AN6366NK, AN6366NS

VTR Color Signal Processing Circuits for NTSC System

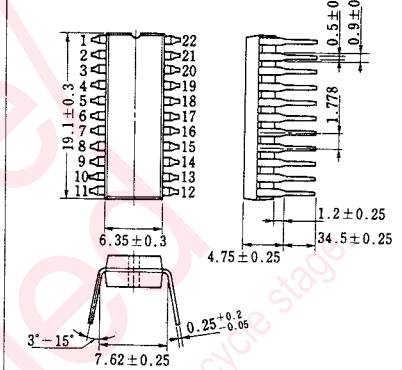
■ Outline

The AN6366NK and The AN6366NS by combining with the MN6163A, are integrated circuits provided with the function which processes VTR color signals matching each mode of 2H/4H/6H in the NTSC system.

■ Features

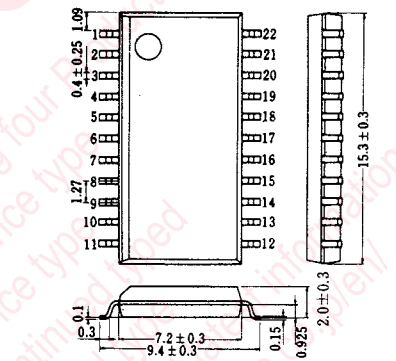
- Operated by low supply voltage : V_{CC}=5V
- Low power consumption(110mW)
- AFC+APC system during recording mode Only APC system during playback mode
- Better S/N ratio by chroma ACC(2H/6Hmode)

AN6366NK Unit : mm



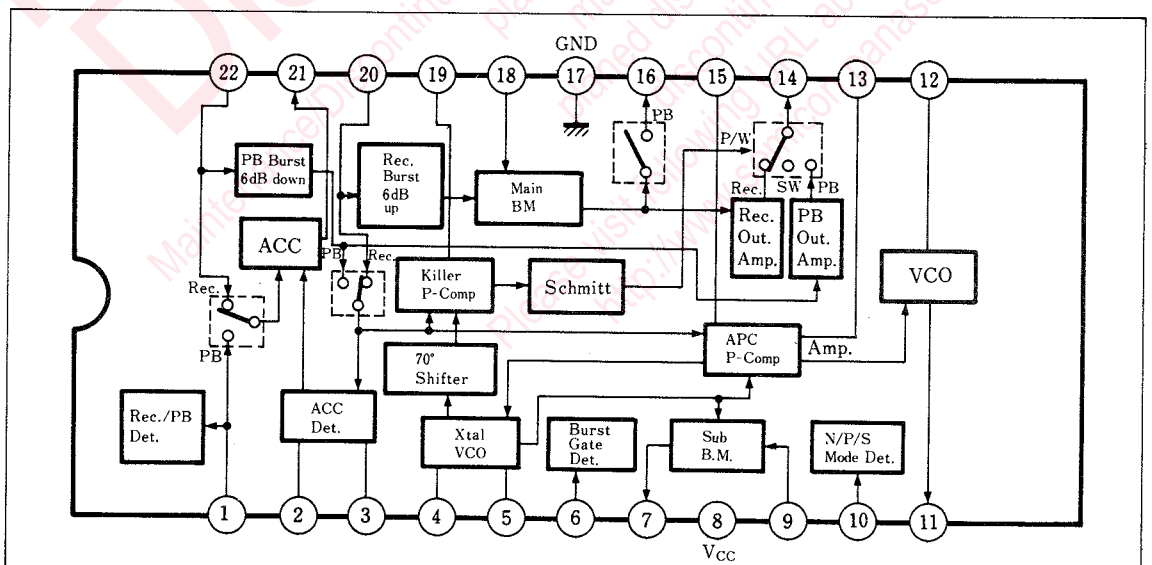
22-Lead Shrunk DIL Plastic Package

AN6366NS Unit : mm



22-Lead PANAFLAT Package (SO-22D)

