INTEGRATED CIRCUIT

TECHNICAL DATA

TA7621P

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT

SILICON MONOLITHIC

TV CHROMA PROCESSER (FOR SECAM SYSTEM)

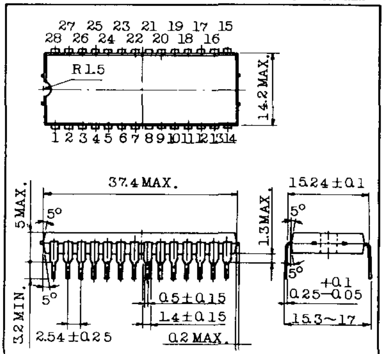
FUNCTION

- Chroma Amplifier
- SECAM Switch
- R-Y/B-Y Chroma Signal Limitter Amplifier
- R-Y/B-Y Demodulator
- H-Blanking Circuit
- Killer and Ident Circuit
- Burst Gate Circuit
- Flip-Flop

FEATURES

- Having a main color signal processing function in one package.
- Minimum number of external parts required.
- A little harmonic frequency generation from R-Y/B-Y demodulater and killer/Ident detector.
- Be able to select line or field IDENT system with external circuit.

Unit in mm



Lead pitch is 2.54 and tolerance is ±0.25 against theoretical center of each lead that is obtained on the basis of No.1 and No.28 leads.

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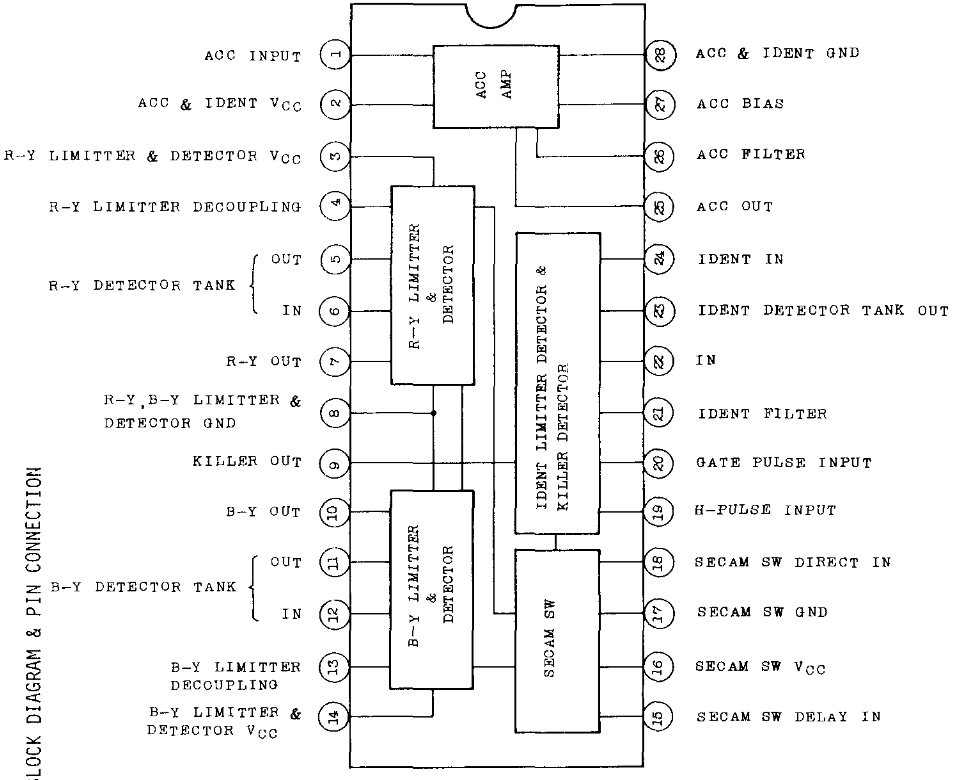
TOSHIBA	5−37

MAXIMUM RATINGS (Ta=25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Supply Voltage		V_{CC}	15	V
Signal Level at Input Pin		e_{in}	5	V_{p-p}
Chroma Amp. Output Current	DC	$I_{O(DC)}$	7	mA
	AC	$I_{O(AC)}$		
Pulse Input Voltage	Burst Gate	e_{p20}	±6	V
	Flip-Flop	e_{p19}	±5	V
Power Dissipation		P_D	1.4	W
Operating Temperature		T_{opr}	−20 ~ 65	°C
Storage Temperature		T_{stg}	−55 ~ 150	°C

