

<b>SANYO</b>	No. 2866A	<b>LA7510</b>
	<b>Quasi-Parallel Intercarrier Detector</b>	

**Overview**

The Sanyo LA7510 is a 4.5MHz to 6.5MHz intercarrier audio IF detector for high-quality multi-channel TV and VCR sound systems. It is designed for use in quasi-parallel circuit configurations to eliminate audio buzz and minimize other side-effects present in conventional detection circuits.

The LA7510 includes a 3-stage IF amplifier, IF AGC circuit and transistor intercarrier audio detection circuit. It operates from a single 8 to 10 power supply.

A compact 9-pin single-in-line package and coil-less circuit simplifies the design of low-cost detection circuitry.

**Features**

- Compact package
- Excellent audio S/N characteristics
- Coil-less circuit

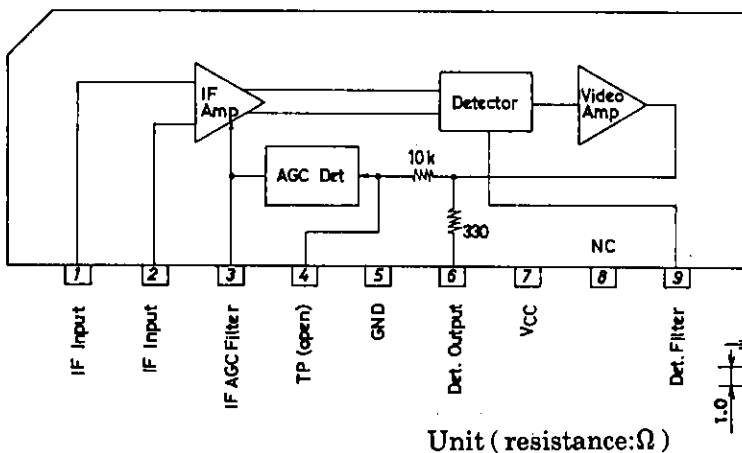
**Maximum Ratings at Ta = 25°C**

Maximum Supply Voltage	V <sub>CC</sub> max		12	V
	V <sub>3</sub> max	V <sub>CC</sub> = 12V	12	V
Allowable Power Dissipation	P <sub>d</sub> max	T <sub>a</sub> ≤ 65°C	540	mW
Operating Temperature	T <sub>op</sub>		-10 to +65	°C
Storage Temperature	T <sub>stg</sub>		-55 to +125	°C
Maximum Output Current	I <sub>6</sub> max		3	mA

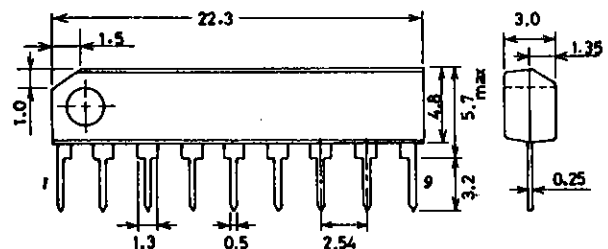
**Operating Conditions at Ta = 25°C**

Recommended Supply Voltage	V <sub>7</sub>		9	V
Operating Voltage Range	V <sub>7 op</sub>		8 to 10	V

**Equivalent Circuit Block Diagram**



**Package Dimensions (unit : mm)**  
3017C



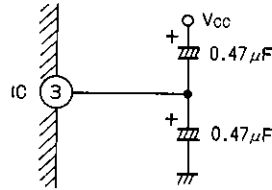
SANYO : SIP9

# LA7510

Operating Characteristics at $T_a = 25^\circ\text{C}$ , $V_{CC} = 9\text{V}$				min	typ	max	unit
Supply Current	$I_7$	$V_3$ (IF AGC) = 4V		17	22	32	mA
Input Sensitivity	$V_i$	IF input level for 0.35V <sub>p-p</sub> detector output with 40% modulation.		34	42	50	dB $\mu$
AGC Range	GR	(Maximum input for $V_o = 0.35$ V <sub>p-p</sub> ) - $V_i$		60	70		dB
Maximum Input Level	$V_i$ max	IF input level for detector output increase of 1dB		100	120		dB $\mu$
Detector Output Amplitude	$V_{06}$	4.5MHz output level, P/S = 13 dB		90	130	180	mVrms
Audio S/N	S/N	fp = 58.75MHz, 87.5% staircase modulation fs = 54.25MHz, (S: FM $\pm$ 25kHz, fm = 400Hz P/S = 13dB (N: Non-modulation		50	56		dB

