

Monolithic Linear IC

LA7976

SANYO

**PAL SIF Converter Circuit
for TV and VCR Multi-system**

Overview

The LA7976 is an IC that converts PAL SIF signals (5.5 MHz, 6 MHz, and 6.5 MHz) to 6 MHz.

Functions

- Mixer, amplifier, oscillator, oscillator mute

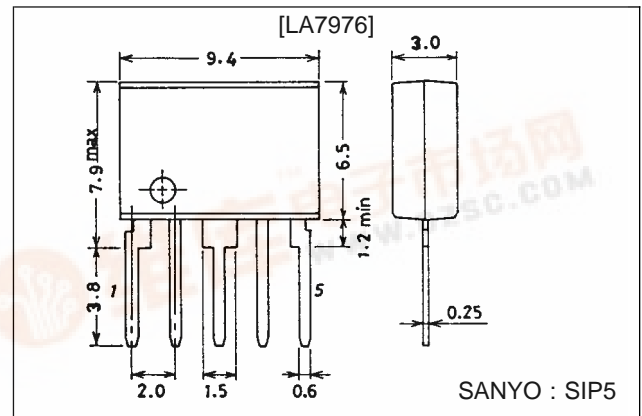
Features

- Small SIP-5 package
- Wide range of usage voltage (5 V to 12 V)

Package Dimensions

unit : mm

3042C-SIP5



Specifications

Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V _{CC} max		13.2	V
Maximum feed current	I ₅ max		3	mA
	I ₄ max		1	mA
Allowable power dissipation	Pd max	Ta ≤ 85°C	200	mW
Operating temperature	T _{opr}		-20 to +85	°C
Storage temperature	T _{stg}		-40 to +150	°C

Operating Conditions at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage	V _{CC}		9	V
Operating voltage range	V _{CC} op		4.5 to 12	V

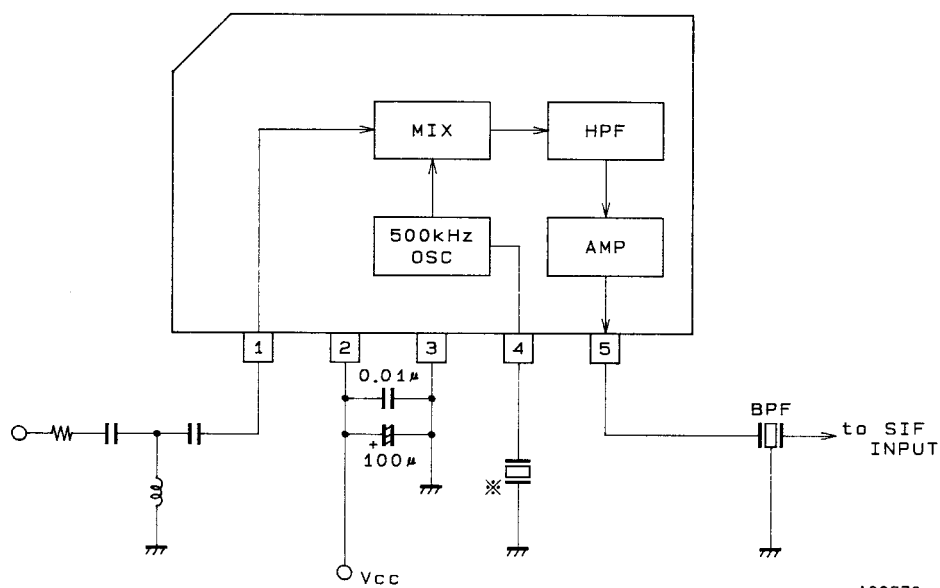


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Operating Characteristics at $T_a = 25^\circ\text{C}$, $V_{CC} = 9\text{ V}$