■ Block Diagram



■ Absolute Maximum Ratings (T_a=25℃)

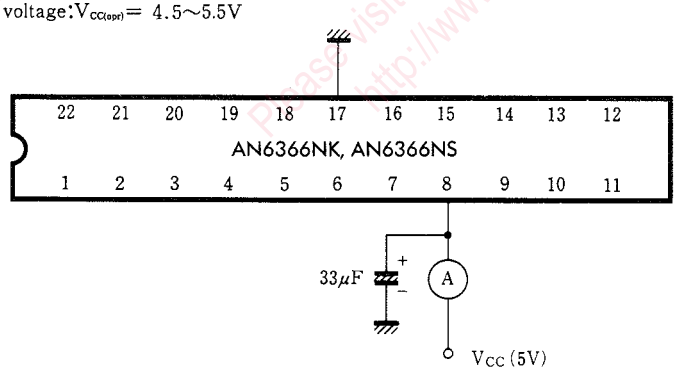
Item	Symbol	Rating	Unit
Supply voltage	V_{CC}	6	V
Power dissipation (Ta=70℃)	P_D	250	mW
Operating ambient temperature	T_{opr}	−20~+70	℃
Storage temperature	T_{stg}	−40~+150	℃

■ Electrical Characteristics (T_a=25℃)

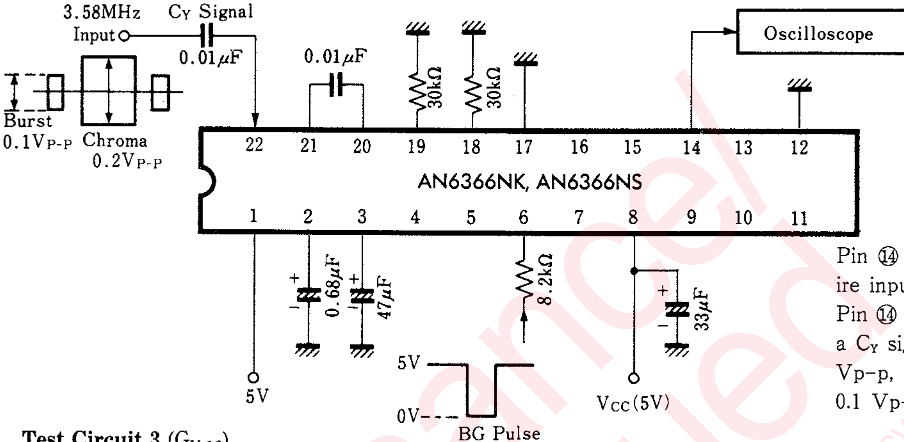
Item	Symbol	Test Circuit	Condition	min.	typ.	max.	Unit
Total circuit current	I_{tot}	1	V_{CC}=5V	15		32	mA
REC output amplitude (Burst ACC)	v_{O14-R}	2	V_{CC}=5V, Pin ㉒ Input Burst 0.1V_{P-P}	0.5		1.2	V_{P-P}
REC ACC control sensitivity (Burst ACC)	β_{AGC-B}	2	V_{CC}=5V, +6dB~−15dB			3	dB
Chroma ACC	β_{AGC-C}	2	V_{CC}=5V	0.5		4.5	dB
Main BM amp. gain	G_{V-16}	3	V_{CC}=5V, Pin ⑳ Input 0.5V_{P-P}	4		9	dB
Main BM carrier leak	CL_{16}	4	V_{CC}=5V			−33	dB
Burst emphasis amount	G_{E11}	5	V_{CC}=5V, Pin ⑳ Input 0.25V_{P-P}	5		7	dB
REC current up rate	G_{REC}	5	V_{CC}=5V, Pin ⑳ Input 0.25V_{P-P}	0.5		2.5	dB
PB output amplitude (2H)	v_{O14-P}	6	V_{CC}=5V, Pin ① Input 0.2V_{P-P}	0.2		0.55	V_{P-P}
Burst de-emphasis amount	G_{DE}	6	V_{CC}=5V, Pin ① Input 0.2V_{P-P}	−6.5		−4.5	dB
PB/REC cross talk	CT_{14-P}	7	V_{CC}=5V			−40	dB
REC control voltage	S_{1-REC}	7	V_{CC}=5V	4.6			V
Sub BM amp. gain	G_{V-7}	8	V_{CC}=5V, Pin ⑨ Input 0.65V_{P-P}	1		5	dB
Sub BM carrier leak	CL_7	9	V_{CC}=5V			−35	dB
Killer sensitivity (ON)	K_{gate1}	10	V_{CC}=5V, Pin ⑳ Input 0dB=0.25V_{P-P}	−22			dB
Killer sensitivity (OFF)	K_{gate2}	10	V_{CC}=5V, Pin ⑳ Input 0dB=0.25V_{P-P}			−10	dB
Killer output (LOW)	V_{14-L}	10	V_{CC}=5V			0.5	V
VCO FREE frequency	f_{OSC}	11	V_{CC}=5V	3		7	MHz
VCO control sensitivity	β_2	11	V_{CC}=5V	1.5		3.5	kHz/mV
VCO output amplitude	v_{O11}	11	V_{CC}=5V	0.4			V_{P-P}
REC Pull in range (H)	f_{APC-H}	12	V_{CC}=5V	500			Hz
REC Pull-in range (L)	f_{APC-L}	12	V_{CC}=5V			−500	Hz
2H mode range	S_{10-1}	13	V_{CC}=5V			0.6	V
4H mode range	S_{10-2}	13	V_{CC}=5V	1.6		2	V
6H mode range	S_{10-3}	13	V_{CC}=5V	3.2		3.6	V

