

COLOR TV SECAM DECODER FOR LOW-COST TV SETS

- SUBCARRIER LIMITER
- R-Y } DEMODULATORS
B-Y }
- IDENTIFICATION AND KILLER
- PAL-SECAM SWITCHES FOR MULTISTANDARD APPLICATION.



DESCRIPTION

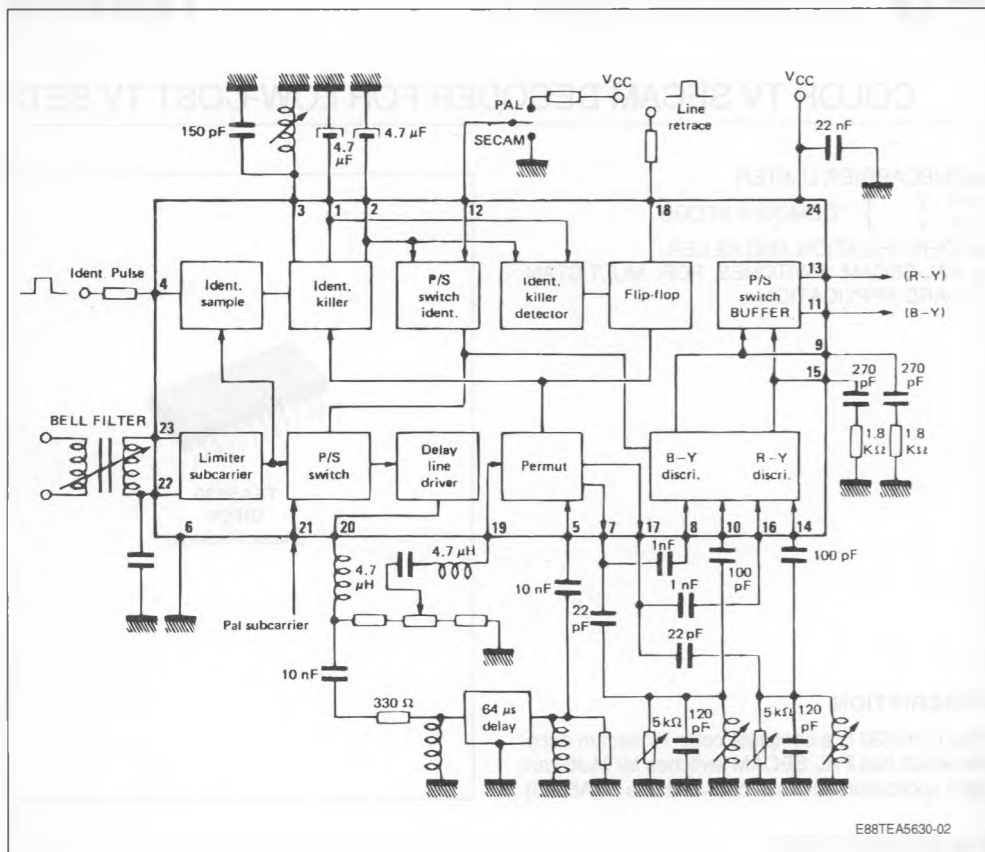
The TEA5630 is a complete color TV secam decoder which has PAL-SECAM switches for Multistandard application (in association with the TEA5620).

PIN CONNECTIONS

Identification and killer decoupling	1	24	VCC
Identification and killer decoupling	2	23	Input color subcarrier
Identification circuit	3	22	Input decoupling
Identification pulse	4	21	PAL subcarrier input
Delayed chroma input	5	20	Color subcarrier output
Ground	6	19	Direct subcarrier input
B-Y permutator output	7	18	Line retrace
B-Y discriminator input	8	17	R-Y permutator output
B-Y desaccentuation	9	16	R-Y discriminator input
B-Y discrimination	10	15	R-Y desaccentuation
B-Y output	11	14	R-Y discrimination
PAL SECAM switch	12	13	R-Y output

