Ordering number : EN5559A

Discontinued

SANYO Semiconductors
DATA SHEET

# LA7976 — Monolithic Linear IC For TV and VCR Multi-system PAL SIF Converter IC

## Overview

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

## Functions

- Mixer, amplifier, oscillator, oscillator mute

## 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 tp +85 | °C |
| Storage temperature | Tstg | | -40 to +150 | °C |

### Operating Conditions at Ta = 25°C

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

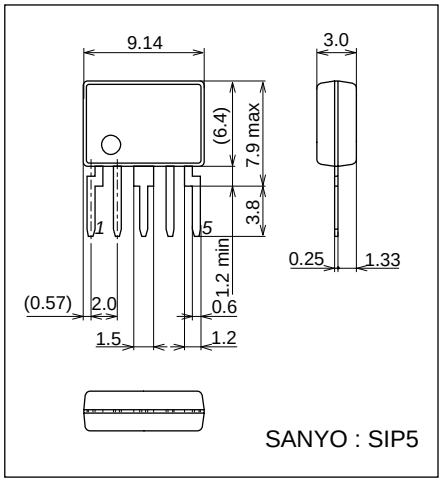
## Electrical Characteristics at Ta = 25°C, $V_{CC}$ = 9V

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|---|---|---|---|---|---|
| | | | min | typ | max | |
| Current drain | $I_{CC}$ | | 5 | 6.5 | 9 | mA |
| Conversion gain | G5.0 | 5.0MHz, 80dBμV input | 10 | 13.5 | 17 | dB |
| | G5.5 | 5.5MHz, 80dBμV input | 10 | 13.5 | 17 | dB |
| | G6.0 | 6.0MHz, 80dBμV input | 10 | 13.5 | 17 | dB |
| Oscillation level | VOSC | | 15 | 48 | 80 | mVp-p |
| Maximum output level | $V_O$ max | 5.5MHz, 100 dBμV input | 104 | 108 | 112 | dB/μV |
| Input impedance | Ri | 5.5MHz input | | 4.8 | | Ω |
| Pin voltages | $V_1$ | Pin 1 | 2.6 | 3.0 | 3.4 | V |
| | $V_4$ | Pin 4 | 7.3 | 7.7 | 8.1 | V |
| | $V_5$ | Pin 5 | 7.2 | 7.6 | 8.0 | V |
| 500kHz level difference relative to 6MHz | OSC leak | | 30 | 40 | | dB |
| Maximum input level | $V_{IN}$ max | | | 85 | | dB/μV |

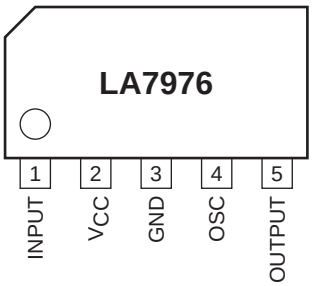
## Package Dimensions

unit : mm (typ)