Note) Operating supply voltage:$V_{CC(opr)}$= 4.5~5.5V

Test Circuit 1 (I_{tot})

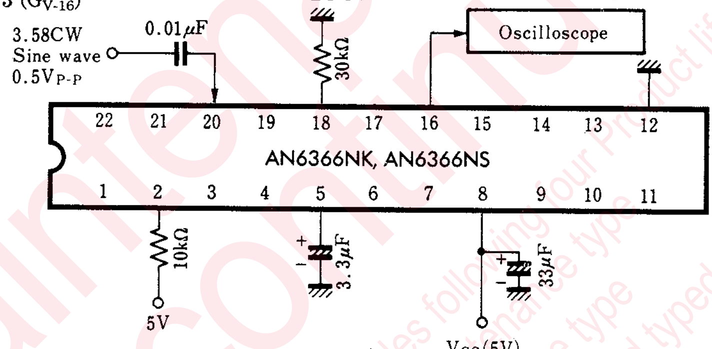


Test Circuit 2 ($v_{O14\text{-}R}$, $\beta_{AGC\text{-}B}$, $\beta_{AGC\text{-}C}$)

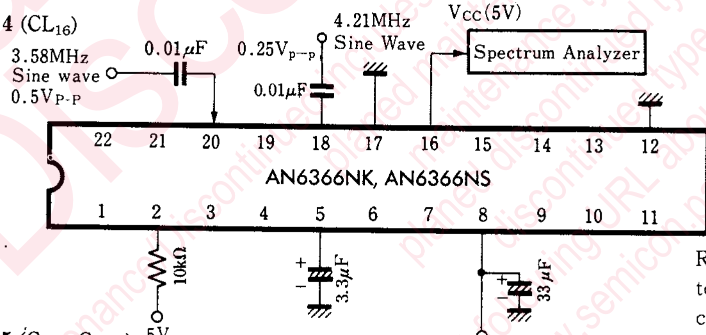


Pin ⑭ output ratio when entire input is +6 dB and −15 dB
Pin ⑭ Burst output ratio when a C_Y signal is 0.2 Vp-p and O Vp-p, with constant Burst of 0.1 Vp-p

Test Circuit 3 ($G_{V\text{-}16}$)

