

LINEAR MONOLITHIC INTEGRATED CIRCUITS

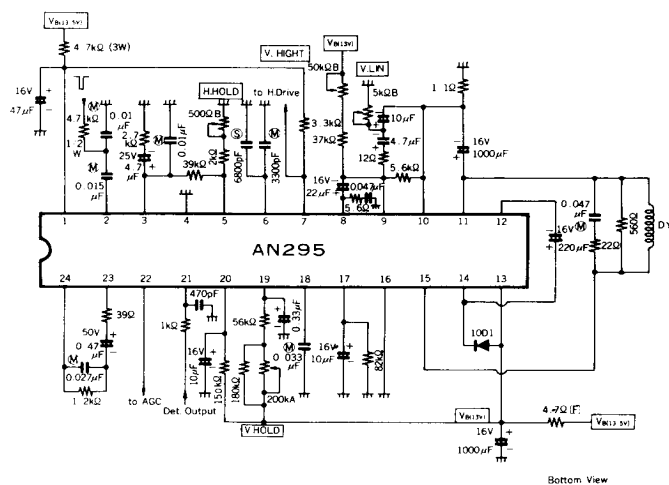
IC's For TV

Type No.	Function	Maximum Ratings (Ta=25°C)	Electrical Characteristics (Ta=25°C)						
			Item	Symbol	Condition	min.	typ.	max.	Unit
AN295	Deflection Signal Processing Circuit	$V_{CC}(V_{1-4})=13.8V$ $V_{CC}(V_{13-16})=15.0V$ $I_{13}=170mA$ $P_D=2.1W$ $T_{opr}=-20\sim+70^\circ C$ $T_{stg}=-55\sim+150^\circ C$	Total Circuit Current	I_1	$V_{CC1}=13V$	33	46	66	mA
			AGC Output Voltage	$V_{O(AGC)}$	$V_{CC1}=13V, Pin(22-4)$	0.9	1	1.1	V
			V-Osc. Nominal Frequency	f_{VO}	$V_{CC1}=12V, R_{OSC(V)}=97k\Omega$	47.8	50.3	52.8	Hz
			V-Osc. Pulse Width	τ_v	$V_{CC1}=12V, R_{OSC(V)}=97k\Omega$	280	380	480	μs
			Verical Pull-in Range	f_{VP}		34.5	38	41.5	Hz
			V-Deflection Output Current	I_{P-P}	$V_{CC1}=12V, R_{LIN(V)}=820\Omega$ $R_{OSC(V)}=97k\Omega, R_{HOLD(V)}=51k\Omega$	0.65	0.75	0.85	Ap-p
			V-Middle-point Voltage	V_{MID}	$V_{CC1}=12V, R_{OSC(V)}=97k\Omega$	5.6	5.9	6.2	V
			Retrace Pulse Width	V_P	$R_{HIGHT}=51k\Omega$	22			V
			Quiescent Circuit Current	I_{CQ}	$V_{CC1}=12V$	7.5	12.1	25	mA
			H-Osc. Nominal Frequency	f_{HO}	$V_{CC1}=12V, R_{OSCH}=2.2k\Omega$	14.95	15.75	16.55	kHz
			H-Osc. Pulse Width	τ_H	at $f_{HO}=15.75kHz$	20	22.5	25	μs
			H-Osc. Frequency Control Sensitivity	β_H	$f(\Delta I_1=-100\mu A)-f(\Delta I_1=+100\mu A)/200$	15.1	17.2	19.3	Hz/ μA
			Sync. Separation Start Input Voltage	V_{sync-s}	$\tau_H=4.7\sim5.3\mu s, V_O\geq 1V_{P-P}$			0.18	V_{P-P}
			Sync. Separation Horizontal Pulse Width	τ_{sync-s}	Input H-sync signal 0.6-1.2V _{P-P}	4.7	5	5.3	μs
			Vertical Output Saturation Voltage	V_{15-16}	$V_{CC1}=11.5V$			0.16	V
			Horizontal Output Saturation Voltage	V_{7-4}				0.21	V
AN5410 AN5411	Deflection Signal Processing Circuit	$V_{CC}(V_{20-164})=14.4V$ $V_{CC}(V_{8-416})=15.0V$ $I_{20}=22mA$ $I_8=18mA$ $P_D=600mW$ $Popr=1\pm 0.6kg/cm^2$ $Gopr=1000G$ $Sopr=500G$ $T_{opr}=-20\sim+70^\circ C$ $T_{stg}=-55\sim+150^\circ C$	Circuit Current	I_8	$V_{CC1}=12V$	7.7	10	12.3	mA
				I_{20}	$V_{CC2}=12V$	20.8	26	31.2	mA
			V-Osc. Frequency	f_{VO}	$V_{CC}=12V$	53	55.6	58	Hz
			Frequency Drift with Supply Voltage (V-Osc.)	$\Delta f_{VO}/V_{CC}$	$f_{VO}[9.6V]-f_{VO}[14.4V]$	0	0.84	1	Hz