TA7621P

BLOCK DIAGRAM & PIN CONNECTION



ELECTRICAL CHARACTERISTICS (Unless otherwise specified, V_{CC}=12V, Ta=25°C)

CHARACTERISTIC		SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Current		I_{CC}	Fig.1	R_L ACC=∞	33	50	67	mA
Power Dissipation		P_D	Fig.1	R_L ACC=∞	-	600	804	mW
Supply Current	Pin 2	I_2	Fig.1	R_1 ACC=1kΩ	22	30	38	mA
	Pin 16	I_{16}	Fig.1	-	5.2	7.6	10.0	mA
	Pin 3	I_3	Fig.1	-	7.5	10.6	14.2	mA
	Pin 14	I_{14}	Fig.1	-	7.5	10.6	14.2	mA
ACC Input DC Voltage		V_1	Fig.1	-	1.5	1.9	2.3	V
ACC Output DC Voltage		V_{25}	Fig.1	R_L ACC=1kΩ	-	7.7	-	V
Output DC Voltage	R-Y	V_7	Fig.1	-	6.9	7.7	8.5	V
	B-Y	V_{10}	Fig.1	-	6.9	7.7	8.5	V
SECAM Switch Input DC Voltage		V_{15},V_{18}	Fig.1	-	1.7	2.2	2.7	V
Killer Output DC Voltage	ON	$V_{9(ON)}$	Fig.1	Note 1	-	1.0	2.0	V
	OFF	$V_{9(OFF)}$			11.5	12	-	V
ACC Amp. Output Saturation		e_{25S}	Fig.2	f=4.5MHz RF_{in}=200mV_{p-p}	1.1	1.5	1.9	V_{p-p}
Variation of ACC Amp. Output Saturation		Δe_{25}	Fig.2	f=4.5MHz RF_{in}=100 ~ 200V_{p-p}	-	0	25	mV
Input Sensitivity of ACC AMP		e_{1L}	Fig.2	f=4.5MHz 3dB Down e_{25S}	-	12	25	mV_{p-p}
Ident Amp. Output Saturation		e_{23S}	Fig.2	f=4.5MHz RF_{in}=1V_{p-p}	0.9	1.3	-	V_{p-p}
Variation of Ident Amp. Output Saturation		Δe_{23}	Fig.2	f=4.5MHz RF_{in}=0.5 ~ 1V_{p-p}	-	0	25	mV_{p-p}
Input Sensitivity of Ident Amp.		e_{24L}	Fig.2	f=4.5MHz 3dB Down e_{23S}	-	240	-	mV_{p-p}
Center Frequency of Ident		$f_{O(I)}$	Fig.4	Note 2	-	4,328	-	MHz
Bandwidth of Ident Detector		$f_{D(I)}$	Fig.4	Note 3	-	45	100	kHz
Ident Detector Sensitivity		$e_{O(I)}$	Fig.4	Note 4	-	1.0	-	V_{p-p}
Killer Switch Threshold		$V_{21(K)}$	Fig.4	Note 6	-	6.6	-	V
Ident Switch Threshold		$V_{21(I)}$	Fig.4	Note 6	-	7.7	-	V
Ident Switch DC Voltage		V_{21}	Fig.4	Note 7	-	6.9	-	V

CHARACTERISTIC			SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Minimum Gate Pulse	Ident		V_G	Fig.4	Note 8	2.0	-	-	V
	Blanking		V_B	Fig.4	-	1.5	-	-	V
SECAM Switch	Output Saturation		V_{11S} V_{5S}	Fig.5	Note 9	1.0	1.6	-	V_{p-p}
	Input Knee		V_{15L} V_{18L}	Fig.5	-	-	25	60	mV_{p-p}
	Cross-talk		-	Fig.5	Note 10	-	-40	-36	dB
	Frequency Response		-	Fig.5	-	3.5	4.1	-	MHz
Color Detector	Center Frequency		$f_{O(R)}$ $f_{O(B)}$	Fig.6	$RF_{in}=200mV_{p-p}$	4.2	4.5	4.8	MHz
	Sensitivity	R-Y	$e_{O(R)}$	Fig.6	-	200	300	400	mV_{p-p}
		B-Y	$e_{O(B)}$						
	Voltage Sensitivity	R-Y	Δe_{ORV}	Fig.6	$V_{CC}=11\sim13V$	-	13	-	mV_{p-p}/V
		B-Y	Δe_{OBV}						
	Temperature Sensitivity	R-Y	Δe_{ORT}	Fig.6	$Ta=25\pm20^{\circ}C$	-	0	-	mV_{p-p}/V
		B-Y	Δe_{OBT}						
	Bandwidth	R-Y	-	Fig.6	-	1.1	1.4	-	MHz
		B-Y							
	Frequency Response	R-Y	-	Fig.6	$f_O=4.5MHz$	0.5	1.0	-	MHz
		B-Y							
	Output Voltage	R-Y	-	Fig.7	-	1.28	1.6	1.92	V_{p-p}
		B-Y				1.01	1.26	1.51	
Killer Residual Signal			-	Fig.6	Note 11	-	70	-	mV_{p-p}
Color Detector AMR			-	Fig.6	Note 12	39	50	-	dB
Killer Threshold			-	Fig.7	Note 13	0.9	1.6	2.25	mV_{p-p}
Limitting Sensitivity of Color Detector			-	Fig.7	Note 14	-	2.8	6.0	mV_{p-p}
DC Offset at Evry 1H			-	Fig.7	Note 15	-	0	20	mV
Cross-talk			-	Fig.7	Note 16	-30	-40	-	dB

