AN5622

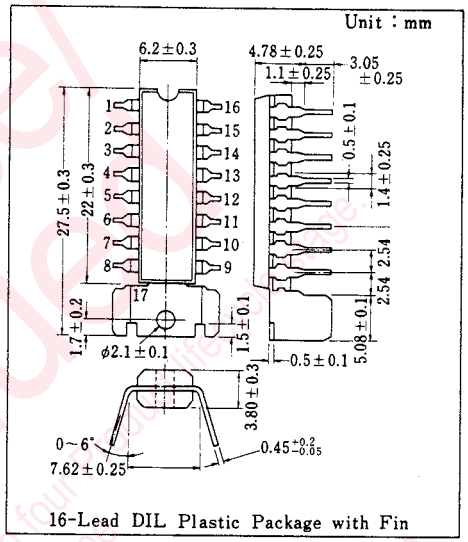
PAL System Color TV Chrominance Signal Processing Circuit

■ Outline

The AN5622 is an integrated circuit designed for PAL system color TV chrominance signal processing circuit.

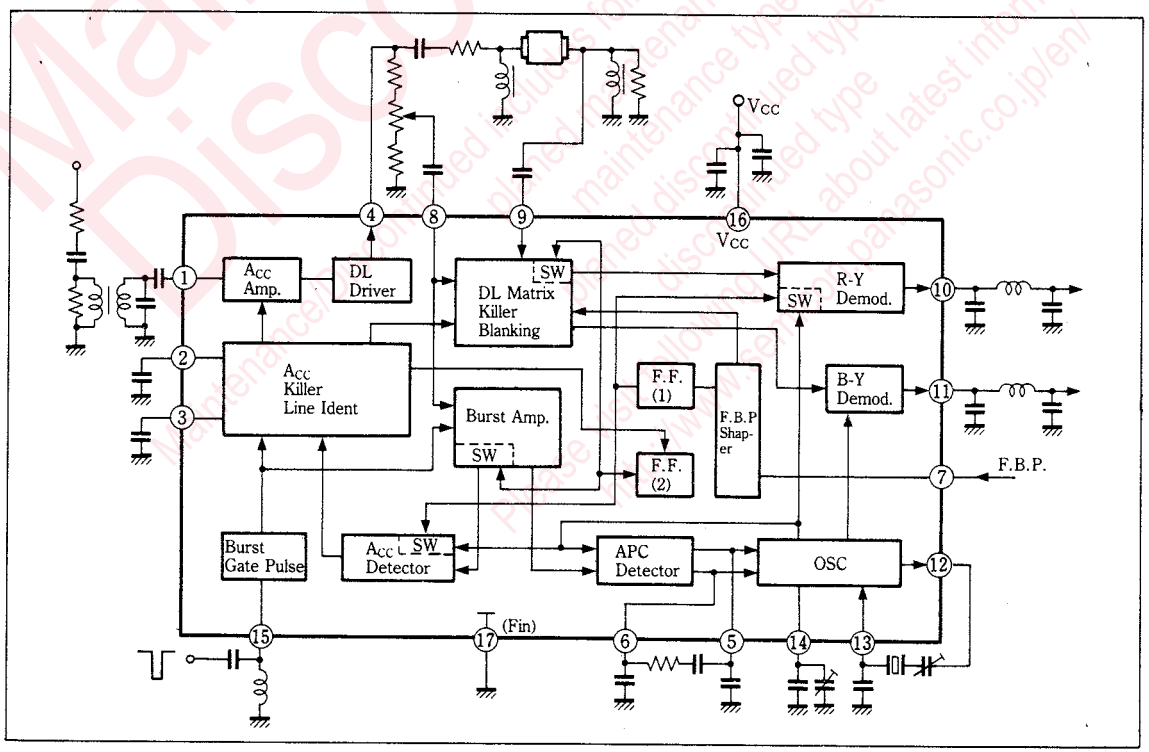
■ Featuris

- Incorporating a total chrominance signal processing circuitry for PAL system color TV receivers on a single chip
- Fewer external components and easier circuit design
- PAL/SECAM compatible receivers can be realized when this circuit is used in combination with the AN5612 (AN5613) and AN5630N



