

# AN2350S

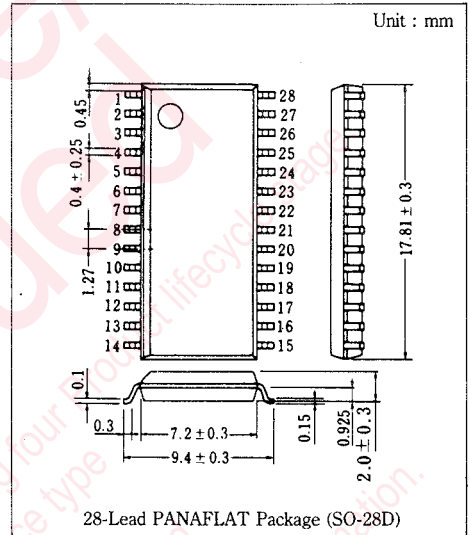
## CCD Video Camera Signal Processing Circuit

### ■ Outline

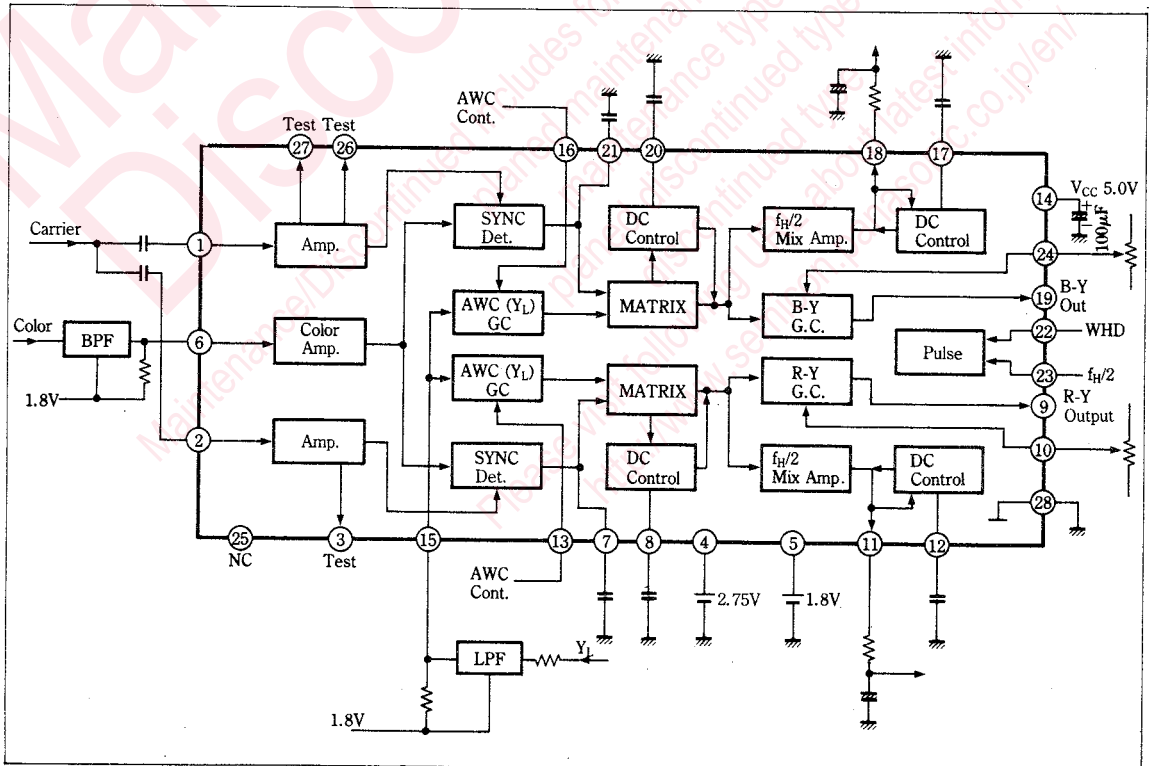
The AN2350S is an integrated circuit for CCD video camera signal processing. It detects and outputs color difference information out of color signals for which complementary color filters(Ye, Cy, Mg, G)

### ■ Features

- Low operating voltage & current :  $V_{CC}=5.0V$ ,  $I_{CC}=12mA$  (typ.)
- Detection by balanced modulator
- Built-in white balance



