

AN5612, AN5613

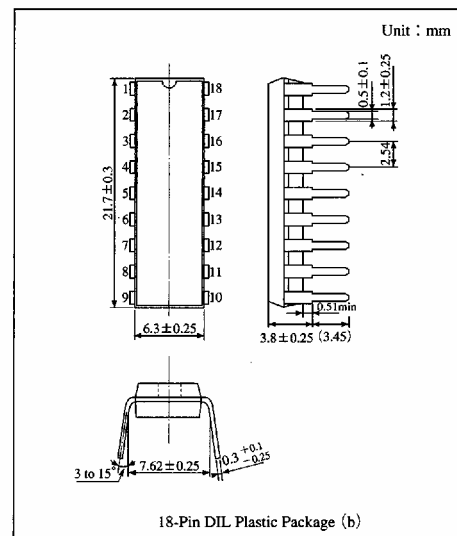
Video Signal, Chrominance Signal Processing ICs for Color TV

Overview

The AN5612 and the AN5613 are integrated circuits designed for color TV video signal and chrominance signal processing circuits.

Features

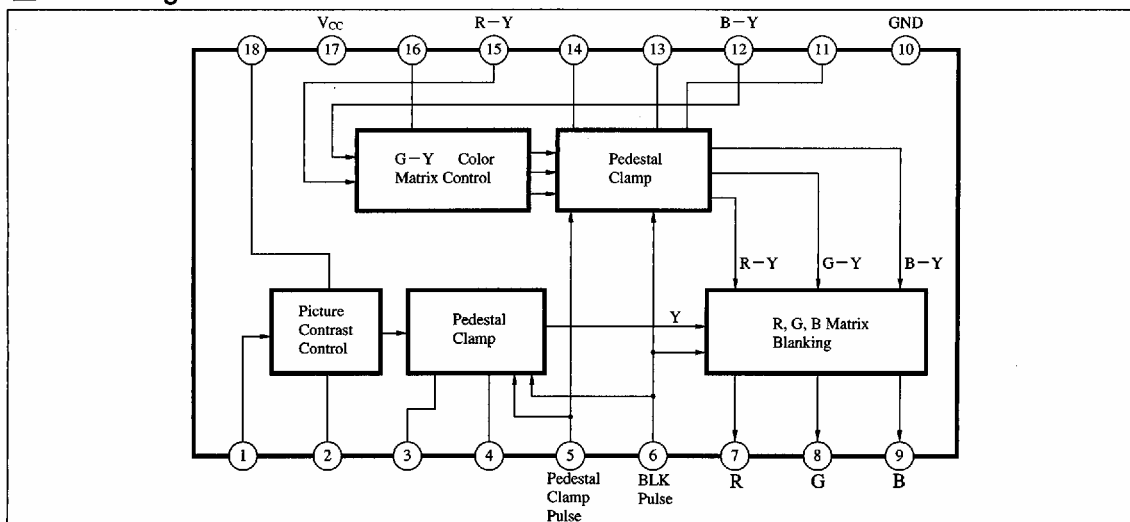
- Chrominance signal processing circuit for either PAL or SECAM system color TV receivers, which can be made by using the AN5612 or the AN5613 in combination with the AN5622 and the AN5630N
 - PAL system : AN5612/AN5613, AN5622
 - SECAM system : AN5612/AN5613, AN5622, AN5630N
 - Incorporating luminance signal mixer circuit, they provide R.G.B. primary color output
 - DC regeneration
- AN5612...60% AN5613...100%



Pin Descriptions

Pin No.	Pin name	Pin No.	Pin name
1	Y signal input	10	GND
2	Picture control	11	B-Y clamp capacitor
3	Y clamp capacitor	12	B-Y signal input
4	Brightness control	13	G-Y clamp capacitor
5	Pedestal clamp pulse input	14	R-Y clamp capacitor
6	Blanking pulse input	15	R-Y signal input
7	R output	16	Color control
8	G output	17	Vcc
9	B output	18	Contrast control

Block Diagram



■ Absolute Maximum Ratings (Ta=25°C)

