

|              |          |                                                                  |
|--------------|----------|------------------------------------------------------------------|
| <b>SANYO</b> | No. 5151 | <b>LA7640N</b>                                                   |
|              |          | <b>Chroma Circuit for<br/>SECAM-system Color Television Sets</b> |

## Overview

The LA7640N houses the chroma circuit for a SECAM-system color television set in a shrink-type DIP24S package. The LA7640N eliminates the need for adjustment of the discriminator. When used in conjunction with the LA7685J single-chip PAL/NTSC system LSI, it becomes possible to process color television signals for multiple systems. Note that the LA7640N has a built-in SECAM signal demodulation circuit block and a demodulated signal amplitude modulation circuit block.

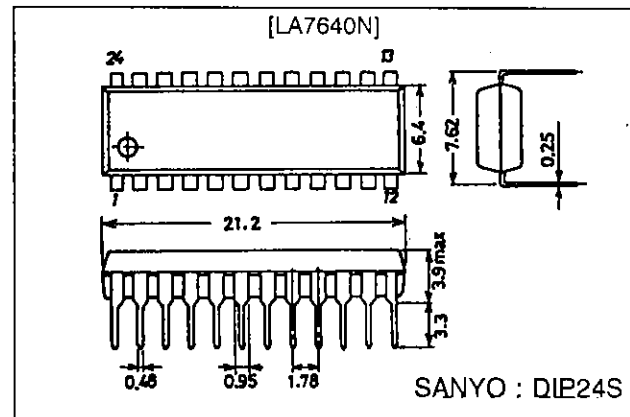
## Features

- Discriminator requires no adjustment.
- Conversion of SECAM signals into pseudo-NTSC signals (SECAM → pseudo-NTSC transcoder).

## Package Dimensions

unit : mm

### 3067-DIP24S



## Specifications

### Maximum Ratings at Ta = 25 °C

| Parameter                   | Symbol             | Conditions             | Ratings     | Unit |
|-----------------------------|--------------------|------------------------|-------------|------|
| Maximum supply voltage      | V <sub>CCmax</sub> |                        | 10          | V    |
| Allowable power dissipation | P <sub>d max</sub> | T <sub>a</sub> ≤ 65 °C | 650         | mW   |
| Operating temperature       | T <sub>opr</sub>   |                        | -10 to +65  | °C   |
| Storage temperature         | T <sub>stg</sub>   |                        | -55 to +150 | °C   |

### Operating Conditions at Ta = 25 °C

| Parameter                      | Symbol            | Conditions | Ratings | Unit |
|--------------------------------|-------------------|------------|---------|------|
| Recommended supply voltage     | V <sub>CC</sub>   |            | 9       | V    |
| Operating supply voltage range | V <sub>CCop</sub> |            | 8 to 10 | V    |