### ■ Block Diagram



## ■ Pin

Pin No.	Pin Name	Pin No.	Pin Name
1	Carrier Input 1	15	Y <sub>L</sub> Input (AWC)
2	Carrier Input 2	16	Y <sub>L</sub> GC (B-Y)
3	Test Pin	17	DC Control
4	Vref1 (typ. 2.75V)	18	B-Y Output (AWC)
5	Vref2 (typ. 1.8V)	19	B-Y Output
6	Color Input	20	DC Control
7	Band Limit (R-Y)	21	Band Limit (B-Y)
8	DC Control	22	WHD Pulse Input
9	R-Y Output	23	f <sub>H</sub> /2 Pulse Input
10	R-Y Gain Control	24	B-Y GC
11	R-Y Output (AWC)	25	NC
12	DC Control	26	Test Pin
13	Y <sub>L</sub> GC (R-Y)	27	Test Pin
14	V <sub>CC</sub> (typ. 5V)	28	GND

■ Absolute Maximum Ratings (T<sub>a</sub>=25°C)

Item	Symbol	Rating	Unit
Supply Voltage	V <sub>CC</sub>	6.0	V
Supply current	I <sub>CC</sub>	18	mA
Power dissipation	P <sub>D</sub>	130	mW
Operating ambient temperature	T <sub>opr</sub>	-20~+75	°C
Storage temperature	T <sub>stg</sub>	-55~+125	°C

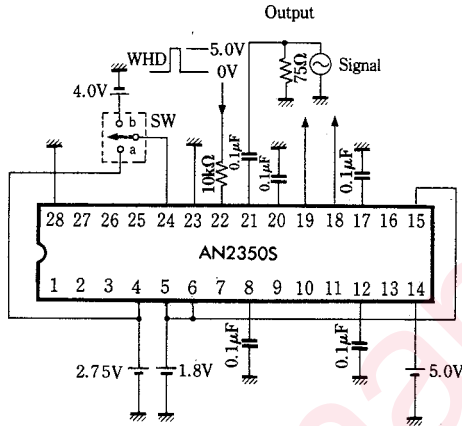
■ Electrical Characteristics (T<sub>a</sub>=25°C)

