AN6367NK, AN6367NS

VTR Color Signal Processing Circuits for 3 Systems

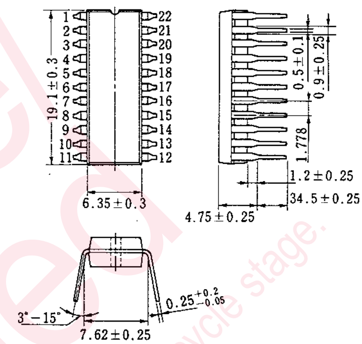
■ Outline

The AN6367NK and The AN6367NS are integrated circuits provided with color signal processing function which can cope with 3 VTR systems, such as PAL, pseudo NTSC and pseudo SECAM, by combining with the AN6163A.

■ Features

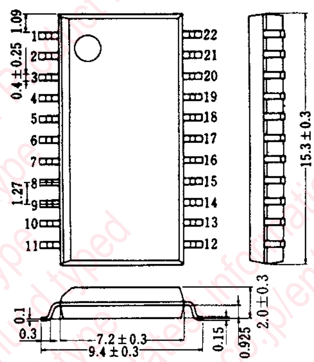
- Operated by low supply voltage : V_{CC}= 5 V
- Low power consumption (110mV)
- AFC+APC system during recording mode
  Only APC system during playback mode
- Requires only one crystal for PAL system

AN6367NK Unit : mm



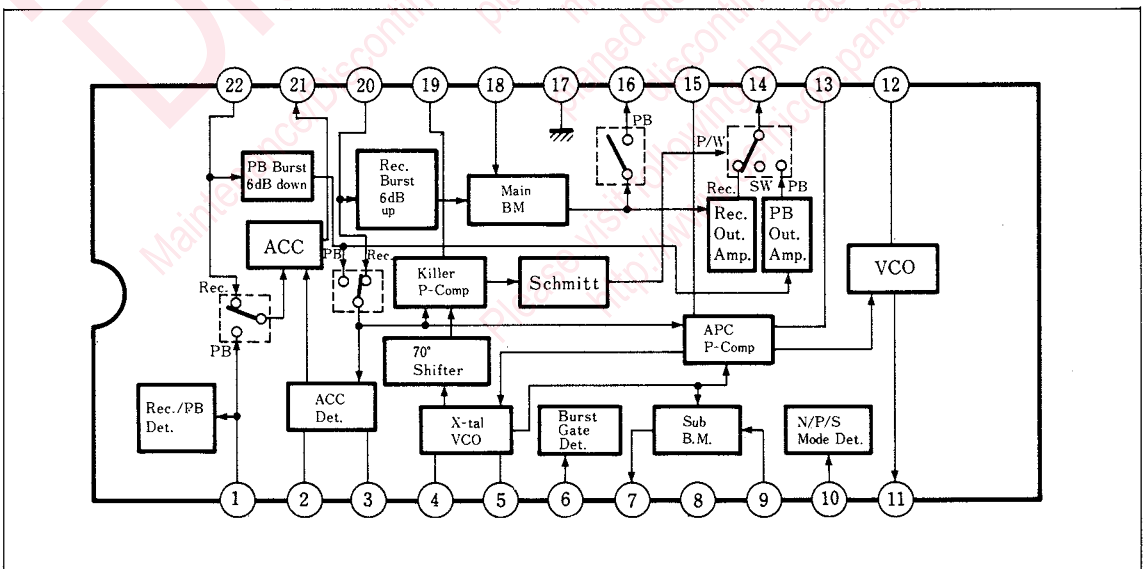
22-Lead Shrunk DIL Plastic Package

AN6367NS Unit : mm



22-Lead PANAFLAT Package (SO-22D)

■ Block Diagram



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■ Absolute Maximum Ratings (T_a=25℃)