E88TEA5630-01

BLOCK DIAGRAM



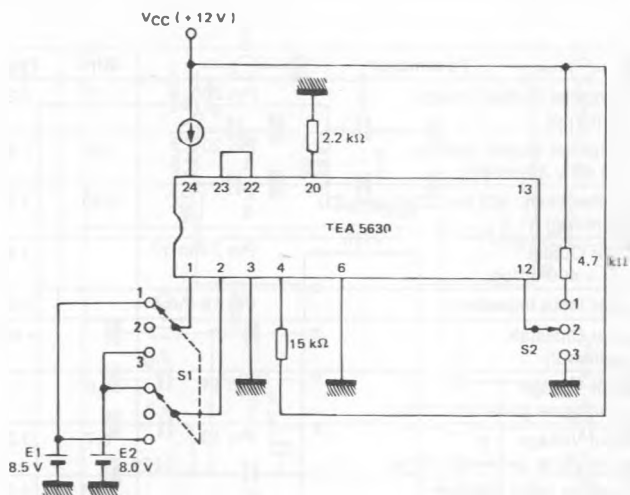
ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V _{CC}	Supply Voltage	14.4	V
P _{tot}	Power Dissipation	760	mW
T _{oper}	Operating Ambient Temperature	0 to 70	°C
T _{stg}	Storage Temperature	– 55 to 150	°C

THERMAL DATA

$R_{th(j-a)}$	Junction-ambient Thermal Resistance	60	°C/W
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TEST CIRCUIT 1



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DC ELECTRICAL CHARACTERISTICS

T_{amb} = + 25 °C V_{CC} = 12 V (unless otherwise specified)