16-Lead DIL Plastic Package with Fin

■ Block Diagram



■ Absolute Maximum Ratings (Ta=25℃)

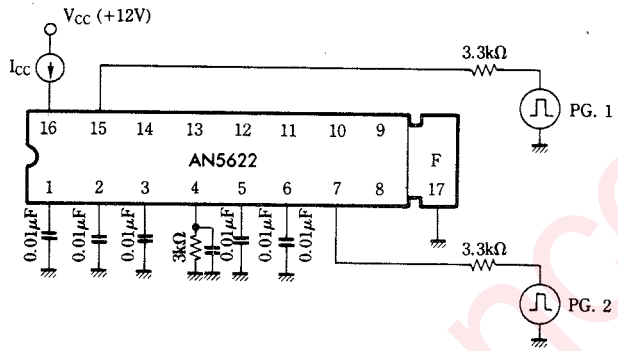
Item		Symbol	Rating		Unit
Voltage	Supply Voltage	V_{CC}	14.4		V
	Circuit Voltage	V_{1-17}	0	V_{16-17}	V
		V_{15-17}	0	+4	V
Current	Circuit Current	I_4	−20		mA
		I_{10}	−1	+5	mA
		I_{11}	−1	+5	mA
Power Dissipation (Ta=70℃)		P_D	1100		mW
Temperature	Operating Ambient Temperature	T_{opr}	−20～+70		℃
	Storage Temperature	T_{stg}	−55～+150		℃

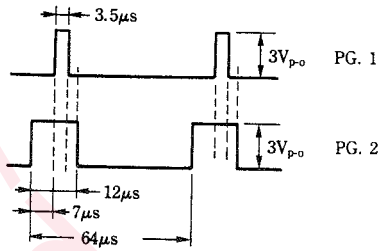
Note : ⊕ and ⊖ are flow-in and flow-out currents to/from the circuit, respectively.

■ Electrical Characteristics (Ta=25℃)