Item	Symbol	Test Circuit	Condition	min.	typ.	max.	Unit
Supply current	I <sub>tot</sub>	1	V <sub>CC</sub> =5.0V	6	12	18	mA
f <sub>H</sub> /2 pulse separation level	V <sub>t(f<sub>H</sub>/2)1</sub>	2	V <sub>CC</sub> =5.0V	1.4	2.0	2.6	V
f <sub>H</sub> /2 pulse separation level	V <sub>t(f<sub>H</sub>/2)2</sub>	2	V <sub>CC</sub> =5.0V	1.4	2.0	2.6	V
WHD pulse separation level	V <sub>t(WHD)</sub>	3	V <sub>CC</sub> =5.0V	1.4	2.0	2.6	V
R-Y detection output	G <sub>V1</sub>	4	V <sub>CC</sub> =5.0V, f <sub>i</sub> =3.58MHz, V <sub>i</sub> =400mV <sub>P-P</sub>	110	150	190	mV <sub>P-P</sub>
B-Y detection output	G <sub>V2</sub>	4	V <sub>CC</sub> =5.0V, f <sub>i</sub> =3.58MHz, V <sub>i</sub> =400mV <sub>P-P</sub>	120	160	200	mV <sub>P-P</sub>
R-Y color difference signal gain 1	G <sub>V3</sub>	4	V <sub>CC</sub> =5.0V, f <sub>i</sub> =H-RATE, V <sub>i</sub> =50mV <sub>P-P</sub>	70	110	150	mV <sub>P-P</sub>
R-Y color difference signal gain 2	G <sub>V4</sub>	5	V <sub>CC</sub> =5.0V, f <sub>i</sub> =H-RATE, V <sub>i</sub> =50mV <sub>P-P</sub>	160	230	300	mV <sub>P-P</sub>
AWC R-Y color difference output	G <sub>V5</sub>	5	V <sub>CC</sub> =5.0V, f <sub>i</sub> =H-RATE, V <sub>i</sub> =50mV <sub>P-P</sub>	500	650	800	mV <sub>P-P</sub>
R-Y correction Y <sub>L</sub> output 1	G <sub>V6</sub>	6	V <sub>CC</sub> =5.0V, f <sub>i</sub> =H-RATE, V <sub>i</sub> =50mV <sub>P-P</sub>	-20	0	20	mV <sub>P-P</sub>
R-Y correction Y <sub>L</sub> output 2	G <sub>V7</sub>	6	V <sub>CC</sub> =5.0V, f <sub>i</sub> =H-RATE, V <sub>i</sub> =50mV <sub>P-P</sub>	90	130	170	mV <sub>P-P</sub>
R-Y AWC Y <sub>L</sub> output	G <sub>V8</sub>	6	V <sub>CC</sub> =5.0V, f <sub>i</sub> =H-RATE, V <sub>i</sub> =50mV <sub>P-P</sub>	610	800	990	mV <sub>P-P</sub>
B-Y color difference signal gain 1	G <sub>V9</sub>	7	V <sub>CC</sub> =5.0V, f <sub>i</sub> =H-RATE, V <sub>i</sub> =50mV <sub>P-P</sub>	240	330	420	mV <sub>P-P</sub>
B-Y color difference signal gain 2	G <sub>V10</sub>	7	V <sub>CC</sub> =5.0V, f <sub>i</sub> =H-RATE, V <sub>i</sub> =50mV <sub>P-P</sub>	500	640	780	mV <sub>P-P</sub>
AWC B-Y color difference output	G <sub>V11</sub>	7	V <sub>CC</sub> =5.0V, f <sub>i</sub> =H-RATE, V <sub>i</sub> =50mV <sub>P-P</sub>	560	825	1000	mV <sub>P-P</sub>
B-Y correction Y <sub>L</sub> output 1	G <sub>V12</sub>	8	V <sub>CC</sub> =5.0V, f <sub>i</sub> =H-RATE, V <sub>i</sub> =50mV <sub>P-P</sub>	-30	0	30	mV <sub>P-P</sub>
B-Y correction Y <sub>L</sub> output 2	G <sub>V13</sub>	8	V <sub>CC</sub> =5.0V, f <sub>i</sub> =H-RATE, V <sub>i</sub> =50mV <sub>P-P</sub>	300	425	550	mV <sub>P-P</sub>
B-Y AWC Y <sub>L</sub> output	G <sub>V14</sub>	8	V <sub>CC</sub> =5.0V, f <sub>i</sub> =H-RATE, V <sub>i</sub> =50mV <sub>P-P</sub>	850	1100	1350	mV <sub>P-P</sub>

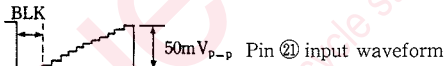
Note) Operating supply voltage range : V<sub>CC</sub> (opr) = 4.8~5.2V



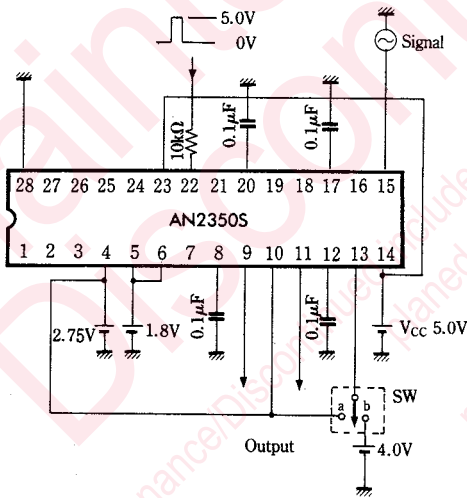
Test Circuit 7 ( $G_{V9}$ ,  $G_{V10}$ ,  $G_{V11}$ )



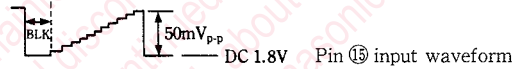
$G_{V9}$  : Shift the SW to "a" and measure Pin ⑱ output.  
 $G_{V10}$  : Shift the SW to "b" and measure Pin ⑱ output.  
 $G_{V11}$  : Shift the SW to "b" and measure Pin ⑳ output.



