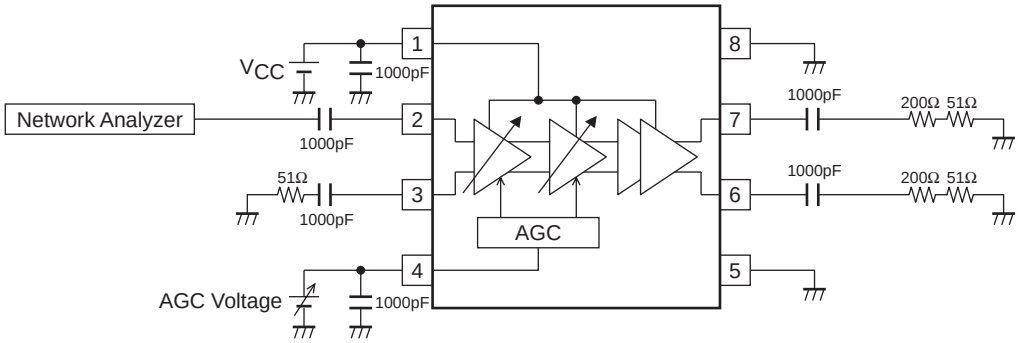


Output Voltage is divided by 50Ω / (200+50)Ω

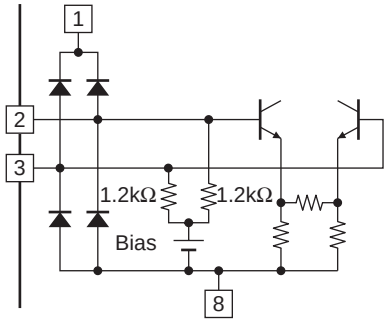
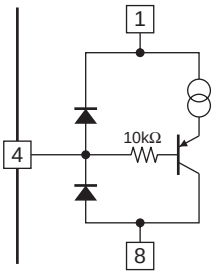
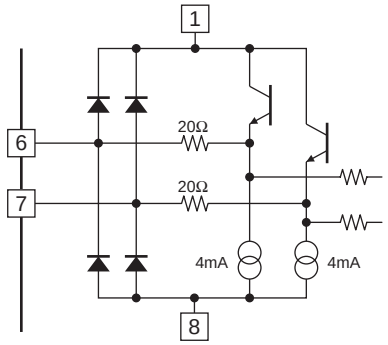
Test Circuit 2