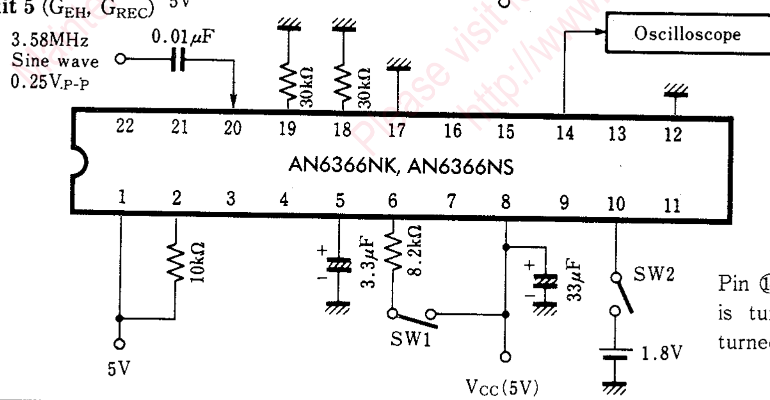


Test Circuit 4 (CL_{16})



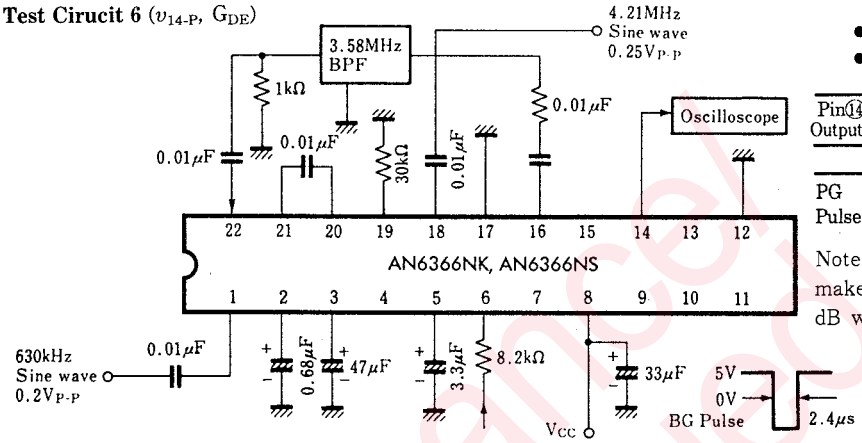
Ratio of 4.21 MHz component to Pin ⑯ 3.58 MHz output component

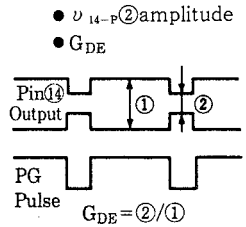
Test Circuit 5 (G_{EH}, G_{REC})



Pin ⑭ output ratio when SW1 is turned on/off with SW2 turned off

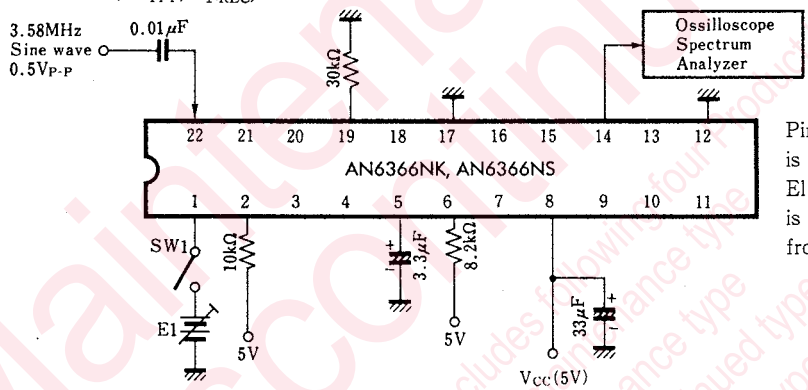
Test Cirucit 6 ($\upsilon_{14\text{-P}}$, G_{DE})





