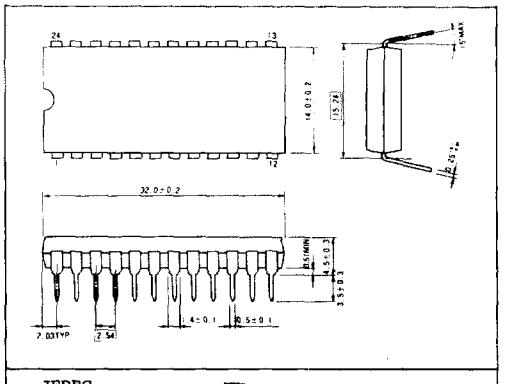
TA7193P

TV CHROMA PROCESSOR (FOR PAL SYSTEM)

Unit: mm



JEDEC	—
TOSHIBA	DIP24-P-600

FUNCTIONS

- Chroma Amplifier
- DC Chroma Gain Control
  DC Uni-color Control
- Burst Amplifier
- Burst Gate
- ACC Peak Detecter
- ACC Amplifier
- Killer Detector
- APC Phase Detector
- Voltage Controlled Oscillator
- Ident Detector
- PAL Switch
- Matrix Circuit
- Flip Flop

FEATURES

- Having a whole color signal processing function.
- Minimum number of external parts required.
- In order to stabilize the operation of the phase detector in the APC circuit under poor receiving condition, DC feed back technique is provided.
- The VCO consists of a low pass R.C circuit, so that there is no possibility of an undesirable parasitic oscillation.
- It needs no tank circuit and consequently no initial adjustment is required in the VCO circuit.
- AS the reference signals reproduced in the VCO are fed internally without passing through a tuning circuit, adjustment is not needed.
- The ACC level is internally defined.

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MAXIMUM RATINGS ($Ta=25^{\circ}C$)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}	15	V
Power Dissipation ($Ta=65^{\circ}C$)	P_D	720	mW
Signal Level at Input Pin	e_{in}	5	V_{p-p}
Load Resistance at Demodulator Output	R_L	MIN 1.8	kΩ
Gate Pulse Input Voltage	e_p	±6	V
Operating Temperature	T_{opr}	-20 ~ 65	$^{\circ}C$
Storage Temperature	T_{stg}	-55 ~ 150	$^{\circ}C$
Thermal Resistance (J-A)	R_{TH}	108	$^{\circ}C/W$
Flip-Flop Drive Pulse	e_F	±5	V

ELECTRICAL CHARACTERISTICS ($Ta=25\pm1.5^{\circ}C$, $V_{CC}=12V$)

CHARACTERISTIC	SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Current	I_{CC}	4	$S_1=2$, $S_2=1$	34	46	65	mA
Maximum Chroma Output Voltage	e_c	1	$S_1=1$, $S_2=1$, $S_3=1$ $e_{in}=100mV_{p-p}$ PIN 19	0.5	0.7	1.0	V_{p-p}
Burst Output Voltage	e_b	1	-	1.0	1.3	1.7	V_{p-p}
ACC Range	e_a	1	$S_1=1$, $S_2=1$, $S_3=1$ $e_{in}=14mV_{p-p}$ PIN 17	0.7	-	-	V_{p-p}
Killed Chroma Output Voltage	e_k	1	$S_1=1$, $S_2=1$, $S_3=2$ $e_{in}=100mV_{p-p}$ PIN 19	-	-	3	mV_{p-p}
Min. Gain Chroma Output Voltage	e_s	1	$S_1=1$, $S_2=3$, $S_3=1$ $e_{in}=100mV_{p-p}$ PIN 19	-	-	3	mV_{p-p}
Terminal Voltage 18	V_{18}	1	$S_1=2$, $S_2=1$, $S_3=1$	6.9	7.4	7.9	V
Color Control Voltage	V_{20}	1	$S_1=1$, $S_2=1$, $S_3=1$ $e_{in}=100mV_{p-p}$ When e_c being reduced to half	-	8.3	-	V

