

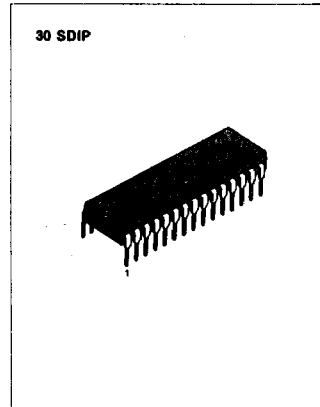
## VIDEO CHROMA, DEFLECTION SYSTEM FOR A COLOR TV (NTSC)

The KA2155/KA2156 are small-sized multifunction ICs containing the video chroma, deflection circuit of NTSC color TV in the SDIP30 shrink type.

The KA2155 containing a peak clip circuit in the video circuit is well suited for use in small-sized sets.

The KA2156 without a peak clip circuit in the video circuit is well suited for use in the large-sized sets.

Device Name	DC Restoration Ratio	Peak Clip Circuit
KA2155	100%	O
KA2156	100%	X



## FEATURES

- Small-sized package
- Fewer adjustments required
  - Chroma VCO (APC)
  - Horizontal oscillator (H-Hold)
  - Vertical oscillator (V-Hold)
- A minimum number of parts is required
- Multifunction

## FUNCTIONS

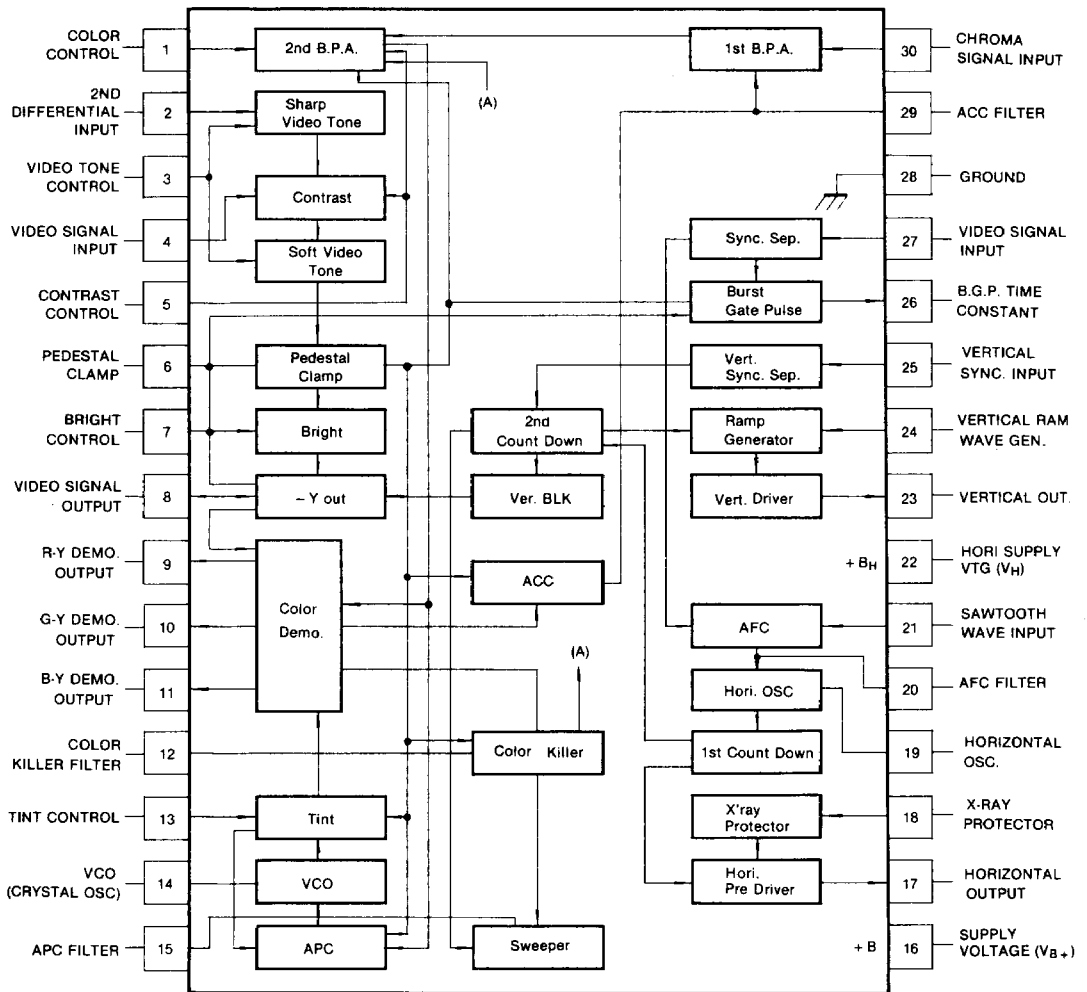
- Video section
  - Sharp & soft video tone control
  - Contrast control
  - Pedestal clamp
  - Bright control
  - Vertical blanking
- Chroma section
  - 1st & 2nd BPA
  - ACC
  - APC
  - VCO
  - Sweeper
  - Color control
  - Tint control
  - Color killer
  - Color demodulator