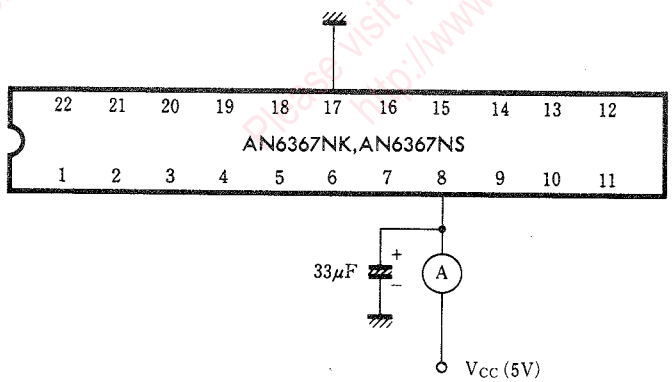
Item	Symbol	Rating	Unit
Supply voltage	V_{CC}	6	V
Power dissipation (Ta=70℃)	P_D	250	mW
Operating ambient temperature	T_{opr}	−20~+70	℃
Storage temperature	T_{stg}	−55~+150	℃

■ Electrical Characteristics (T_a=25℃)

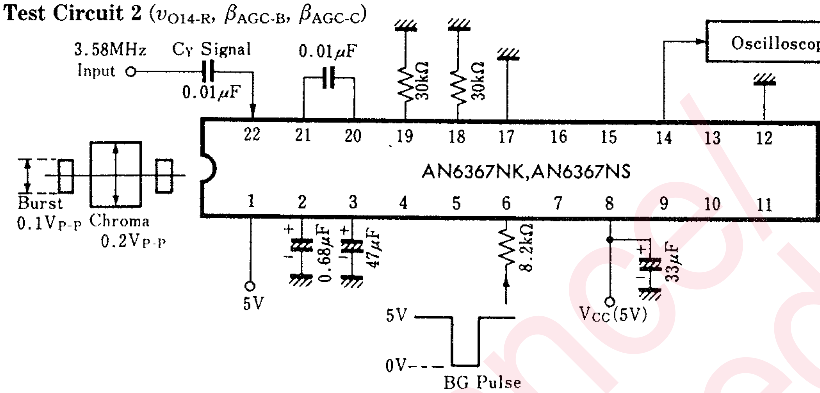
Item	Symbol	Test Circuit	Condition	min.	typ.	max.	Unit
Total circuit current	I_{tot}	1	V_{CC}=5V	15		32	mA
REC output amplitude (Burst ACC)	v_{O14-R}	2	V_{CC}=5V, Pin ㉒ Input, Burst 0.1V_{P-P}	0.5		1.2	V_{P-P}
REC ACC control sensitivity (Burst ACC)	β_{AGC-B}	2	V_{CC}=5V, +6dB~−15dB			3	dB
Chroma ACC	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	$G_{(EH)}$	5	V_{CC}=5V, Pin ⑳Input 0.25V_{P-P}	5		7	dB
PB output amplitude (pseudo NTSC)	v_{O14-P}	6	V_{CC}=5V	0.2		0.55	V_{P-P}
Burst de-emphasis amount	$G_{(DE)}$	6	V_{CC}=5V	−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 ⑨ Input 0dB=0.25V_{P-P}	−22			dB
Killer sensitivity (OFF)	K_{gate2}	10	V_{CC}=5V, Pin ⑨ 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
Pseudo NTSC mode range	S_{10-1}	13	V_{CC}=5V			0.6	V
PAL mode range	S_{10-2}	13	V_{CC}=5V	1.6		2	V
Pseudo SECAM mode range	S_{10-3}	13	V_{CC}=5V	3.2		3.6	V

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

Test Circuit 1 (I_{tot})