			Frequency Drift with Ambient Temperature (V-Osc.)	$\Delta f_{VO}/T_a$	$V_{CC}=12V, T_a=-20\sim+70^\circ C$	0		1	Hz
			V-Osc. Pulse Width	τ_{VO}	$V_{CC}=12V$	500		820	μs
			V-Middle-point Temperature Dependence	V_{MID}/T_a	$T_a=-20\sim+70^\circ C$	-0.5		0.5	V
			H-Osc. Start Voltage	V_{HO-S}	$f_{HO}=10kHz\sim 20kHz$ $3V_{P-P}(V_{CC}=6.5V)$	5		6.5	V
			H-Osc. Frequency	f_{HO}	$V_{CC}=12V$	15.2		16.5	kHz
			Frequency Drift with Supply Voltage (H-Osc.)	$\Delta f_{HO}/V_{CC}$	$f_{HO}[14.4V]-f_{HO}[9.6V]$	0		100	Hz
			H-Osc. Pulse Width (Duty)	τ_{H-DUTY}	$V_{CC}=12V$	AN5410 36		50 41	%
			H-Osc. Frequency Control Sensitivity	β_H	$I_O=\pm 100\mu A$	17	18.9	20.8	Hz/ μA
			AFC Loop Gain	f_C	$\mu \times \beta$	4500	6050	7600	Hz/rad
			Protector Operation Voltage	V_{12-4}	AN5410	5.7		6.9	V
				V_{12-9}	$V_{9-4}\div 6V$ AN5411	-20	80	180	mV
AN5429	Deflection Signal Processing Circuit	$V_{CC}(V_{7-10})=10.5V$ $V_{CC}(V_{15-10})=14.4V$ $I_{CC}(I_7)=16mA$ $I_{CC}(I_{15})=20mA$ $P_D=460mW$ $T_{opr}=-20\sim+70^\circ C$ $T_{stg}=-55\sim+150^\circ C$	Circuit Current	I_7		7.5	12	15.5	mA
				I_{15}		13	20	27	mA
			Sync. Sep. H Pulse Width	τ_{sync}	Video input 2.5V _{P-P} APL=50%	4.8	5.1	5.4	μs
			V Free Osc. Start Supply Voltage	V_{fVO-S}	f_{VO} at 40-60Hz Output 3V _{P-P} and over, V_{CC1}			6	V
			V Free Osc. Frequency	f_{VO}	$R_{OSC(V)}=9.5k\Omega$ $V_{CC1}=12V$	47	50	53	Hz
			Frequency Drift with Supply Voltage (V-Osc.)	$\Delta f_{VO}/V_{CC}$	$V_{CC1}=14.4V$ and $9.6V$ f_{VO} diff.	0	1	1.3	Hz
			fvo Frequency Drift with Ambient Temperature	$\Delta f_{VO}/T_a$	$T_a=-20\sim+70^\circ C$		0.8		Hz
			V Free Osc. Pulse Width	τ_{VO}	$R_{OSC(V)}=9.5k\Omega$ $V_{CC1}=12V$	420	600	780	μs
			H Free Osc. Start Supply Voltage	V_{fHO-S}	$f_{HO}=10\sim 20kHz$ Output 2V _{P-P} and over, V_{CC2}	7.5			V
			H Free Osc. Frequency	f_{HO}	$R_{OSC(H)}=2.95k\Omega$ $V_{CC2}=12V$	15	15.75	16.25	kHz
			H Osc. Pulse Duty Ratio	τ_{HO}		31.5	35.4	38.9	%
			Frequency Drift with Supply Voltage (H-Osc.)	$\Delta f_{HO}/V_{CC}$	$V_{CC2}=14.4V$ and $9.6V$ f_{HO} diff.	0	100	200	Hz
			H Osc. Control Sensitivity	β_H	$\Delta I_1\pm 100\mu A$ f_{HO} change	19.8	21.8	23.8	Hz/ μA
			AFC Loop Gain	f_C			8.2		kHz/rad
			Protector Operation Voltage	V_{5-10}		0.55		0.75	V