## ORDERING INFORMATION

Device	Package	Operating Temperature
KA2155	30 SDIP	-20 ~ +70°C
KA2156		

- Deflection section
  - Sync separator
  - Gate pulse generator
  - Vertical sync input
  - 1st & 2nd count down
  - Ramp generator
  - AFC
  - Horizontal OSC
  - Vertical driver
  - Horizontal pre driver
  - X'ray protector

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ )

Characteristics	Symbol	Value	Unit
Supply Voltage	$V_{16}$ max	14.0	V
Horizontal Supply Current	$I_{22}$ max	15.0	mA
Power Dissipation	$P_D$ max	1100	mW
Operating Temperature	$T_{opr}$	-20 ~ +70	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-55 ~ +125	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS ( $V_{CC} = 12.0\text{V}$ ,  $T_a = 25^\circ\text{C}$ )

## VIDEO STAGE

Characteristics	Symbol	Test Conditions	Min	Typ	Max	Unit
Operating Voltage Range	$V_{B+}$		9.0	12.0	14.0	V
Supply Current	$I_{CC}$	$V_{B+} = 12.0\text{V}$	40	53	75	mA
Video Voltage Gain	$G_V$	$V_{B+} = 12.0\text{V}$ , $f = 100\text{KHz}$	12	15	18	dB
Video Frequency Characteristic	$G_{Vf}$	$V_{B+} = 12.0\text{V}$ , $f = 100\text{KHz} \quad 5.0\text{MHz}$	-5			dB
Dependence of Video Output on Supply Voltage	$\Delta e_o$	$V_{B+} = 12.0\text{V}$ , $f = 100\text{KHz}$	-10		+10	%
Tone Control Characteristic (I)	$G_p$ min	$V_{B+} = 12.0\text{V}$ , $f = 2.0\text{MHz}$	-5	-3	-1	dB
Tone Control Characteristic (II)	$G_p$ max	$V_{B+} = 12.0\text{V}$ , $f = 2.0\text{MHz}$	12	15	18	dB
Contrast Control Characteristic	$E_o$	$V_{B+} = 12.0\text{V}$ , $f = 100\text{KHz}$	0.2	0.3	0.4	$V_{pp}$
Contrast Control Range	$\Delta G_{CV}$	$V_{B+} = 12.0\text{V}$ , $f = 100\text{KHz}$	16	18	20	dB
DC Restoration Ratio	K	$V_{B+} = 12.0\text{V}$ , Stair Wave		100		%

ELECTRICAL CHARACTERISTICS ( $V_{CC} = 12.0V$ ,  $T_a = 25^\circ C$ )

