

# SANYO Semiconductors DATA SHEET



# 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 $Ta = 25^{\circ}C$

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V <sub>CC</sub> 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 $Ta = 25^{\circ}C$

Parameter	Symbol	Conditions	Ratings	Unit
Recommending supply voltage	V <sub>CC</sub>		5	V
Operating supply voltage range	V <sub>CC</sub> op		4.5 to 5.5	V

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## **Electrical Characteristics** at $Ta = 25^{\circ}C$ , $V_{CC} = 5V$

	<b>a</b>		Ratings				
Parameter	Symbol	Conditions	min	typ	max	Unit	
Current dissipation	I <sub>CC</sub> 1	VHF-L operation	51	59	67	mA	
	I <sub>CC</sub> 2	VHF-H operation	54	62	70	mA	
	ICC3	UHF operation	54.5	62.5	70.5	mA	
Voltage gain *1	CG1	f <sub>RF</sub> = 50MHz, VHF-L	21.5	24	26.5	dB	
	CG2	f <sub>RF</sub> = 170MHz, VHF-L	22.5	25	27.5	dB	
	CG3	f <sub>RF</sub> = 170MHz, VHF-H	22.5	25.5	28.5	dB	
	CG4	f <sub>RF</sub> = 450MHz, VHF-H	19	22	25	dB	
	CG5	f <sub>RF</sub> = 450MHz, UHF	20	23	26	dB	
	CG6	f <sub>RF</sub> = 860MHz, UHF	15	18	21	dB	
Noise figure *1, 2	NF1	f <sub>RF</sub> = 50MHz, VHF-L		12	13	dB	
	NF2	f <sub>RF</sub> = 170MHz, VHF-L		12	13	dB	
	NF3	f <sub>RF</sub> = 170MHz, VHF-H		11	13	dB	
	NF4	f <sub>RF</sub> = 450MHz, VHF-H		11	13	dB	
	NF5	f <sub>RF</sub> = 450MHz, UHF		12.5	14.5	dB	
	NF6	f <sub>RF</sub> = 860MHz, UHF		12.5	14.5	dB	
Output voltage causing 1%	CM1	f <sub>RF</sub> = 50MHz, VHF-L	83	86		dBμ	
cross modulation in channel *1, 3	CM2	f <sub>RF</sub> = 170MHz, VHF-L	83	85		dBμ	
	CM3	f <sub>RF</sub> = 170MHz, VHF-H	90	93		dBμ	
	CM4	f <sub>RF</sub> = 450MHz, VHF-H	88	91		dBμ	
	CM5	f <sub>RF</sub> = 450MHz, UHF	86	89		dBμ	
	CM6	f <sub>RF</sub> = 860MHz, UHF	93	96		dBμ	
Maximum output power	P <sub>O</sub> max			8		dBm	
Switch on oscillator	∆fsw1	VHF-L f <sub>OSC</sub> = 100MHz			±300	kHz	
frequency drift *4	∆fsw2	VHF-L f <sub>OSC</sub> = 220MHz			±400	kHz	
	∆fsw3	VHF-H f <sub>OSC</sub> = 220MHz			±300	kHz	
	∆fsw4	VHF-H f <sub>OSC</sub> = 500MHz			±400	kHz	
	∆fsw5	UHF f <sub>OSC</sub> = 500MHz			±400	kHz	
	∆fsw6	UHF f <sub>OSC</sub> = 910MHz			±500	kHz	
Supply voltage oscillator	∆fst1	VHF-L f <sub>OSC</sub> = 100MHz			±150	kHz	
frequency drift *5	∆fst2	VHF-L f <sub>OSC</sub> = 220MHz			±250	kHz	
	∆fst3	VHF-H f <sub>OSC</sub> = 220MHz			±150	kHz	
	∆fst4	VHF-H f <sub>OSC</sub> = 500MHz			±250	kHz	
	∆fst5	UHF f <sub>OSC</sub> = 500MHz			±150	kHz	
	∆fst6	UHF f <sub>OSC</sub> = 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	

\*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  $\pm$ 12MHz.