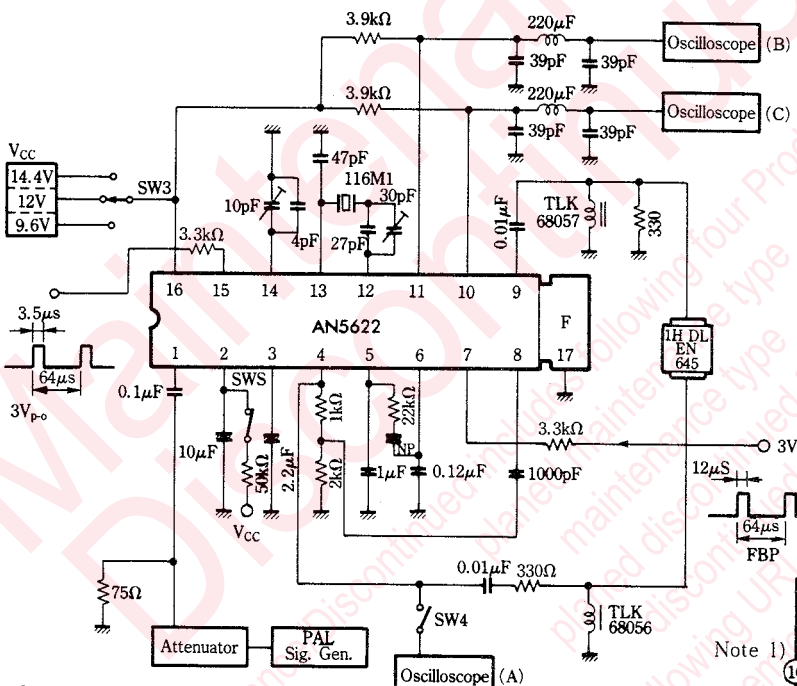
Item	Symbol	Test Circuit	Condition	min.	typ.	max.	Unit
Total Circuit Current	I_{tot}	1	V_{CC}=12V	37	50	63	mA
Circuit Current	V_{10-17}	1	V_{CC}=12V	9.7	10.5	11.3	V
	V_{11-17}	1	V_{CC}=12V	0.45	0.60	0.75	V
Output Voltage(Burst)	e_b	2	TYP input(burst 100mVp-p) Pin ④ burst output Level	0.45	0.60	0.75	V_{P-P}
ACC Characteristics	ACC	2	-20dB input(burst 10mVp-p)	−6	−4	−1	dB
Output Voltage (B−Y)	$e_{o(1)}$	2	Standard color bar, burst 100mVp-p	0.8	1.2	1.6	V_{P-P}
Output Voltage (R−Y)	$e_{o(2)}$	2		0.7	1.1	1.5	V_{P-P}
Killer Color Leak(R−Y)	e_{LK}	2	Standard color bar, signal level Killer ON	—	—	10	mV_{P-P}
Color Killer Level	e_K	2	Chroma input level When Killer ON (Attenuation from TYP input Level)	−40	−35	−30	dB
System Switch OFF Characteristics	e_{LOFF}	2	PNP EF of demodulator output at standard operation Signal element for Cut off	—	—	10	mV_{P-P}
Oscillation Frequency	f_o	4	V_{5-6}=0V displacement from 4.433618MHz	-250	—	250	Hz
fosc Change with Supply Voltage	Δf_o-V_{CC}	4	V_{CC}=12V±20%, V_{5-6}=0V	−80	—	80	Hz
fosc Change with Ambient Temperature	Δf_o-Ta	4	V_{5-6}=0V, Ta=−20～+70℃	100	—	100	Hz
Oscillation Starting Supply Voltage	V_{osc}	4	UP from V_{CC} : Low side, V_{CC} for the start of oscillation	—	—	8.0	V
VCO Control Sensitivity	β	4	Oscillation frequency for V_{5-6}=±50mV	0.4	0.9	1.4	Hz/mV
Phase Detection Sensitivity (APC)	μ	4	Burst relative phase±15° for SC	50	75	100	mV/deg.
APC Pull-in Range	f_p	4	Burst frequency change of Pin ⑧ alternating burst	±0.4	±0.6	—	kHz
Phase Hold Characteristics	$\Delta\phi$	4	Output phase change for variation of burst frequency	0.00	0.03	0.13	deg./Hz

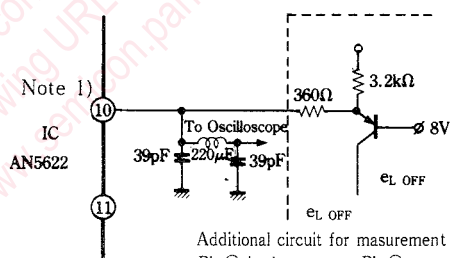
Test Circuit 1 (I_{tot}, $V_{10\text{-}17}$, $V_{11\text{-}17}$)





Test Circuit 2 (e_b, ACC, e_o, e_{LK}, $e_{L\ OFF}$, B-Y/R-Y)