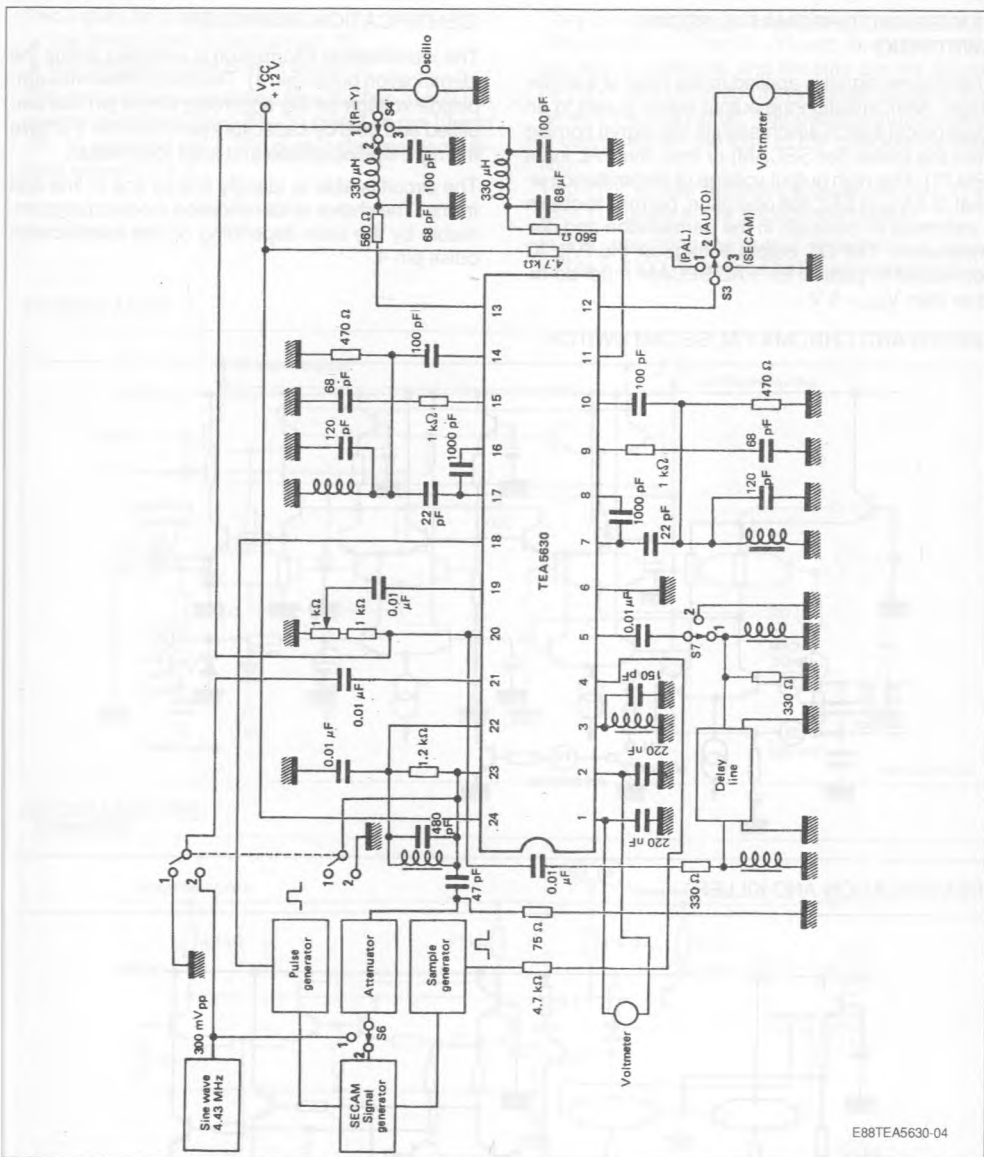
TEST CIRCUIT 1

Parameter		Switch State		Min.	Typ.	Max.	Unit
		S1	S2				
Operating Supply Voltage	Pin 24	2	2	9.6	12	13	V
Supply Current	Pin 24	2	2	20	30	40	mA
DC Voltage at :	Pin 1, Pin 2	2	3	4.8	5.7	6.4	V
	Pin 5, pin 19	2	3	1.8	2.4	3	V
	Pin 7, Pin 17	2	3	10.6	11.2	11.8	V
	Pin 8, Pin 16	2	3	4.7	5.4	6.1	V
	Pin 9, Pin 15	2	3	6.3	7.2	8	V
	Pin 10, Pin 14	2	3	2.5	3.3	4	V
	Pin 11, Pin 13	2	3	6.8	8	9	V
	Pin 20	2	3	6.8	7.9	9	V
	Pin 21	2	3	2.6	3.3	4	V
	Pin 22	2	3	2.3	3	3.7	V
	Pin 9, Pin 15	2	1	11.7	11.9		V
	Pin 11, Pin 13	2	1	11.7	11.9		V
	Pin 12	2	2	0.85	1.1	1.3	V
	Pin 12	1	2	0	0.1	0.2	V
	Pin 12	3	2	0	0.1	0.2	V

AC ELECTRICAL CHARACTERISTICST_{amb} = + 25°C, V_{CC} = 12V (unless otherwise specified)**TEST CIRCUIT 2**

Symbol	Parameter	Min.	Typ.	Max.	Unit
Elim-1	Limiter Amplifier Output Voltage (V _I = 100 mVpp) Pin 20	1.7	2.2	2.7	Vpp
Elim-2	Limiter Amplifier Output Voltage (V _I = - 30 dB = 3.2 mVpp) Pin 20	0.6	1.4	2.4	Vpp
AvPAL	PAL Amplifier Gain : VO (pin 20)/V _I (pin 21) (V _I = 300 mVpp)	0.95	1.1	1.3	
	Permutator Output (V _{I9} = V ₅ = 400 mVpp) Pin 7-Pin 17		1.4		Vpp
	Permutator Input Impedance Pin 19-Pin 5		2.5		kΩ
CT1	Permutator Crosstalk (S7 = position 2)		- 60		dB
ED1 _{BY}	B-Y Output Voltage (colour bar signal generator 75 %) Pin 11	0.6	1	1.3	Vpp
ED1 _{RY}	R-Y Output Voltage (colour bar signal generator 75 %) Pin 13	0.7	1.2	1.6	Vpp
R _o	output Voltage Ratio R-Y/B-Y (colour bar signal generator 75 %)	0.95	1.2	1.5	
ED2 _{BY}	B-Y Output Voltage (colour bar signal generator 75 %, - 16 dB) Pin 11	0.6	1	1.3	Vpp
ED2 _{RY}	R-Y Output Voltage (colour bar signal generator 75 %, - 16 dB) Pin 13	0.7	1.2	1.6	Vpp
	PAL/SECAM Switch Threshold Pin 12		1.1		V
V12R1	Input Level Attenuation for PAL/SECAM switching - Measure on Pin 12 (colour bar generator 75 %, - 40 dB)	0.9	1.05	1.2	V
V12R2	Input Level Attenuation for NO PAL/SECAM Switching - Measure on Pin 12 (colour bar generator 75 %, - 18 dB)			0.2	V
PRS1	PAL/SECAM Switching Crosstalk (SECAM mode - PAL input signal pin 21 : 300 mVpp)		- 33		dB
PRS2	PAL/SECAM Switching Crosstalk (PAL mode - SECAM input signal pins 23-22 : 5 mVpp)		- 50		dB
FF	Line retrace Threshold Pin 18	0.85	1	1.07	V
	Identification Sampling Pulse Threshold Pin 4		0.8		V

