

**ULN-2219A/TBA396  
LUMA/CHROMA CONTROL COMBINATION**

**FEATURES**

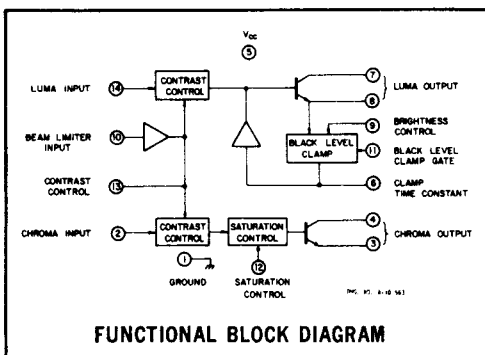
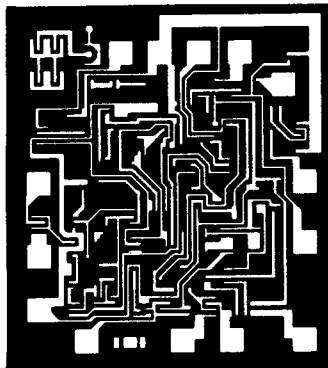
- D-C Controls
- Luma/Chroma Tracking with Contrast Control
- Stable Black Level Clamp
- Simple Alignment Procedure
- Beam Current Limiting
- Used in PAL or NTSC Receivers
- 14-Pin Dual In-Line Plastic Package

**I**NTENDED for use primarily in TV receivers utilizing the PAL color system, the ULN-2219A luma/chroma control combination integrated circuit features improved luma/chroma tracking with changes in the contrast level. When used in conjunction with the ULN-2217A chroma demodulator and the ULN-2220A chroma processor, these three devices constitute a complete PAL color system. The ULN-2219A can also be used with the ULN-2224A demodulator and ULN-2298A processor for a complete three-chip NTSC color system.

The ULN-2219A control combination provides d-c controls for the standard TV functions of contrast,

saturation, and brightness. These are d-c operated for ease of system design and lowest receiver cost.

These monolithic integrated circuits will be marked with the standard Sprague part number (ULN-2219A) rather than the Pro-Electron part number, unless otherwise specified.

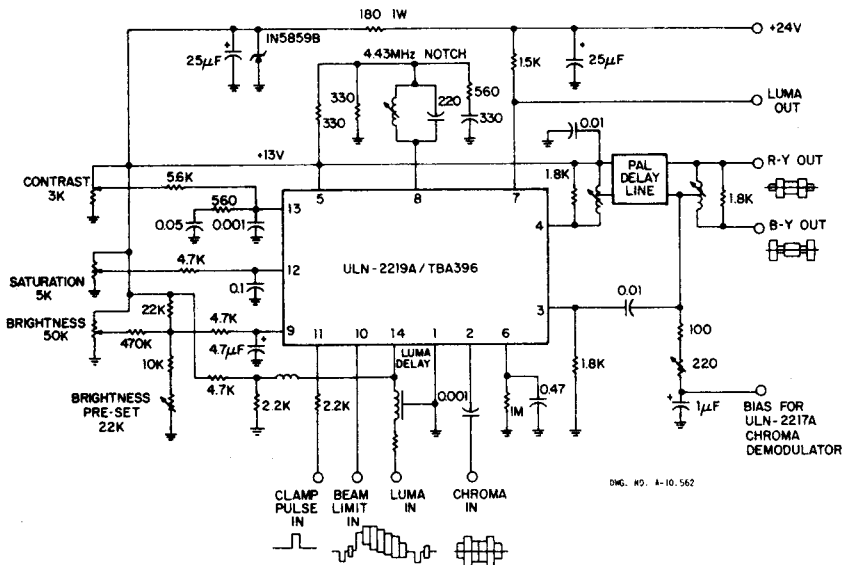


**ABSOLUTE MAXIMUM RATINGS**

Supply Voltage, V <sub>CC</sub> . . . . .	20 V
Luma Output Collector Voltage, V <sub>7</sub> . . . . .	30 V
Luma Output Emitter Current, I <sub>8</sub> . . . . .	7.0 mA
Chroma Output Emitter Current, I <sub>3</sub> . . . . .	5.0 mA
Operating Temperature Range, T <sub>A</sub> . . . . .	-40°C to +85°C
Storage Temperature Range, T <sub>S</sub> . . . . .	-65°C to +150°C

**ELECTRICAL CHARACTERISTICS at  $T_A = 25^\circ\text{C}$**

Characteristic	Test Pins	Test Conditions	Limits			Units
			Min.	Typ.	Max.	
Luma Bandwidth	14-8	-3 dB, resistive load	—	7.5	—	MHz
Luma Voltage Gain	14-8		0.6	1.0	1.2	—
Luma Input Resistance	14		100	—	—	k $\Omega$
Video Input Aperture	14		1.4	—	3.4	Vpp
Chroma Voltage Gain	2-3	resistive load	2.5	3.8	5.0	—
Chroma Input Resistance	2		5.0	—	—	k $\Omega$
Contrast Control Range			35	—	—	dB
Saturation Control Range			35	—	—	dB
Chroma Phase Shift		over contrast control range	—	—	$\pm 3$	%
		over saturation control range	—	—	$\pm 3$	%
Chroma/Luma Tracking Error		over contrast control range	—	—	$\pm 2$	dB
Black Level Clamp Gating Pulse	11		50	—	1000	$\mu\text{A}$
Black Level Shift		with contrast and signal changes (black to white 4 $\mu\text{s}$ gating)	—	—	$\pm 3$	%
Beam Limiter Threshold	10		1.8	2.0	2.2	V



**TYPICAL APPLICATION**

