

# TDA2521 ✓

## PAL TV CHROMA DEMODULATOR COMBINATION FAIRCHILD LINEAR INTEGRATED CIRCUIT

**GENERAL DESCRIPTION** – The TDA2521 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.

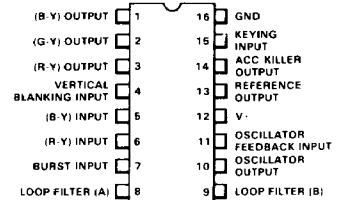
The TDA2521 is intended to interface directly with the TDA2510 with a minimum of external components and is constructed on a single silicon chip using the Fairchild Planar\* epitaxial process.

- 8.8 MHz CHROMA SUBCARRIER OSCILLATOR AND DIVIDER TO GENERATE TWO 4.4 MHz REFERENCE SIGNALS
- KEYED PHASE COMPARATOR FOR OPTIMUM NOISE PERFORMANCE
- CHROMA CONTROL AND REFERENCE VOLTAGE
- COLOR KILLER AND IDENTIFICATION SIGNALS
- B-Y AND R-Y SYNCHRONOUS DEMODULATORS AND G-Y MATRIX
- TEMPERATURE COMPENSATED EMITTER FOLLOWER OUTPUTS
- PAL FLIP-FLOP AND SWITCH
- ON-CHIP CAPACITORS TO REDUCE CARRIER RESIDUE
- COLOR KILLED IN DEMODULATORS DURING FLYBACK
- VERTICAL BLANKING IN THE OUTPUT STAGES

### ABSOLUTE MAXIMUM RATINGS

Supply Voltage	14 V
Internal Power Dissipation	600 mW
Operating Temperature Range	-20°C to +60°C
Storage Temperature Range	-55°C to +125°C
Pin Temperature (Soldering 10 s)	260°C

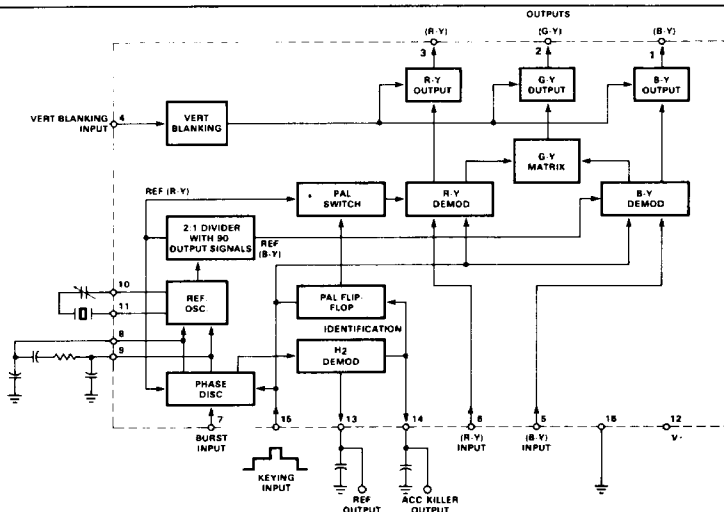
### CONNECTION DIAGRAM 16-Pin DIP (TOP VIEW) PACKAGE OUTLINE 9B



### ORDER INFORMATION

TYPE	PART NO.
2521	TDA2521

### BLOCK DIAGRAM



\*Planar is a patented Fairchild process

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

CHARACTERISTICS	CONDITIONS	MIN	TYP	MAX	UNITS
Supply Current ( $I_{12}$ )			40		mA
<b>DEMODULATOR SECTION (Pins 1, 2, 3)</b>					
Ratio of Demodulated Signals B-Y/R-Y G-Y Channel	$V_5 = V_6 = 50\text{ mV}_{\text{pk-pk}}$		1.78 Note 1		
Color Difference DC Output Voltage R-Y Output ( $V_3$ ) G-Y Output ( $V_2$ ) B-Y Output ( $V_1$ )			5.6 5.6 5.6		V V V
Color Difference Output Voltage R-Y Output ( $V_{3\text{pk-pk}}$ ) G-Y Output ( $V_{2\text{pk-pk}}$ ) B-Y Output ( $V_{1\text{pk-pk}}$ )	Note 2	2.4 1.35 3.0			$V_{\text{pk-pk}}$ $V_{\text{pk-pk}}$ $V_{\text{pk-pk}}$
H/2 Ripple Voltage at R-Y Output ( $V_{3\text{pk-pk}}$ )				10	mV
Input Resistance of Chroma Inputs ( $R_5, R_6$ )		800			$\Omega$
Input Capacitance of Chroma Inputs ( $C_5, C_6$ )				10	pF
Output Resistance of Color Difference Terminals ( $R_1, R_2, R_3$ )			250		$\Omega$
<b>REFERENCE SECTION</b>					
Burst Signal Required on Pin 7 ( $V_{7\text{pk-pk}}$ )			0.5		$V_{\text{pk-pk}}$
Static Phase Error for $\pm 400\text{ Hz}$ Deviation between $f_{\text{Burst}}$ and $f_{\text{Osc}}$ .			$\pm 5$		degrees
Holding Range using a Typical Crystal			$\pm 500$		Hz
DC Control Output Voltage ( $V_{14}$ ) Without Burst Signal With $0.5 V_{\text{pk-pk}}$ Burst Signal			7.0 5.5		V V
ACC Reference Output Voltage ( $V_{13}$ )			7.0		V
<b>Keying Pulse Levels from Horizontal Combination TDA2590 (<math>V_{15}</math>)</b>					
Burst Keying (ON)				6.5	V
Burst Keying (OFF)		7.5			V
Blanking (ON)				6.5	V
Blanking (OFF)		7.5			V
Vertical Blanking (Pin 4) $V_4$ (ON) $V_4$ (OFF)			$V_+$	$V_+ - 2$	V
Oscillator Input Resistance ( $R_{11}$ )			270		$\Omega$
Oscillator Output Resistance ( $R_{10}$ )			200		$\Omega$

**NOTES:**

- G-Y output is typically equal to  $-0.51\text{ (R-Y)} - 0.19\text{ (B-Y)}$
- Increase  $V_{IN}$  :  $V_5 = V_6$  until gain is equal to 0.7 of small signal gain.

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EQUIVALENT CIRCUIT