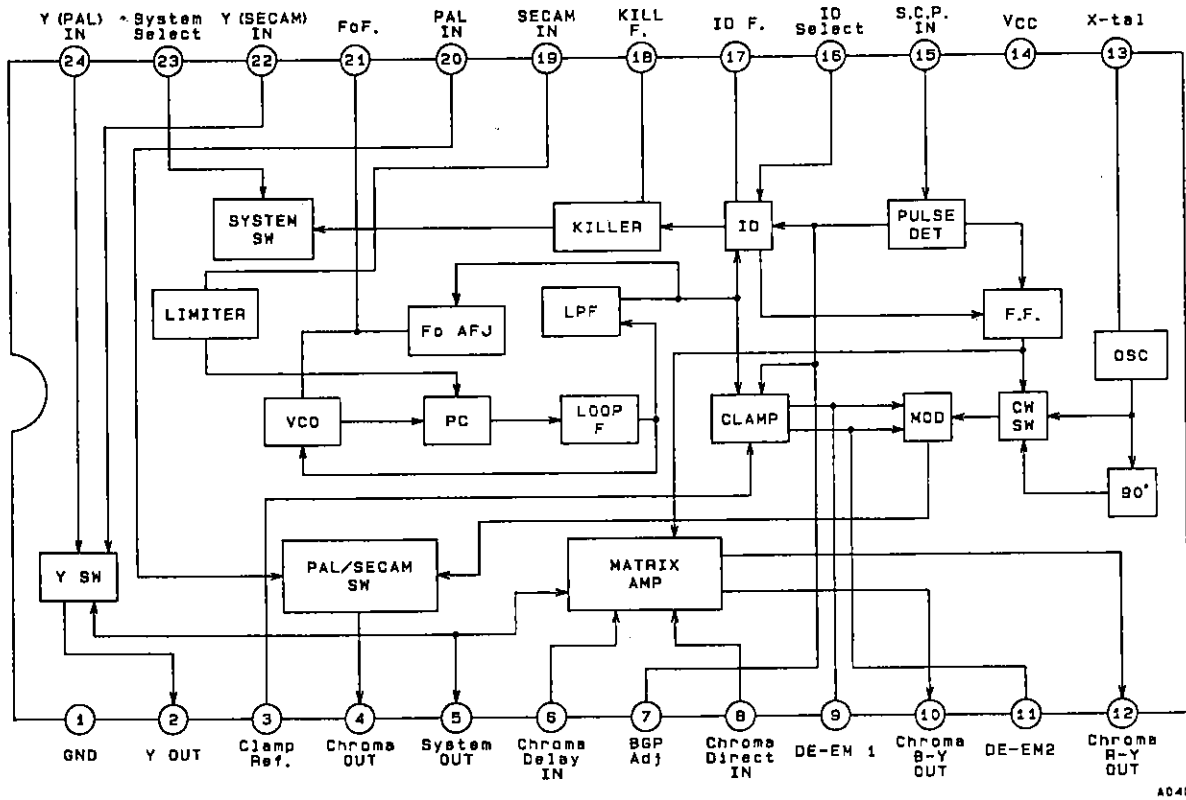
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### Electrical Characteristics at Ta = 25 °C, V<sub>CC</sub> = 9 V