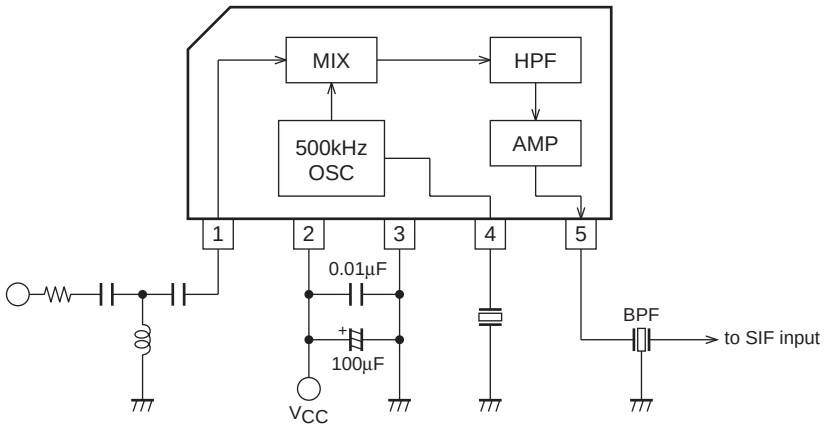
3042D



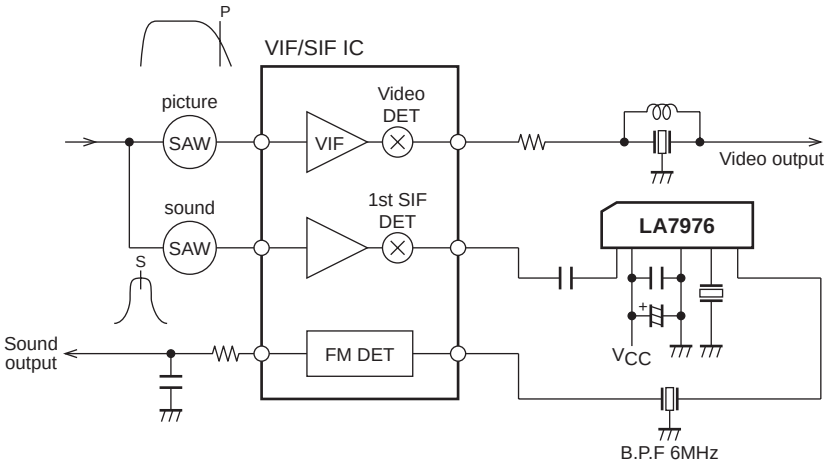

## Pin Assignment



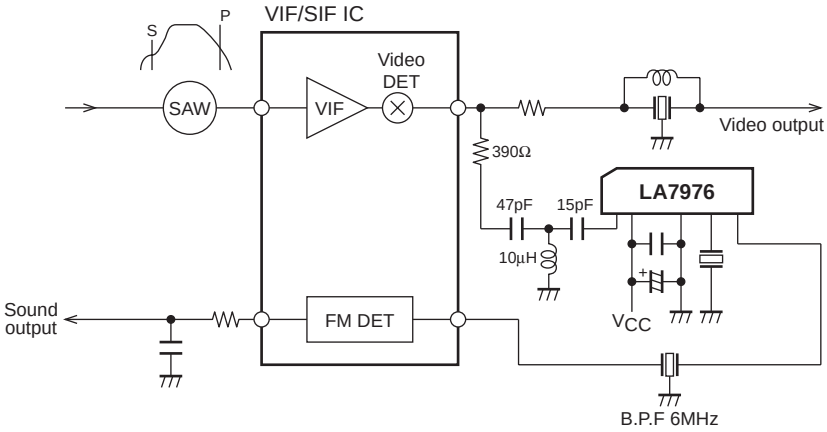

## Application Circuit Example



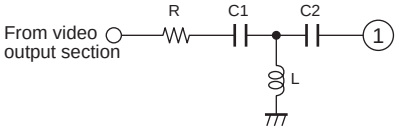
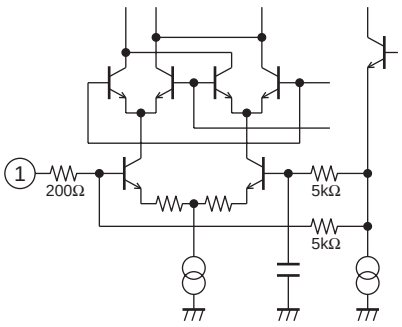
## Reference Example 1




## Reference Example 2




## Pin Description

| Pin No. | Pin name | Description | Equivalent circuit |
|---|---|---|---|
| 1 | INPUT | SIF input pin.<br>The filter in Fig.1 can be connected to the input section to improve the buzz characteristic.<br>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.<br>  <br><br>**Fig.1** |  <br> |
| 2 | $V_{CC}$ | Power supply pin. | |
| 3 | GND | Ground pin. | |

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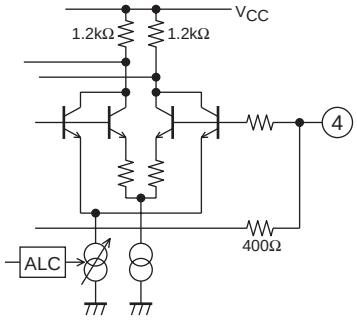
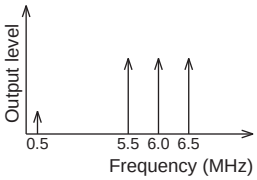
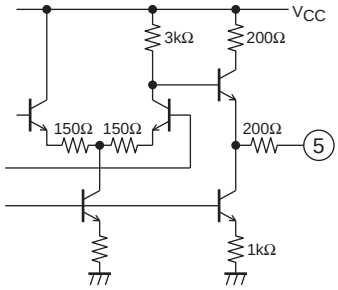
| Pin No. | Pin name | Description | Equivalent circuit |
|---|---|---|---|
| 4 | OSC | Ceramic oscillator pin.<br>To make the oscillation waveform approach a sine wave, the oscillation level is controlled internally.<br>Oscillation levels of 15 to 80mVp-p at Pin 4 give the waveform shown in Fig.2.<br>  <br>**Fig.2**<br>(Pin 4 oscillation waveform) |  |
| 5 | OUTPUT | Output pin.<br>The output from Pin 5 is input to the SIF via a 6MHz band-pass filter (BPF).<br>When 5.5MHz is input to Pin 1, the spectrum shown in Fig.3 is obtained at Pin 5.<br>  <br>**Fig.3** |  |