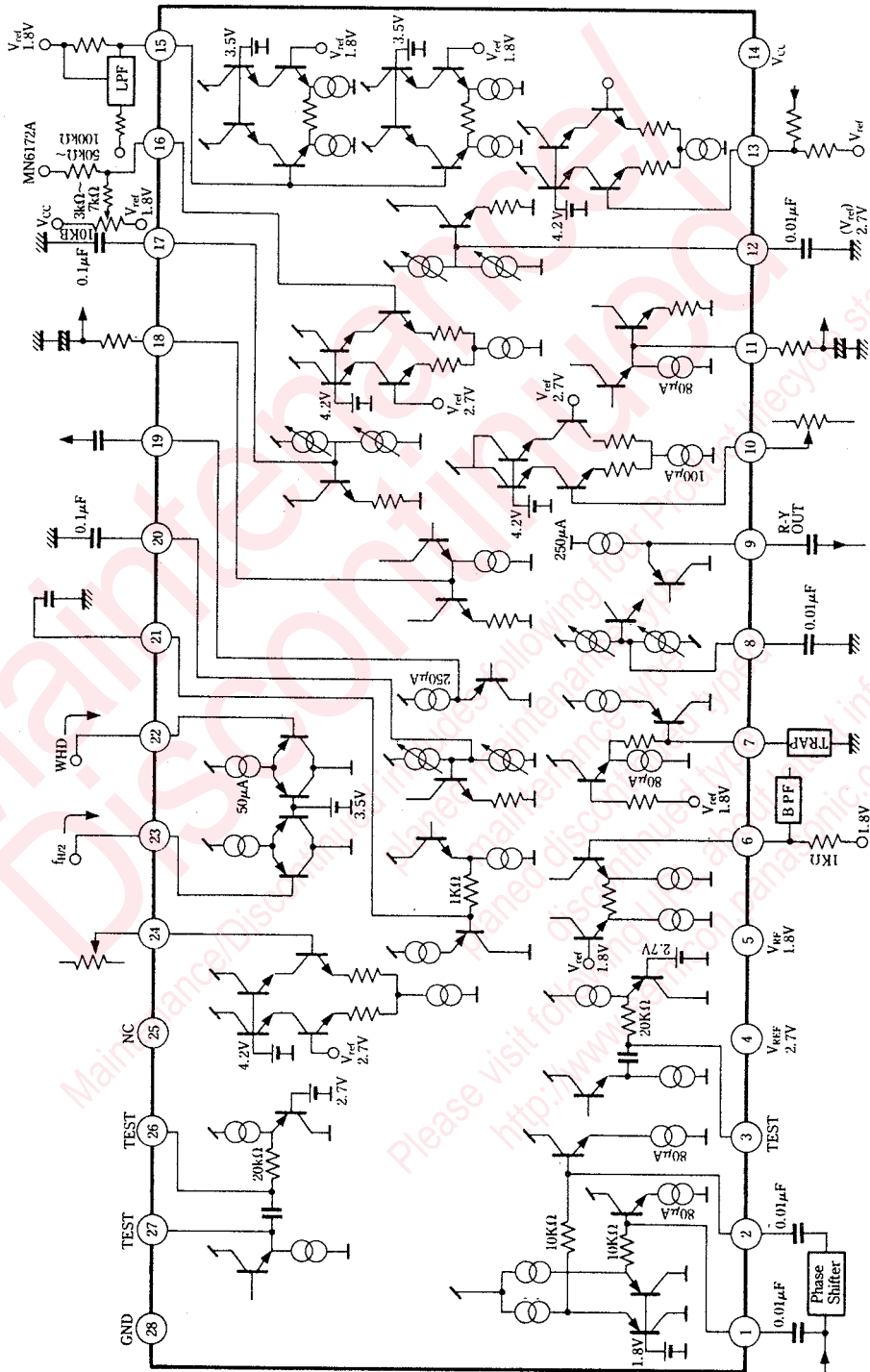
Test Circuit 8 ( $G_{V15}$ ,  $G_{V16}$ ,  $G_{V17}$ )



$G_{V12}$  : Shift the SW to "a" and measure Pin ⑱ output.  
 $G_{V13}$  : Shift the SW to "a" and measure Pin ⑱ output.  
 $G_{V14}$  : Shift the SW to "b" and measure Pin ⑳ output.



■ Input-Output Schematic Diagram



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