TEST CIRCUIT 2



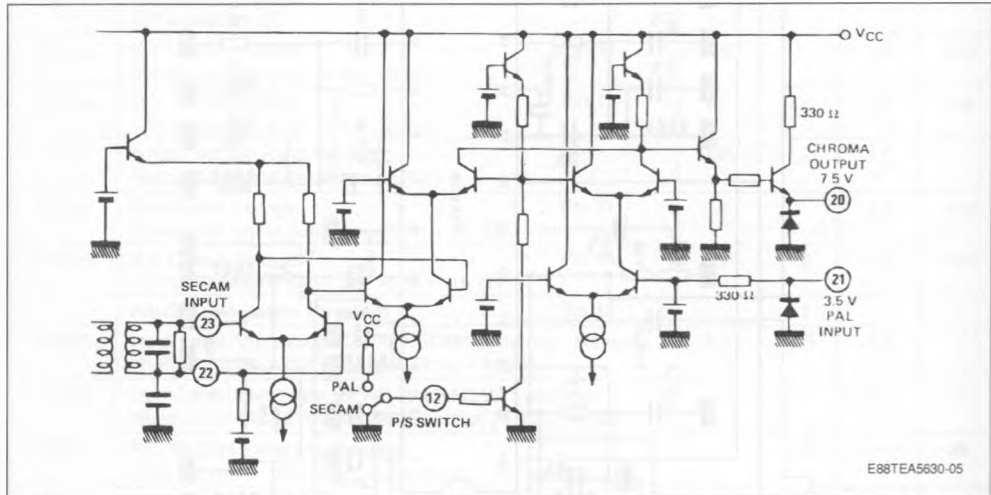
	$V_O(1)$	$V_O(2)$	A_V	$\frac{e_o(1)}{B-Y}$	$\frac{e_o(1)}{R-Y}$	e_k	C_{T1}	C_{T2}
S_3	2	3	1	2	2	3	2	3
S_4	1	1	1	3	3	3	3	1
S_5	1	1	2	1	1	1	1	2
S_6	2	2	2	2	2	2	2	2

