Ordering number : ENA0903

SANYO Semiconductors
DATA SHEET

Monolithic Linear IC

LA74309TT — Microphone Amplifier for Digital Still Camera

Overview

LA74309TT is a microphone amplifier for digital still cameras that have mono audio recording. The analog signal processing for the recording of the digital still camera or other equipment can be easily composed, because the MIC power supply and the ALC circuit are built-in. Moreover, the regulator is built-in, therefore external regulator IC is unnecessary.

Features

- Microphone (MIC) amplifier (+20dB)
- MIC power supply with built-in pull-up resistor
- Automatic level control (ALC) amplifier (output level=-1dBV≈2.5Vpp)
- 3rd order LPF (fc=11kHz)
- 3.3V regulator (internal supply voltage: $V_{CC}A$≈3.0V)
- Standby control (I_{CC}≤10μA)

Specifications

Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum power supply voltage	V_{CC} max		4.0	V
Allowable power dissipation	Pd max	Ta≤85°C	50	mW
Operating temperature	Topr		-20 to +85	°C
Storage temperature	Tstg		-55 to +150	°C

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Operating Conditions at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Recommended power supply voltage	V_{CC}		3.3	V
Operating voltage range of V_{CC}	$V_{CC}op$		3.1 to 3.6	V

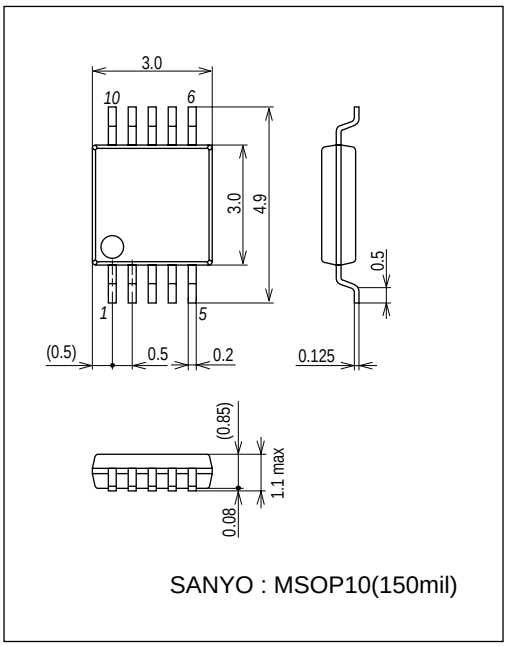
Electrical Characteristics at Ta=25°C, V_{CC}=3.3V, f=1kHz

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Current Dissipation						
V_{CC} no signal current dissipation	I_{CC}	V_{CC}=3.3V, Active mode (Pin3=3V)	3.9	5.3	6.7	mA
V_{CC} standby current dissipation	$I_{CC}S$	V_{CC}=3.3V, Standby mode (Pin3=0V)			10	μA
REC output system						
Standard REC output level	VOR	V_{IN}=-49dBV at ALC IN pin (=Standard level)	-10	-9	-8	dBV
Standard REC output distortion	HDR	ALC IN, V_{IN}=-49dBV, THD from 2nd to 5th harmonic		0.1	0.2	%
ALC characteristics	ALM	ALC IN, V_{IN}=-17dBV (=Standard level +32dB)	-3	-1		dBV
ALC THD	ALMD	ALC IN, V_{IN}=-17dBV (=Standard level +32dB), THD from 2nd to 5th harmonic		0.25	1	%
ALC IN maximum input level	VINRMX	REC output THD≤3%			-10	dBV
REC output noise level	VNOR	No signal at MIC IN pin, with JIS-A Filter		-53	-47	dBV
REC output frequency characteristics 1	FEQR1	ALC IN, V_{IN}=-17dBV, The output level ratio at f=11kHz/1kHz	-5	-3	-1	dB
REC output frequency characteristics 2	FEQR2	ALC IN, V_{IN}=-17dBV, The output level ratio at f=22kHz/1kHz		-18	-12	dB
REC output frequency characteristics 3	FEQR3	ALC IN, V_{IN}=-17dBV, The output level ratio at f=100kHz/1kHz		-55	-45	dB
MIC output system						
MIC voltage gain	VGMIC	V_{IN}=-39dBV at MIC IN pin	19	20	21	dB
MIC output THD	HDMIC	MIC IN, V_{IN}=-39dBV, THD from 2nd to 5th harmonic		0.03	0.1	%
MIC IN maximum input level	VINMMX	MIC output THD=3%			-30	dBV
MIC V_{CC} output DC voltage	VMIC	With 6.2kΩ load	1.5	1.7	1.9	V

Package Dimensions

unit : mm (typ)