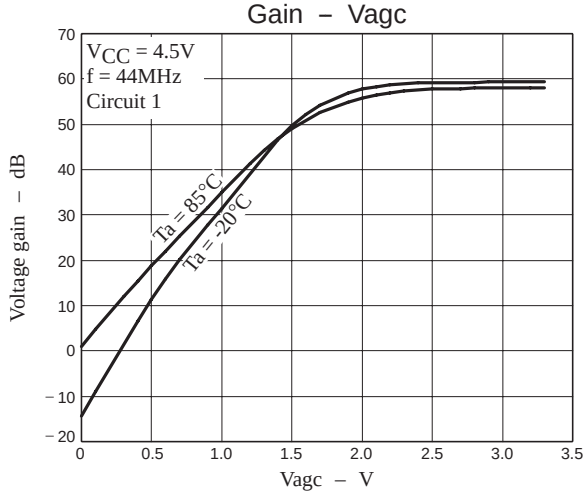
Test Circuit 3



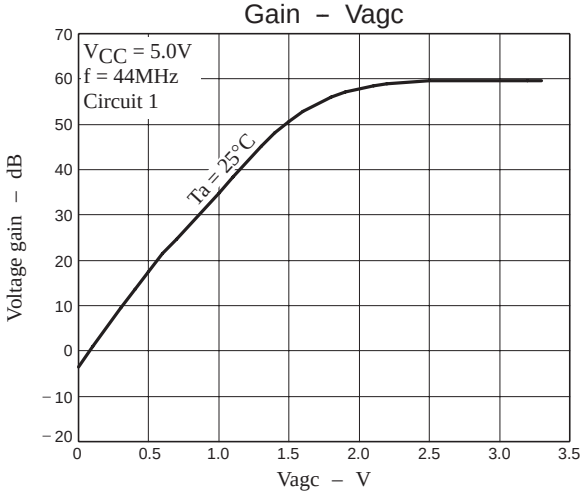
Pin Function

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	

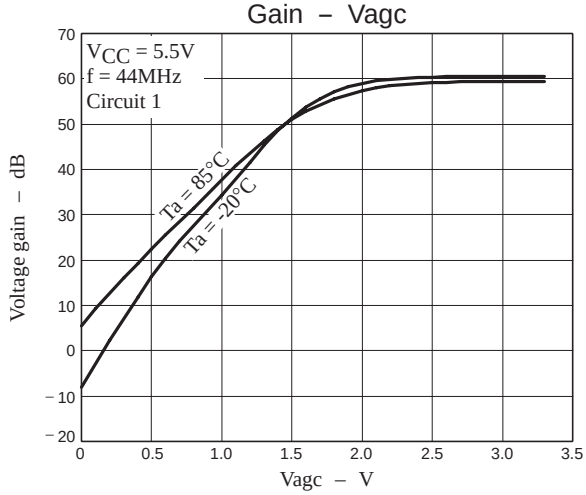
Gain – Vagc



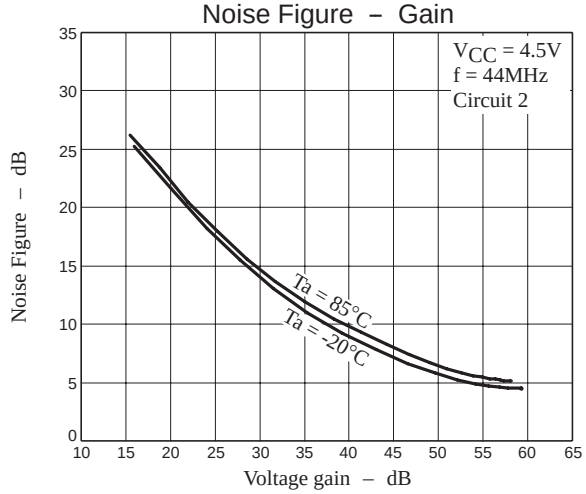
Gain – Vagc



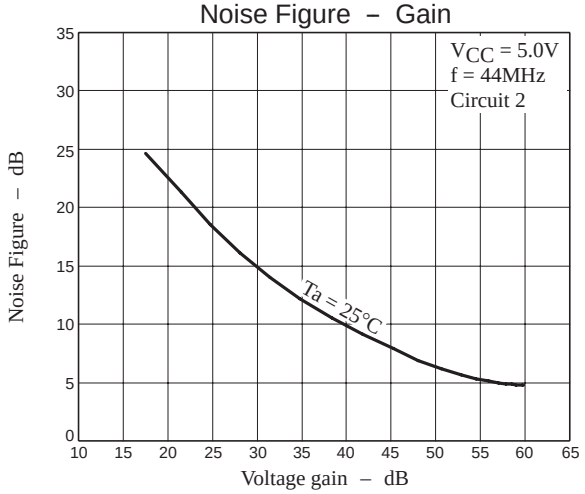
Gain – Vagc



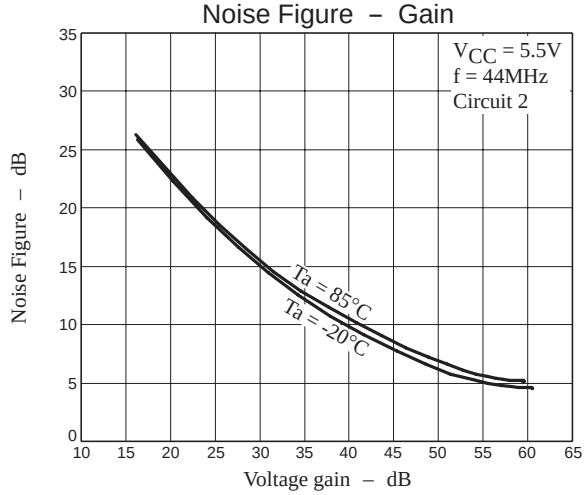
Noise Figure – Gain