| Parameter                               | Symbol              | Conditions                                    | min  | typ  | max  | Unit  |
|-----------------------------------------|---------------------|-----------------------------------------------|------|------|------|-------|
| Supply current                          | I <sub>CC</sub>     |                                               | 23   | 33   | 43   | mA    |
| [Chroma Block]                          |                     |                                               |      |      |      |       |
| Killer operating point                  | Killer              |                                               | -42  | -36  | -30  | dB    |
| SECAM demodulation output               |                     |                                               |      |      |      |       |
| B-Y                                     | D <sub>OUTB</sub>   |                                               | 0.37 | 0.47 | 0.56 | Vp-p  |
| R-Y                                     | D <sub>OUTR</sub>   |                                               | 0.53 | 0.67 | 0.80 | Vp-p  |
| SECAM demodulation output ratio R-Y/B-Y | D <sub>OUTR/B</sub> |                                               | 1.0  | 1.4  | 1.8  |       |
| Modulation output ratio                 |                     |                                               |      |      |      |       |
| R-Y/Burst                               | M <sub>OUTB/B</sub> |                                               | 1.90 | 2.55 | 3.10 |       |
| R-Y/B-Y                                 | M <sub>OUTR/B</sub> |                                               | 0.92 | 1.30 | 1.69 |       |
| Modulation output burst                 | M <sub>OUTB</sub>   |                                               | 65   | 100  | 125  | mVp-p |
| Modulation angle B-Y                    | ANGBY               | Burst = 180 °                                 | -10  | 0    | +10  | deg   |
| Modulation angle R-Y                    | ANGRY               | Burst = 180 °                                 | 80   | 90   | 100  | deg   |
| Demodulation linirarity                 | DLIN                |                                               | 80   | 100  | 120  | %     |
| Modulation linirarity                   | MLIN                |                                               | 80   | 100  | 120  | %     |
| [Video Block]                           |                     |                                               |      |      |      |       |
| Voltage gain pin 22                     | VG <sub>22</sub>    | f = 100 kHz 1 Vp-p, pin 23 GND                | -3   | 0    | +3   | dB    |
| Voltage gain pin 24                     | VG <sub>24</sub>    | f = 100 kHz 1 Vp-p, pin 23 V <sub>CC</sub>    | -3   | 0    | +3   | dB    |
| Frequency characteristics pin 22        | VF <sub>22</sub>    | f = 10 MHz 0.5 Vp-p, pin 23 GND               | -4   | -1   | +2   | dB    |
| Frequency characteristics pin 24        | VF <sub>24</sub>    | f = 10 MHz 0.5 Vp-p, pin 23 V <sub>CC</sub>   | -4   | -1   | +2   | dB    |
| Dymamic range pin 22                    | VD <sub>22</sub>    | Pin 23 GND                                    | 2.0  | 2.9  |      | Vp-p  |
| Dymamic range pin 24                    | VD <sub>24</sub>    | Pin 23 V <sub>CC</sub>                        | 2.0  | 2.9  |      | Vp-p  |
| PAL matrix                              |                     |                                               |      |      |      |       |
| PAL Gain +                              | P <sub>G+</sub>     | f = 4.43 MHz 300mVp-p, pin 23 V <sub>CC</sub> | 3.0  | 6.0  | 9.0  | dB    |
| PAL Gain -                              | P <sub>G-</sub>     | f = 4.43 MHz 300mVp-p, pin 23 V <sub>CC</sub> |      | -35  | -30  | dB    |
| SECAM switch                            |                     |                                               |      |      |      |       |
| SECAM Gain 1                            | SE <sub>G1</sub>    | f = 4.43 MHz 300mVp-p, pin 23 GND             | 3.0  | 6.0  | 9.0  | dB    |
| SECAM Gain 2                            | SE <sub>G2</sub>    | f = 4.43 MHz 300mVp-p, pin 23 GND             | 3.0  | 6.0  | 9.0  | dB    |
| SECAM cross-talk 1                      | S <sub>C1</sub>     | f = 4.43 MHz 300mVp-p, pin 23 GND             |      | -35  | -30  | dB    |
| SECAM cross-talk 2                      | S <sub>C2</sub>     | f = 4.43 MHz 300mVp-p, pin 23 GND             |      | -35  | -30  | dB    |
| [PAL/SECAM Switch Block]                |                     |                                               |      |      |      |       |
| PAL-side voltage gain                   | C <sub>OUTG</sub>   | Pin 23 V <sub>CC</sub>                        | -3   | 0    | +3   | dB    |
| Cross-talk SECAM → PAL                  | C <sub>OUTC</sub>   |                                               |      |      | -35  | dB    |
| Xtal oscillator oscillation frequency   | f <sub>REQ</sub>    |                                               | 0    | 97   | 180  | Hz    |
| B.G.P threshold voltage                 | V <sub>BGP</sub>    | Pin 23 GND                                    | 5.7  | 6.2  | 6.7  | V     |
| V.BLK pulse threshold voltage           | V <sub>V</sub>      | Pin 23 GND                                    | 2.6  | 3.1  | 3.6  | V     |
| Forced PAL threshold voltage            | V <sub>23P</sub>    |                                               | 6.3  | 6.7  | 7.1  | V     |
| SECAM threshold voltage                 | V <sub>23S</sub>    |                                               | 1.8  | 2.2  | 2.6  | V     |
| SECAM discrimination output voltage     | V <sub>OUTS</sub>   |                                               |      | 0.15 | 0.3  | V     |

