

**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

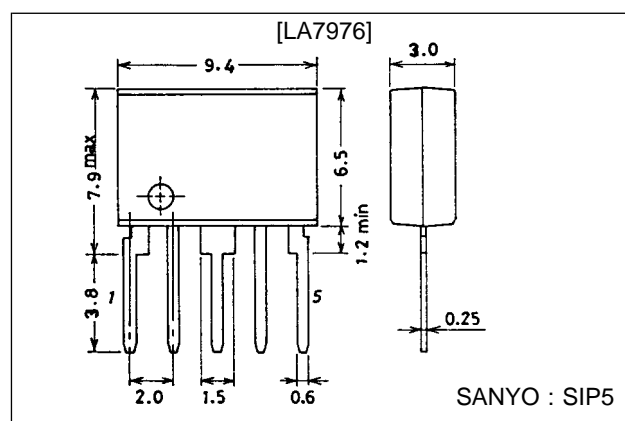
- Mixer, amplifier, oscillator, oscillator mute

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	$V_{CC \text{ max}}$		13.2	V
Maximum feed current	$I_5 \text{ max}$		3	mA
	$I_4 \text{ max}$		1	mA
Allowable power dissipation	$P_d \text{ max}$	$T_a \leq 85^\circ\text{C}$	200	mW
Operating temperature	T_{opr}		-20 to +85	°C
Storage temperature	T_{stg}		-40 to +150	°C

Operating Conditions at Ta = 25°C

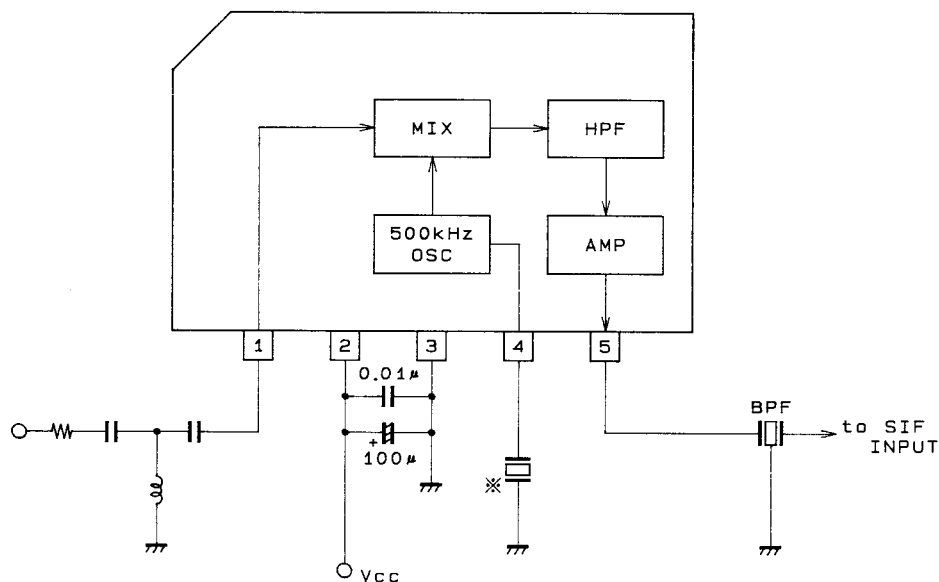
Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage	V_{CC}		9	V
Operating voltage range	$V_{CC \text{ op}}$		4.5 to 12	V

LA7976

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	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



A00670

※ Oscillator

500 kHz CSB503E5

Murata Industries, Ltd.

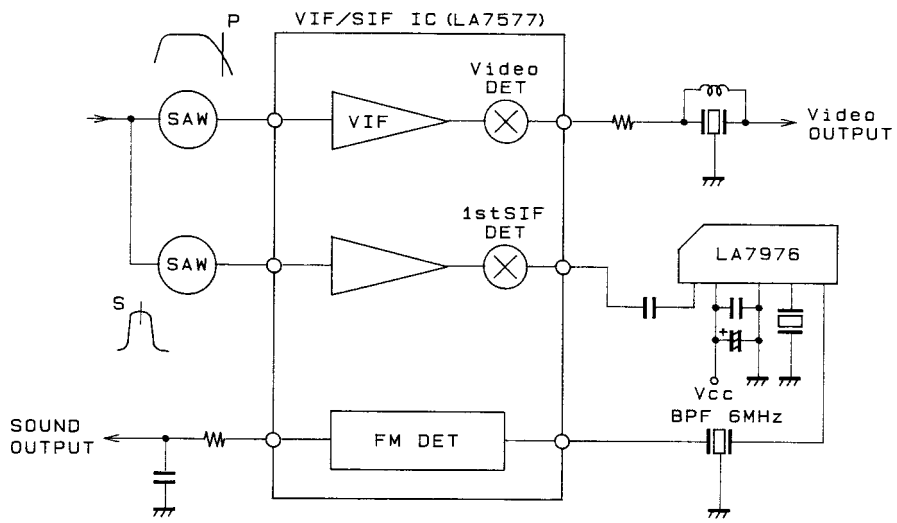
500 kHz EFOA512K04A

Matsushita Electric, Ltd.

