

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

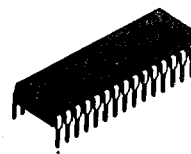
The KA2155/KA2156 are small-sized multifunction ICs containing the video chroma, deflection circuit of NTSC color TV in the SDIP30 shrink type.

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

30 SDIP



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

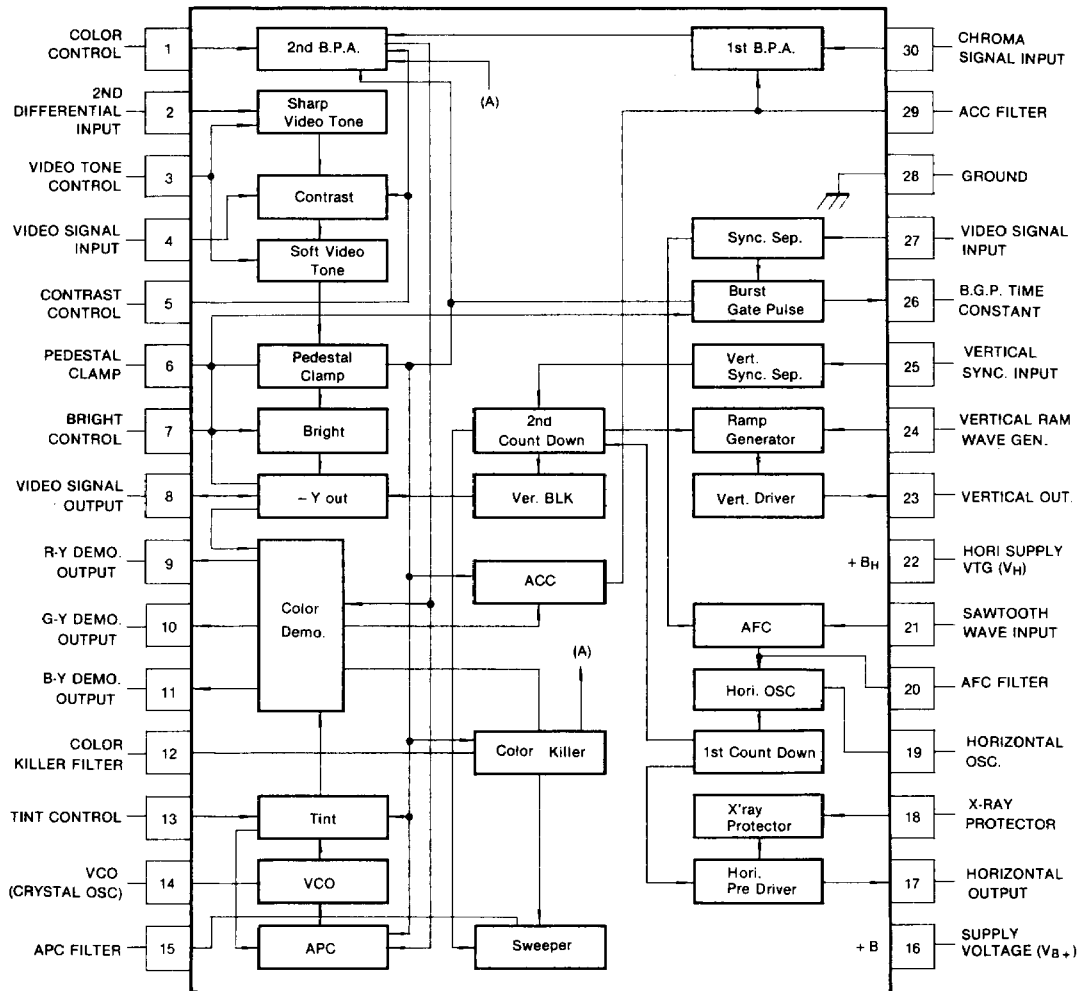
FUNCTIONS

- 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
- 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

ORDERING INFORMATION

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

BLOCK DIAGRAM



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

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

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	Δe_o	$V_{B+} = 12.0\text{V}$, $f = 100\text{KHz}$	-10		+10	%
Tone Control Characteristic (I)	$G_p \text{ min}$	$V_{B+} = 12.0\text{V}$, $f = 2.0\text{MHz}$	-5	-3	-1	dB
Tone Control Characteristic (II)	$G_p \text{ max}$	$V_{B+} = 12.0\text{V}$, $f = 2.0\text{MHz}$	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_{p-p}
Contrast Control Range	ΔG_{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		%

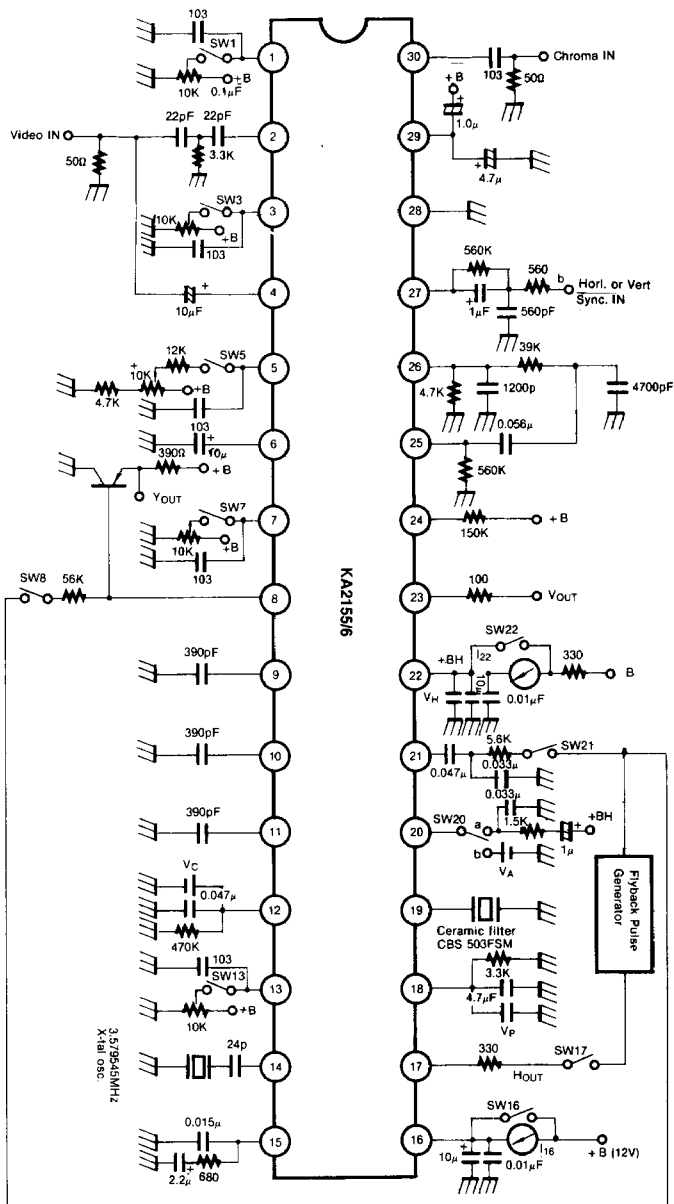
ELECTRICAL CHARACTERISTICS ($V_{CC} = 12.0V$, $T_a = 25^\circ C$)**CHROMA STAGE**

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Contrast Color Control Range	ΔG_{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.	ΔE_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}	$V_{B+} = 12.0V$, $f = 3.5MHz \sim 3.9MHz$	± 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



TYPICAL APPLICATION CIRCUIT