GENERAL DESCRIPTION

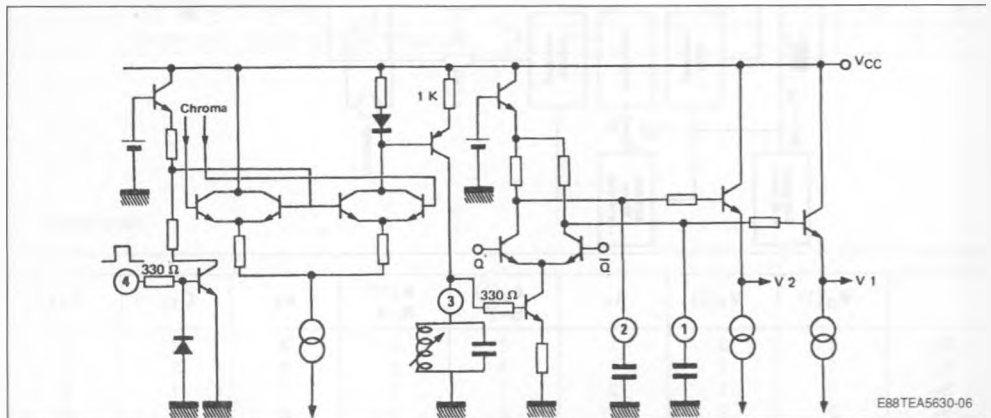
LIMITER AND CHROMA PAL/SECAM SWITCHING

The chroma signal is applied to the input of a limiter stage. After limitation the output signal is sent to an electronic switch which selects the signal coming from the limiter (for SECAM) or from the PAL input (Pin 21). The high output voltage of chrominance signal, $2.2 V_{pp}$ in SECAM operation, permits to obtain a minimum of crosstalk in the permutation and discrimination. The DC output voltage of the PAL IC connected in parallel for PAL/SECAM must be higher than $V_{CC} - 5 V$.

LIMITER AND CHROMA PAL/SECAM SWITCH.



IDENTIFICATION AND KILLER.



IDENTIFICATION AND KILLER

The identification information is sampled during the identification pulse (pin 4). The burst differential amplitude voltage on the according circuit pin 3 is amplified and held by capacitors pin 2 and pin 1 to give the right flip-flop phase and killer information.

The circuit is able to identify line by line or line and frame. The choice of identification mode is programmable by the user depending on the identification pulse pin 4.

PERMUTATOR

Two inputs on the permutator :

- the direct signal is sent on pin 19,
- the delayed signal is sent on pin 5.

The permutator is controlled by a flip-flop at H/2 frequency in order to have (R - Y) signal on pin 17 and (B - Y) signal on pin 7. The output chroma signal typical value is 1.4 V.

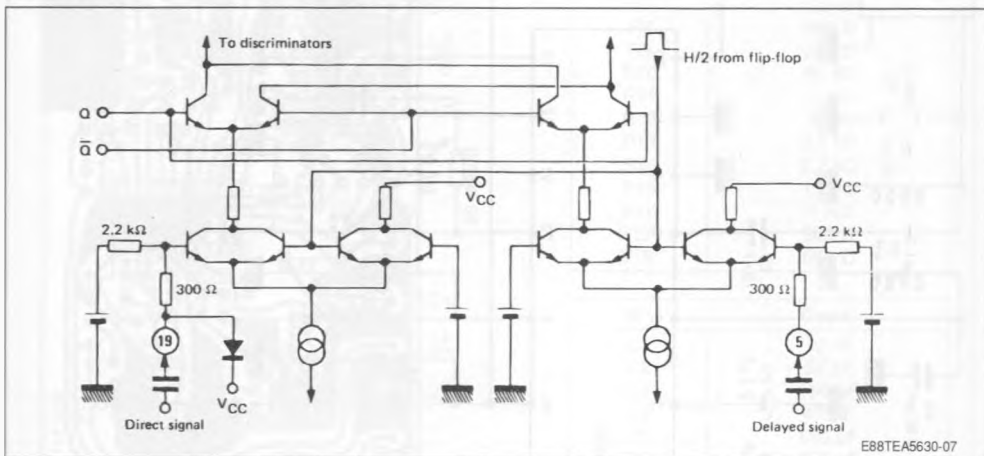
DISCRIMINATORS

They use coincidence detectors with external according circuit L-C. The (R - Y) and (B - Y) demodulated signal amplitude and linearity can be adjusted by the choice of the damping resistor value in parallel with the L-C circuit. The desaccentuation circuit is connected on the load of the coincidence detection.