Parameter	Symbol	Conditions	Test point	min	typ	max	Unit	
Current drain	I_{CC}		Pin 2	5	6.5	9	mA	
Conversion gain	5.5 MHz	G5.5	80 dB/ μV input	Pin 5	10	13.5	17	dB
	6.5 MHz	G6.5	80 dB/ μV input	Pin 5	10	13.5	17	dB
	6.0 MHz	G6.0	80 dB/ μV input, Pin 4 grounded with 10 k Ω	Pin 5	10	13.5	17	dB
Oscillation level	V_{OSC}		Pin 4	15	48	80	mVp-p	
Maximum output level	V_O max	5.5 MHz 100 dB/ μV input	Pin 5	104	108	112	dB/ μV	
Input impedance	R_i	5.5 MHz input			4.8		k Ω	
Pin voltages	V_1		Pin 1	2.6	3	3.4	V	
	V_4		Pin 4	7.3	7.7	8.1	V	
	V_5		Pin 5	7.2	7.6	8	V	
500 kHz level difference relative to 6 MHz	OSC leak		Pin 5	30	40		dB	
Maximum input level	V_{IN} max			85			dB/ μV	

Sample Application Circuit



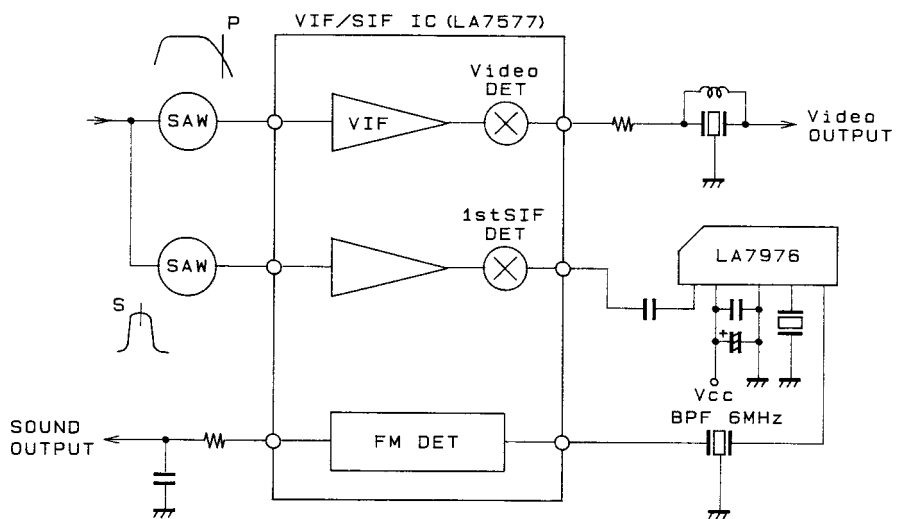
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※ Oscillator
 500 kHz CSB503E5 Murata Industries, Ltd.
 500 kHz EFOA512K04A Matsushita Electric, Ltd.

Unit (resistance: Ω , capacitance: F)

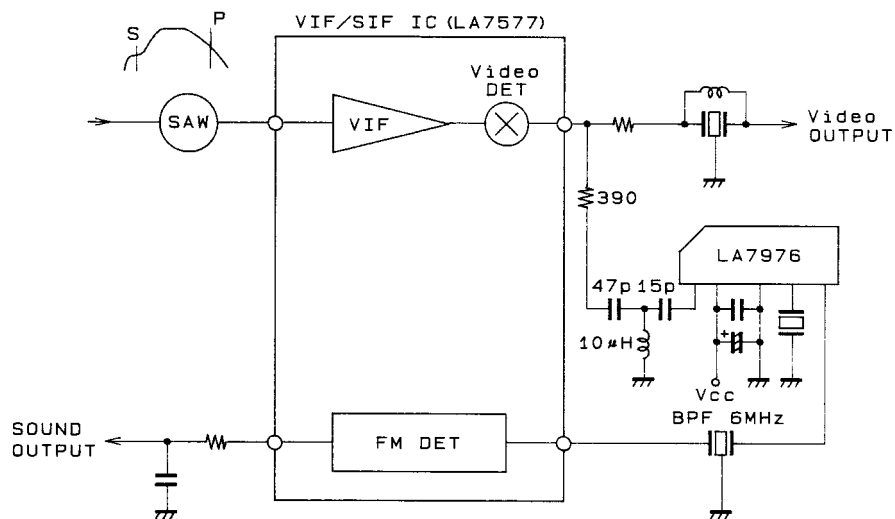
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Reference Example 1