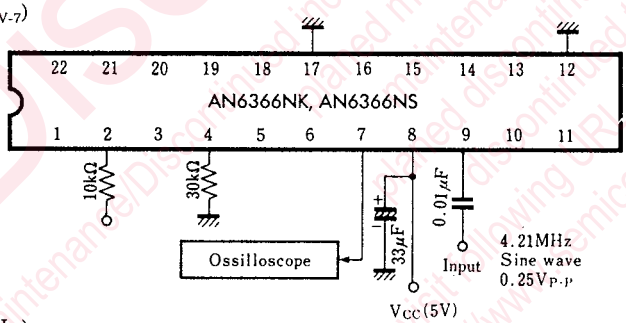
Note) BPF characteristic shall make 3.52 MHz component-6 dB with the left constant.

Test Circuit 7 ($CT_{14\text{-P}}$, $S_{1\text{-REC}}$)

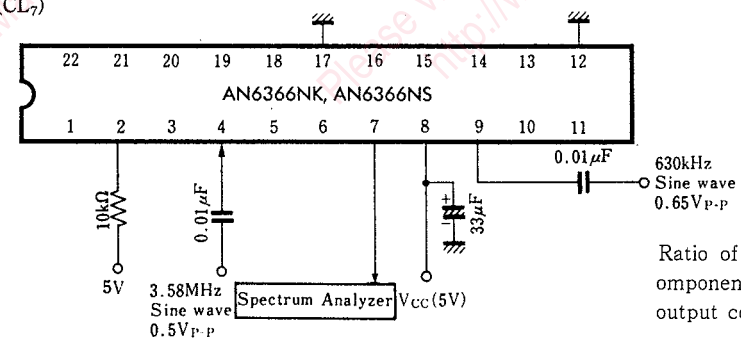


Pin ⑭ output ratio when SW1 is turned on/off
El voltage when Pin ⑭ output is not made by increasing El from O V

Test Circuit 8 ($G_{V\text{-}7}$)

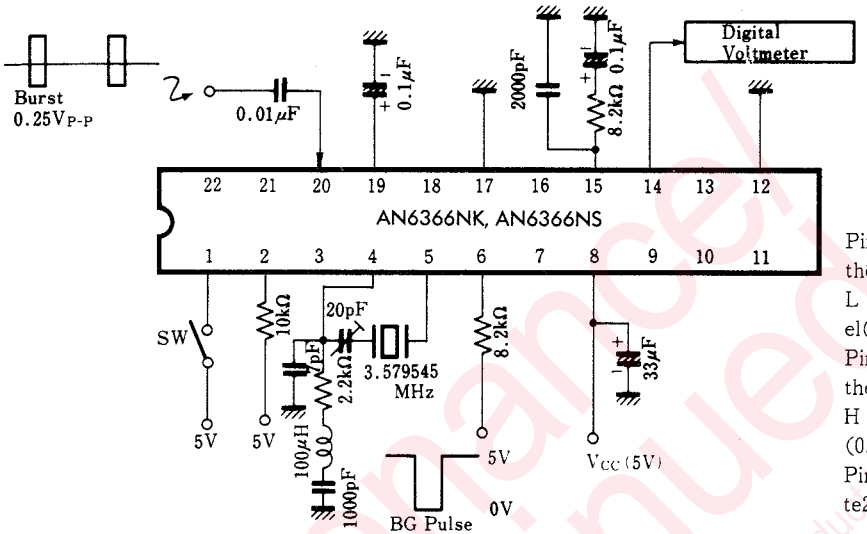


Test Circuit 9 (CL_7)



Ratio of 3.58 MHz output component to Pin ⑦ 4.2 MHz output component

Test Circuit 10 (K_{gate1}, K_{gate2}, $V_{14\text{-}L}$)