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CHARACTERISTIC	SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Unicolor Control Characteristic	Δe_{03}	1	S_1=3, S_2=1, S_3=1 e_{in}=100mV$_{p-p}$ V_{18}=5.9 ~ 8.9V, Signal change of PIN 19	9	10	12	dB
Phase Shift by Unicolor Control	$\Delta\phi$	1	S_1=3, S_2=1, S_3=1 e_{in}=100mV$_{p-p}$ 4.43MHz CW V_{18}=0 ~ 12V Phase shift of PIN 19	-	4	7	deg
APC Detector Output Balance	V_P	2	S_1=1, S_2=2, S_3=1 Difference in voltage between PIN 9 and 10	-50	0	+50	mV
APC Pull-in Range	f_P	2	S_1=2, S_2=1, S_3=2 Adj. V_9-V_{10} for f_o±10Hz S_1=1, S_2=1, S_3=2 Vary f_{11} & Measure f_p	±240	±350	-	Hz
VCO Frequency Control Sensitivity	β	2	S_1=1, S_2=1, S_3=1 Measure V_9-V_{10} at Δf=100Hz	-	1.0	-	Hz/mV
Phase Detector Sensitivity	α	2	S_1=1, S_2=2, S_3=1 Measure V_9-V_{10} at $\Delta\phi$=10°	-	+25	-	mV/deg
VCO Frequency Stability vs V_{22}	f_{OV}	2	S_1=2, S_2=1, S_3=1 V_{22}=12±1V	-20	0	+20	Hz
Temp-stability of APC Detector	ΔV_{pt}	2	S_1=1, S_2=1, S_3=1 e_B=100mV$_{p-p}$, Ta=0 ~ 60°C	-70	0	+70	mV
Burst Level for Killer & Ident	e_i	2	S_1=1, S_2=1, S_3=1 at V_{20} ≥10V	30	80	150	mV$_{p-p}$
Demodulator DC Output Voltage	E_{ODC}	3	S_1=2, S_2=1, S_3=1 PIN 1, 23, 24	6.6	7.2	7.8	V
Temp. Coeffi. of Demod. DC Output Voltage	$\frac{\partial E_{ODC}}{\partial T}$	3	S_1=2, S_2=1, S_3=1 Ta=-20 ~ 65°C	-3	0	+2	mV/°C
DC Voltage Difference Between Any Demod. Output Terminal	ΔE_{ODC}	3	S_1=2, S_2=1, S_3=1 Vol. Difference among PIN 1, 23 & 24	-0.3	0	+0.3	V

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CHARACTERISTIC	SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Temp. Coeffi. of Demod Output Voltage Defferences	$\frac{\partial \Delta E_{ODC}}{\partial T}$	3	S_1=2, S_2=1, S_3=1 Ta=-20 ~ +65°C	-2	0	+2	mV/°C
Color Difference Output Voltage	e_{OB}	3	S_1=1, S_2=1, S_3=1 e_{CW}=0.2Vp-p, 4.44MHz PIN 1, 23 & 24 (10kHz, Beat)	-	2.4	-	Vp-p
	e_{OR}			-	1.45	-	
	e_{OG}			-	0.65	-	
Maximum Color Difference Output Voltage	e_{om} B	3	S_1=1, S_2=1, S_3=1 e_{CW}=1.2Vp-p, 4.44MHz PIN 1, 23 and 24 (10kHz Beat)	4.5	5.5	-	Vp-p
	e_{om} R			4.5	5.5	-	
	e_{om} G			1.5	2.0	-	
Relative Amplitude	$B-Y/R-Y$	3	S_1=1, S_2=1, S_3=1 e_{CW}=0.2Vp-p 4.44MHz (10kHz Beat)	-	1.65	-	-
	$G-Y/R-Y$			-	0.45	-	
Demod. Phase	θ_{R-Y}	3	S_1=3, S_2=1, S_3=2 e_{CW}=0.2Vp-p, 4.43MHz	83	90	97	deg
	θ_{G-Y}			222	236	250	
Residual Carrier	e_{car}	3	S_1=2, S_2=2, S_3=1 4.43MHz	-	-	0.2	Vp-p
Residual Harmonics	e_{harm}	3	S_1=1, S_2=2, S_3=1 e_{CW}=1.2Vp-p, 4.44MHz	-	-	2.2	Vp-p
Demod. Freq. Characteristics	f_D	3	S_1=1, S_2=2, S_3=1 e_{CW}=0.2Vp-p, 4.44 ~ 7MHz 3dB band width	0.8	1.5	-	MHz
Output DC Voltage Change by PAL Switch	E_{SW}	4	S_1=2, S_2=1 ein=0mVp-p DC Deviation on each scanning	-	-	50	mVp-p
Carrier Leak In B.P.	e_{ccar}	4	S_1=1, S_2=2, ein=0mVp-p, Carrier Component Output of PIN 19	-	-	14	mVp-p