A00671

Reference Example 2



Unit (resistance: Ω , capacitance: F)

A00672

LA7976

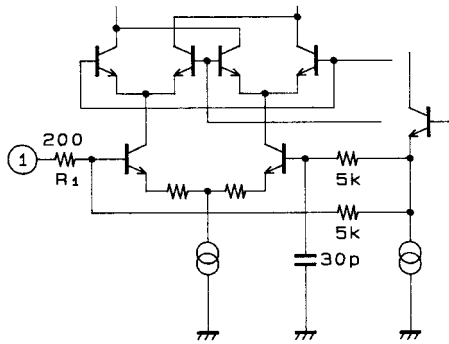
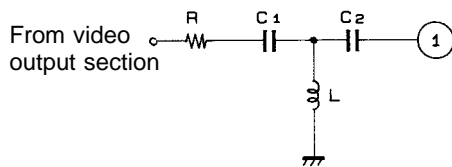


Figure 1 A00673

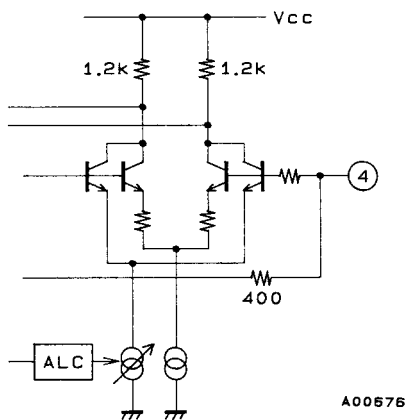
Unit (resistance: Ω , capacitance: F)

- Pin 1 is the SIF input pin. The filter in Figure 2 can be connected to the input section to improve the buzz characteristic. If C1 is too small, the buzz characteristic improves for normal input, but the filter cuts into the sound carrier and the buzz characteristic deteriorates for the P/S (picture/sound carrier) ratio.



Use $C1 \approx 20 \text{ pF}$ to 47 pF .

Figure 2 A00674



- Pin 4 is the ceramic oscillator pin. To make the oscillation waveform approach a sine wave, the oscillation level is controlled internally. Oscillation levels of 15 to 80 mVp-p at Pin 4 give the waveform shown in Figure 4.

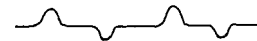


Figure 4
(Pin 4 oscillation waveform)

Figure 3 Unit (resistance: Ω)

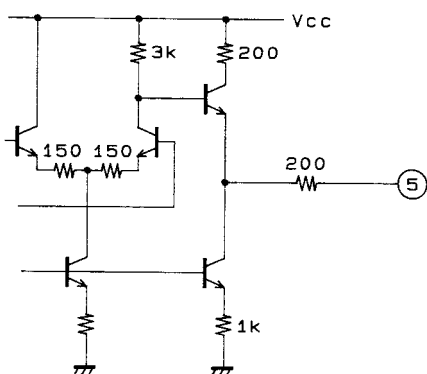


Figure 5 A00679
Unit (resistance: Ω)

- Pin 5 is the output pin. The output from Pin 5 is input to the SIF via a 6 MHz bandpass filter (BPF). When 5.5 MHz is input to Pin 1, the spectrum shown in Figure 6 is obtained at Pin 5.

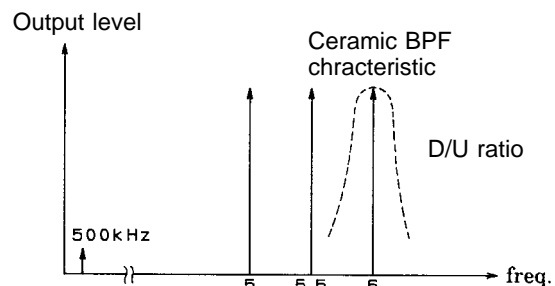


Figure 6 (5.5 MHz input)

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