AN5612, AN5613

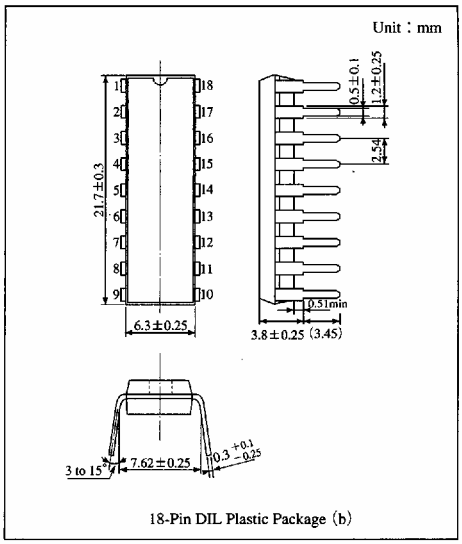
Video Signal, Chrominance Signal Processing ICs for Color TV

■ 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%

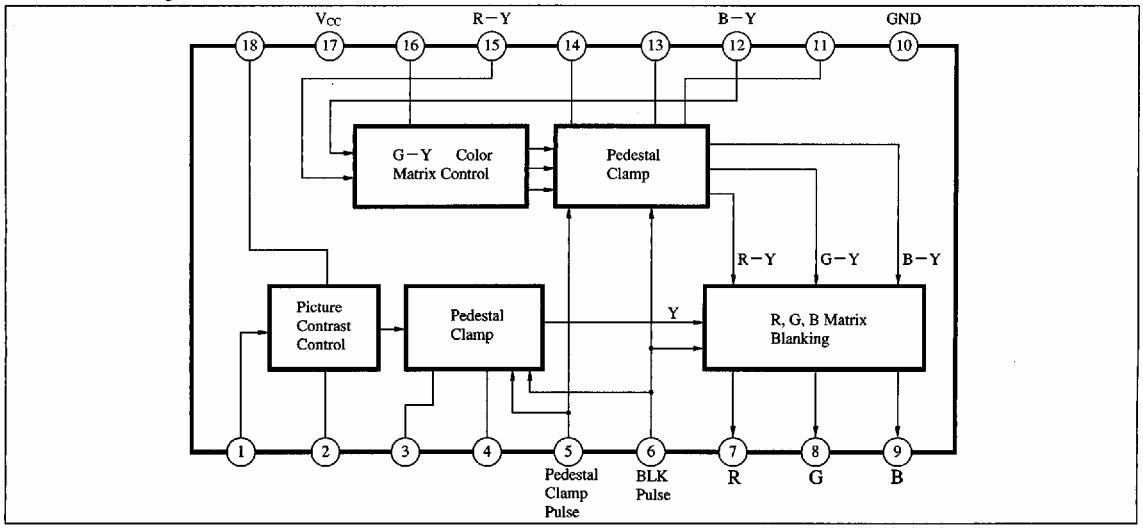


18-Pin DIL Plastic Package (b)

■ 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	V_{CC}
9	B output	18	Contrast control

■ Block Diagram



■ Absolute Maximum Ratings (Ta=25℃)

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 (Ta=70℃)		P_D	800		mW
Temperature	Operating ambient temperature	T_{opr}	−20 to +70		℃
	Storage temperature	T_{stg}	−55 to +155		℃

■ Electrical Characteristics (Ta=25℃)

Parameter		Symbol	Condition		min	typ	max	Unit
Total circuit current		I_{tot}	V_{CC}=12V	AN5612	28	38	48	mA
				AN5613	27	37	47	
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	—	60	%
				AN5613	90	96	100	
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		$\Delta E_{O(DC)}/V_{CC}$	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		$\Delta E_{O(DC)}/Ta$	V_7=2.0V (Ta=25℃) Ta=−20 to +70℃, R.G.B outputs		−4	−2	+0.5	mV/℃
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		$\Delta E_{X-Y}/V_{CC}$	V_{CC}=12V±20%, V_7=2.0V (V_{CC}=12V) for V_{CC}=12V		—	0	±100	mV
ΔE_{X-y} ambient temperature dependency		$\Delta E_{X-Y}/Ta$	V_7=2.0V (Ta=25℃), Ta=−20 to +70℃, for Ta=25℃		—	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)