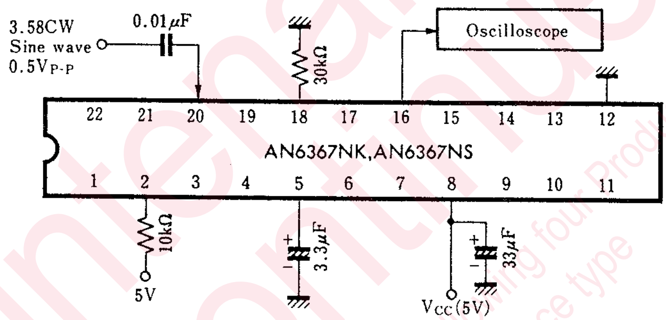


Test Circuit 2 ($v_{O14\text{-}R}$, $\beta_{AGC\text{-}B}$, $\beta_{AGC\text{-}C}$)

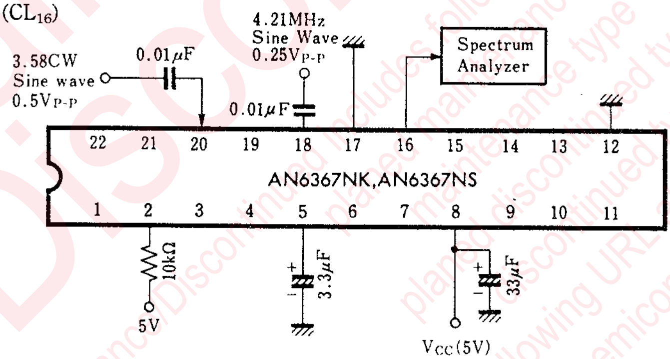


Pin ⑭ output ratio when entire input is +6 dB and −15 dB
Pin ⑭ Burst output ratio when C_Y signal is 0.2 Vp-p and 0Vp-p, with Burst constant at 0.1 Vp-p

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

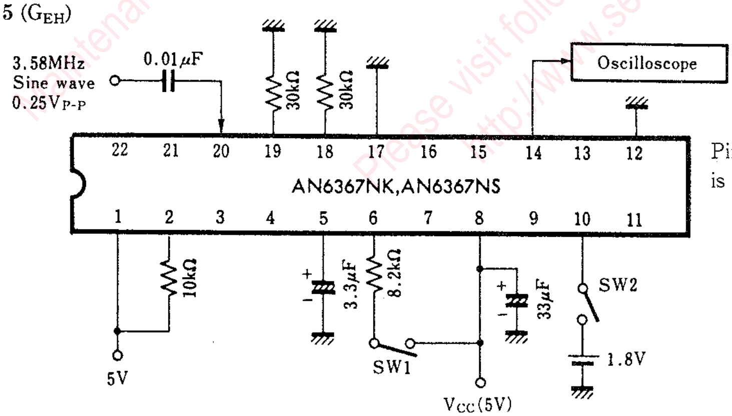


Test Circuit 4 (CL_{16})



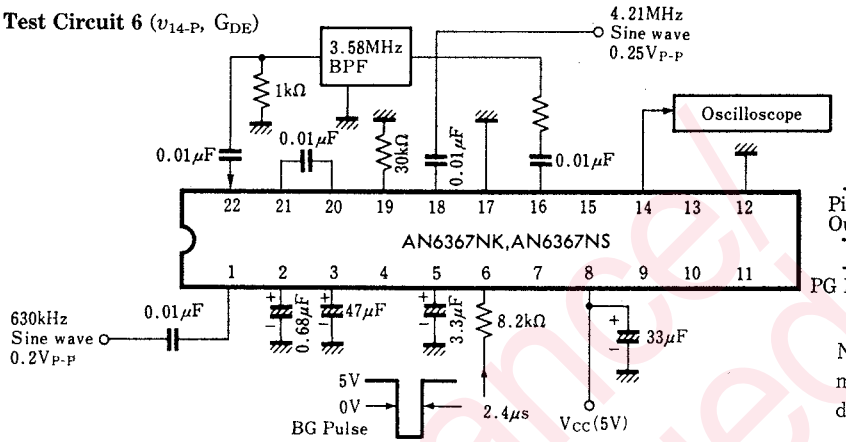
Ratio of 4.21 MHz output component to Pin ⑯ 3.58 MHz output component