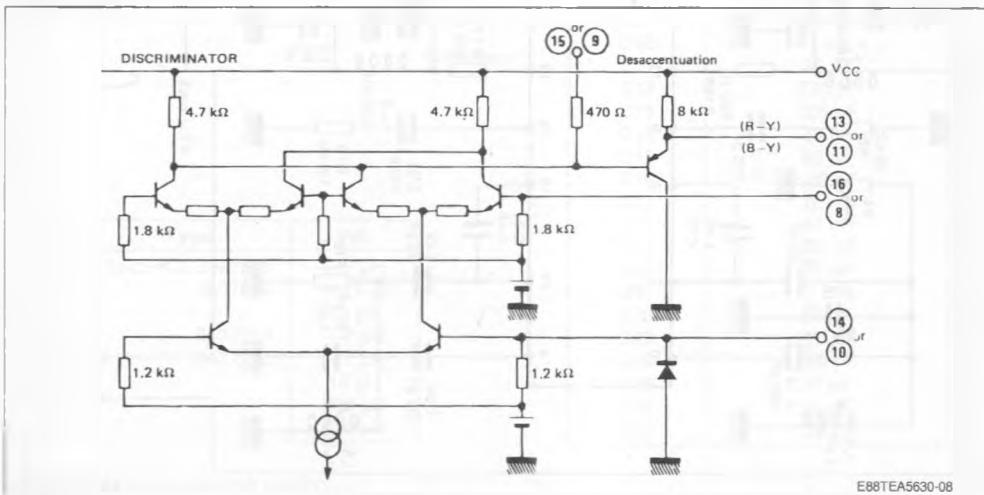
Two PNP emitter followers provide the (R - Y) and (B - Y) signals at low impedance output.

In PAL operating the output impedance is equivalent to a 8 K Ω resistance between output and V_{CC}.

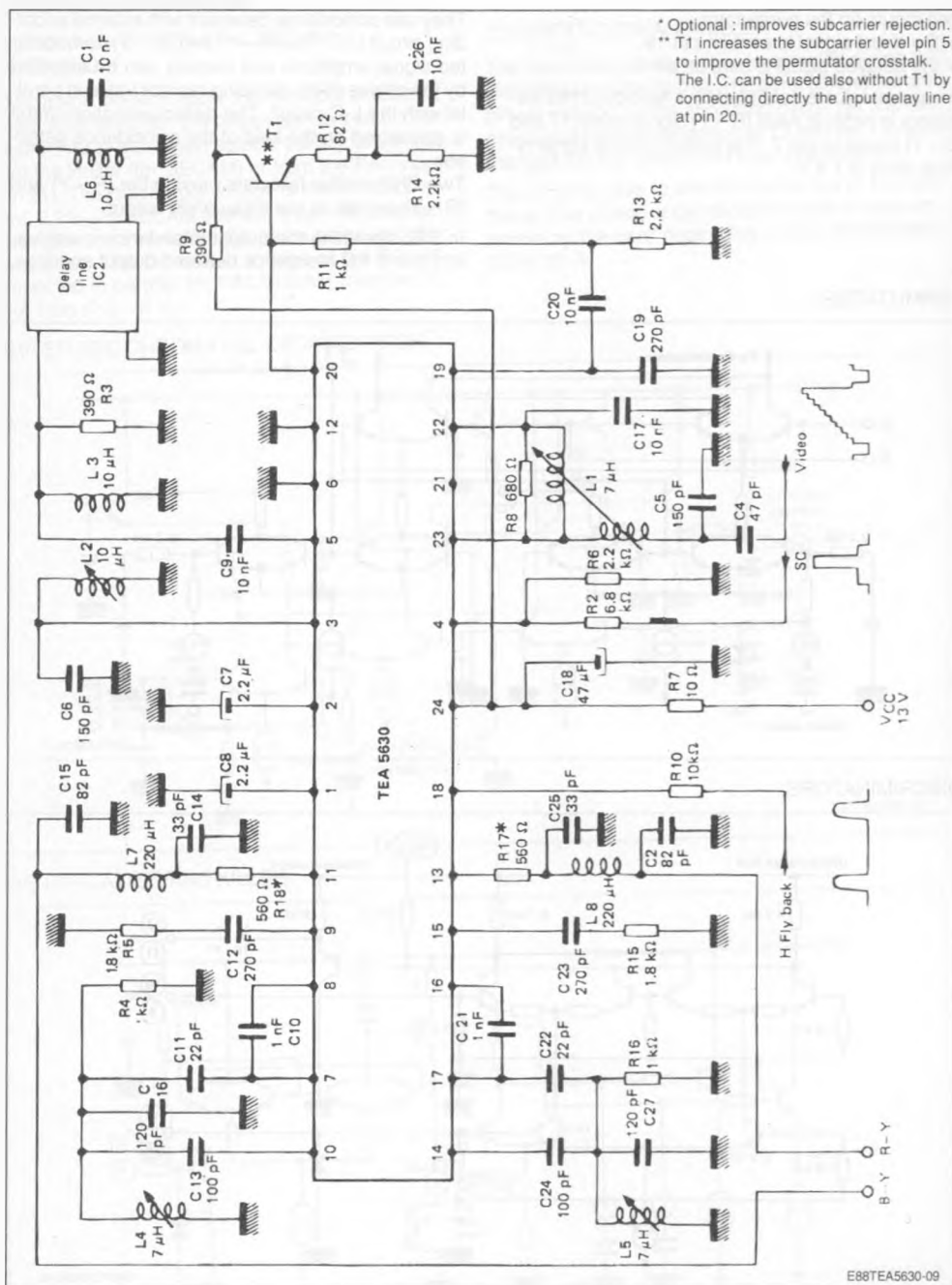
PERMUTATOR.



