Ordering number : ENA0257

SANYO Semiconductors
DATA SHEET

LA79107V — Monolithic Linear IC For TV and VCR 3-band Tuners Mixers/oscillators

Overview

This LA79107V is a mixers/oscillators for TV and VCR 3-band tuners.

Functions

- 3 Mixers
- 3 Oscillators
- IFout is balanced output
- Local OSC has balanced output

Specifications

Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V_{CC} max		7	V
Allowable power dissipation	Pd max	Ta ≤ 70°C	455	mW
Operating temperature	Topr		-20 to +70	°C
Storage temperature	Tstg		-55 to +150	°C

Recommended Operating Conditions at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Recommending supply voltage	V_{CC}		5	V
Operating supply voltage range	V_{CC} op		4.5 to 5.5	V

SANYO Semiconductor Co., Ltd.
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

Electrical Characteristics at Ta = 25°C, V_{CC} = 5V

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Current dissipation	$I_{CC}1$	VHF-L operation	51	59	67	mA
	$I_{CC}2$	VHF-H operation	54	62	70	mA
	$I_{CC}3$	UHF operation	54.5	62.5	70.5	mA
Voltage gain ∗1	CG1	f_{RF} = 50MHz, VHF-L	21.5	24	26.5	dB
	CG2	f_{RF} = 170MHz, VHF-L	22.5	25	27.5	dB
	CG3	f_{RF} = 170MHz, VHF-H	22.5	25.5	28.5	dB
	CG4	f_{RF} = 450MHz, VHF-H	19	22	25	dB
	CG5	f_{RF} = 450MHz, UHF	20	23	26	dB
	CG6	f_{RF} = 860MHz, UHF	15	18	21	dB
Noise figure ∗1, 2	NF1	f_{RF} = 50MHz, VHF-L		12	13	dB
	NF2	f_{RF} = 170MHz, VHF-L		12	13	dB
	NF3	f_{RF} = 170MHz, VHF-H		11	13	dB
	NF4	f_{RF} = 450MHz, VHF-H		11	13	dB
	NF5	f_{RF} = 450MHz, UHF		12.5	14.5	dB
	NF6	f_{RF} = 860MHz, UHF		12.5	14.5	dB
Output voltage causing 1% cross modulation in channel ∗1, 3	CM1	f_{RF} = 50MHz, VHF-L	83	86		dBμ
	CM2	f_{RF} = 170MHz, VHF-L	83	85		dBμ
	CM3	f_{RF} = 170MHz, VHF-H	90	93		dBμ
	CM4	f_{RF} = 450MHz, VHF-H	88	91		dBμ
	CM5	f_{RF} = 450MHz, UHF	86	89		dBμ
	CM6	f_{RF} = 860MHz, UHF	93	96		dBμ
Maximum output power	P_O max			8		dBm
Switch on oscillator frequency drift ∗4	Δfsw1	VHF-L f_{OSC} = 100MHz			±300	kHz
	Δfsw2	VHF-L f_{OSC} = 220MHz			±400	kHz
	Δfsw3	VHF-H f_{OSC} = 220MHz			±300	kHz
	Δfsw4	VHF-H f_{OSC} = 500MHz			±400	kHz
	Δfsw5	UHF f_{OSC} = 500MHz			±400	kHz
	Δfsw6	UHF f_{OSC} = 910MHz			±500	kHz
Supply voltage oscillator frequency drift ∗5	Δfst1	VHF-L f_{OSC} = 100MHz			±150	kHz
	Δfst2	VHF-L f_{OSC} = 220MHz			±250	kHz
	Δfst3	VHF-H f_{OSC} = 220MHz			±150	kHz
	Δfst4	VHF-H f_{OSC} = 500MHz			±250	kHz
	Δfst5	UHF f_{OSC} = 500MHz			±150	kHz
	Δfst6	UHF f_{OSC} = 910MHz			±250	kHz
Voltage on band switching	VBS1	VHF-L band select	0		0.9	V
	VBS2	VHF-H band select	1.3		2.35	V
	VBS3	UHF band select	2.75		5	V