Parameter		Symbol	Rating		Unit
Voltage	Supply voltage	V _{CC}	14.4		V
	Circuit voltage	V ₄₋₁₀ , V ₁₆₋₁₀ , V ₁₈₋₁₀	V ₁₇₋₁₀	0	V
		V ₅₋₁₀ , V ₆₋₁₀	+6	-4	V
Current	Circuit current	I ₇ , I ₈ , I ₉	+7	-15	mA
		I ₁₁ , I ₁₃ , I ₁₄	+3	-3	mA
		Power dissipation (T _a =70°C)		P _D	800
Temperature	Operating ambient temperature	T _{opr}	-20 to +70		°C
	Storage temperature	T _{stg}	-55 to +155		°C

■ Electrical Characteristics (Ta=25°C)

Parameter		Symbol	Condition	min	typ	max	Unit
Total circuit current		I _{tot}	V _{CC} = 12V	AN5612	28	38	mA
				AN5613	27	37	
Voltage gain (max. Video)		A _V	Sine wave 10kHz, 100mV _{rms} input, contrast max., picture min.	3.1	4.0	4.9	times
Contrast attenuation ratio (min.)		A _{Vmax} /A _{Vmin}		0.15	0.19	0.26	times
Frequency characteristics (Video)		f _c	Sine wave 100mV _{rms} input, frequency when output/input is -3dB, picture min. (10kHz level assumed as 0dB)	6	—	—	MHz
DC transfer quantity		T _{DC}	Video input 1V _{P-P} (stair step), APL10 to 90%, B output	AN5612	46	—	%
				AN5613	90	96	
Color difference voltage amplification	B-Y	A _{V(B-Y)}	Sine wave 10kHz, 240mV _{P-P} , Pin⑨ output voltage gain for Pin⑫ input	5.1	6.6	7.9	times
	R-Y	A _{V(R-Y)}	Cosine wave 10kHz, 200mV _{P-P} , Pin⑦ for Pin⑮ input	5.1	6.6	7.9	times
G-Y color difference ratio		G-Y / B-Y	Sine wave 10kHz, 240mV _{P-P} , Pin⑫ input cosine wave 10kHz, 200mV _{P-P} , Pin⑧ output ratio to Pin⑨ output for Pin⑮ input	0.28	0.34	0.40	times
Demodulated color (G-Y)		∠(G-Y)	In G-Y/B-Y, phase difference between Pin⑧ output and Pin⑨ output	234	236	239	deg.
Color difference output voltage (max.)		e _o	Sine/cosine wave 10kHz, Pin⑦ or Pin⑨ output voltage at input 1.5V _{P-P}	5.5	6.5	7.6	V _{P-P}
Differential gain (Video Amp.)		DG	Superimpose 3.58MHz components at 10mV _{P-P} on the video part of stair step 1V _{P-P} for measurement with a vector-scope	—	—	6	%
Demodulation output DC voltage		E _{O(DC)}	V ₄ =8V, at non-input signal : RGB each outputs	1.3	1.9	2.4	V
E _{O(DC)} supply voltage dependency		ΔE _{O(DC)} / V _{CC}	V _{CC} = 12V ± 20%, V ₇ = 2.0V (V _{CC} = 12V) R.G.B outputs	0.16	0.24	0.32	V/V
E _{O(DC)} ambient temperature dependency		ΔE _{O(DC)} / Ta	V ₇ = 2.0V (Ta = 25°C) Ta = -20 to +70°C, R.G.B outputs	-4	-2	+0.5	mV/°C
DC voltage difference between demodulation outputs		ΔE _{X-Y}	V ₇ = 2.0V, output differential voltage for each of R.G.B	—	0	±300	mV
ΔE _{X-Y} supply voltage dependency		ΔE _{X-Y} / V _{CC}	V _{CC} = 12V ± 20%, V ₇ = 2.0V (V _{CC} = 12V) for V _{CC} = 12V	—	0	±100	mV
ΔE _{X-Y} ambient temperature dependency		ΔE _{X-Y} / Ta	V ₇ = 2.0V (Ta = 25°C), Ta = -20 to +70°C, for Ta = 25°C	—	0	±100	mV
Pedestal clamp voltage		V _(clamp)	Pulse voltage for pedestal clamp operation	0.65	0.85	1.05	V
Blanking voltage		V _(BLK)	Pulse voltage for blanking operation	0.65	0.85	1.05	V

■ Application Circuit (Combined Use of the AN5612/5613, the AN5622 and the AN5630N)

