AN6397, AN6397S

VTR SECAM Color Signal Processing Circuits

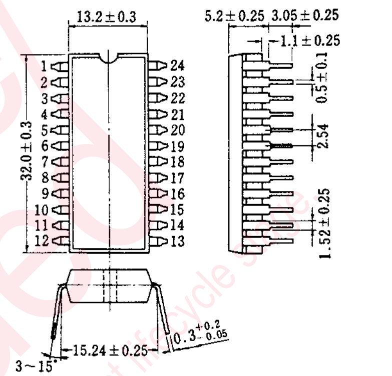
■ Outline

The AN6397 and the AN6397S are integrated circuits designed for VTR SECAM color signal processing and constitute a VTR SECAM-system color signal processing circuit with the AN6398 or the AN6398S.

■ Features

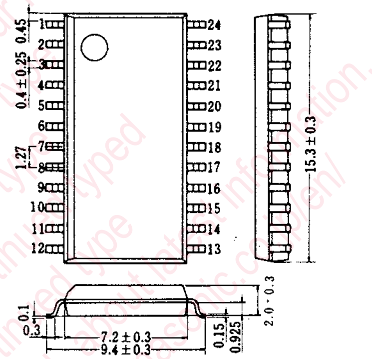
- The functions consist of :
  - Bell filter circuit
  - Equalizer circuit
  - Limiter circuit
  - 1/4 Frequency divider
  - Balanced modulator
- Supply voltage : 5V

AN6397 Unit : mm



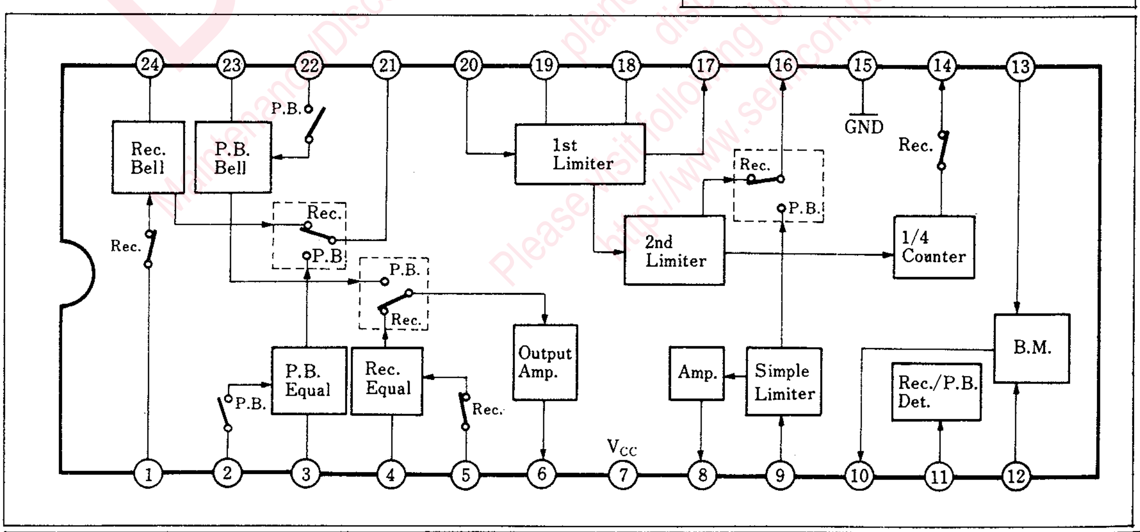
24-Lead DIL Plastic Package

AN6397S Unit : mm



24-Lead PANAFLAT Package (SO-24D)

■ Block Diagram



■ Pin

Pin No.	Pin Name	Pin No.	Pin Name
1	Rec. Chroma Input	13	Carrier Input
2	PB Chroma Input	14	1/4 Divider Output
3	Equal Filter	15	GND
4	Equal Filter	16	Chroma Output(2)
5	Rec. Eq. Input	17	1st Limiter Output
6	Chroma Output(1)	18	Limiter
7	V_{cc}	19	Limiter
8	Amp. Output	20	1st Limiter Input
9	Simple Limiter Input	21	Rec. Bell P.B. Equal Output
10	B.M. Output	22	P.B. Bell Input
11	Rec. V_{cc} Input	23	Bell Filter
12	Signal Input	24	Bell Filter

■ Absolute Maximum Ratings (Ta=25℃)

Item		Symbol	Rating	Unit
Supply voltage		V_{CC}	6	V
Power dissipation (Ta=70℃)	AN6397	P_D	350	mW
	AN6397S		270 *	
Operating ambient temperature		T_{opr}	−20~+70	℃
Storage temperature		T_{stg}	−40~+125	℃

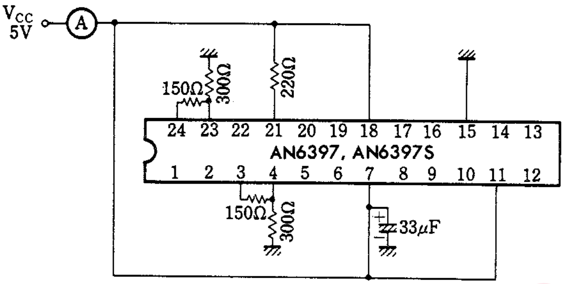
*Indicates a package capability.