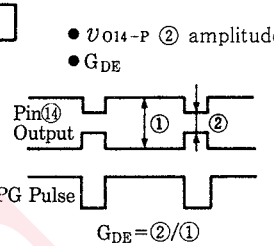
Test Circuit 5 (G_{EH})



Pin ⑭ output ratio when SW1 is turned on/off

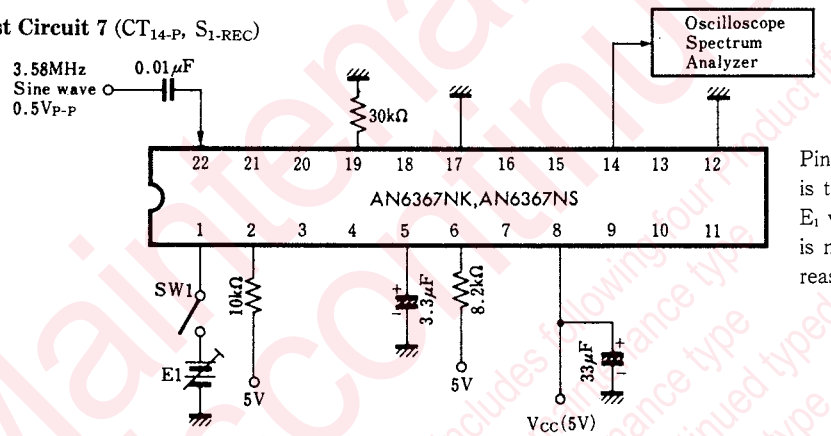
Test Circuit 6 ($v_{14\text{-}P}$, G_{DE})





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

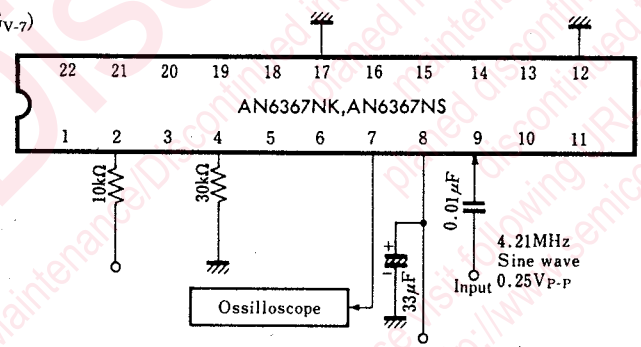
Test Circuit 7 ($CT_{14\text{-}P}$, $S_{1\text{-}REC}$)



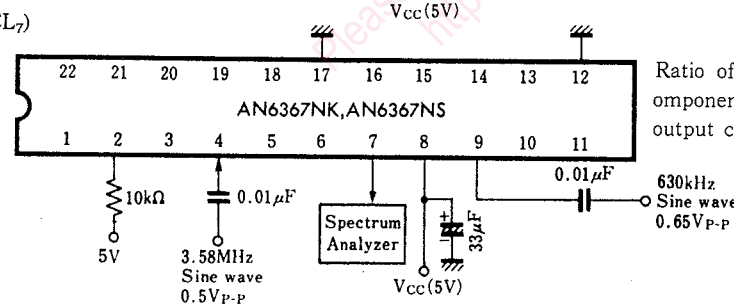
Pin ⑭ output ratio when SW1 is turned on/off