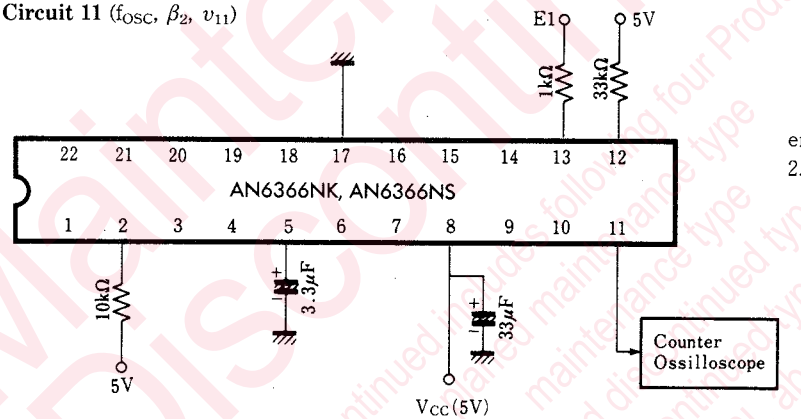


Pin ⑳ Burst input level when the Pin ⑭ is turned from H to L by lowering the Pin ⑳ level(0.25 Vp-p=O dB)

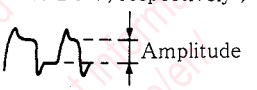
Pin ⑳ Burst input level when the Pin ⑭ is turend from L to H by raising the Pin ⑳ level (0.25 Vp-p=O dB)

Pin ⑭ voltage in case of K gate2

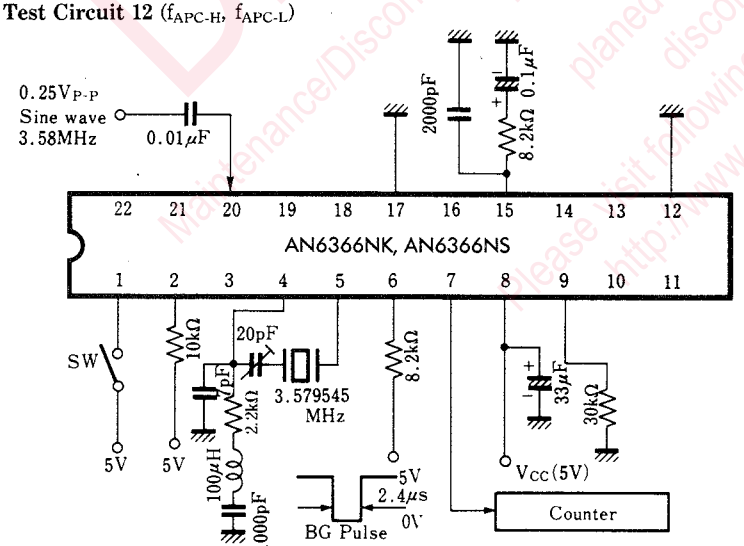
Test Circuit 11 (f_{OSC}, β_2, v_{11})



Assuming that output frequencies are f_1 and f_2 when E_1= 2.4 V and 2.6 V, respectively ;



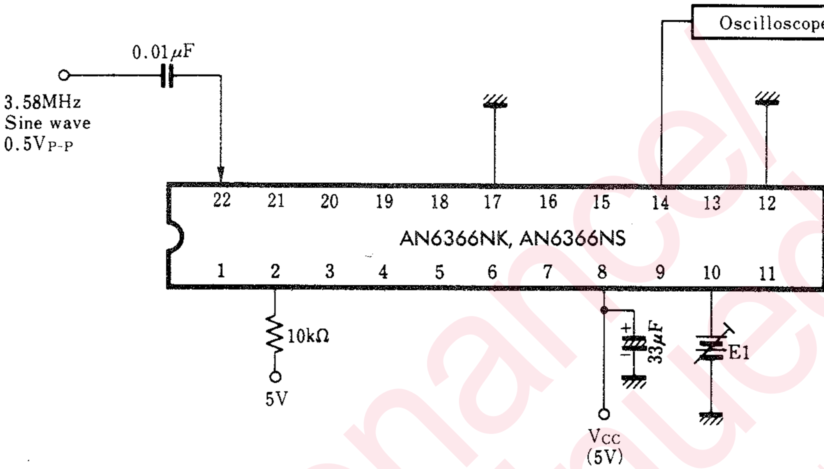
Test Circuit 12 ($f_{APC\text{-}H}$, $f_{APC\text{-}L}$)