■ Electrical Characteristics (V_{CC}=5V, Ta=25°C±2°C)

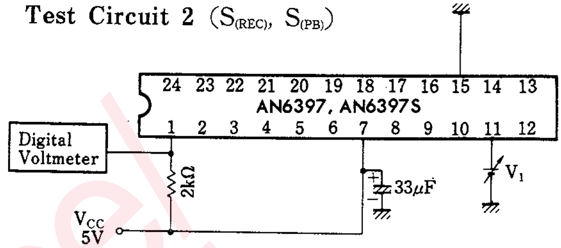
Item	Symbol	Test Circuit	Condition	min.	typ.	max.	Unit
Total circuit current	I_{tot}	1	In recording	30		62	mA
Rec. mode select level	$S_{(REC)}$	2		4		5	V
PB mode select level	$S_{(PB)}$	2		0		0.5	V
Rec. Bell output amplitude	v_{O-21-R}	3	Pin ⑪ input 150mV_{p-p}	600		920	mV_{P-P}
Rec. Equal output amplitude	v_{O-6-R}	4	Pin ⑤ input 200mV_{p-p}	350		680	mV_{P-P}
PB Equal output amplitude	v_{O-21-P}	5	Pin ② input 150mV_{p-p}	420		700	mV_{P-P}
PB Bell output amplitude	v_{O-6-P}	6	Pin ㉒ input 200mV_{p-p}	280		600	mV_{P-P}
1st limiter output amplitude	v_{O-17}	7	Pin ⑳ input 200mV_{p-p}	500		1000	mV_{P-P}
2nd limiter output amplitude	v_{O-16-R}	7	Pin ⑳ input 200mV_{p-p}	450		900	mV_{P-P}
1/4 counter output amplitude	v_{O-14}	7	Pin ⑳ input 200mV_{p-p}	900		1500	mV_{P-P}
Simple limiter output amplitude	v_{O-16-P}	8	Pin ⑨ input 400mV_{p-p}	450		900	mV_{P-P}
BM output amplitude	v_{O-10}	9	Pin ⑳ input 100mV_{p-p}	580		1050	mV_{P-P}
BM carrier leak	CL_{10}	9	Pin ⑳ input 100mV_{p-p}			−22	dB

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

Test Circuit 1 (I_{tot})

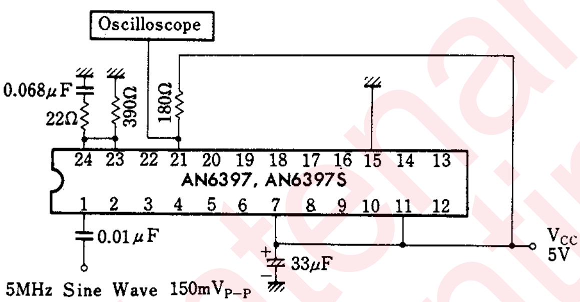


Test Circuit 2 ($S_{(REC)}$, $S_{(PB)}$)

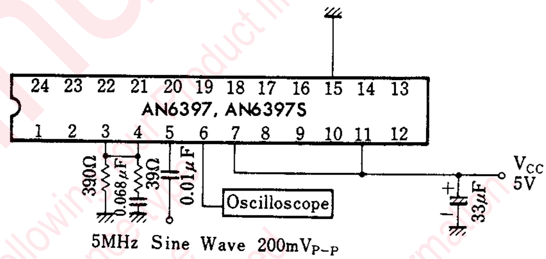


Notes) V (REC): When a Pin ⑪ voltage is changed. Pin ⑪ voltage when a Pin ① voltage is lowered to about 4.3V.
V (PB): When the Pin ⑪ voltage is changed. Pin ⑪ voltage when the Pin ① voltage becomes equal to Vcc (5V)

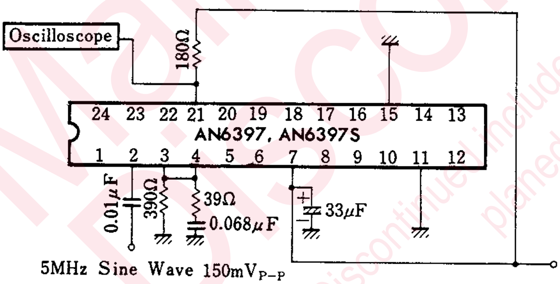
Test Circuit 3 (v_{0-21-R})