E_1 voltage when Pin ⑭ output is not made any more by increasing E_1 from O V

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

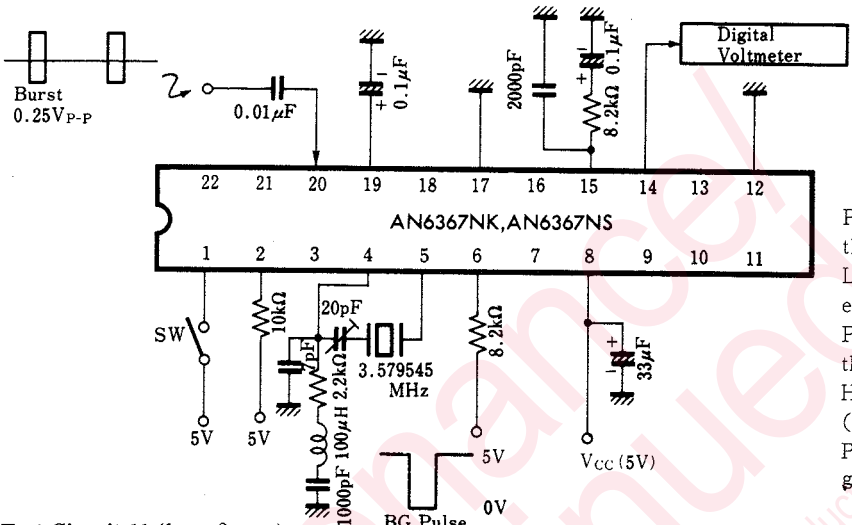


Test Circuit 9 (CL_7)



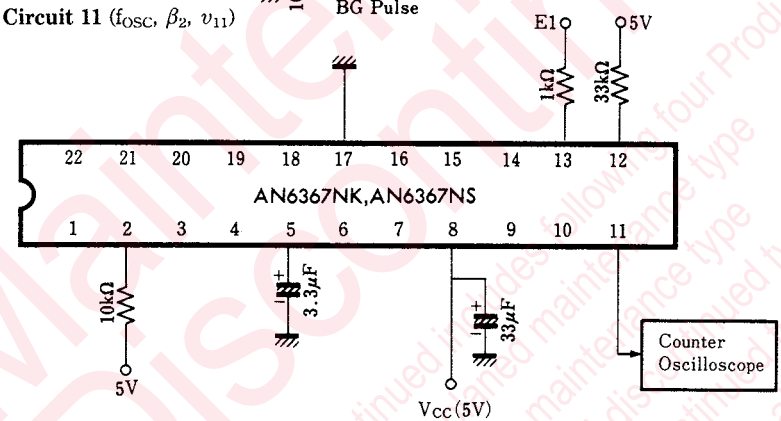
Ratio of 3.58 MHz output component to Pin ⑦ 4.2 kHz output component

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

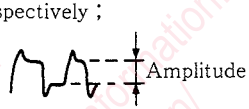


Pin ⑳ Burst input level when the Pin ⑭ is turned from H to L by lowering the Pin ⑳ level(0.25 Vp-p=O dB)
Pin ⑳ Burst input level when the Pin ⑭ is turned from L to H by raising the Pin ⑳ level (0.25 Vp-p=O dB)
Pin ⑭ voltage in case of K gate2

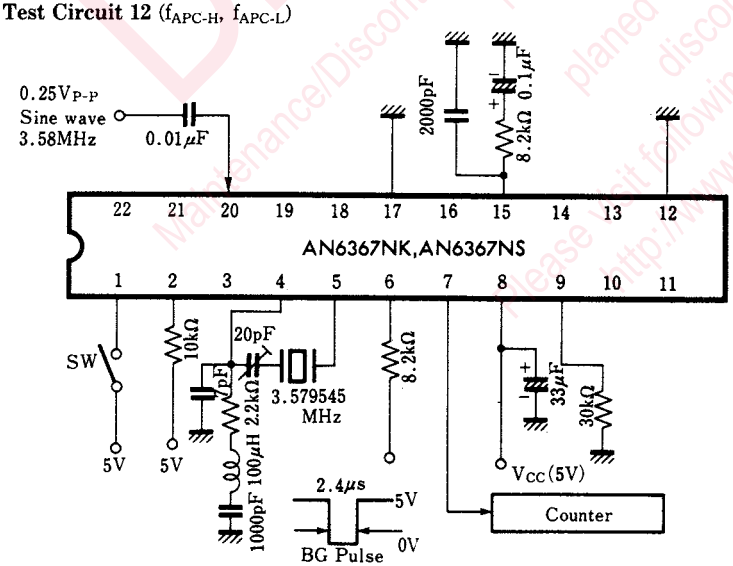
Test Circuit 11 (f_{OSC}, β_2, v_{11})