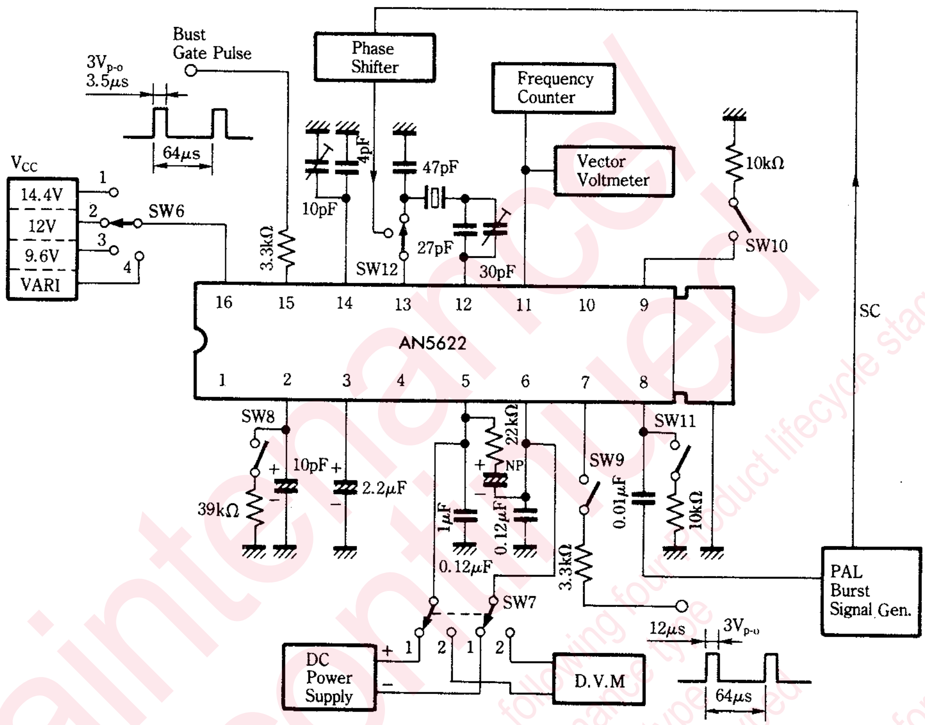
Additional circuit for masurement
Pin⑪ is the same as Pin⑩.

Chroma input
TYP(OdB)
Burst 100mVp-p 10 cycles
BURST/Chroma(R-Y) = 100/220

Item	e_b	ACC	e_o, B-Y /R-Y	e_{LK}	e_K	$e_{L\ OFF}$
SW3	②	②	②	②	②	②
SW4	ON	ON	OFF	OFF	OFF	OFF
SW5	OFF	OFF	OFF	ON	OFF	OFF
Chroma Input	OdB	−20dB	OdB	OdB	Chroma input attenuation	OdB
Osilloscope	A	A	B/C	B/C	B	Note 1)