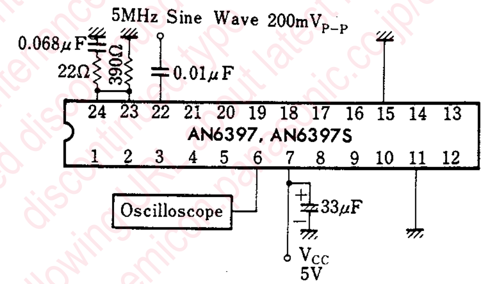
Test Circuit 4 (v_{0-6-R})



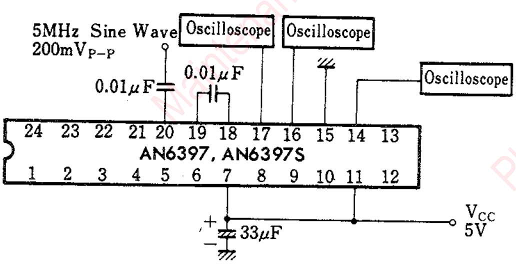
Test Circuit 5 (v_{0-21-P})

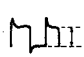


Test Circuit 6 (v_{0-6-P})



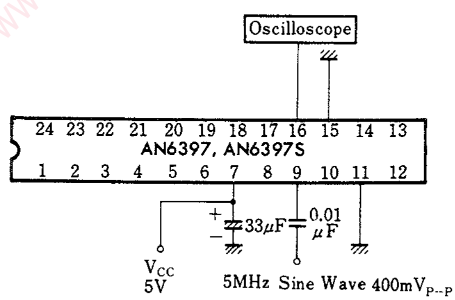
Test Circuit 7 (v_{0-17}, v_{0-16-R}, v_{0-14})





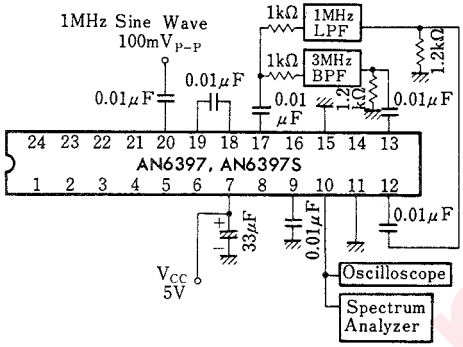
Note) As shown in the figure, an amplitude value shall not include overshoot.

Test Circuit 8 (v_{0-16-P})



Note) As shown in the figure, an amplitude  shall not include overshoot.

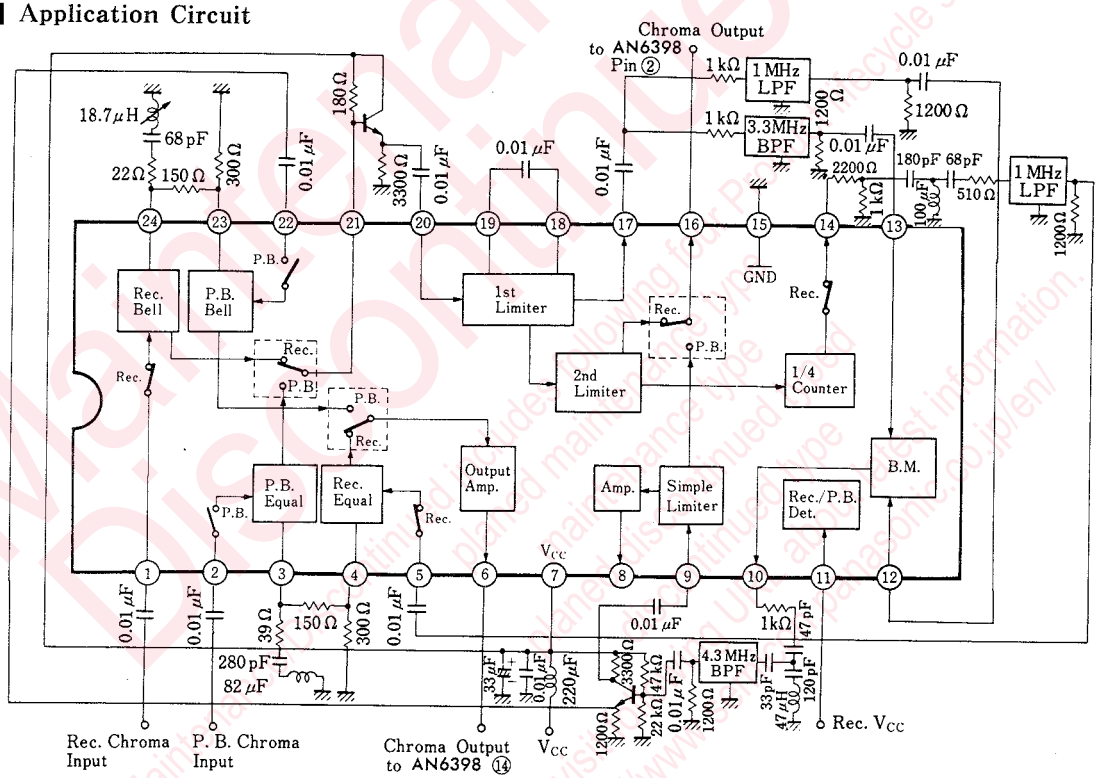
Test Circuit 9 (υ_{0-10}, CL_{10})