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

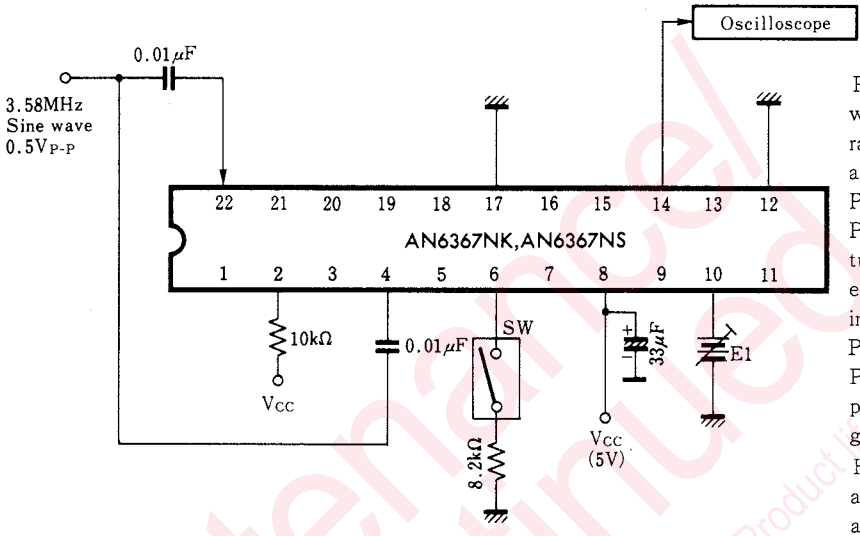


Test Circuit 12 ($f_{APC\text{-}H}$, $f_{APC\text{-}L}$)



Frequency difference between a Pin ⑳ input frequency and 3.57945 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 is increased from 3.578 MHz 3.578 MHz and the Pin ⑦ output frequency coincides with the former.f_{APC-L}=Pin ⑳ frequency-3.579545 MHz

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



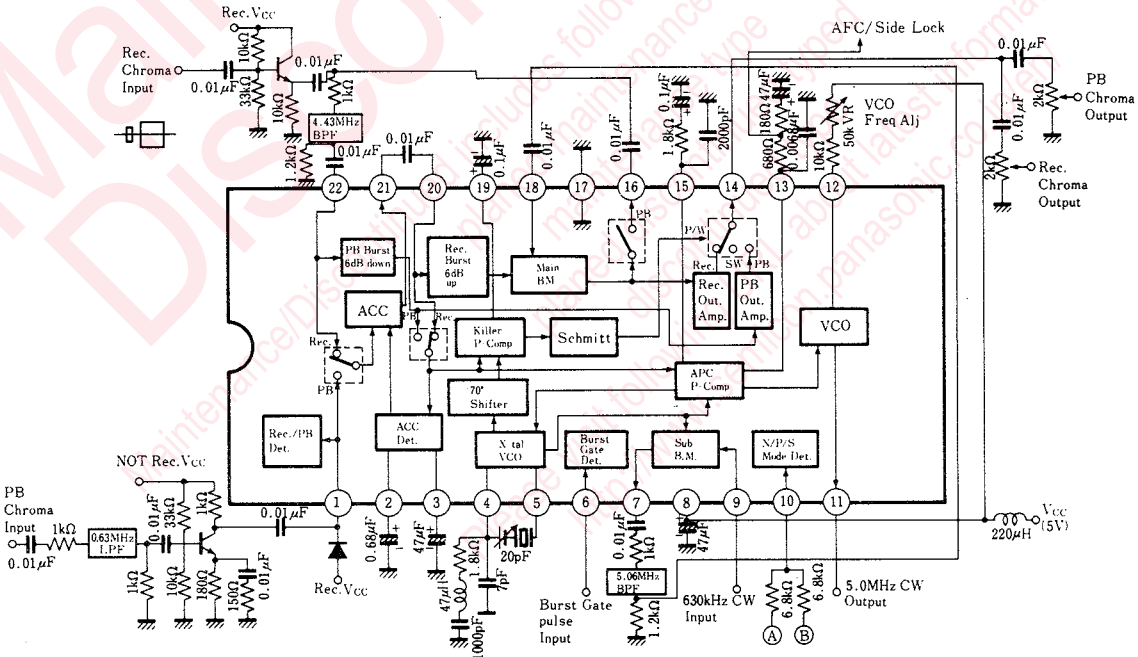
Pin ⑩ voltage range within which a Pin ⑭ output level is raised by about 6 dB by increasing E_1 from O V