## CHROMA STAGE

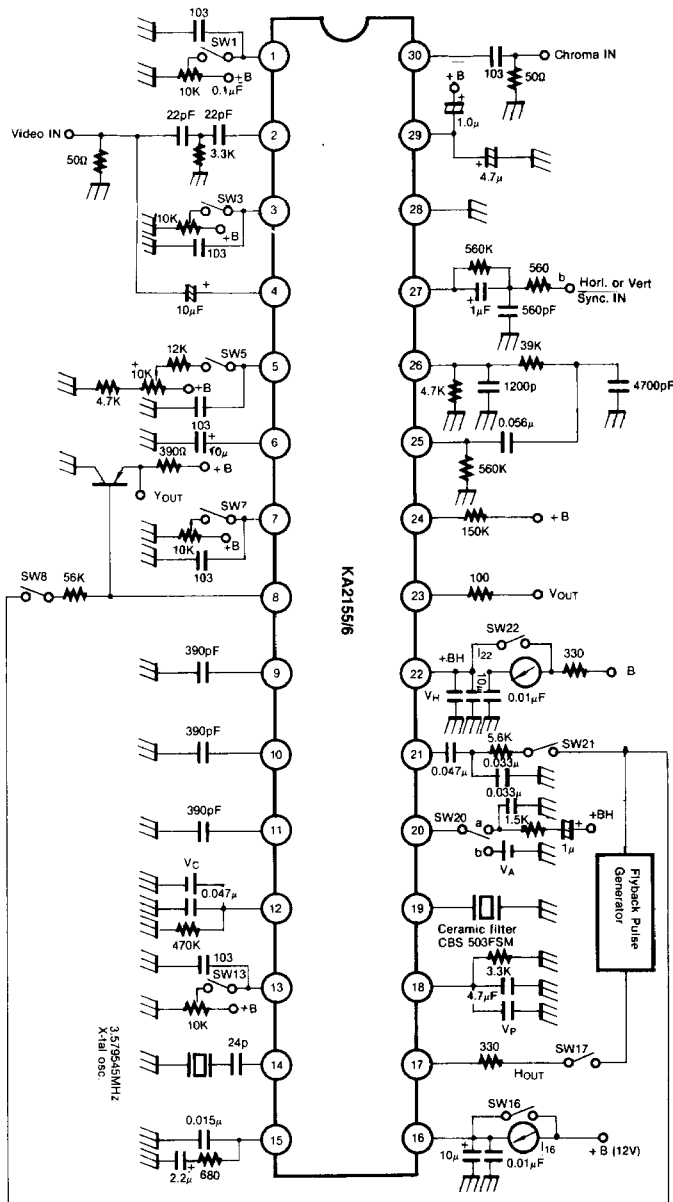
Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Contrast Color Control Range	$\Delta G_{CC}$	$V_{B+} = 12.0V$ , Composite Signal	15.5	17.0	18.5	dB
Demo. Output Voltage	$E_o$	$V_{B+} = 12.0V$	6.7	7.2	7.7	
Demo. Output Voltage Diff.	$\Delta E_o$	$V_{B+} = 12.0V$	-200		+200	mV
B-Y Demo. Output	$e_{oB}$	$V_{B+} = 12.0V$ , Composite Signal	2.9	4.3	5.5	$V_{pp}$
Maximum B-Y Demo. Output	$e_{oBmax}$	$V_{B+} = 12.0V$ , Composite Signal	5.5	6.5		$V_{pp}$
R-Y, B-Y Demo. Output Ratio	$\frac{e_{oR}}{e_{oB}}$	$V_{B+} = 12.0V$ , $f = 3.569545MHz$	0.81	0.90	0.98	
G-Y, B-Y Demo. Output Ratio	$\frac{e_{oG}}{e_{oB}}$	$V_{B+} = 12.0V$ , $f = 3.569545MHz$	0.24	0.30	0.38	
R-Y, B-Y Demo. Phase Ratio	$\frac{\angle e_{oR}}{\angle e_{oB}}$	$V_{B+} = 12.0V$ , $f = 3.569545MHz$	96	104	112	deg
G-Y, B-Y Demo. Phase Ratio	$\frac{\angle e_{oG}}{\angle e_{oB}}$	$V_{B+} = 12.0V$ , $f = 3.569545MHz$	-112	-122	-132	deg
APC Pull-In Range	$f_{APC}$	$V_{B+} = 12.0V$ , $f = 3.5MHz \sim 3.9MHz$	$\pm 300$			Hz
Tint Change Range	$\Delta \theta_T$	$V_{B+} = 12.0V$ , $f = 3.569545MHz$		110		deg
ACC Amplitude Char. (I)	A (I)	$V_{B+} = 12.0V$ , Composite Signal	-3	0	+3	dB
ACC Amplitude Char. (II)	A (II)	$V_{B+} = 12.0V$ , Composite Signal	-7	0	+2	dB

ELECTRICAL CHARACTERISTICS ( $V_{B+} = 12.0V$ ,  $I_{22} = 10mA$ ,  $T_a = 25^\circ C$ )