Frequency difference between a Pin ⑳ input frequency and 3.579545 MHz when the former is lowered from 3.581 MHz and a Pin ⑦ output frequency coincides with the former. f_{APC-H}=Pin ⑳ frequency-3.579545 MHz

Frequency difference between the Pin ⑳ input frequency and 3.579545 MHz when the former former is raised 3.57 MHz and a Pin ⑦ output frequency coincides with the former. f_{APC-L}= Pin ⑳ frequency-3.579545 MHz

Test Circuit 13 ($S_{10\text{-}1}$, $S_{10\text{-}2}$, $S_{10\text{-}3}$)

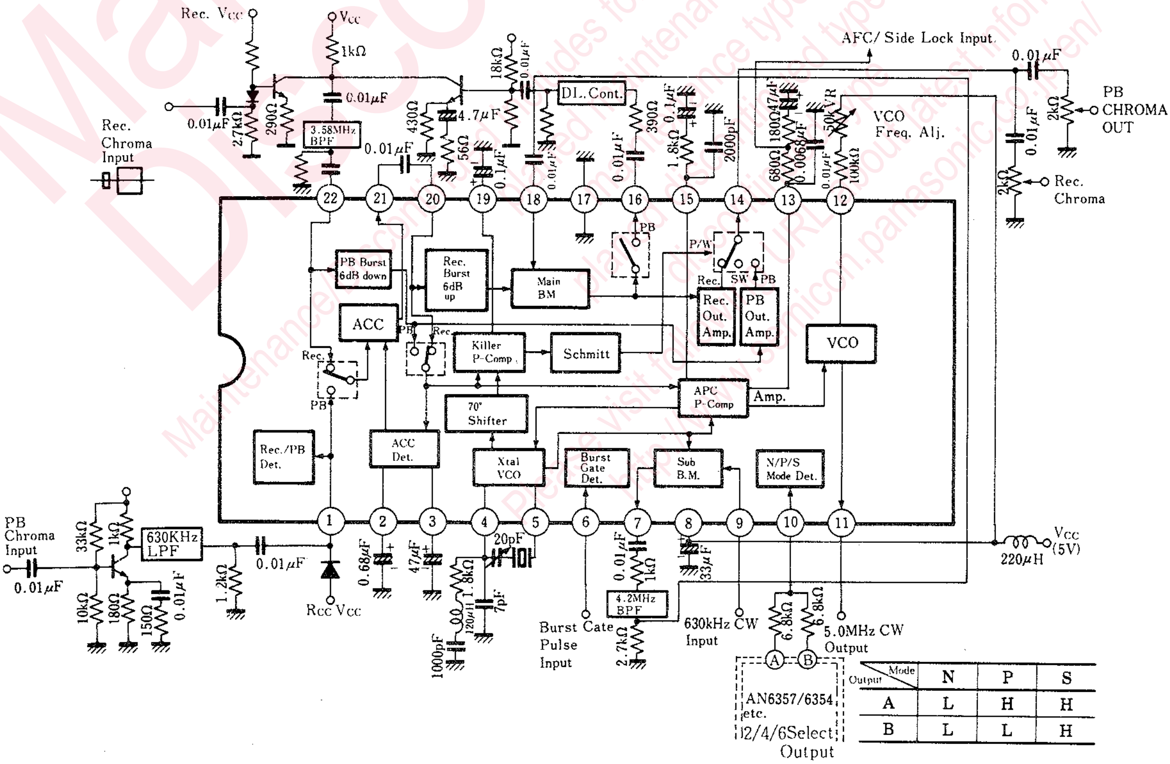


Pin ⑩ voltage range within which a ⑭ output level is raised up by about 6 dB by incrasing E_1 from O V

Pin ⑩ voltage range within which an increase of about 6 dB is maintained, with E_1 further increased