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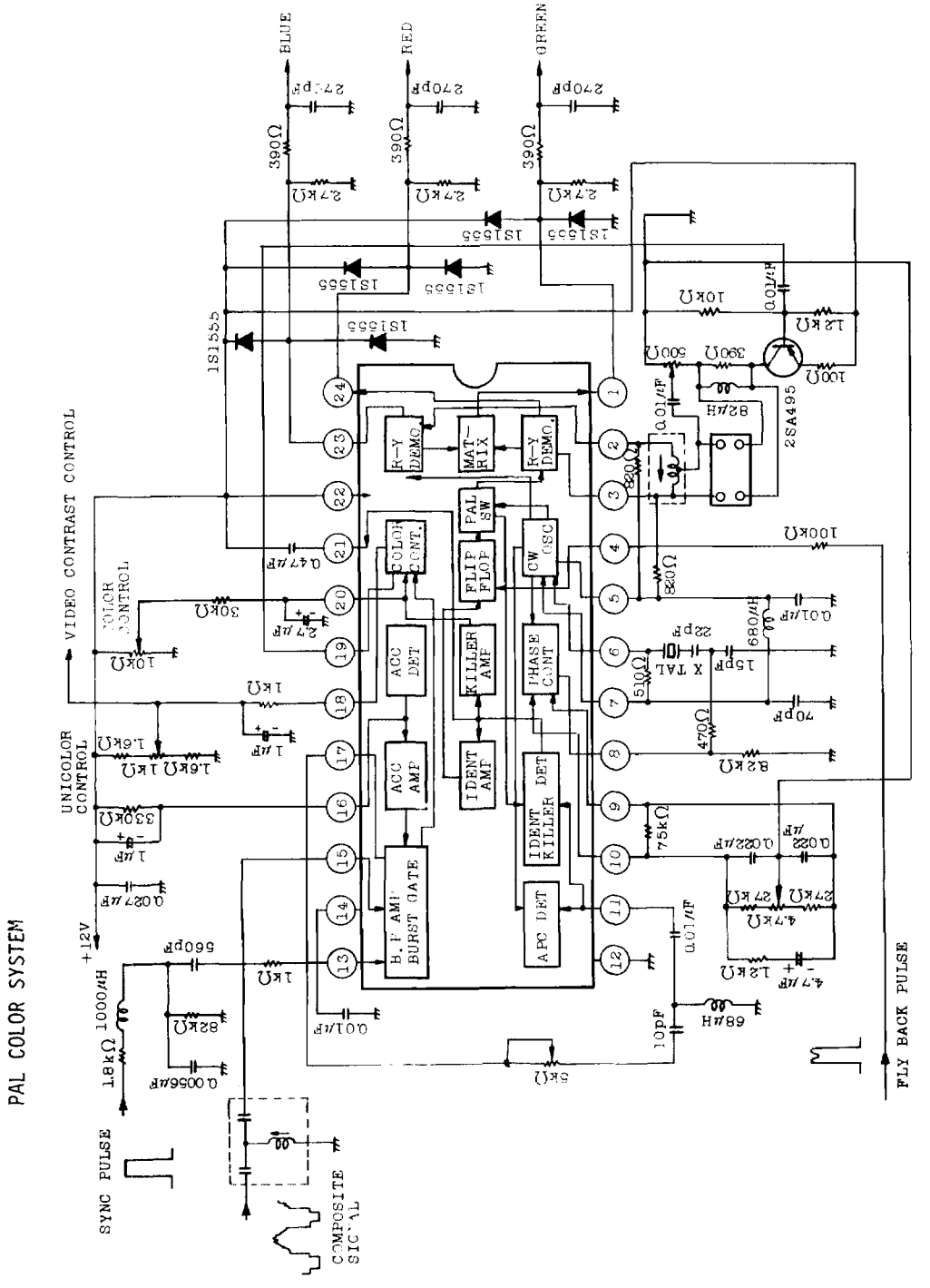
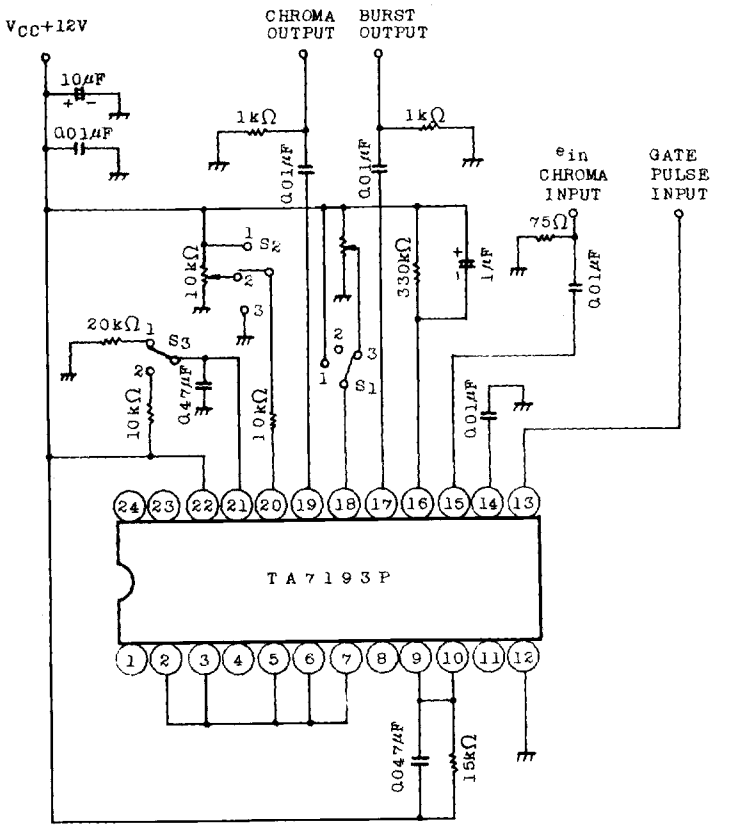
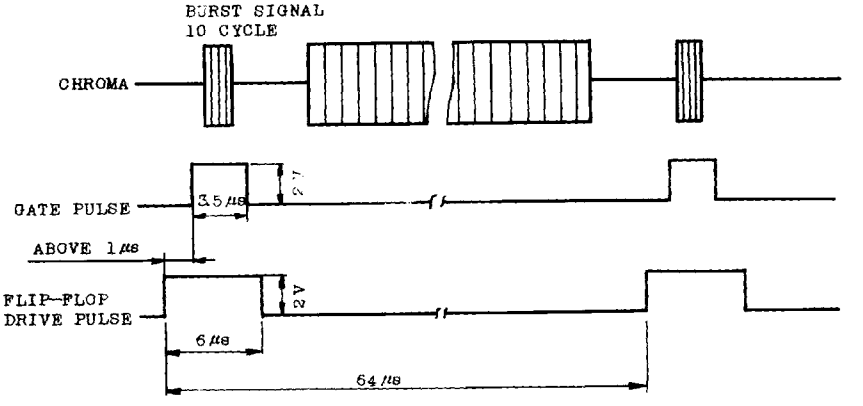

