



SANYO Semiconductors

## DATA SHEET

# LA8128T — Monolithic Linear IC

## AGC Amplifier with Step Gain Control

### Overview

The LA8128T is a video amplifier that includes an integrated A/D converter driver. It is optimal for use in reception side devices in systems that transfer QPSK, QAM, and other digital data.

### Functions

- Differential input amplifier
- Driver amplifier

### Applications

- Digital CATV, terrestrial broadcast TV
- Cable modem receivers
- IP Telephone receivers

### Specifications

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

Parameter	Symbol	Conditions	Rated value	Unit
Maximum supply rating	$V_{CC\ max}$	Pin 1	7.0	V
Circuit current	$I_6$	Pin 6 inflow current	2	mA
	$I_7$	Pin 7 inflow current	2	
Allowable power dissipation	$P_d\ max$	$T_a \leq 85^\circ\text{C}$	220*	mW
Operating temperature	$T_{opr}$		-20 to +85	$^\circ\text{C}$
Storage temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$

\*  $20.0 \times 10.0 \times 0.8$  mm Paper phenolic circuit board

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# LA8128T

## Recommended Operating Conditions at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Rated value	Unit
Recommended supply voltage	$V_{CC}$	Pin 1	5.0	V
Operating supply voltage range	$V_{CC\text{ op}}$	Pin 1	4.5 to 5.5	V

## Electrical Characteristics

### AC Characteristics at $T_a = 25^\circ\text{C}$ , $V_{CC} = 5.0\text{ V}$

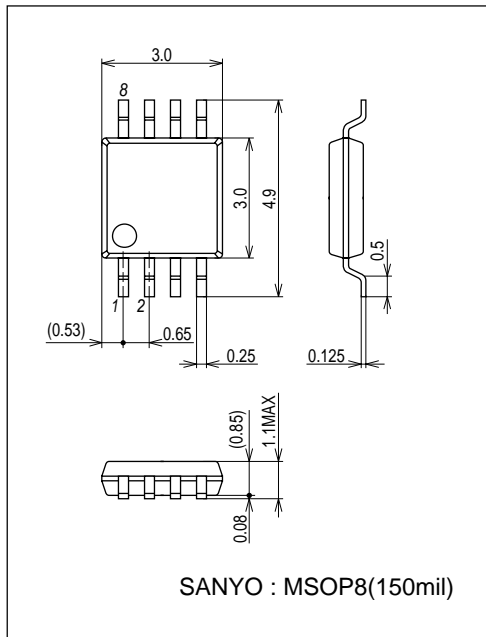
Parameter	Symbol	Conditions	Rated value			Unit	
			Min.	Typ.	Max.		
Circuit current	$I_{CC}$	No signal	*1	18	23	28	mA
Input frequency range	$f(\text{in})$	$f_c : -3\text{ dB}$	*1	30	-	100	MHz
Noise figure	NF	$f = 45\text{ MHz}$	*2	-	7	-	dB
Voltage gain	GV	$f = 45\text{ MHz}$ Between pins 7 and 2	*1	18.5	21	23.5	dB
Output 3rd order intercept point	OIP3	Single-ended output $f_1 = 44\text{ MHz}$ , $f_2 = 45\text{ MHz}$ Output = $104\text{ dB}\mu\text{V}/\text{tone}$	*1	123	126	-	$\text{dB}\mu\text{V}$
Output 1 dB compression point	OP1dB	Single-ended output $f = 45\text{ MHz}$	*1	113	116	-	$\text{dB}\mu\text{V}$
Input impedance	$Z_{in}$	$f = 45\text{ MHz}$	*3	-	1.2 // 4.1	-	$\text{k}\Omega // \text{pF}$

\*1 : Test circuit 1, \*2: Test circuit 2, \*3: Test circuit 3

## Package Dimensions

unit: mm (typ)