Pin ⑩ voltage range within which ⑭ output maintains a decrease of about 6 dB from S_{10-2}, with E_1 further increased

■ Application Circuit



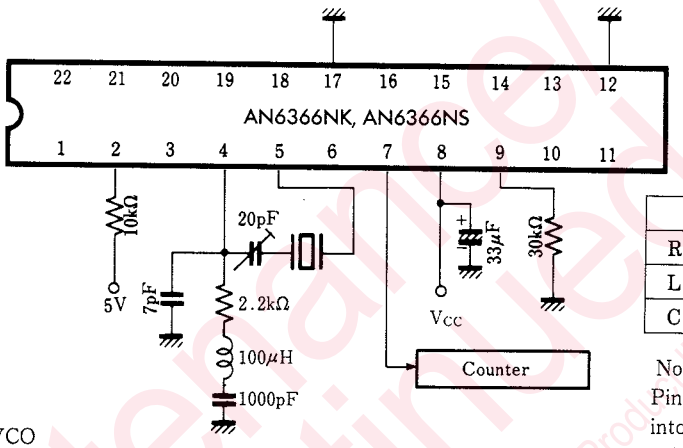
Output \ Mode	N	P	S
A	L	H	H
B	L	L	H

Precautions for Use

(i)Allowable power supply range : 4.5V to 5.5 V

(ii)Adjusting X'-tal VCO

In the PB mode, connect 30 kΩ between the Pin ⑨ and, GND, and adjust a trimmer so that a Pin ⑦ frequency will be 3.579545 MHz.

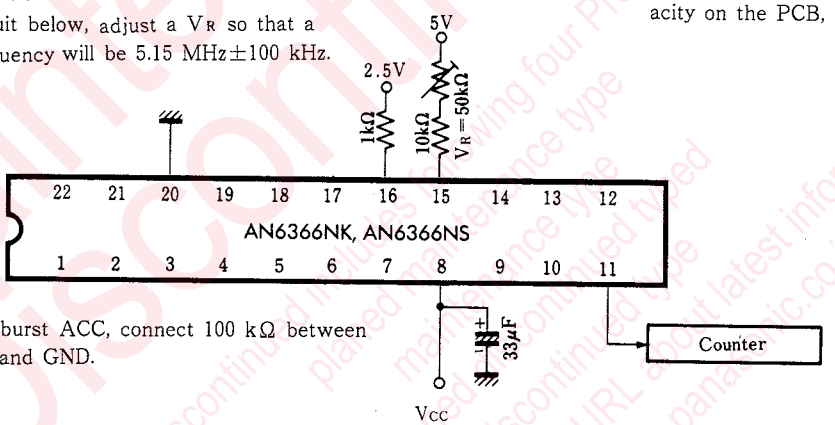


	NTSC	3 Systems
R	2.2kΩ	1.8kΩ
L	100μF	47μF
C	1000pF	1000pF

Note) For 7PF between the Pin ④ and GND, select taking into account an optimum capacity on the PCB, etc.

(iii)Adjusting VCO

In the circuit below, adjust a V_R so that a pin ⑪ frequency will be 5.15 MHz±100 kHz.



(iv)For forced burst ACC, connect 100 kΩ between the Pin ③ and GND.

■ Pin

Pin No.	Pin Name	Pin No.	Pin Name
1	PB Chroma Input Rec. Changeover Input	12	VCO Frequency Adjustment
2	ACC Burst Det.	13	VOC Control Terminal
3	ACC Ref. Level	14	Chroma Output
4	X'tal Osc. Input	15	X'tal APC Control Terminal
5	X'tal Osc. Output	16	PB Main BM Output
6	Burst Gate Pulse Input	17	GND
7	Sub. BM Output	18	Main BM Input
8	V_{CC}	19	Killer Control Terminal
9	Sub BM Input	20	ACC Input
10	2H/4H/6H Mode Selective Input	21	ACC Output
11	VCO Output	22	3.58MHz Chroma Input

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