



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

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Electrical Characteristics at $T_a = 25^\circ\text{C}$, $V_{CC} = 5\text{V}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Current dissipation	I_{CC1}	VHF-L operation	51	59	67	mA
	I_{CC2}	VHF-H operation	54	62	70	mA
	I_{CC3}	UHF operation	54.5	62.5	70.5	mA
Voltage gain *1	CG1	$f_{RF} = 50\text{MHz}$, VHF-L	21.5	24	26.5	dB
	CG2	$f_{RF} = 170\text{MHz}$, VHF-L	22.5	25	27.5	dB
	CG3	$f_{RF} = 170\text{MHz}$, VHF-H	22.5	25.5	28.5	dB
	CG4	$f_{RF} = 450\text{MHz}$, VHF-H	19	22	25	dB
	CG5	$f_{RF} = 450\text{MHz}$, UHF	20	23	26	dB
	CG6	$f_{RF} = 860\text{MHz}$, UHF	15	18	21	dB
Noise figure *1, 2	NF1	$f_{RF} = 50\text{MHz}$, VHF-L		12	13	dB
	NF2	$f_{RF} = 170\text{MHz}$, VHF-L		12	13	dB
	NF3	$f_{RF} = 170\text{MHz}$, VHF-H		11	13	dB
	NF4	$f_{RF} = 450\text{MHz}$, VHF-H		11	13	dB
	NF5	$f_{RF} = 450\text{MHz}$, UHF		12.5	14.5	dB
	NF6	$f_{RF} = 860\text{MHz}$, UHF		12.5	14.5	dB
Output voltage causing 1% cross modulation in channel *1, 3	CM1	$f_{RF} = 50\text{MHz}$, VHF-L	83	86		dB μ
	CM2	$f_{RF} = 170\text{MHz}$, VHF-L	83	85		dB μ
	CM3	$f_{RF} = 170\text{MHz}$, VHF-H	90	93		dB μ
	CM4	$f_{RF} = 450\text{MHz}$, VHF-H	88	91		dB μ
	CM5	$f_{RF} = 450\text{MHz}$, UHF	86	89		dB μ
	CM6	$f_{RF} = 860\text{MHz}$, UHF	93	96		dB μ
Maximum output power	$P_O \text{ max}$			8		dBm
Switch on oscillator frequency drift *4	Δf_{sw1}	VHF-L $f_{OSC} = 100\text{MHz}$			± 300	kHz
	Δf_{sw2}	VHF-L $f_{OSC} = 220\text{MHz}$			± 400	kHz
	Δf_{sw3}	VHF-H $f_{OSC} = 220\text{MHz}$			± 300	kHz
	Δf_{sw4}	VHF-H $f_{OSC} = 500\text{MHz}$			± 400	kHz
	Δf_{sw5}	UHF $f_{OSC} = 500\text{MHz}$			± 400	kHz
	Δf_{sw6}	UHF $f_{OSC} = 910\text{MHz}$			± 500	kHz
Supply voltage oscillator frequency drift *5	Δf_{st1}	VHF-L $f_{OSC} = 100\text{MHz}$			± 150	kHz
	Δf_{st2}	VHF-L $f_{OSC} = 220\text{MHz}$			± 250	kHz
	Δf_{st3}	VHF-H $f_{OSC} = 220\text{MHz}$			± 150	kHz
	Δf_{st4}	VHF-H $f_{OSC} = 500\text{MHz}$			± 250	kHz
	Δf_{st5}	UHF $f_{OSC} = 500\text{MHz}$			± 150	kHz
	Δf_{st6}	UHF $f_{OSC} = 910\text{MHz}$			± 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 $\pm 12\text{MHz}$.

*4 Δf from 3s to 3min after switch on.

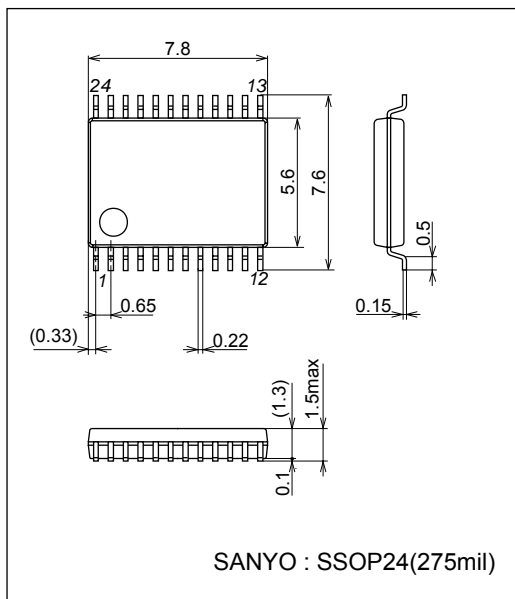
*5 Δf when V_{CC} 5V change $\pm 5\%$.