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Application Circuit

The block diagram illustrates the video processing system for the 1000 Series Color Monitor. It features a 24-pin connector at the top and a 12-pin connector at the bottom. The system includes several key components: V. Sync Sep., Sync. Amp., Noise Detector, Noise Gate, V. Sync Sep., Vertical Osc., Vertical Output (Class-B), Fly Back Gen., Horizontal AFC, Horizontal Osc., Ramp Generator, and Vertical Drive. The diagram shows the flow of video signals and control lines between these components and the connectors. Solid lines represent video signals, while dashed lines represent control signals. The 24-pin connector includes pins for Vcc, and the 12-pin connector includes pins for ground and other control signals.



Bottom View

The block diagram illustrates the signal flow in a television receiver. It features two rows of functional blocks. The top row, from left to right, includes: Sync Separator, Noise Blanking, Vert Oscillator, Vert Sawtooth Generator, Vert Amplifier, and Vert Pre Driver. The bottom row, from left to right, includes: Integrator, Hor AGC, Hor Oscillator, X-Ray Protector, Hor Output, and Voltage Regulator. Signal paths are indicated by lines connecting the blocks. A top horizontal line contains 20 numbered terminals (1-20) and a ground symbol. A bottom horizontal line contains 12 numbered terminals (1-12) and a ground symbol. The connections are as follows:

- Terminal 1 connects to the Integrator.
- Terminal 2 connects to the Integrator.
- Terminal 3 connects to the Integrator and the Hor AGC.
- Terminal 4 connects to the Voltage Regulator and has a ground connection.
- Terminal 5 connects to the Hor AGC and the Vert Oscillator.
- Terminal 6 connects to the Hor AGC and the Hor Oscillator.
- Terminal 7 connects to the Hor AGC and the X-Ray Protector.
- Terminal 8 connects to the Voltage Regulator.
- Terminal 9 connects to the X-Ray Protector and the Hor Output.
- Terminal 10 connects to the X-Ray Protector and the Hor Output.
- Terminal 11 connects to the X-Ray Protector and the Hor Output.
- Terminal 12 connects to the Hor Output.
- Terminal 13 connects to the Sync Separator.
- Terminal 14 connects to the Vert Amplifier and has a ground connection.
- Terminal 15 connects to the Vert Sawtooth Generator and the Vert Amplifier.
- Terminal 16 connects to the Vert Pre Driver and has a ground connection.
- Terminal 17 connects to the Vert Pre Driver.
- Terminal 18 connects to the Vert Oscillator and the Vert Sawtooth Generator.
- Terminal 19 connects to the Vert Oscillator and the Vert Sawtooth Generator.
- Terminal 20 connects to the Sync Separator.

Note: Pin 9 is No Connection for AN5410. Application circuit see page 184

