

# TDA2522

## PAL TV CHROMA DEMODULATOR COMBINATION

### FAIRCHILD LINEAR INTEGRATED CIRCUIT

**GENERAL DESCRIPTION**— The TDA2522 is a monolithic integrated circuit designed as a synchronous demodulator for PAL color television receivers. It includes an 8.8 MHz oscillator and divider to generate two 4.4 MHz reference signals and provides color difference outputs.

The TDA2522 is intended to interface directly with the TDA2560 with a minimum of external components. The TDA2530 may be added if RGB drive is required. The TDA2522 is constructed using the Fairchild Planar\* process.

- 8.8 MHz CHROMA SUBCARRIER OSCILLATOR AND DIVIDER TO GENERATE TWO 4.4 MHz REFERENCE SIGNALS
- KEYED BURST PHASE COMPARATOR FOR OPTIMUM NOISE PERFORMANCE
- ACC DETECTOR AND AMPLIFIER
- COLOR KILLER
- B-Y AND R-Y SYNCHRONOUS DEMODULATORS AND G-Y MATRIX
- TEMPERATURE COMPENSATED EMITTER FOLLOWER OUTPUTS
- PAL SWITCH AND FLIP-FLOP WITH INTERNAL IDENTIFICATION
- ON-CHIP CAPACITORS TO REDUCE CARRIER RESIDUE

#### ABSOLUTE MAXIMUM RATINGS

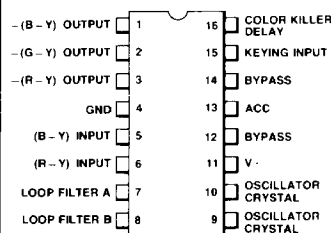
|                                  |                 |
|----------------------------------|-----------------|
| Supply Voltage                   | 14 V            |
| Internal Power Dissipation       | 600 mW          |
| Operating Temperature Range      | -20°C to +60°C  |
| Storage Temperature Range        | -20°C to +125°C |
| Pin Temperature (Soldering 10 s) | 260°C           |

\*Planar is a patented Fairchild process.