PAL COLOR SYSTEM
BLUE
RED
GREEN
390Ω
270pF
2.7kΩ
1S1555
VIDEO CONTRAST CONTROL
COLOR CONTROL
UNICOLOR CONTROL
30kΩ
10kΩ
1kΩ
1.6kΩ
330kΩ
1μF
0.047μF
2.7μF
0.0027μF
+12V
560pF
1000μH
1.8kΩ
82kΩ
0.0056μF
SYNC PULSE
COMPOSITE SIGNAL
0.01μF
5kΩ
R-Y DEMO.
MAT-RIX
B-Y DEMO.
PAL SW
COLOR CONT.
FLIP FLOP
CW OSC
ACC DET
KILLER AMP
PHASE CONT
ACC AMP
IDENT AMP
IDENT KILLER DET
B. F AMP BURST GATE
APC DET
500Ω
390Ω
100Ω
12kΩ
0.01μF
82μH
2SA495
100kΩ
10Ω
0.01μF
680μH
22pF
15pF
X TAL
510Ω
470Ω
8.2kΩ
75kΩ
0.022μF
27kΩ
4.7kΩ
4.7μF
68μH
10pF
FLY BACK PULSE

TEST CIRCUIT (1)





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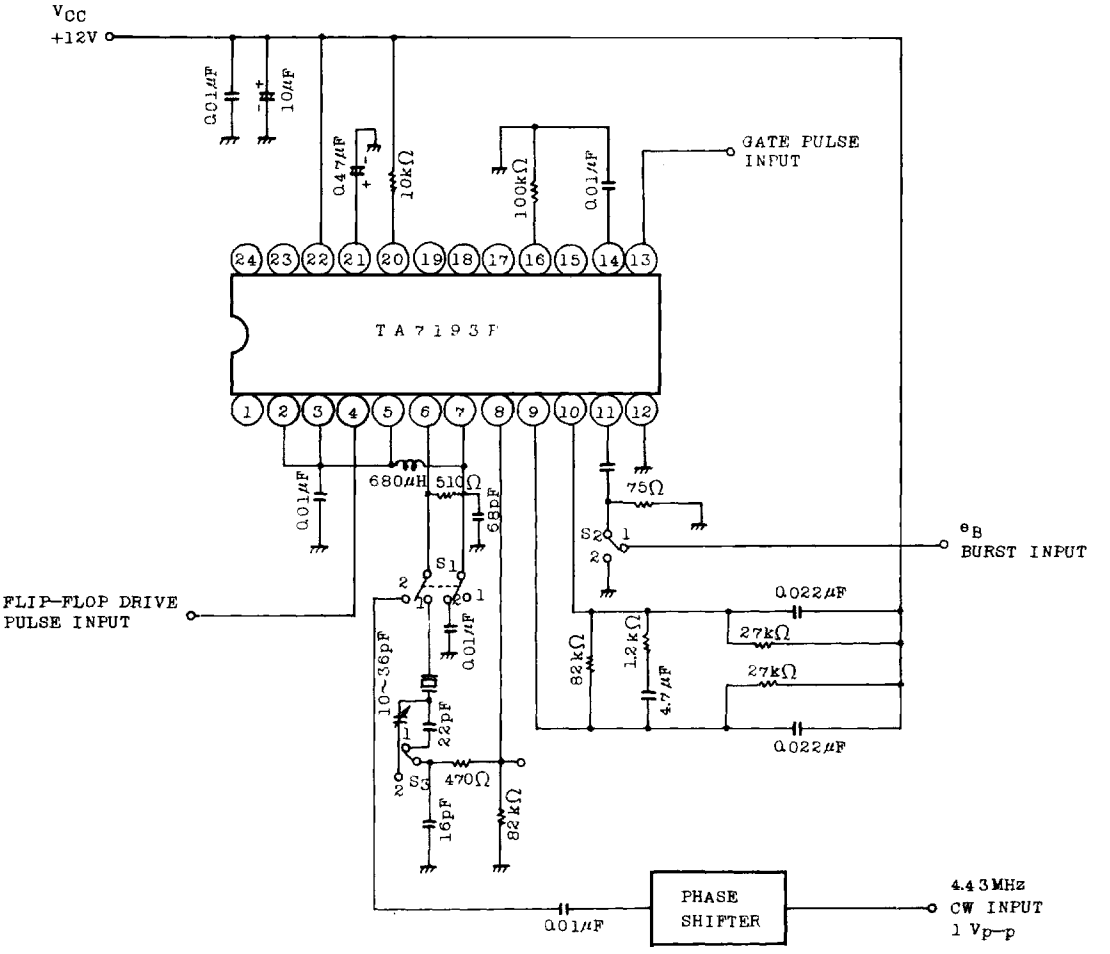
TEST CIRCUIT (2)



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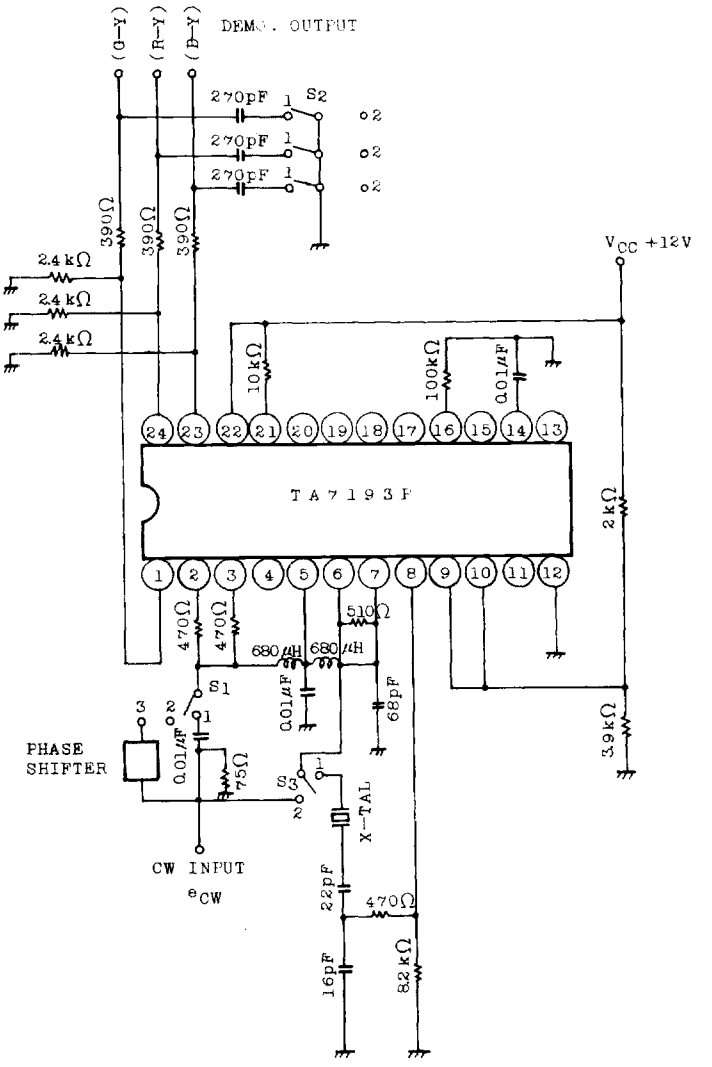
TEST CIRCUIT (3)