## DEFLECTION STAGE

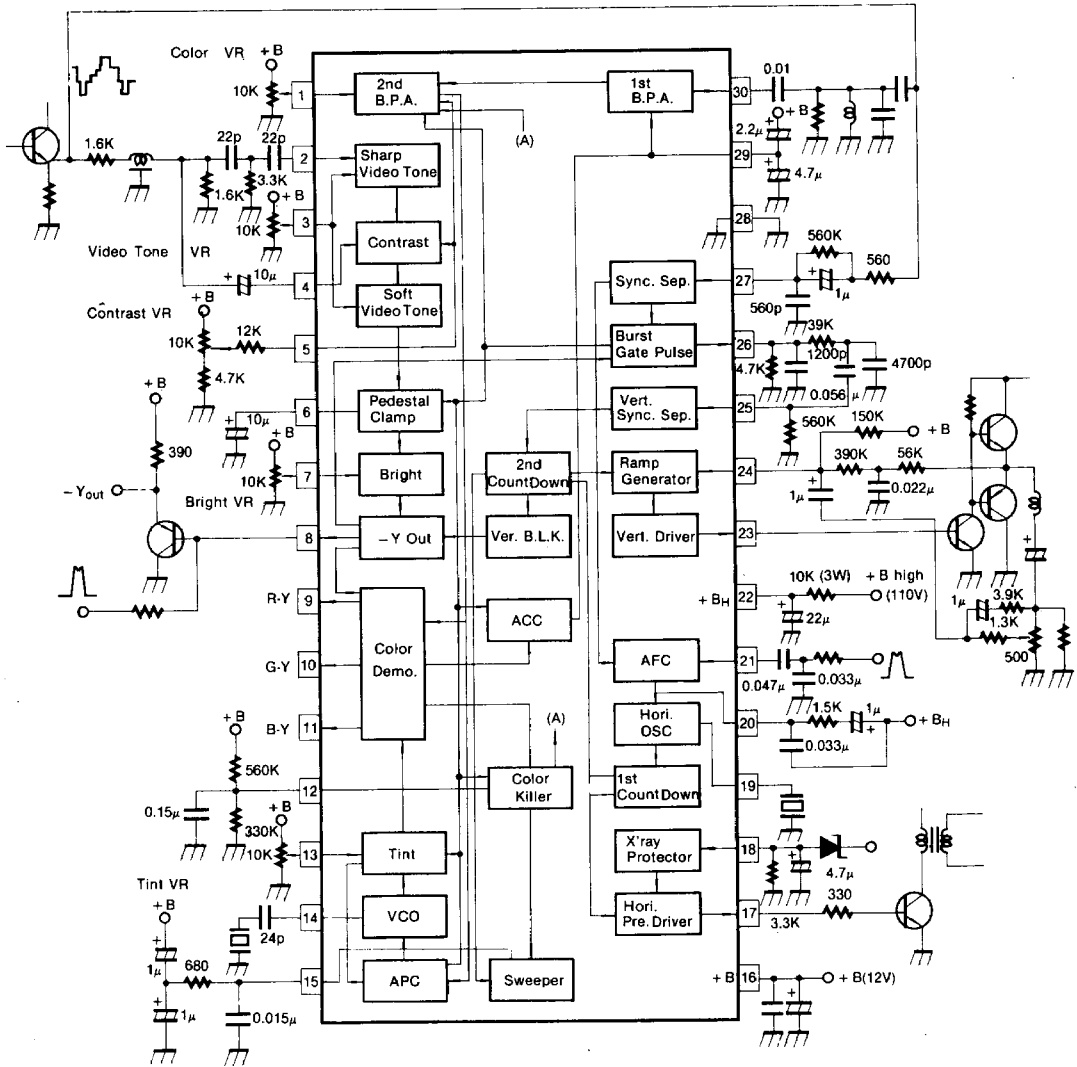
Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Operating Current Range	$I_{22}$		8.5	10.0	15.0	mA
Horizontal Regulating Voltage	$V_H$	$I_{22} = 10mA$	8.0	8.7	9.4	V
Sync Separator Input Voltage	$V_{27}$	$I_{22} = 10mA$	9.0	9.3	9.6	V
Hori. Pulse Starting Voltage	$V_{HSTR}$	$V_H = \text{Variable}$			5.5	V
Hori. Free-Running Freq.	$f_H$	$I_{22} = 10mA$	15.564	15.734	15.864	KHz
Hori. Output Pulse Width	$T_H$	$I_{22} = 10mA$	23.5	24.5	25.5	us
X-ray Protection Voltage	$V_{x18}$	$I_{22} = 10mA$ , $V_p = \text{Variable}$	0.55	0.65	0.75	V
Horizontal Pull-In Range	$f_{Hpull}$	$I_{22} = 10mA$	+400 -500			Hz
Vert. Free-Running Freq.	$f_v$	$V_{B+} = 12.0V$	49.15	53.15	57.15	Hz
Vert. Retrace Time	$T_R$	$V_{B+} = 12.0V$	0.50	0.65	0.80	ms
Vert. Blanking Pulse Width	$T_{BL}$	$V_{B+} = 12.0V$		1223.5		us
Vert. Pull-In Range	$f_{vpull}$	$V_{B+} = 12.0V$	11.0			Hz

TEST CIRCUIT



3

TYPICAL APPLICATION CIRCUIT



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