Ordering number: EN 5559

Monolithic Linear IC

LA7976

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

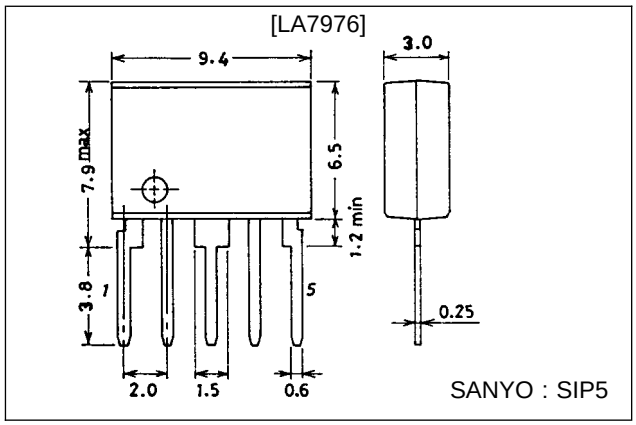
Features

- 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	Topr		–20 to +85	°C
Storage temperature	Tstg		–40 to +150	°C

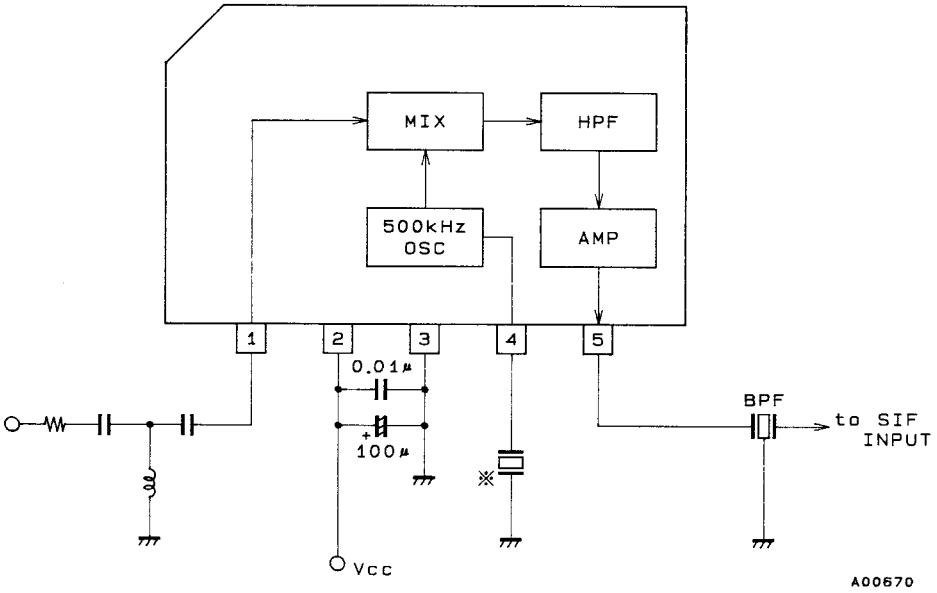
Operating Conditions at Ta = 25°C

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

Operating Characteristics at Ta = 25°C, V_{CC} = 9 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 kΩ	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		Ri	5.5 MHz input			4.8		kΩ
Pin voltages		V1		Pin 1	2.6	3	3.4	V
		V4		Pin 4	7.3	7.7	8.1	V
		V5		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