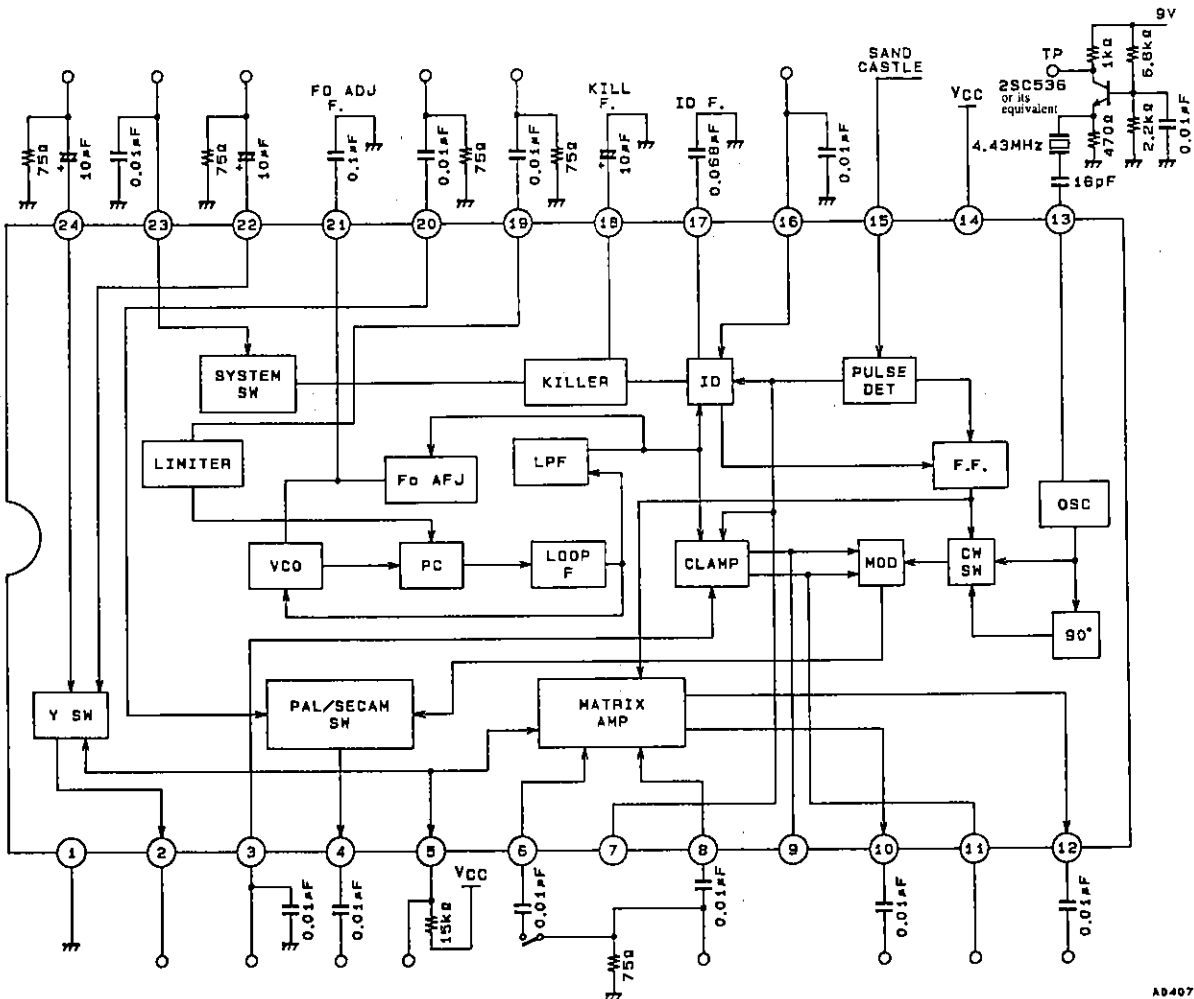
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## Block Diagram