DISCRIMINATORS.

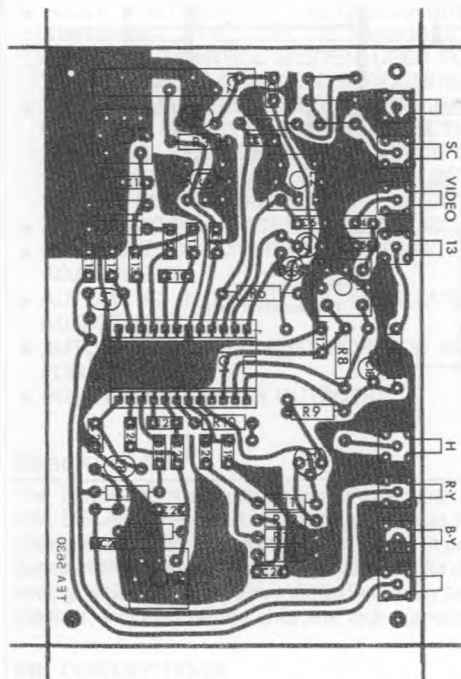


TYPICAL APPLICATION



P.C. BOARD AND COMPONENT LAYOUT (for secam decoder)

COMPONENT SIDE



E88TEA5630-10

N°	Type
Tr1	BC548 B

N°	Value
R2	6.8 k Ω
R3	390 Ω
R4	1 k Ω
R5	1.8 k Ω
R6	2.2 k Ω
R7	10 Ω
R8	680 Ω
R9	390 Ω
R10	10 k Ω
R11	1 k Ω
R12	82 Ω
R13	2.2 k Ω
R14	2.2 k Ω
R15	1.8 k Ω
R16	1 k Ω
R17*	560 Ω
R18*	560 Ω

N°	Capa.
C1	10 nF
C2	82 pF
C3	100 pF
C4	47 pF
C5	150 pF
C6	150 pF
C7	2.2 μ F
C8	2.2 μ F
C9	10 nF
C10	1 nF
C11	22 pF
C12	270 pF
C13	100 pF
C14	33 pF
C15	82 pF
C16	120 pF
C17	10 nF
C18	47 μ F
C19	270 pF
C20	10 nF
C21	1 nF
C22	22 pF
C23	270 pF
C24	100 pF
C25	33 pF
C26	10 nF
C27	120 pF

N°	Type	Val.
L1	Toko RCL 3627010	$\approx$ 7 μ H
L2	" " 3627014	10-15 μ H
L3	" " 3627013	10 μ H
L4	" " 3627013	$\approx$ 7 μ H
L5	" " 3627013	$\approx$ 7 μ H
L6		10 μ H
L7		220 μ H
L8		220 μ H

* Optional improves subcarrier rejection.

PACKAGE MECHANICAL DATA

24 PINS – PLASTIC DIP