TEST CIRCUIT

Fig. 1 DC TEST CIRCUIT

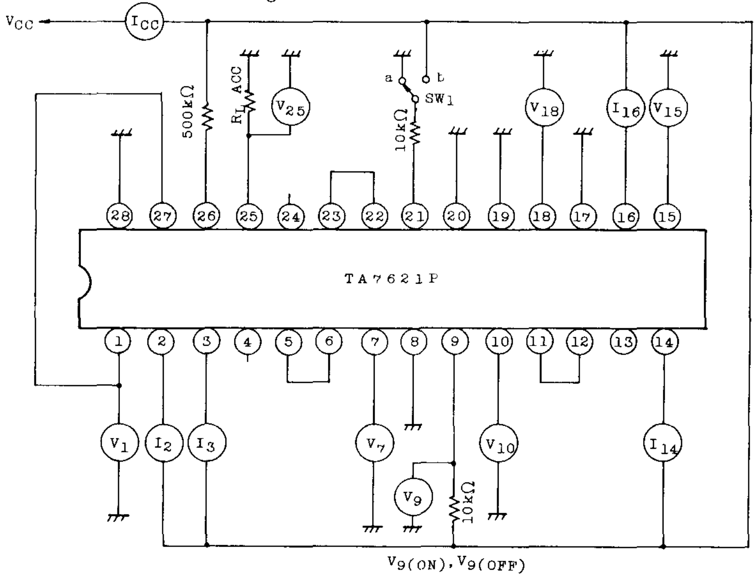


Fig. 2 ACC IDENT TEST CIRCUIT

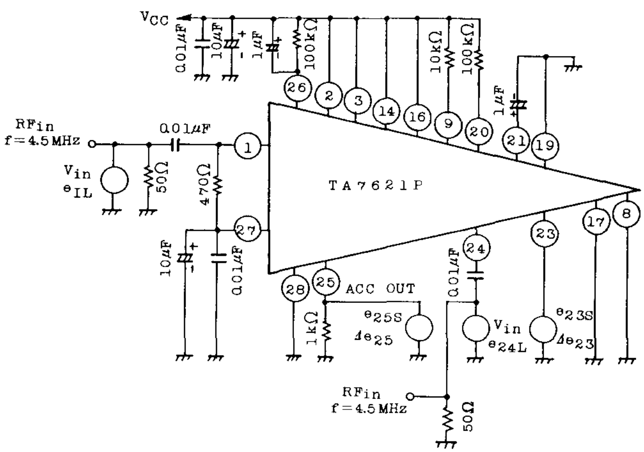
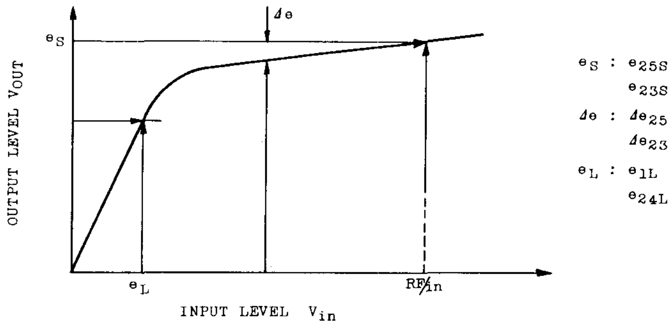