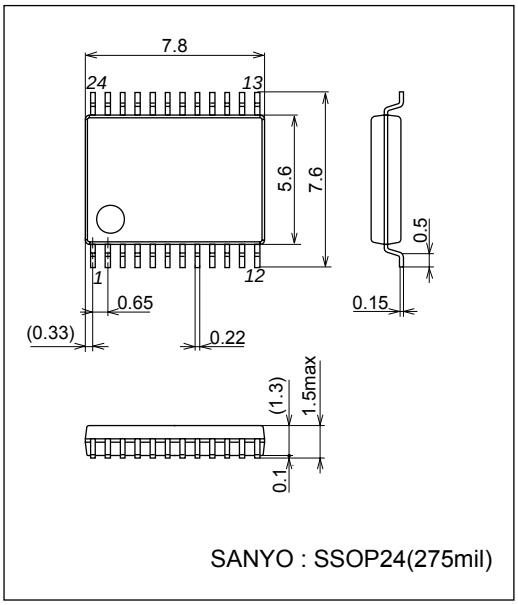
∗1 Measured value for untuned inputs.
∗2 Noise figure is the direct-reading value of NF meter in DSB.
∗3 Desired signal (f_D)input level is -30dBm. Undesired signal (f_{UD}) is 100kHz, 30%AM at ±12MHz.
∗4 Δf from 3s to 3min after switch on.
∗5 Δf when V_{CC} 5V change ±5%.

Note) This IC puts the priority on the high frequency characteristics, so that it should be handled with care to prevent electrostatic discharge damage.