Unit (resistance: Ω , capacitance: F)

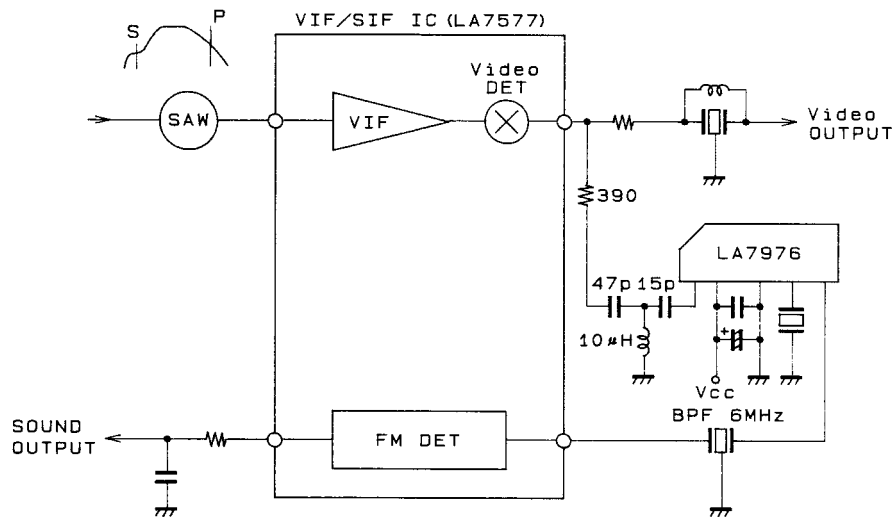
LA7976

Reference Example 1



A00671

Reference Example 2



Unit (resistance: Ω , capacitance: F)

A00672

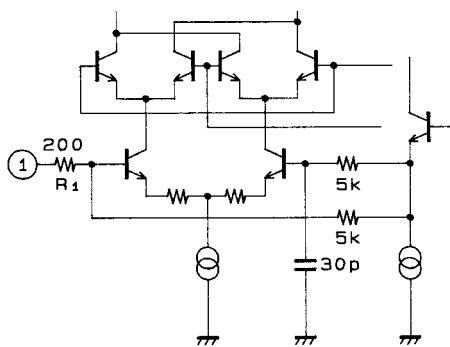
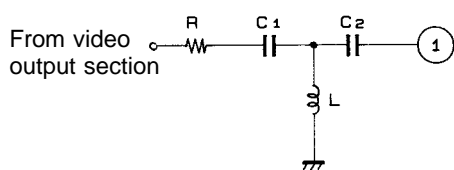


Figure 1 A00673

Unit (resistance: Ω, capacitance: F)

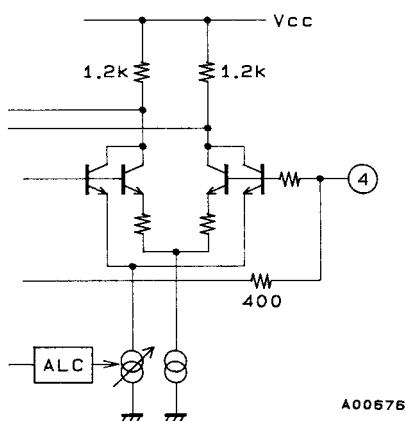
- Pin 1 is the SIF input pin.
The filter in Figure 2 can be connected to the input section to improve the buzz characteristic.
If C1 is too small, the buzz characteristic improves for normal input, but the filter cuts into the sound carrier and the buzz characteristic deteriorates for the P/S (picture/sound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



A00674

Figure 2

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



A00676

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.

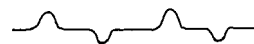
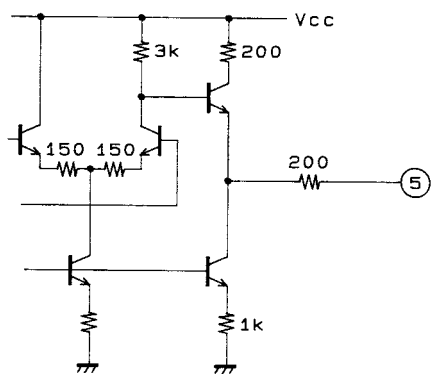


Figure 4 (Pin 4 oscillation waveform)



A00679

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.

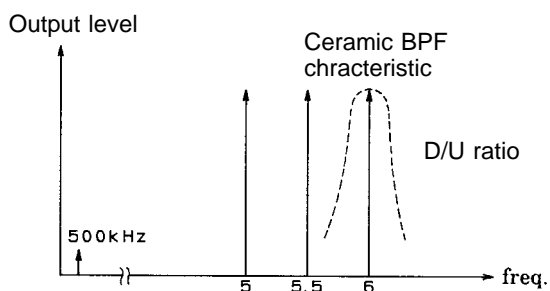


Figure 6 (5.5 MHz input)

A00680

- No products described or contained herein are intended for use in surgical implants, life-support systems, aerospace equipment, nuclear power control systems, vehicles, disaster/crime-prevention equipment and the like, the failure of which may directly or indirectly cause injury, death or property loss.
- Anyone purchasing any products described or contained herein for an above-mentioned use shall:
 - ① Accept full responsibility and indemnify and defend SANYO ELECTRIC CO., LTD., its affiliates, subsidiaries and distributors and all their officers and employees, jointly and severally, against any and all claims and litigation and all damages, cost and expenses associated with such use:
 - ② Not impose any responsibility for any fault or negligence which may be cited in any such claim or litigation on SANYO ELECTRIC CO., LTD., its affiliates, subsidiaries and distributors or any of their officers and employees jointly or severally.
- Information (including circuit diagrams and circuit parameters) herein is for example only; it is not guaranteed for volume production. SANYO believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.

This catalog provides information as of August, 1996. Specifications and information herein are subject to change without notice.