Fig. 3 ACC AMP/IDENT AMP



CHARACTERISTICS

Fig. 4 IDENT TEST CIRCUIT

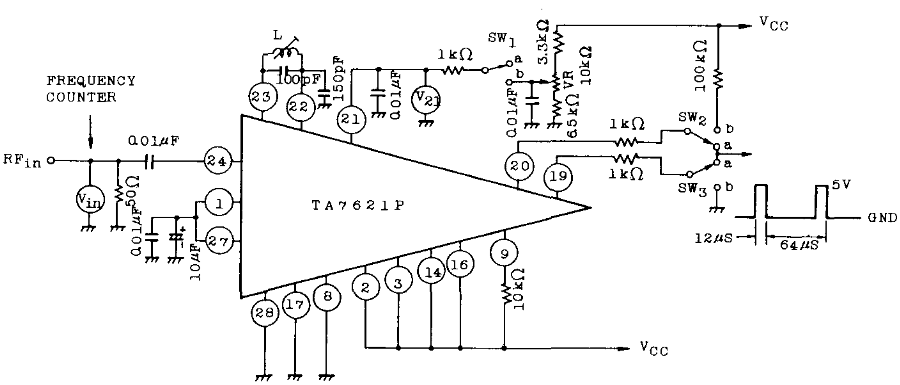


Fig. 5 SWITCH CIRCUIT

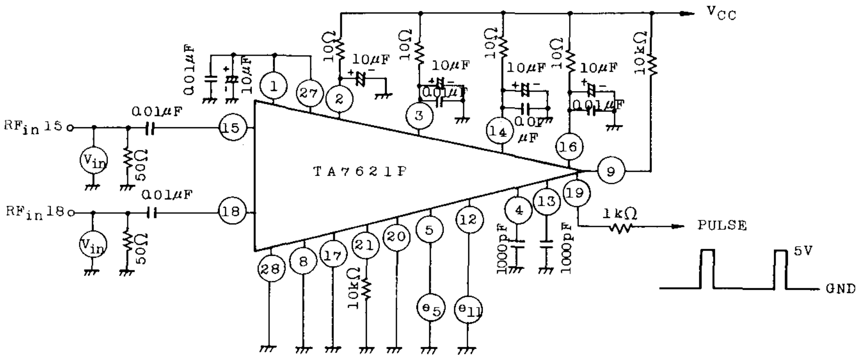
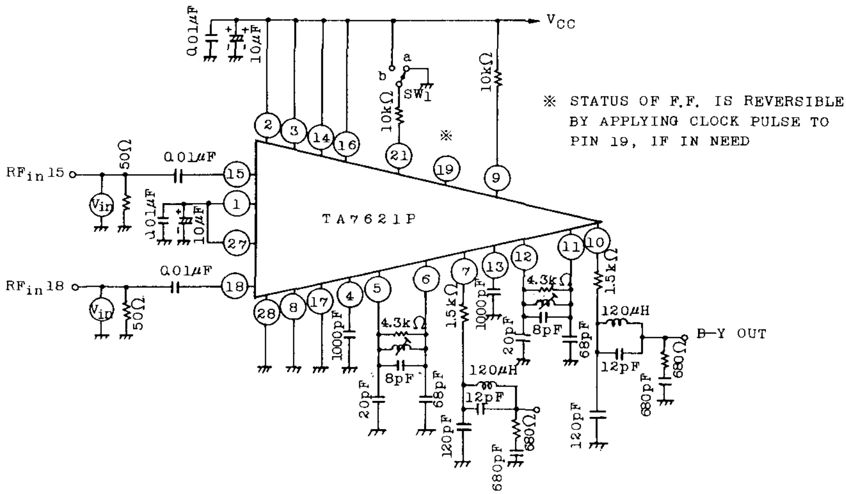