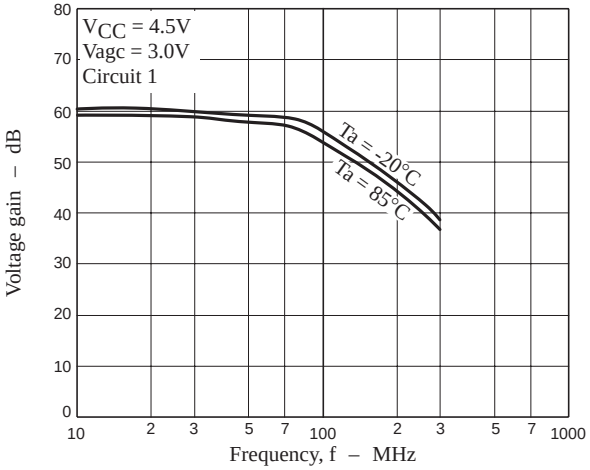
Noise Figure – Gain



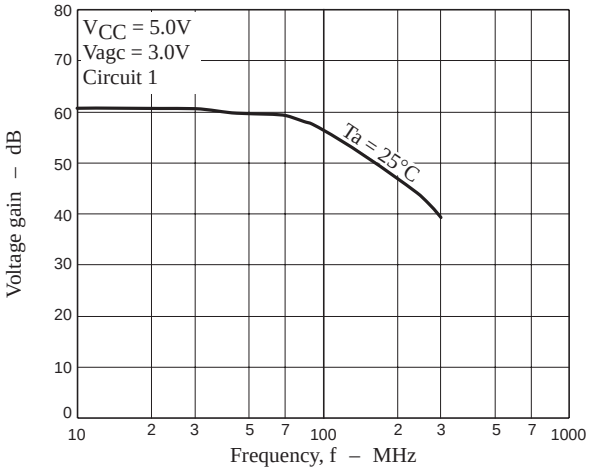
Noise Figure – Gain



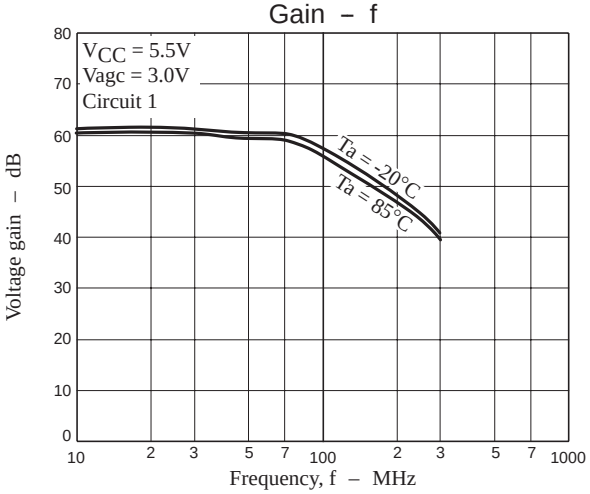
Gain – f



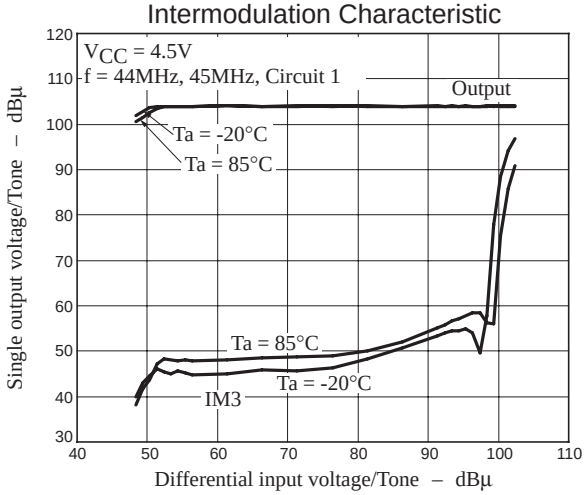
Gain – f



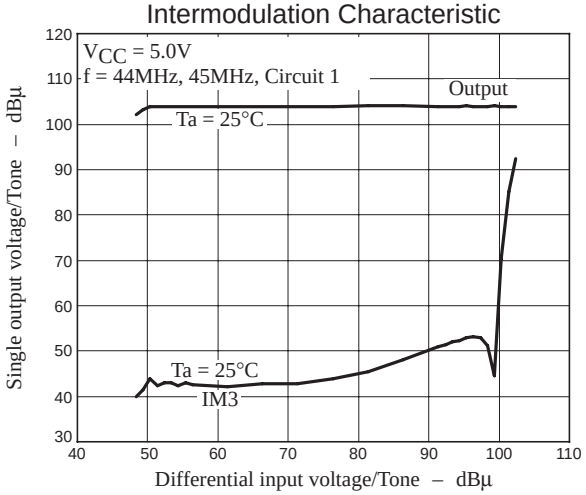
Gain – f



Intermodulation Characteristic



Intermodulation Characteristic



Intermodulation Characteristic