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## Test Circuit

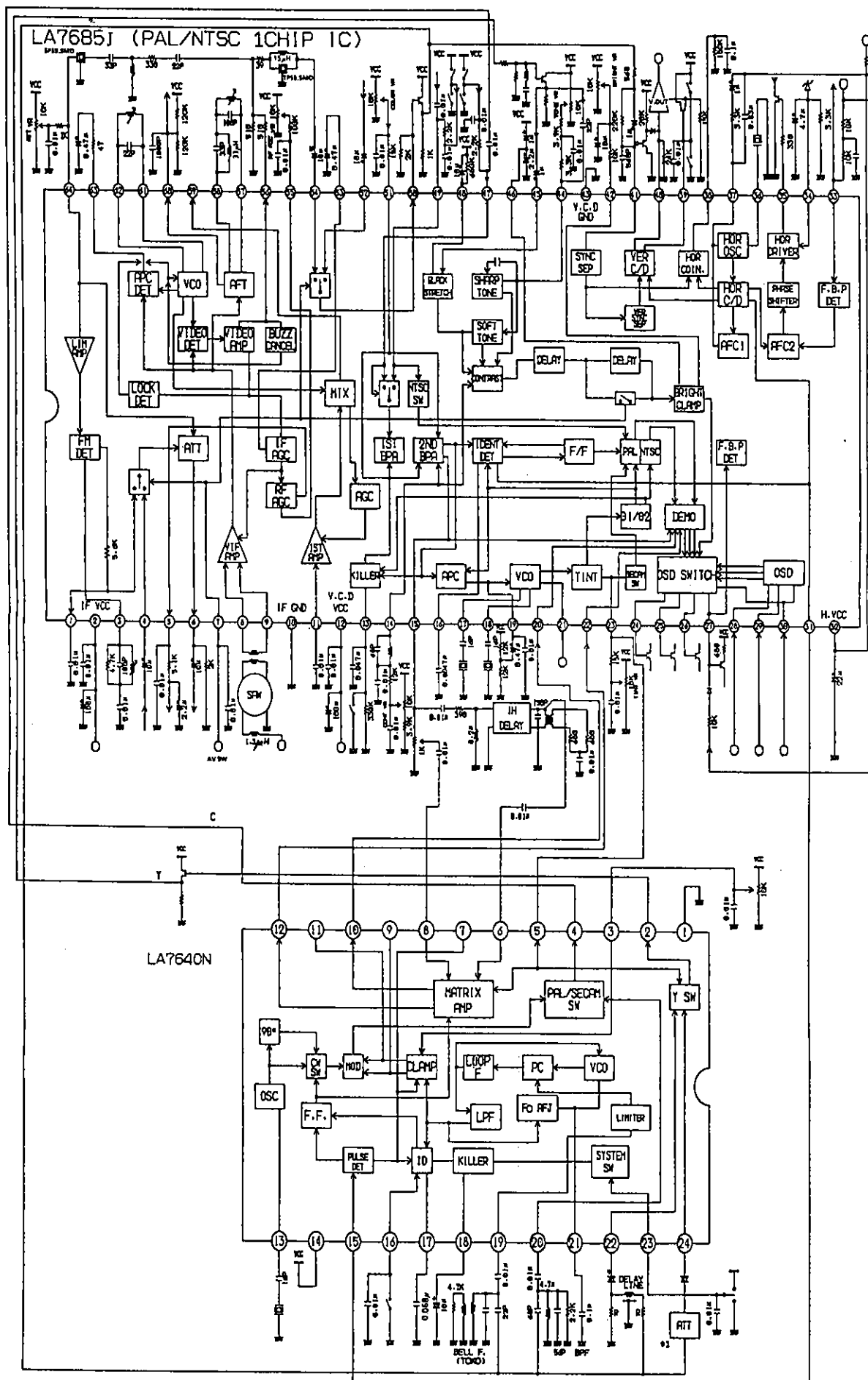


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# LA7640N

## LA7685J LA7640N Connection Diagram (Reference)

Unit (resistance:  $\Omega$ , capacitance: F)



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