3245B

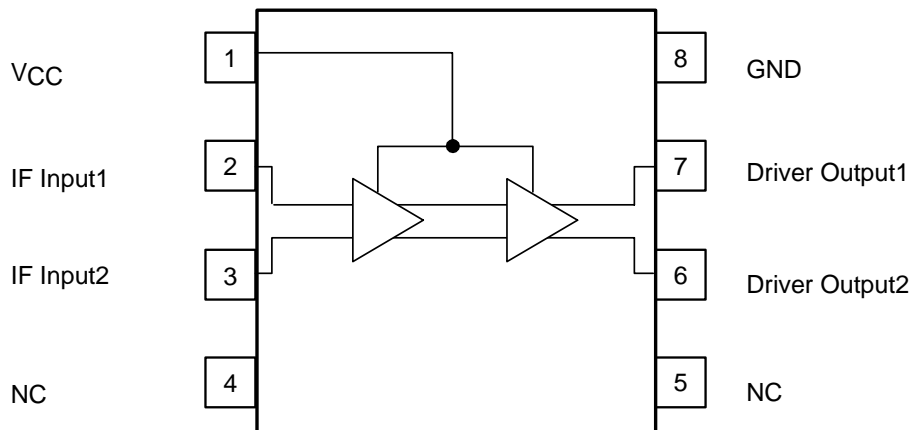


# LA8128T

## Pin Functions

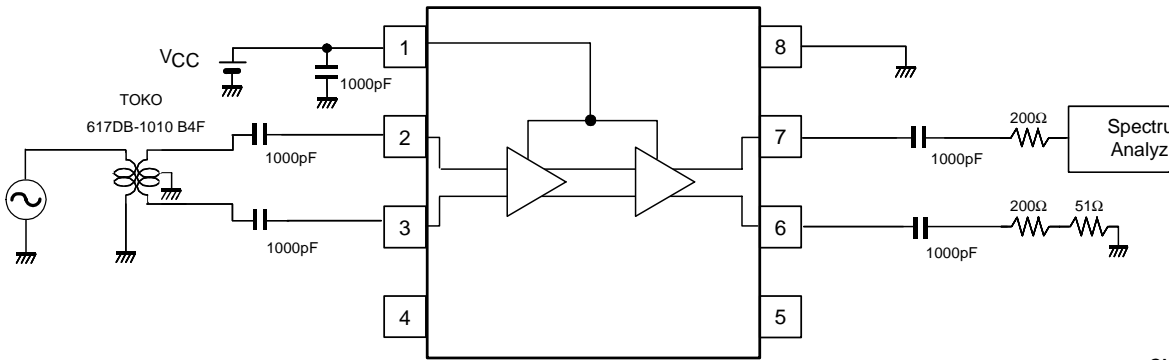
Pin Number	Function	Equivalent circuit (Resistor units: $\Omega$ )
1	VCC	
2 3	IF Inputs	
4 5	NC	
6 7	Driver outputs	
8	Ground	

## Block Diagram



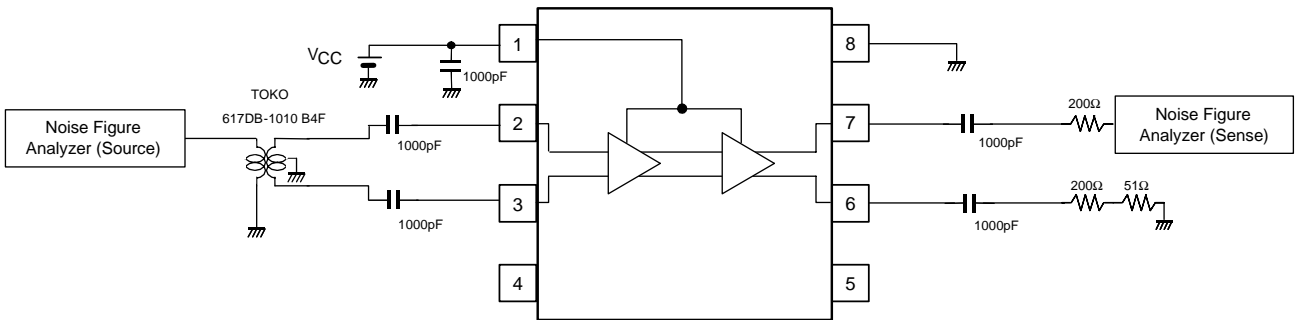
# LA8128T

## LA8128T Test Circuit 1



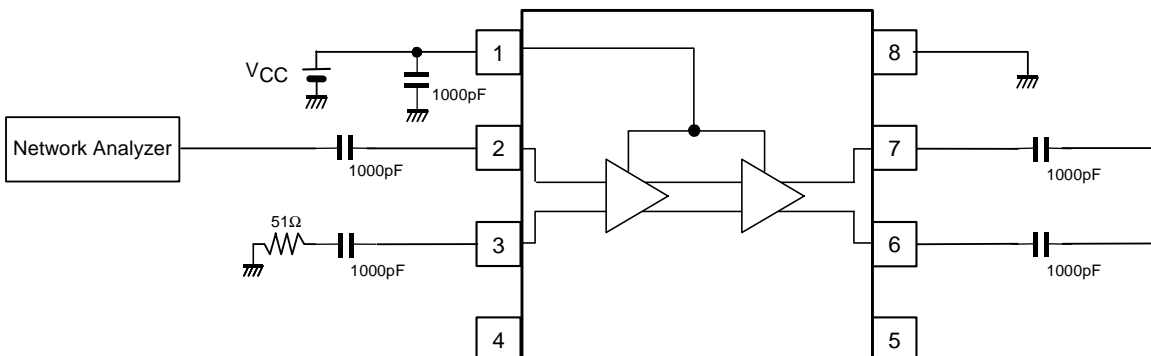
Note that the value of the output voltage read by the spectrum analyzer is voltage divided from the actual output by  $50\Omega / (200 + 50)\Omega$ .