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

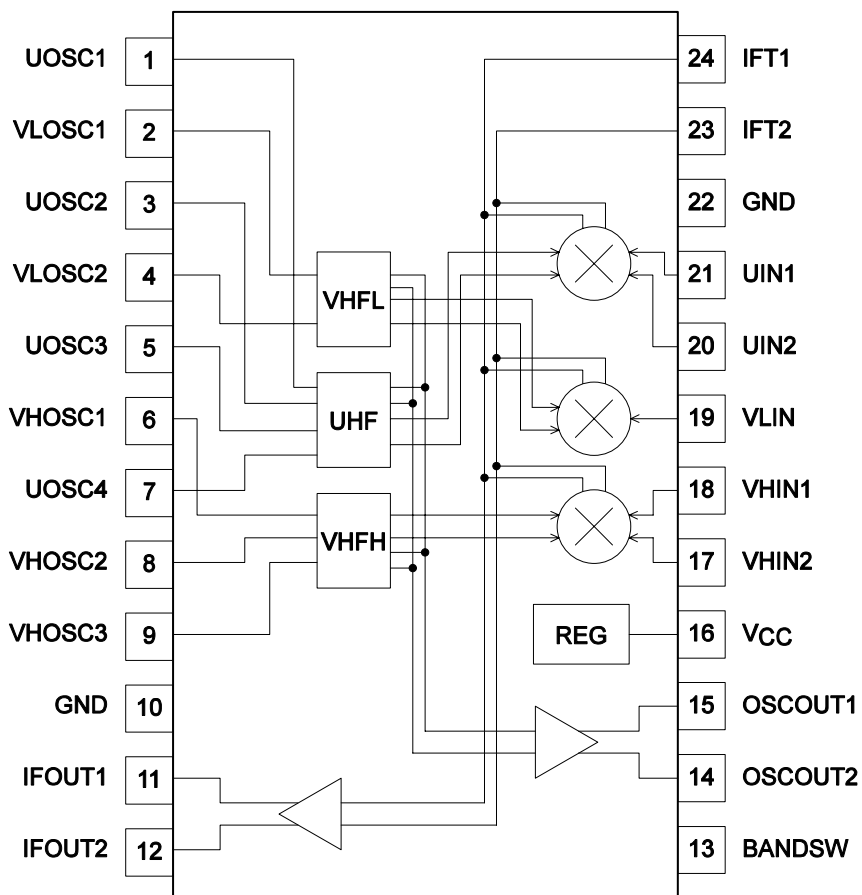
Package Dimensions

unit : mm

3175C



Block Diagram

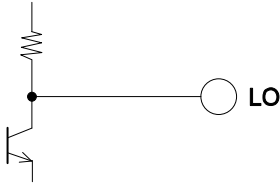
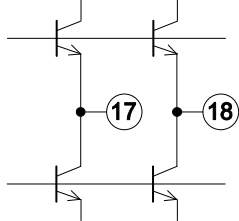
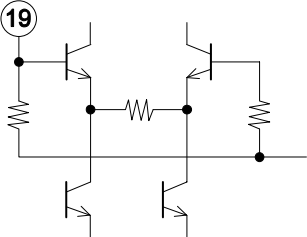
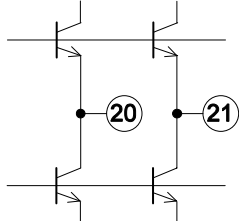
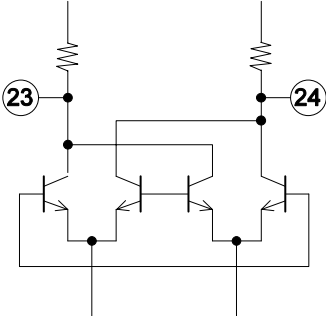