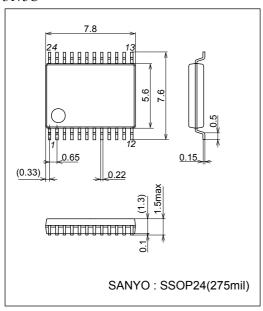
\*4  ${\it \Delta} f$  from 3s to 3min after switch on.

\*5  $\Delta$ f when V<sub>CC</sub> 5V change ±5%.

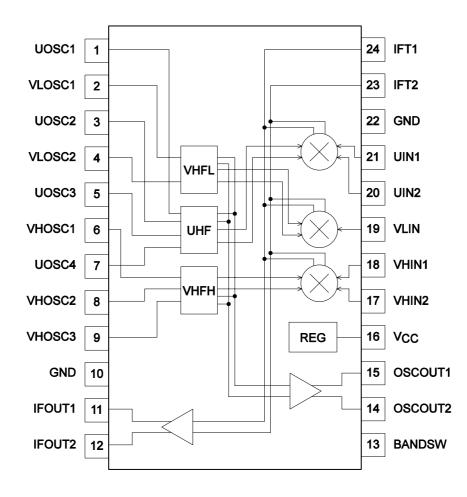
Note) This IC puts the priority on the high frequency characteristics, so that it should be handled with care to prevent electrostatic discharge damage.

# **Package Dimensions**

unit : mm 3175C



# **Block Diagram**



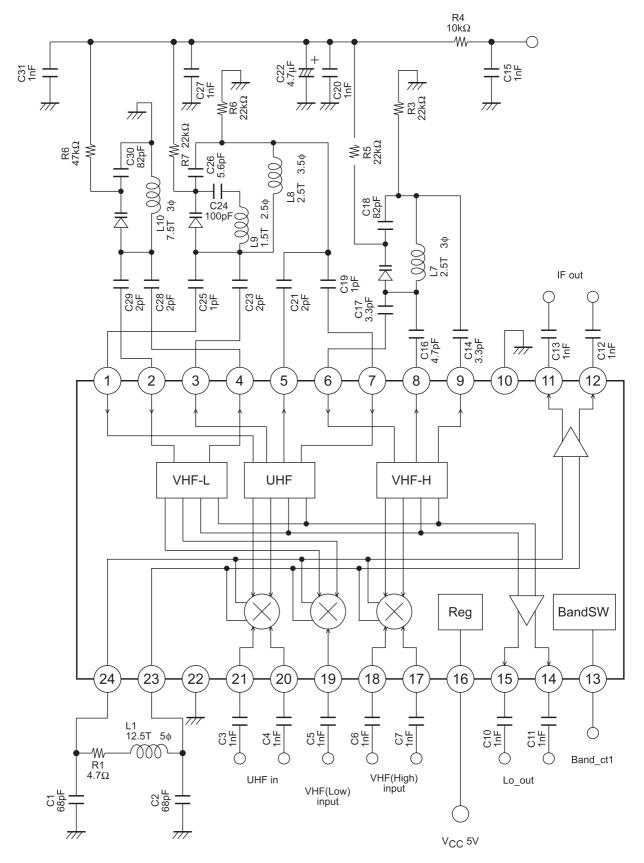
#### Pin equivalent circuit

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Pin No.	Pin name	VHF_L	VHF_H	UHF	Equivalent Circuit
1	UOSC_B2			2.0	
3	UOSC_C2			2.7	
5	UOSC_C1			2.7	3 → 5
7	UOSC_B1			2.0	
-					
					1 I
2		2.0			
2	VLOSC_B	2.0			
4	VLOSC_C	2.4			
					(2)
					I
	144000 D				
6	VHOSC_B		2.0		
8	VHOSC_C2		2.6		
9	VHOSC_C1		2.6		8 →
					▲
					I I
10	OSGND				
11	IFOUT2	2.0	2.0	2.0	
12	IFOUT1	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	LO LO
16	V <sub>CC</sub>	5.0	5.0	5.0	
17 18	VHF_H_IN2 VHF_H_IN1	5.0	1.1 1.1	5.0	
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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