3297

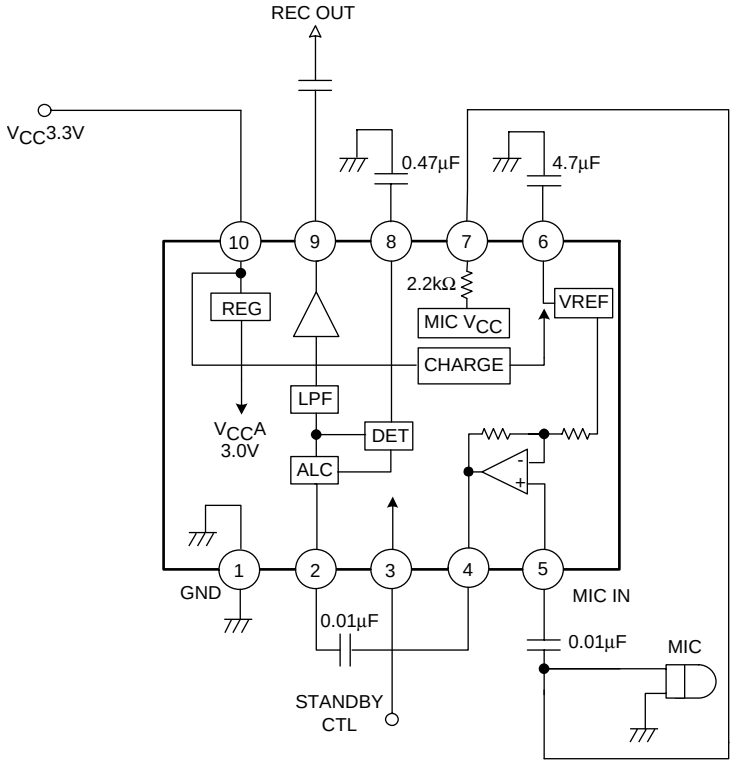


SANYO : MSOP10(150mil)

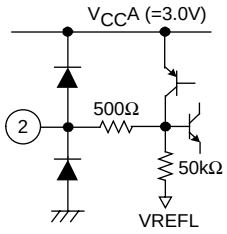
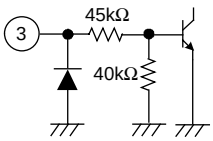
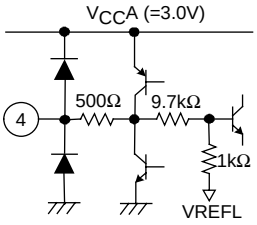
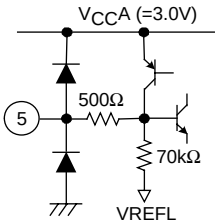
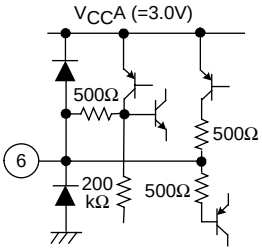
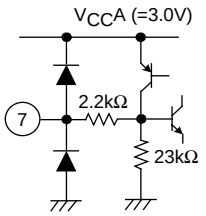
Pin Description

Pin No.	Pin Description
1	GND
2	ALC input
3	STANDBY CTL
4	MIC output
5	MIC input
6	Ripple removal for VREF
7	Internal MIC power supply
8	ALC DET
9	REC output
10	V_{CC}

Equivalent Circuit Block Diagram & Application Circuit



Pin Functions

PIN No.	Pin Name	DC voltage	AC voltage	Functions	Equivalent Circuit
1	GND	0V		Ground	
2	ALC IN	1.60V	Output level=-49dBV (At MIC IN=-69dBV) Maximum input level =-10dBV	ALC input	
3	STANDBY CTL			Standby control Over 2V: Standby OFF	
4	MIC OUT	1.60V	Output level=-49dBV (At MIC IN=-69dBV)	MIC output	
5	MIC IN	1.60V	Standard input level =-69dBV Maximum input level =-30dBV	MIC input	
6	VREF	2.30V		MIC V_{CC} and ripple rejection pin for VREFL	
7	INT MIC V_{CC}	2.30V		MIC power supply	

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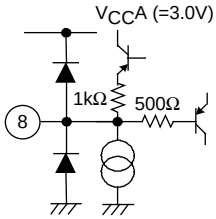
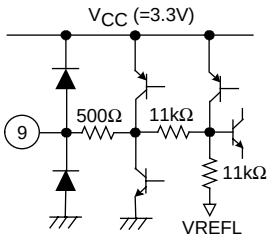
PIN No.	Pin Name	DC voltage	AC voltage	Functions	Equivalent Circuit
8	ALC DET			ALC detector	
9	REC OUT	1.60V	Output level=-9dBV (At MIC IN=-69dBV)	REC output	
10	V_{CC}	3.3V		Power supply	

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