#### CONNECTION DIAGRAM

##### 16-PIN DIP (TOP VIEW)

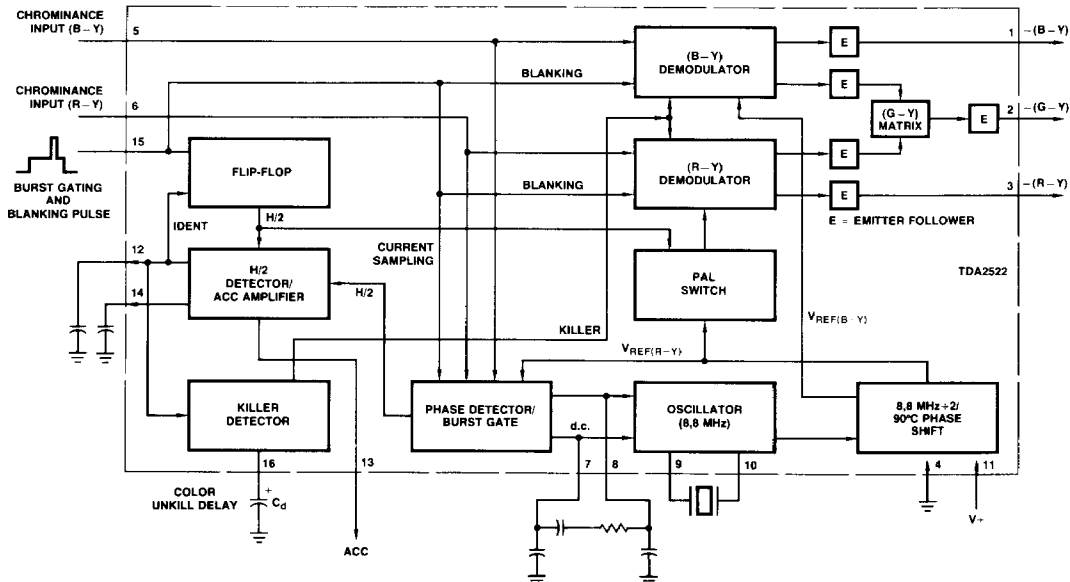
PACKAGE OUTLINE 9B



#### ORDER INFORMATION

| TYPE | PART NO. |
|------|----------|
| 2522 | TDA2522  |

#### BLOCK DIAGRAM



**ELECTRICAL CHARACTERISTICS:**  $V_+ = 12\text{ V}$ ,  $T_A = 25^\circ\text{C}$ , unless otherwise specified

| CHARACTERISTICS                                                                                                                                          | CONDITIONS                            | MIN                | TYP               | MAX        | UNITS                                     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|--------------------|-------------------|------------|-------------------------------------------|
| Supply Current ( $I_{11}$ )                                                                                                                              |                                       |                    | 40                |            | mA                                        |
| <b>DEMODULATOR SECTION</b>                                                                                                                               |                                       |                    |                   |            |                                           |
| Ratio of Demodulated Signals<br>B-Y/R-Y<br>G-Y Channel                                                                                                   | $V_5 = V_6 = 50\text{ mV}_{pk-pk}$    |                    | 1.78<br>Note 1    |            |                                           |
| Color Difference DC Output Voltage<br>R-Y Output ( $V_3$ )<br>G-Y Output ( $V_2$ )<br>B-Y Output ( $V_1$ )                                               |                                       |                    | 5.6<br>5.6<br>5.6 |            | V<br>V<br>V                               |
| Color Difference Output Voltage<br>R-Y Output ( $V_{3pk-pk}$ )<br>G-Y Output ( $V_{2pk-pk}$ )<br>B-Y Output ( $V_{1pk-pk}$ )                             | Note 2                                | 2.4<br>1.35<br>3.0 |                   |            | $V_{pk-pk}$<br>$V_{pk-pk}$<br>$V_{pk-pk}$ |
| Chroma Input Signal (Including Burst)<br>R-Y Input ( $V_{6pk-pk}$ )<br>B-Y Input ( $V_{5pk-pk}$ )                                                        | Note 3                                |                    | 500<br>350        |            | mV<br>mV                                  |
| H/2 Ripple Voltage at R-Y Output<br>( $V_{3pk-pk}$ )                                                                                                     |                                       |                    |                   | 10         | $\text{mV}_{pk-pk}$                       |
| Input Resistance of Chroma Inputs (R5, R6)<br>Input Capacitance of Chroma Inputs (C5, C6)                                                                |                                       | 800                |                   | 10         | $\Omega$<br>pF                            |
| Output Resistance of Color Difference<br>Terminals (R1, R2, R3)                                                                                          |                                       |                    | 250               |            | $\Omega$                                  |
| <b>REFERENCE SECTION</b>                                                                                                                                 |                                       |                    |                   |            |                                           |
| Static Phase Error for $\pm 400\text{ Hz}$ Deviation<br>between f Burst and f Oscillator                                                                 |                                       | -5                 |                   | +5         | degrees                                   |
| Holding Range using a Typical Crystal                                                                                                                    |                                       |                    | $\pm 500$         |            | Hz                                        |
| Burst Signal Input with Keying<br>Pulse Width of $4\text{ }\mu\text{s}$                                                                                  | Note 4                                |                    | .25               |            | $V_{pk-pk}$                               |
| ACC Control Output Voltage ( $V_{14}$ )<br>With Zero Burst<br>With Correct Phase Burst Signal                                                            | 0.25 $V_{pk-pk}$ Burst                |                    | 7.0<br>5.5        |            | V<br>V                                    |
| ACC Reference Output Voltage ( $V_{12}$ )                                                                                                                |                                       |                    | 7.0               |            | V                                         |
| ACC Amplifier Output<br>$I_{13}$                                                                                                                         | $V_{13} = 0.5\text{ to }5.0\text{ V}$ | -200               |                   | +200       | $\mu\text{A}$                             |
| Color Killer ( $V_{14}$ or $V_{16}$ )<br>OFF ( $V_{14}$ )<br>ON ( $V_{14}$ )<br>OFF ( $V_{16}$ )<br>ON ( $V_{16}$ )                                      |                                       | 6.0<br>7.0         |                   | 5.6<br>5.0 | V<br>V<br>V<br>V                          |
| Color Killer Turn-On Delay                                                                                                                               | $C_V$ Varried on Pin 16               |                    | 20                |            | ms/ $\mu\text{F}$                         |
| Keying Pulse Levels from Horizontal<br>Combination<br>TDA2590 ( $V_{15}$ )<br>Burst Keying (ON)<br>Burst Keying (OFF)<br>Blanking (ON)<br>Blanking (OFF) |                                       | 7.5<br>2.0         |                   | 6.5<br>1.0 | V<br>V<br>V<br>V                          |
| Oscillator Input Resistance (R9)                                                                                                                         |                                       |                    | 270               |            | $\Omega$                                  |
| Oscillator Output Resistance (R10)                                                                                                                       |                                       |                    | 200               |            | $\Omega$                                  |

**NOTES:**

1. G-Y output is typically equal to  $-0.51\text{ (R-Y)} - 0.19\text{ (B-Y)}$ .
2. Increase  $V_{IN} = V_5 = V_6$  until gain is equal to 0.7 of small signal gain.
3. Color bar with 75% saturation.
4. Burst amplitude is kept constant by ACC but varies linearly with keying pulse width.