Pin equivalent circuit

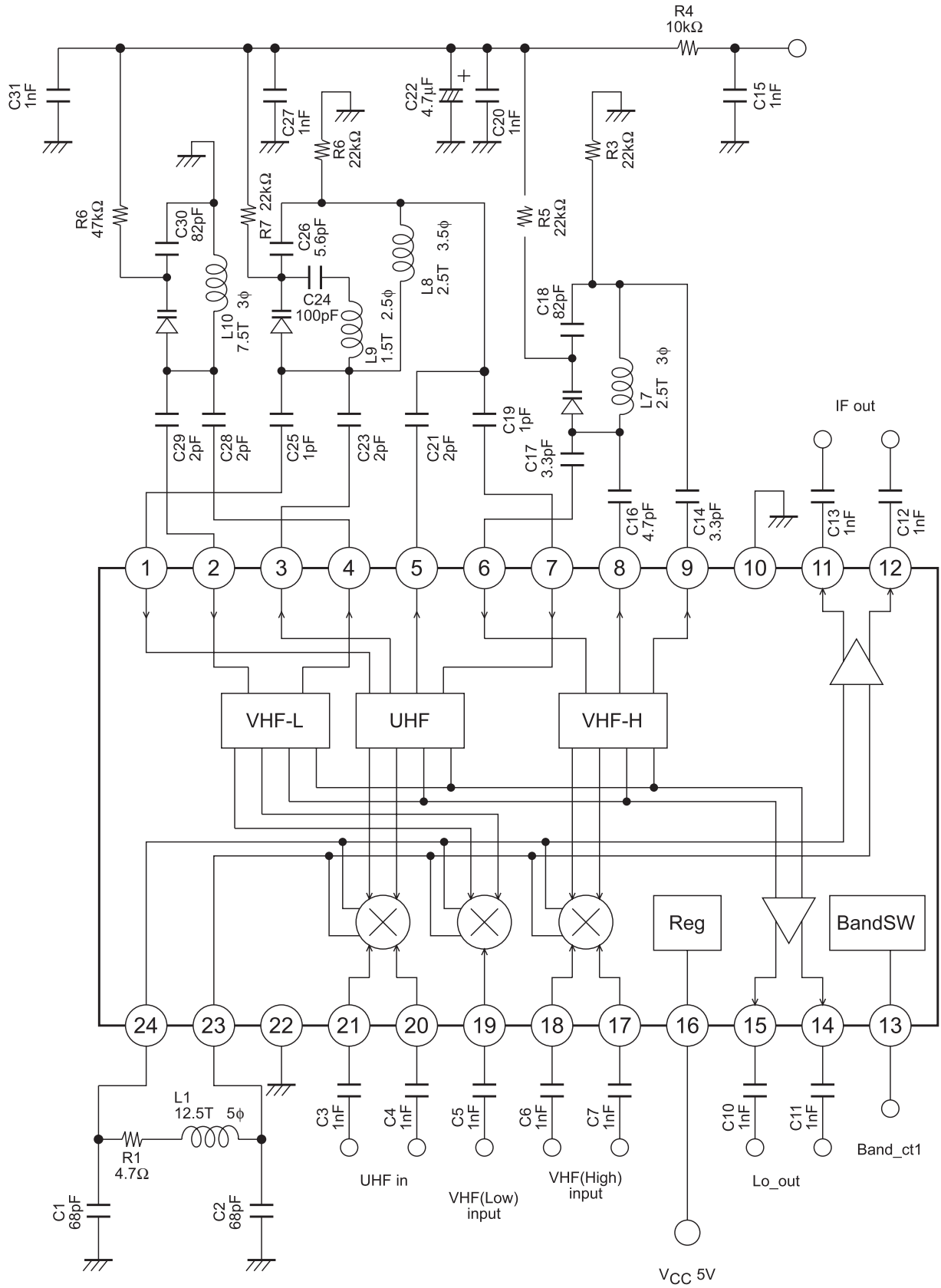
Pin No.	Pin name	VHF_L	VHF_H	UHF	Equivalent Circuit
1 3 5 7	UOSC_B2 UOSC_C2 UOSC_C1 UOSC_B1	.		2.0 2.7 2.7 2.0	
2 4	VLOSC_B VLOSC_C	2.0 2.4			
6 8 9	VHOSC_B VHOSC_C2 VHOSC_C1		2.0 2.6 2.6		
10	OSGND				
11 12	IFOUT2 IFOUT1	2.0 2.0	2.0 2.0	2.0 2.0	
13	BAND_SW				

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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



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