## Pin Descriptions

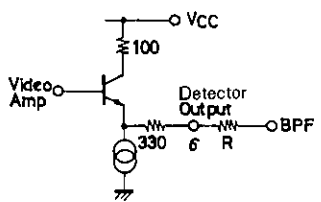
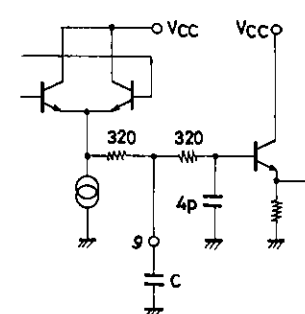
Unit ( resistance: $\Omega$ )		
Pin No.	Internal Circuit	Description
1,2		IF amplifier balanced inputs. Should be decoupled with a $\cong 0.01\mu\text{F}$ capacitor.
3		<p>IF AGC filter pin.</p> <p>The filter capacitor should be <math>1\mu\text{F}</math>. A capacitor with good tan <math>\delta</math> temperature characteristics should be used, such as an ALSi capacitor.</p> <p>If power supply ripple is high, ripple on the detector output can be reduced by using the following circuit.</p>



Continued on next page.

Continued from preceding page.

Unit (resistance:Ω)

Pin No.	Internal Circuit	Description
6		<p>Detector output. The output stage is an emitter-follower. The external resistance R is required to match impedances with the following 4.5MHz ceramic band-pass filter. Note that the LA7510 has an internal 330Ω resistor on the output pin.</p>
9		<p>Transistor detector filter pin. The filter capacitor should be selected for optimum audio signal-to-noise. Its value should be less than 85pF, since the 4.5MHz signal drops as the capacitance increases, increasing the picture/sound carrier level ratio and degrading audio S/N performance.</p>

**Functional Description**

**1. IF Amplifier**

As shown in figure 1, the IF amplifier is a 3-stage balanced circuit. The AGC detector output controls the gain of all three stages.

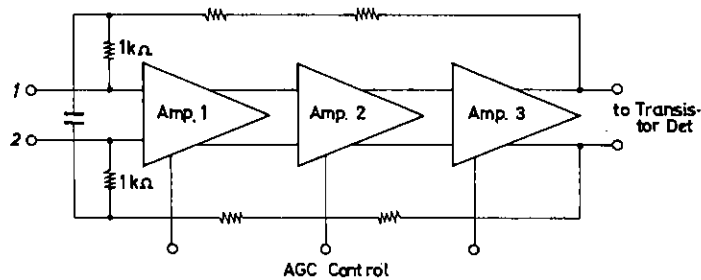


Figure 1

**2. AGC Detector**

The AGC detector, shown in figure 2, is a peak-detection type circuit. Pin 3 is the peak-detection filter capacitor connection.

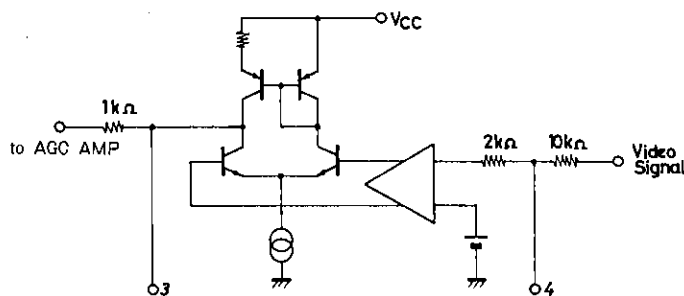


Figure 2

**3. Transistor Detector and Video Amp**

The detector circuit is shown in figure 3. The balanced IF signals from the IF amplifier are applied separately to the bases of the differential pair.