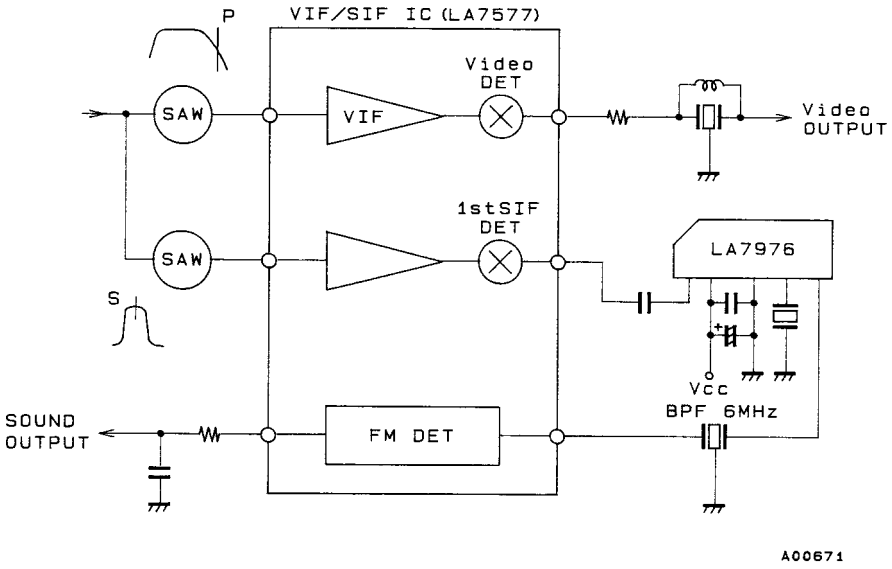
Sample Application Circuit



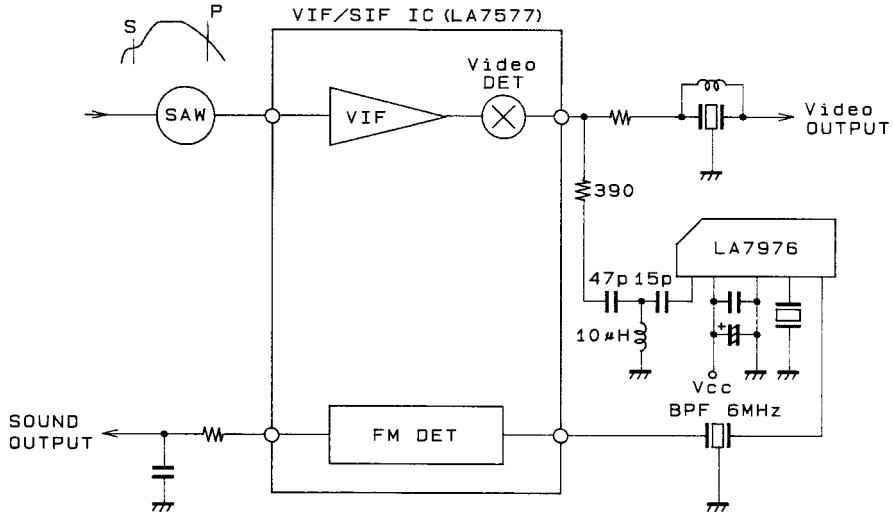
Unit (resistance: Ω, capacitance: F)

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

Reference Example 1



Reference Example 2



Unit (resistance: Ω, capacitance: F)

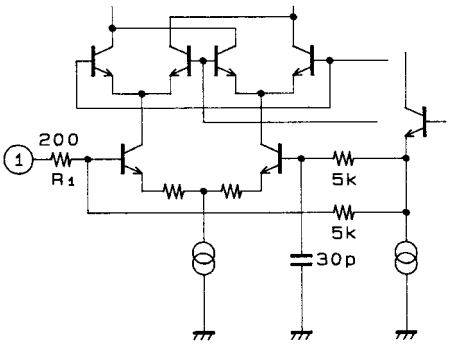


Figure 1

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.

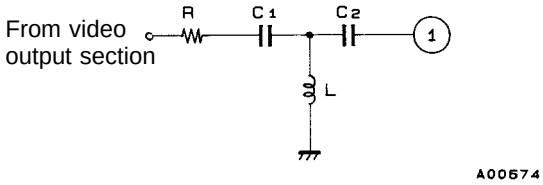


Figure 2

Use C1 ≒ 20 pF to 47 pF.

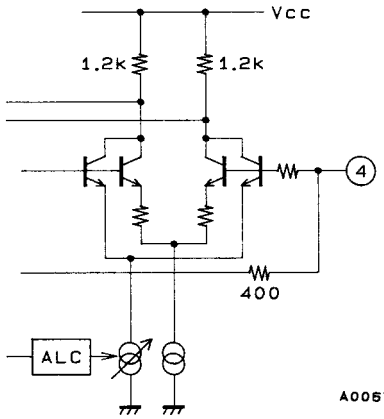


Figure 3 Unit (resistance: Ω)

- 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.

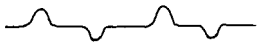


Figure 4
(Pin 4 oscillation waveform)

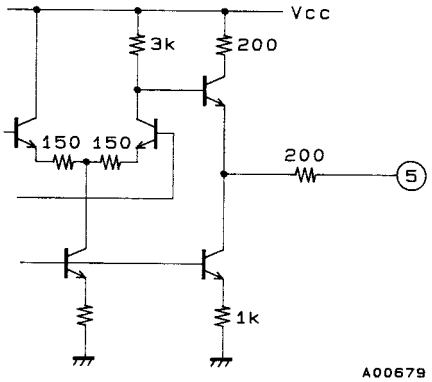


Figure 5 Unit (resistance: Ω)

- 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.

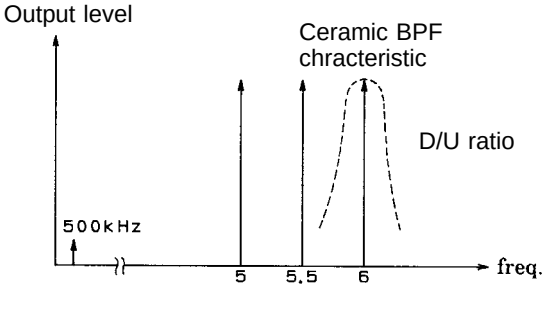


Figure 6 (5.5 MHz input)

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