

TBA970

TELEVISION VIDEO AMPLIFIER

FAIRCHILD LINEAR INTEGRATED CIRCUIT

GENERAL DESCRIPTION — The TBA970 is a monolithic video amplifier for television receivers. It is constructed using the Fairchild Planar* epitaxial process. The circuitry includes a video preamplifier, dc contrast control utilizing a linear potentiometer which can be ganged to the chroma gain control, beam current limiting via contrast. Beam current limiting could be obtained with either positive or negative control voltage. Black level control is achieved by a clamped feedback circuit combined with the brightness control. Emitter follower output could be used to directly drive the video output stage. A separate NPN transistor (Q40) is provided on the chip.

- DC CONTRAST CONTROL
- DC BRIGHTNESS CONTROL
- BLACK LEVEL CLAMPING
- BEAM CURRENT LIMITING
- LOW IMPEDANCE OUTPUT

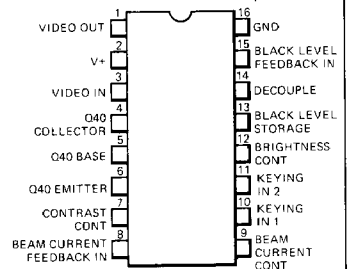
ABSOLUTE MAXIMUM RATINGS

Supply Voltage	15.5 V
Internal Power Dissipation	750 mW
Collector Current Q40	10 mA
Power Dissipation Q40	20 mW
V _{CEO} Q40	13.2 V
V _{CES} Q40	15.5 V
Operating Temperature Range	-20°C to +45°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 98

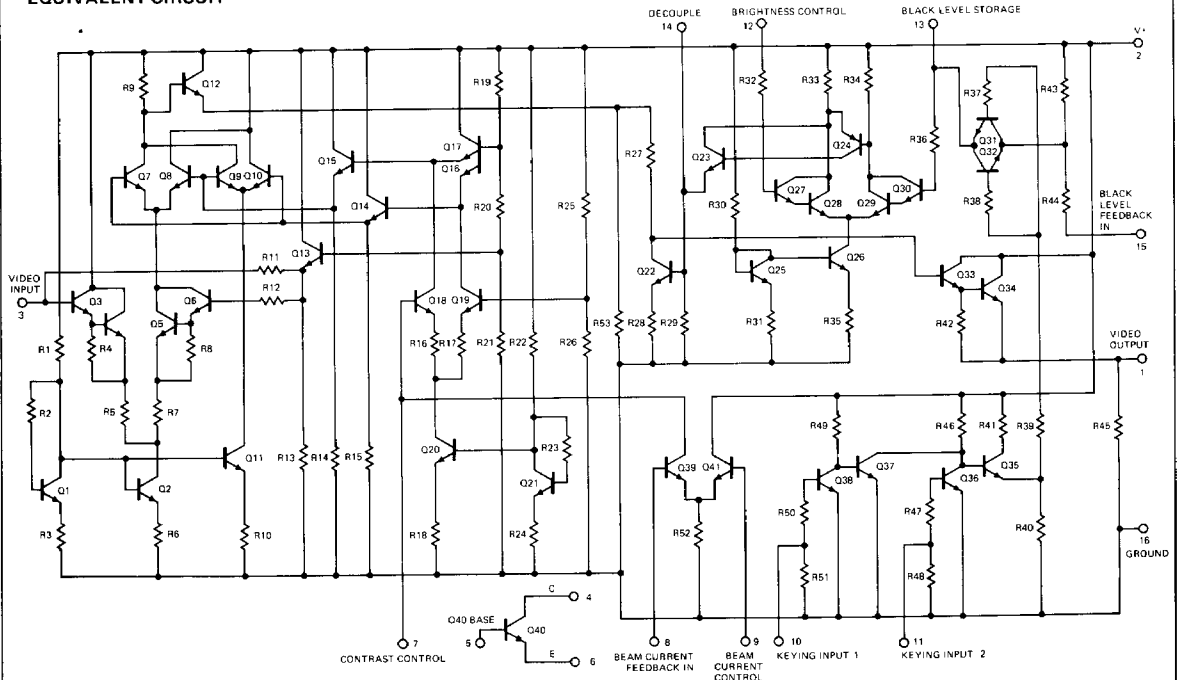


ORDER INFORMATION

TYPE	PART NO.
970	TBA970
(970Q)	(TBA970Q)†

† Not recommended for new designs.

EQUIVALENT CIRCUIT



*Planar is a patented Fairchild process.

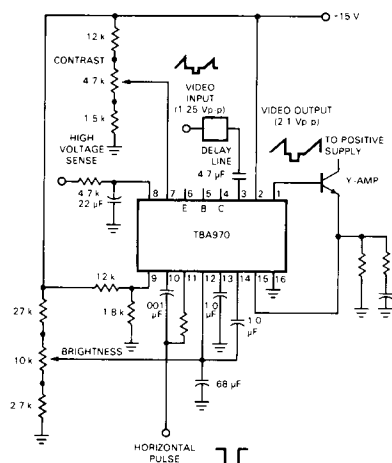
ELECTRICAL CHARACTERISTICS: $T_A = 25^\circ\text{C}$, $V_+ = 15\text{ V}$, See Test Circuit, unless otherwise specified

CHARACTERISTICS	CONDITIONS	MIN	TYP	MAX	UNITS
Supply Current (I_2)	(Note 1)		27	36	mA
Peak-to-Peak Input Voltage ($V_{3\text{ p/p}}$)	(Note 2)			1.6	V _{p-p}
Input Resistance (R_3)			12		k Ω
Voltage Gain			2.4		
3.0 dB Bandwidth			6.0		MHz
6.0 dB Bandwidth			9.0		MHz
Linearity of Black-to-White Video Output Signal		0.9			
Low Black Level Voltage (V_{15})				0.2	V
High Black Level Voltage (V_{15})		3.0			V
Contrast Control Range	$1.5\text{ V} \leq V_7 \leq 4.5\text{ V}$	36			dB
Input Resistance for Brightness Control (R_{12})			200		k Ω
Change of Black Level (ΔV_{15})	(Note 3)			20	mV
DC Voltage for Beam Current Limiting Inputs (V_8, V_9)	(Note 4)		2.0		V
Separate Transistor Q40 Gain	$I_C = I_4 = 1.0\text{ mA}$	40			

NOTES:

1. No input signal and at minimum brightness.
2. With negative going synchronizing pulse.
3. With constant brightness setting, due to change of picture content, contrast control setting and change in ambient temperature ($\Delta T_A = 20^\circ\text{C}$); black level clamping with $t_c = 1\text{ }\mu\text{s}$, $I_{10} \geq 0.25\text{ mA}$, $V_{11} \leq 0.3\text{ V}$.
4. Beam current limiting occurs at $V_8 \geq V_9$.

TEST CIRCUIT



BLOCK DIAGRAM