## LA8128T Test Circuit 2

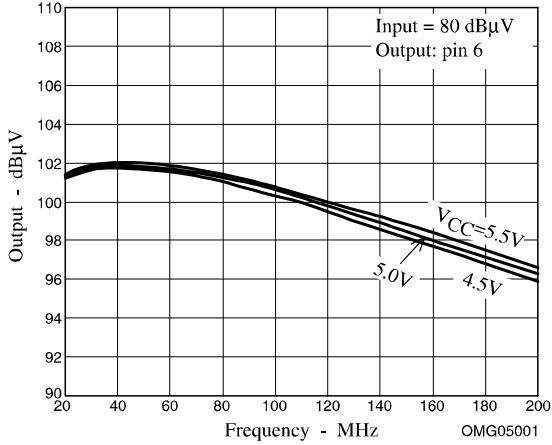


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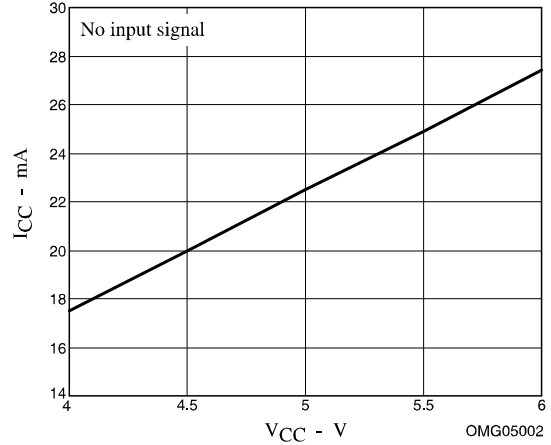
## LA8128T Test Circuit 3