Fig. 6 DETECTOR TEST CIRCUIT



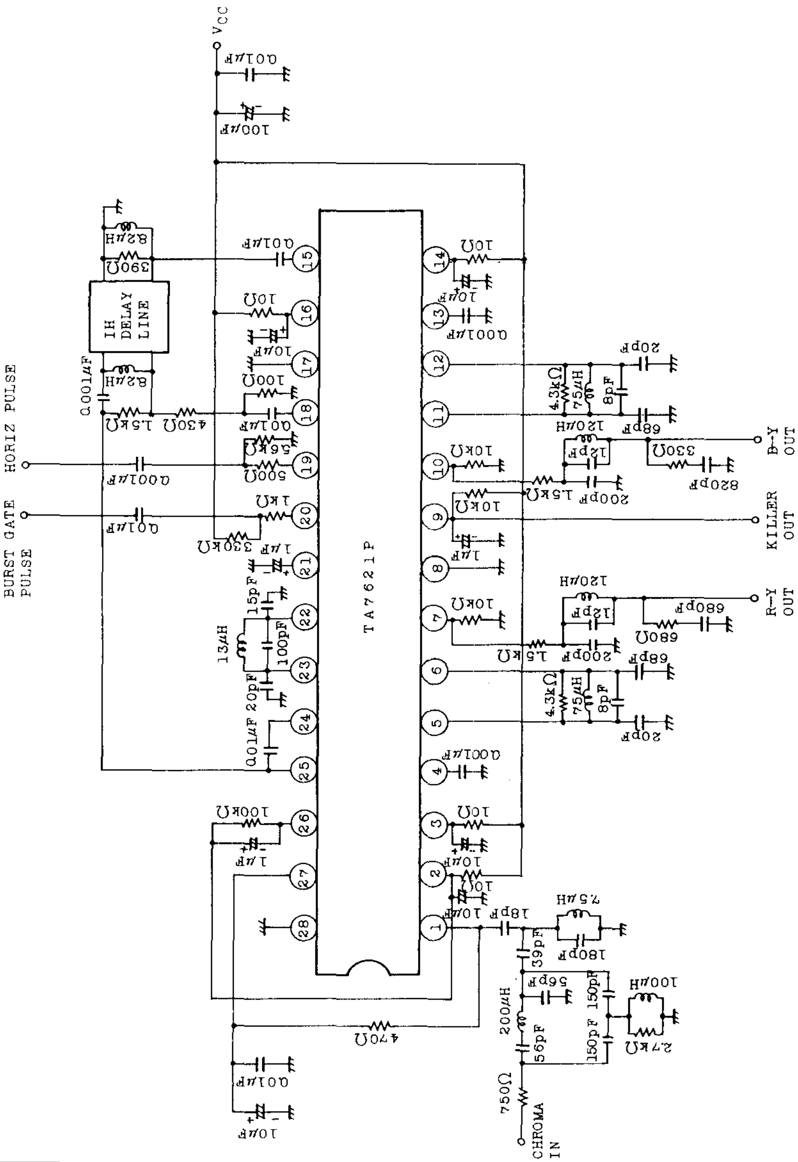


Fig. 7 AC TEST CIRCUIT

NOTE 1 Killer Output DC Voltage

Measure $V_{9(0)}$ with SW1 at position b, and $V_{9(1)}$ at position a.

NOTE 2 Center Frequency of Ident (Fig.4)

Measure pin 21 DC voltage E_0 with no signal and determine $f_{0(I)}$ as the frequency which make the pin 21 voltage same as E_0.

NOTE 3 Ident Detector Bandwidth (Fig.4)

Set SW_1 to position b, fix 10kΩ VR to the point where pin 21 voltage become same as E_0 measured in NOTE 2.

Then, set SW_1 and SW_2 to position a and measure the f_L which is the frequency to give 90% drop from E_0 to lowest pin 21 level, and f_H 90% of the highest level from E_0.

Ident Bandwidth is given by $f_{D(I)}=|f_H-f_L|$.

NOTE 4 Ident Detector Sensitivity (Fig.4)

With the same setting as NOTE 3, measure the AC output of pin 21 at center frequency.

f_m=400Hz, Deviation=15kHz

NOTE 5 Killer Switch Threshold (Fig.4)

After setting SW1, SW2 and SW3 to position b, changing 10kΩ VR, measure pin 21 voltage which change the pin 9 output.

NOTE 6 Ident Switch Threshold (Fig.4)

Set SW1 to position b, measure the level of pin 21 which stop Flip-Flop.

NOTE 7 Minimum Gate Pulse for Ident (Fig.4)

Check the Ident gate pulse height which activates Ident detector.

NOTE 8 Minimum Blanking Pulse Input Level (Fig.4)

Check the blanking input threshold which activates the blanking action.

NOTE 9 SECAM Switch Output Saturation (Fig.5)

Applying input to pin 15 and pin 18 together, check the output at pin 11 and pin5.

NOTE 10 SECAM Switch Cross-talk (Fig.5)
Ratio of peak to peak output at pin 11 with input from pin 15/pin 18 (F.F. at same state).

NOTE 11 Killer Residual Signal (Fig.6)
Set SW1 to position b, and activate killer.

NOTE 12 Color Detector AMR (Fig.6)
FM 100kHz Dev.
AM 30% mod.
f_m 1kHz