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Vol. 62

Single-Chip Color TV IC Series Developed

IC product series provides support for both low cost and global products.

LA76810 Series

Overview

As generation after generation of color TV signal-processing IC is developed, and as rationalization progresses in the design of these ICs, the companies that produce these ICs find themselves in a battle not just for market share, but for their very survival. TV manufacturers, who are facing the rapid collapse of prices in consumer products, now strongly desire both support for global products and reduced total costs in the ICs for these products. To respond to these needs, Sanyo has developed the LA76810 Series of single-chip color TV signal-processing ICs.

To provide reduced design costs in application products, the LA76810 Series are designed to support end products with common printed circuit boards across the product line, and also to support global products by supporting a variety of TV standard combinations, including NTSC, PAL/NTSC, and multi-format. To reduce total costs, these ICs are based on the concept of reducing adjustments in external components by using an I²C bus, and furthermore aim at reducing the number of adjustments by adopting adjustment-free technology (e.g., the IF circuit is adjustment free), and by using circuit technologies (such as S-BPF/TRAP, DDS, and CCD) to reduce the number of components.

Additionally, these products support end product differentiation by the adoption of unique technologies, such as built-in SG circuits, demodulation ratio and demodulation angle adjustment functions, and an AKB function.

Features

Global Product Support (Pin to Pin Structure)

There are now three formats used for color TV broadcasts: PAL, NTSC, and SECAM. Since the signal processing required for these formats differs, it has been necessary to design printed circuit boards using different ICs for these different signal formats. However, since the LA76810 Series ICs are formed with a pin to pin structure as the pin arrangement, these products allow sharing of the printed circuit board circuit constants and layout, the items that make up the customer's design know-how.

- LA76810: Multi-format support (PAL, NTSC, and SECAM)
- LA76812: PAL and NTSC support

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- LA76814: NTSC support

Reductions in Total Costs

- Number of external component adjustments reduced by the use of an I²C bus and by reducing the number of on-board rheostats.
An I²C bus is used for controlling this IC, and this allows the number of adjustment points that require trimmers on the printed circuit board to be reduced.
- Number of adjustments reduced by the adoption of adjustment-free technology.
 - Adjustment-free IF (VCO and AFT circuits)
The VCO coil adjustment and the AFT coil adjustment are now handled by adjustment-free technology.
- Number of external components reduced by the adoption of circuit technologies.
 - S-TRAP, S-BPF
The sound trap and sound bandpass filter circuits, which were previously implemented using external components, are now provided on chip.
 - Horizontal oscillator element
The horizontal oscillator element, which was previously an external component, is now provided on chip.
 - Single crystal operation provided by DDS technology
The functions of the two or three crystal oscillator elements previously required for color demodulation can now be handled by a single crystal oscillator element due to the adoption of DDS*1 technology.
*1: DDS (direct digital synthesizer) technology allows multiple-frequency oscillations to be implemented with the precision provided by normal crystal oscillators with a single crystal element.
 - Built-in CCD provided by multi-chip packaging (2 chips in a single package): LA76810 and LA76812
There is now demand for built-in delay lines (CCDs) in PAL system ICs. These products respond to this need by combining 2 chips in a single package: a bipolar chip, which focuses on analog processing, and a CMOS chip that provides the CCD functionality.

Product Differentiation Provided by Unique Technologies

- Production rationalization provided by an on-chip signal generator.
 - These are the industry's first single-chip color TV ICs that include a built-in signal generator. This functionality was proposed by Sanyo to achieve rationalization in the TV manufacturing process.
- End product differentiation provided by demodulation ratio and demodulation angle adjustment

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function.

- This function was proposed by Sanyo for TV set color creation, in particular, as a means for correcting sample-to-sample variations in the color balance in TV tubes.
- Manufacturing rationalization provided by an AKB function.
 - The AKB function provided by these ICs allows easy adjustment of the white balance during manufacturing using a microcontroller.

Specifications

Type No.	Function	Broadcast formats	Operating supply voltage	Package	Notes
LA76810	Single-chip signal-processing IC	Multi	5.0 V $\pm$ 0.3 V 9.0 V to 12.0 V	DIP54S	2 chips: 1 package
LA76812	Single-chip signal-processing IC	PAL/NTSC	5.0 V $\pm$ 0.3 V 9.0 V to 12.0 V	DIP54S	2 chips: 1 package
LA76814	Single-chip signal-processing IC	NTSC	5.0 V $\pm$ 0.3 V 9.0 V to 12.0 V	DIP54S	

Sample Availability

Samples of the LA76810, LA76812, and LA76814 are available in October, November, and August 1998 each; production quantities will be anticipated in 1999.

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