The detector output is taken from the emitters of the differential pair, smoothed by the filter on pin 9, and amplified by the video amplifier. The video signal ( $\approx 0.85/V_{p-p}$ ) and sound IF signal are output on pin 6 via a 330Ω resistor.

# LA7510

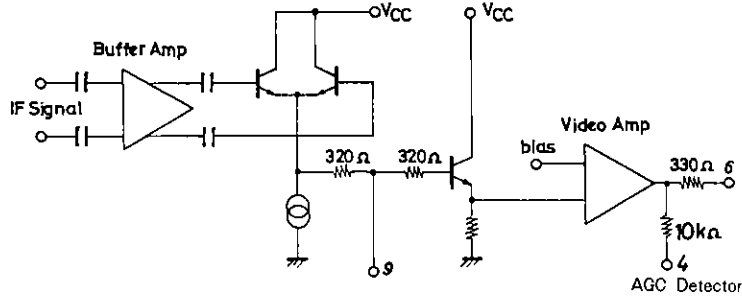
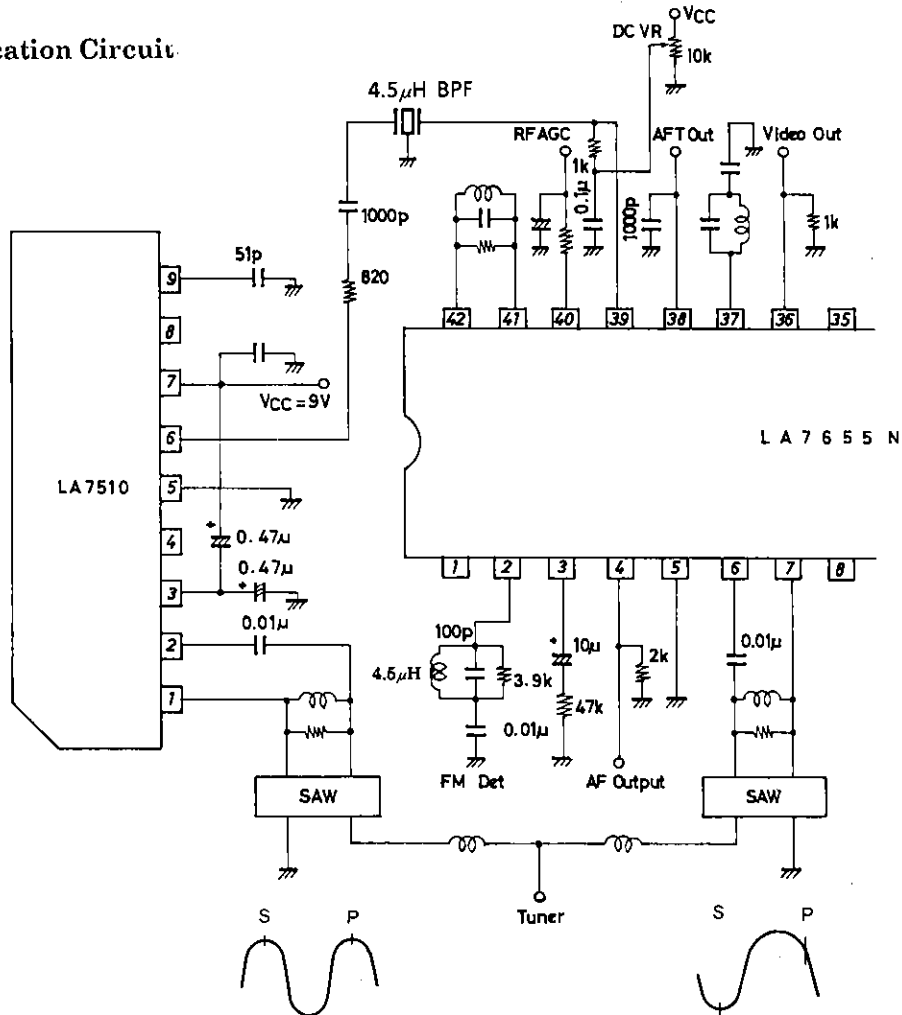


Figure 3

## Sample Application Circuit



Unit (resistance:Ω, capacitance:F)

- 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 **June, 1996**. Specifications and information herein are subject to change without notice.