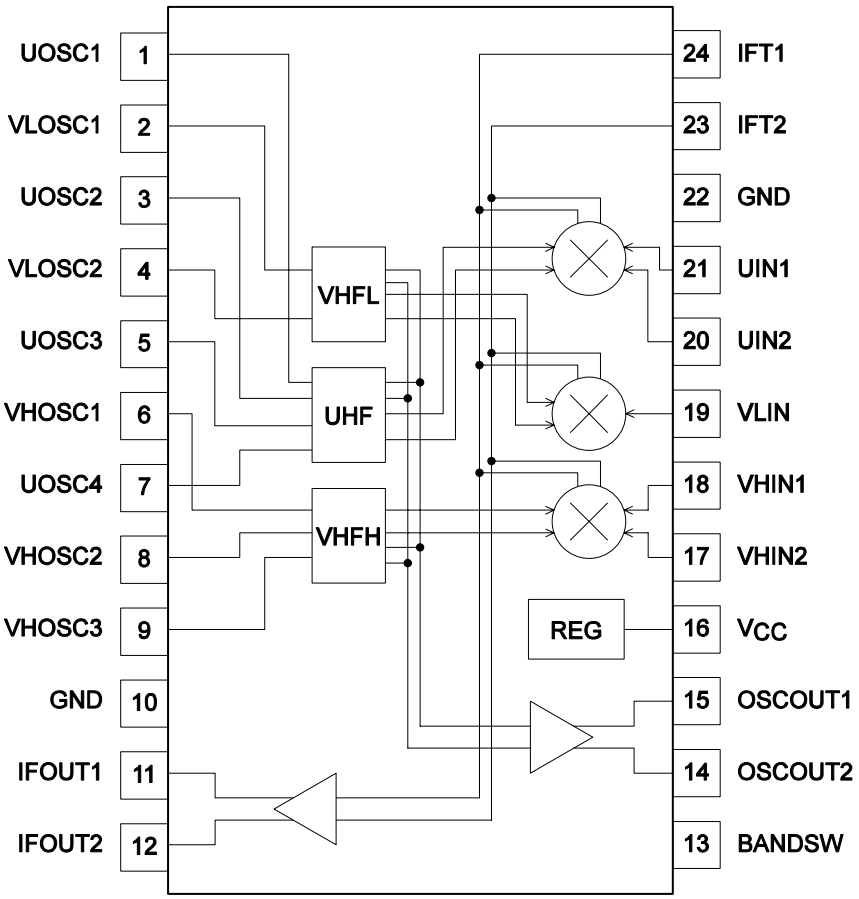
Package Dimensions

unit : mm

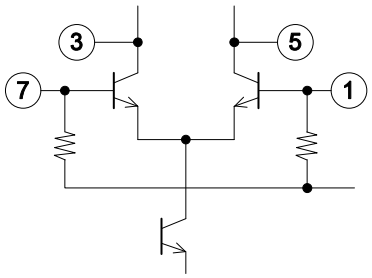
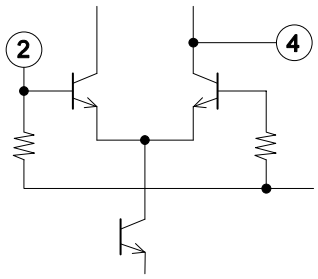
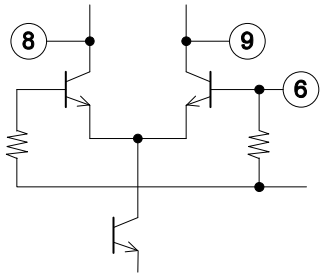
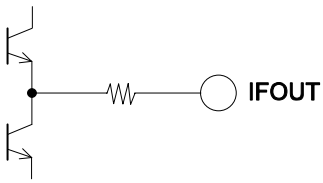
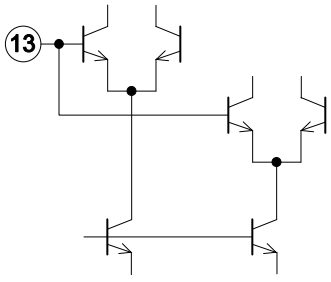
3175C



Block Diagram



Pin equivalent circuit

Pin No.	Pin name	VHF_L	VHF_H	UHF	Equivalent Circuit
1 3 5 7	UOSC_B2 UOSC_C2 UOSC_C1 UOSC_B1	. 	 	2.0 2.7 2.7 2.0	
2 4	VLOSC_B VLOSC_C	2.0 2.4	 	 	
6 8 9	VHOSC_B VHOSC_C2 VHOSC_C1	 	2.0 2.6 2.6	 	
10	OSGND				
11 12	IFOUT2 IFOUT1	2.0 2.0	2.0 2.0	2.0 2.0	
13	BAND_SW				

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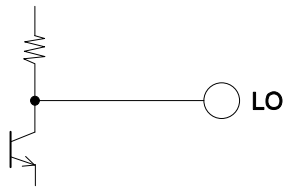
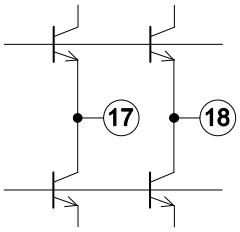
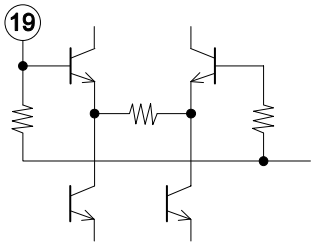
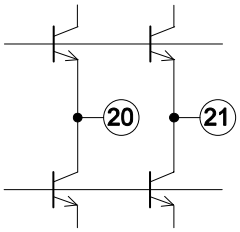
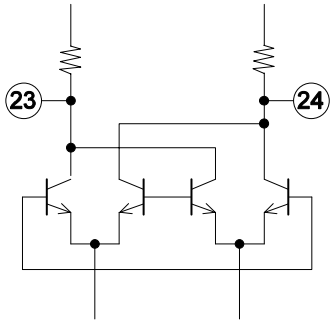
Pin No.	Pin name	VHF_L	VHF_H	UHF	Equivalent Circuit
14 15	LO2 LO1	3.6 3.6	3.6 3.6	3.6 3.6	
16	V_{CC}	5.0	5.0	5.0	
17 18	VHF_H_IN2 VHF_H_IN1		1.1 1.1		
19	VHF_L_IN	1.8			
20 21	UHF_IN2 UHF_IN1			1.1 1.1	
22	MIXGND				
23 24	MIXOUT2 MIXOUT1	4.3 4.3	3.4 3.4	3.4 3.4	

Measurement Circuit