↑
Input level at Killer ON

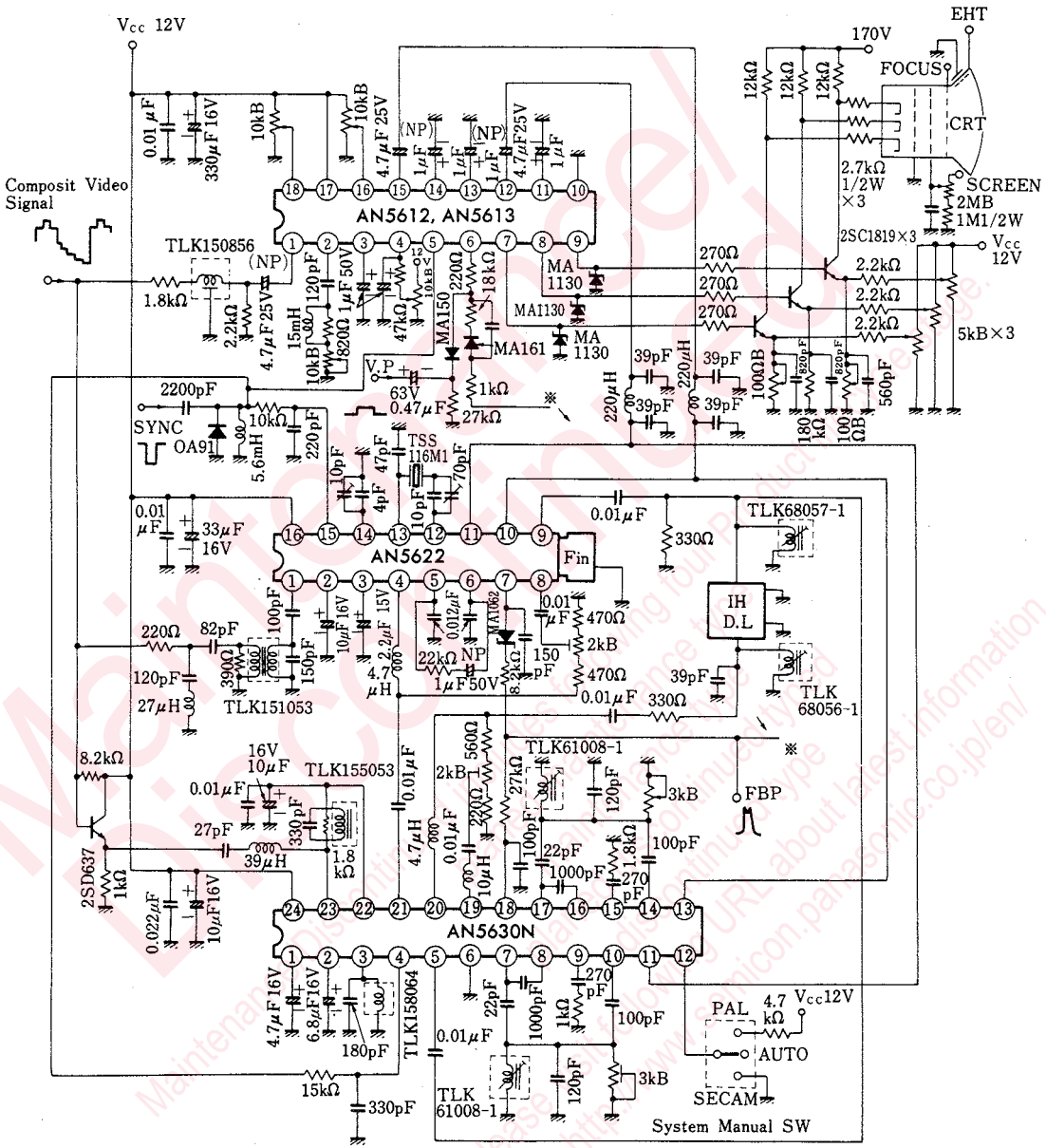
Test Circuit 3 (f_o, Δf_o-V_{CC}, Δf_o-T_a, V_{OSC}, β, μ, f_P, $\Delta\phi$)



Note : Locked to burst frequency for PAL burst signal

Item	f_o	Δf_o–cc	Δf_o–Ta	V_{osc}	β	μ	f_P	$\Delta\phi$
SW6	②	①/③	②	④	②	②	②	②
SW7	①	①	①	①	①	②	②	②
SW8	ON	ON	ON	ON	ON	OFF	OFF	ON
SW9	OFF	OFF	OFF	OFF	OFF	ON	ON	ON
SW10/11	ON	ON	ON	ON	ON	OFF	ON	ON
SW12	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON
Measuring Equipment	Frequency Counter	Frequency Counter	Frequency Counter	Frequency Counter	Frequency Counter	D. V.M	Osc. Pin ⑪	Vector Voltmeter

■ Application Circuit (Combined Use of the AN5612/the AN5613 and the AN5630N)



■ Pin

Pin No.	Pin Name
1	Chroma Input
2	ACC Filter (Variable)
3	ACC Filter (Standard)
4	ACC Chroma Output
5	APC Filter (1)
6	APC Filter (2)
7	FBP Input
8	DL Matrix Chroma Input
9	DL Matrix Chroma Input (1H Delayed)
10	R-Y Output
11	B-Y Output
12	OSC. Output
13	OSC. Input (1)
14	Osc. Outside Constant
15	Burst Gate Pulse Input
16	V_{cc}
17(Fin)	GND

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