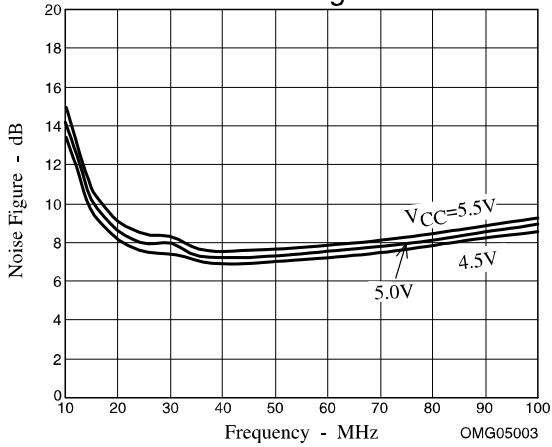
Frequency Characteristics



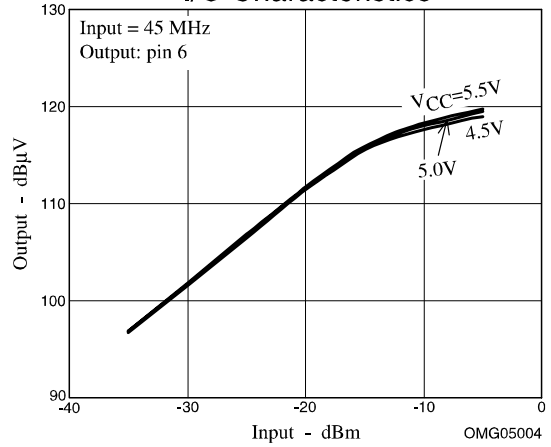
Current Drain



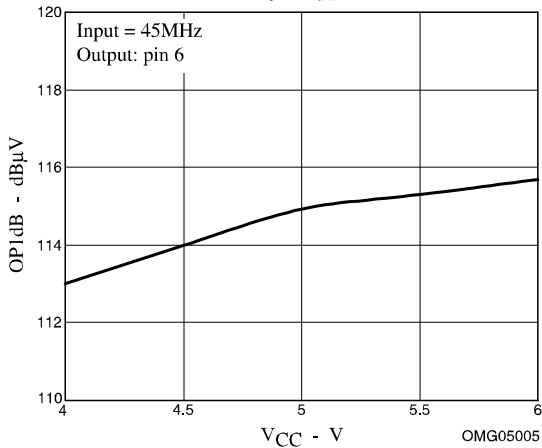
Noise Figure



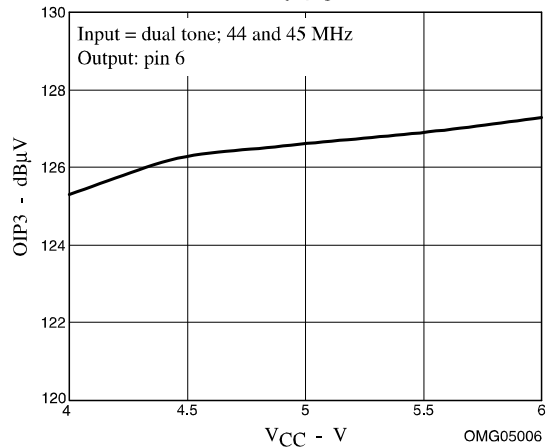
I/O Characteristics



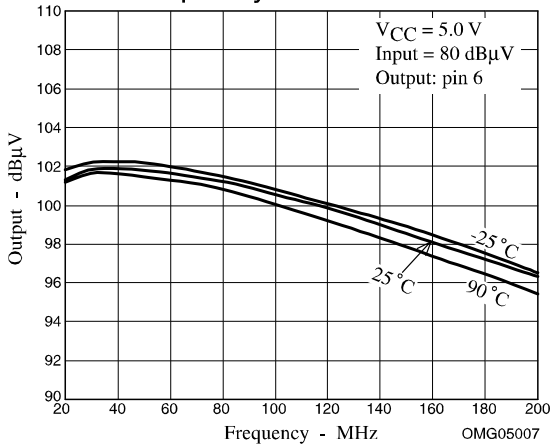
OP1dB



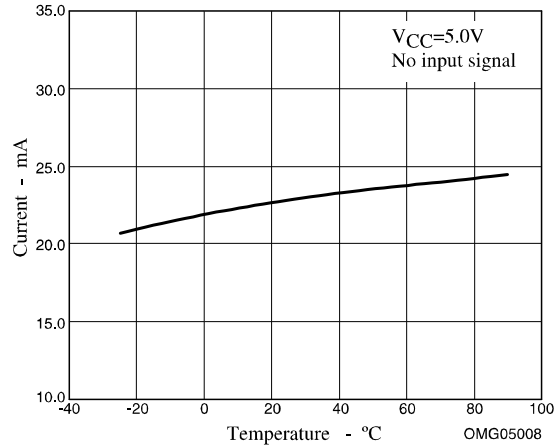
OIP3

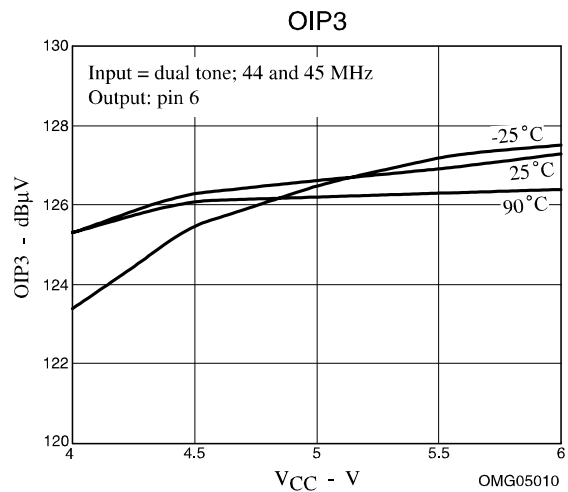
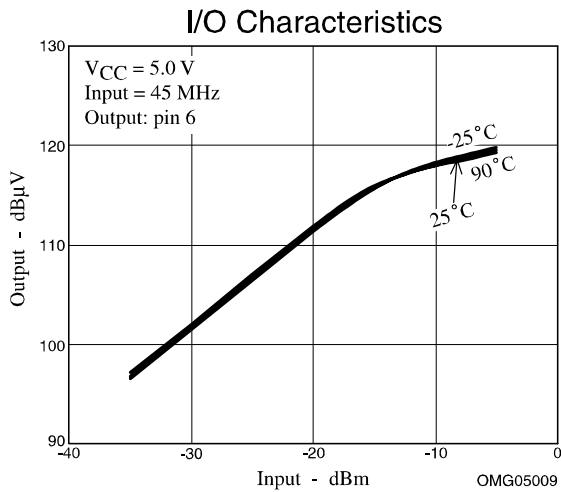


Frequency Characteristics



Current Drain





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