Pin ⑩ voltage range within a Pin ⑮ output DC voltage is turned to a phase comparator error voltage, with E_1 further increased. waveform

Pin ⑩ voltage range when the Pin ⑮ voltage maintains the phase comparator error voltage, with E further increased

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

■ Application Circuit



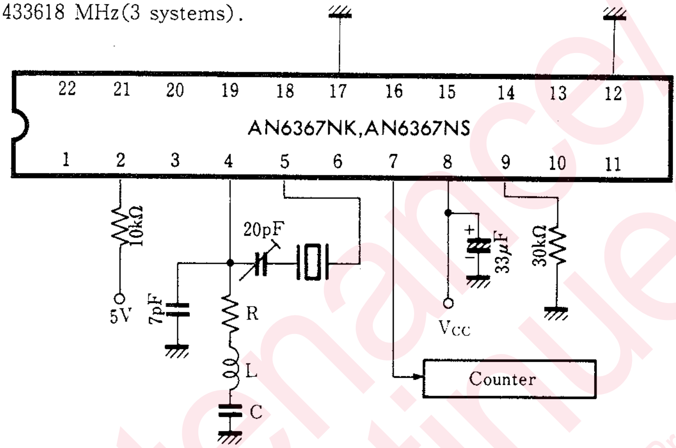
Output \ Mode	2H	4H	6H
A	L	H	H
B	L	L	H

Precautions for Use

(i) Allowable power supply range : 4.5 V 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 ⑦ output frequency will be 3.579545 MHz (for NTSC) or 4.433618 MHz (3 systems).

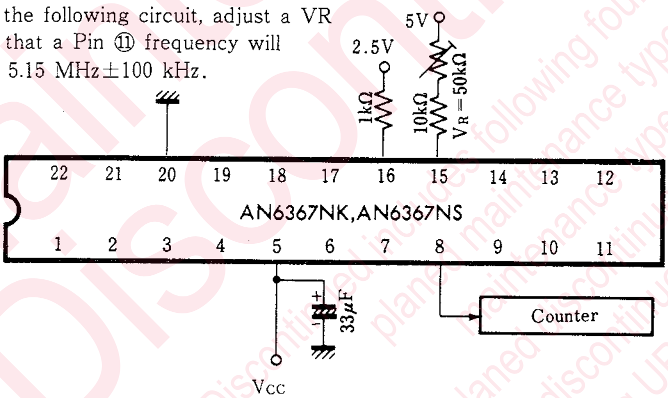


	NTSC	3 Systems
R	2.2kΩ	1.8kΩ
L	100μF	47μF
C	1000pF	1000pF

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

(iii) Adjusting VCO

In the following circuit, adjust a VR 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	VCO 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	NTSC/PAL/SECAM Mode Changeover Input	21	ACC Output
11	VCO Output	22	3.58MHz Chroma Input

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