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NTE7112
Integrated Circuit
Color TV Video Signal/Chrominance Signal Processing Circuit

Description:

The NTE7112 is an integrated circuit in an 18–Lead DIP type package designed for use in color TV video signal and chrominance signal processing circuits.

Features:

- Chrominance signal processing circuitry for either PAL or SECAM system color TV receivers can be made by using the NTE7112 in combination with the AN5622 and the AN5630N:
  PAL System: NTE7112, AN5622
  SECAM System: NTE7112, AN5622, AN5630N
- Incorporating luminance signal mixer circuit, provides R, G, B original color output
- DC Transmission Quality: 100%
- All DC controlled adjustment simplifies wiring operation (Color/Contrast/Brightness adjustment)

Absolute Maximum Ratings: (T_A = +25°C unless otherwise specified)

Supply Voltage, V_{CC} 14.4V
Circuit Voltage, $V_{4–10}$, $V_{16–10}$, $V_{18–10}$ . . . . . $V_{17–10}$ to 0V
Circuit Voltage, $V_{5–10}$, $V_{6–10}$ . . . . . +6V to –4V
Circuit Current, I_7,I_8, I_9 . . . . . +7mA to –15mA
Circuit Current, I_{11}, I_{13}, I_{14} . . . . . +3mA to –3mA
Power Dissipation (T_A = +70°C), P_D 800mW
Operating Ambient Temperature Range, T_{opr} . . . . . –20° to +70°C
Storage Temperature Range, T_{stg} . . . . . –55° to +155°C

Electrical Characteristics: (T_A = +25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Total Circuit Current	I_{tot}	V_{CC} = 12V	27	37	47	mA
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

Electrical Characteristics (Cont'd): (T_A = +25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
DC Transfer Quantity	T_{DC}	Video input $1V_{P-P}$(stair step), APL 10 to 90, B output	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, $240V_{P-P}$, Pin12 input cosine wave 10kHz, $200mV_{P-P}$, Pin8 output ratio to Pin9 output for Pin15 input	0.28	0.34	0.40	times
Demodulation 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 DC Output Voltage	$E_{O(DC)}$	V_4 = 8V, VR_{-4} for input invalid Signal: VR_{-5} RGB outputs	1.3	1.9	2.4	V
$E_{O(DC)}$ Change w/Supply Voltage	$\Delta E_{O(DC)}/V_{CC}$	V_{CC} = 12V ±20%, V_7 = 2V (V_{CC} = 12V) RGB outputs	0.16	0.24	0.32	V/V
$E_{O(DC)}$ Change w/Ambient Temperature	$\Delta E_{O(DC)}/T_A$	V_7 = 2V (T_A = +25°C) T_A = –20° to +70°C, RGB outputs	–4	–2	+0.5	mV/°C
DC Voltage Difference between Demodulation Outputs	ΔE_{X-Y}	V_7 = 2V, Output differential voltage for each of R.G.B	–	0	±300	mV
ΔE_{X-Y} Change w/Supply Voltage	$\Delta E_{X-Y}/V_{CC}$	V_{CC} = 12V ±20%, V_7 = 2V (V_{CC} = 12V) for V_{CC} = 12V	–	0	±100	mV
ΔE_{X-Y} Change w/Ambient Temperature	$\Delta E_{X-Y}/T_A$	V_7 = 2V (T_A = +25°C) T_A = –20° to +70°C, for T_A = +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

Pin Connection Diagram