Note 1) 1 MHz LPF and 3 MHz BPF shall be filters whose frequency components are respectively reduced by 6 dB with the constants above.

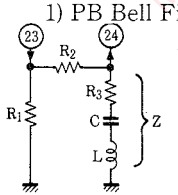
Note 2) Carrier leak represents a 3 MHz component to a 4 MHz component in Pin ⑪ output.

■ Application Circuit



Precautions for Use

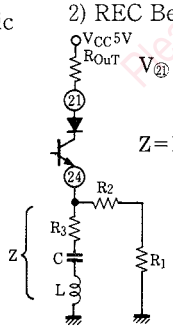
1) PB Bell Filter Characteristic



$$V_{㉔} = \frac{-Z}{R_2+Z} V_{㉓}$$

$$\begin{cases} Z = R_3 + j\left(WL - \dfrac{1}{WC}\right) \\ f_0 = \dfrac{1}{2\pi\sqrt{LC}} = 4.286\text{MHz} \end{cases}$$

2) REC Bell Filter Characteristic



$$V_{㉑} = \frac{-R_{OUT}}{\dfrac{R_2 Z}{R_2+Z}} \cdot V_{㉔}$$

$$Z = R_3 - j\left(WL - \frac{1}{WC}\right)$$

3) REC EQ and PB EQ filter characteristics conform to 1) and 2).

4) When changing REC Bell and PB EQ characteristics, change a load resistor with an external Tr switch.

Request for your special attention and precautions in using the technical information and semiconductors described in this book

(1) If any of the products or technical information described in this book is to be exported or provided to non-residents, the laws and regulations of the exporting country, especially, those with regard to security export control, must be observed.

(2) The technical information described in this book is intended only to show the main characteristics and application circuit examples of the products. No license is granted in and to any intellectual property right or other right owned by Panasonic Corporation or any other company. Therefore, no responsibility is assumed by our company as to the infringement upon any such right owned by any other company which may arise as a result of the use of technical information described in this book.

(3) The products described in this book are intended to be used for standard applications or general electronic equipment (such as office equipment, communications equipment, measuring instruments and household appliances).
Consult our sales staff in advance for information on the following applications:
- Special applications (such as for airplanes, aerospace, automobiles, traffic control equipment, combustion equipment, life support systems and safety devices) in which exceptional quality and reliability are required, or if the failure or malfunction of the products may directly jeopardize life or harm the human body.
- Any applications other than the standard applications intended.

(4) The products and product specifications described in this book are subject to change without notice for modification and/or improvement. At the final stage of your design, purchasing, or use of the products, therefore, ask for the most up-to-date Product Standards in advance to make sure that the latest specifications satisfy your requirements.

(5) When designing your equipment, comply with the range of absolute maximum rating and the guaranteed operating conditions (operating power supply voltage and operating environment etc.). Especially, please be careful not to exceed the range of absolute maximum rating on the transient state, such as power-on, power-off and mode-switching. Otherwise, we will not be liable for any defect which may arise later in your equipment.
 Even when the products are used within the guaranteed values, take into the consideration of incidence of break down and failure mode, possible to occur to semiconductor products. Measures on the systems such as redundant design, arresting the spread of fire or preventing glitch are recommended in order to prevent physical injury, fire, social damages, for example, by using the products.

(6) Comply with the instructions for use in order to prevent breakdown and characteristics change due to external factors (ESD, EOS, thermal stress and mechanical stress) at the time of handling, mounting or at customer's process. When using products for which damp-proof packing is required, satisfy the conditions, such as shelf life and the elapsed time since first opening the packages.

20080805

littlediode
COMPONENTS FOR ALL

Littlediode supplies new, hard to find or obsolete electronic components and semiconductors all over the world.

With over two million different components listed you are sure to find the part you need.

Feel free to visit us today at our online store:

LittleDiode.com

Looking forward to providing you with the best possible service.