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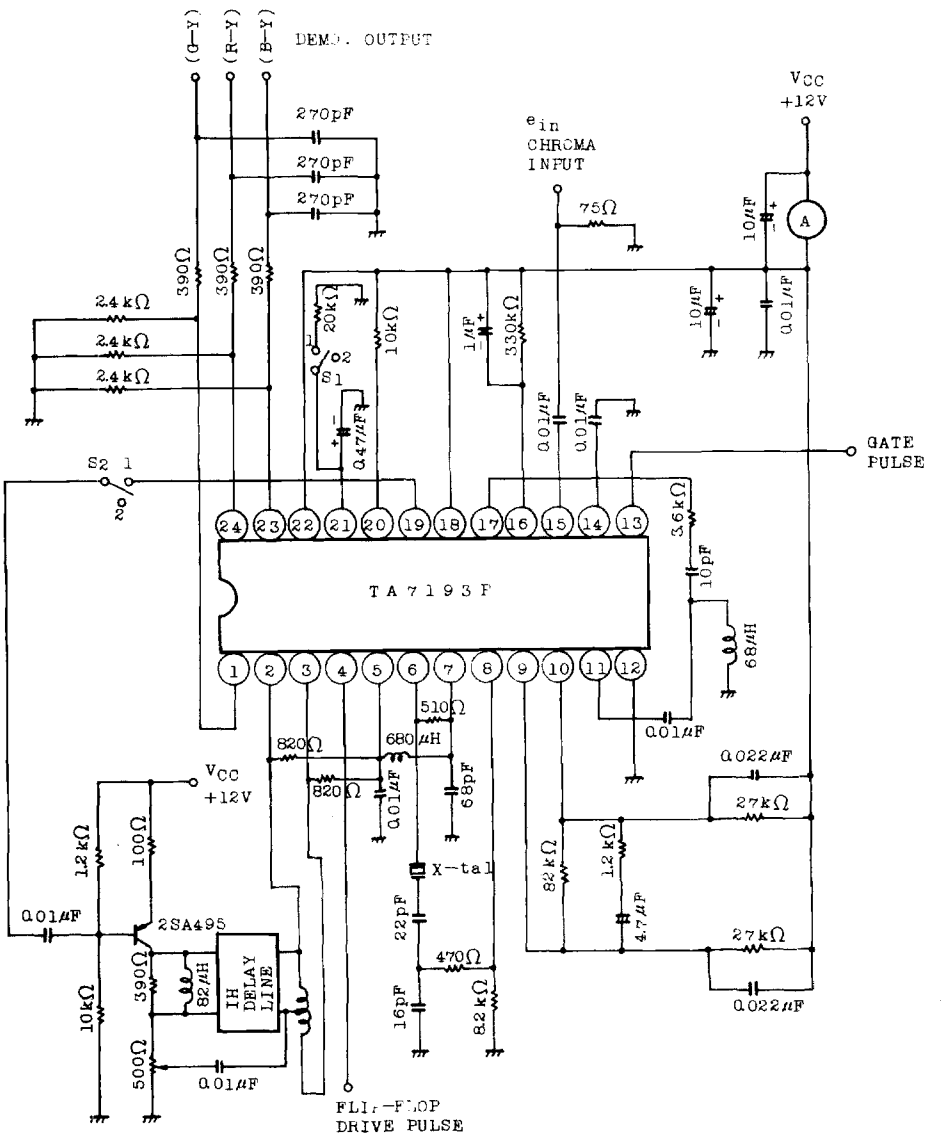
TEST CIRCUIT (4)