INTEGRATED CIRCUIT

TECHNICAL DATA

TA7622AP

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT

SILICON MONOLITHIC

TV COLOR DIFFERENCE SIGNAL PRE-AMPLIFIER

This integrated circuit has been designed to be driven from the TA7621P (SECAM DEMODURATOR) or TA7193P (PAL DEMODURATOR).

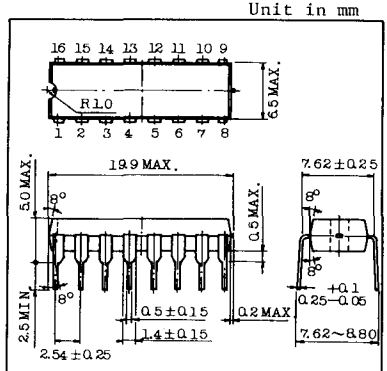
FUNCTION

- PAL/SECAM System Switch
- PAL/SECAM Color Control
- SECAM Uni-color
- Matrix
- Clamp Circuit by Line Pulse
- Line Pulse Amplifier
- Branking Circuit by Field Pulse
- Field Pulse Amplifier

FEATURE

- PAL/SECAM Dual System
- Automaticaly Switching for PAL or SECAM System
- One Color Control for PAL and SECAM System
- A Little Difference Voltage Between Output Terminals with Line Clamp Circuit.

Unit in mm



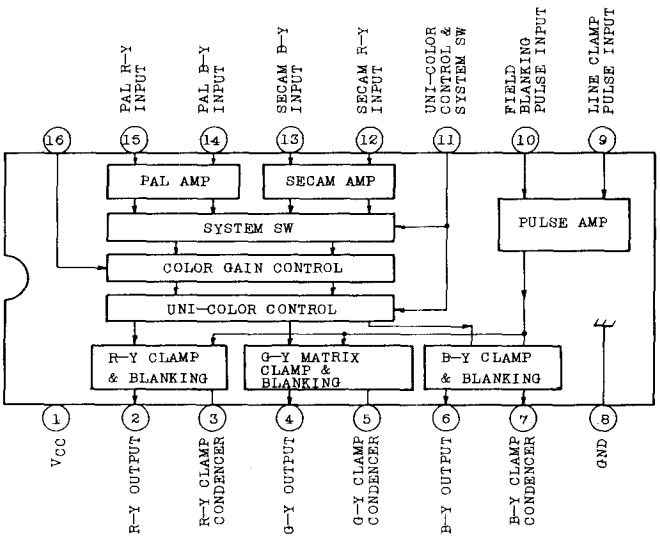
Lead pitch is 2.54 and tolerance is ±0.25 against theoretical center of each lead that is obtained on the basis of No.1 and No.16 leads.

JEDEC	—
TOSHIBA	5-22E

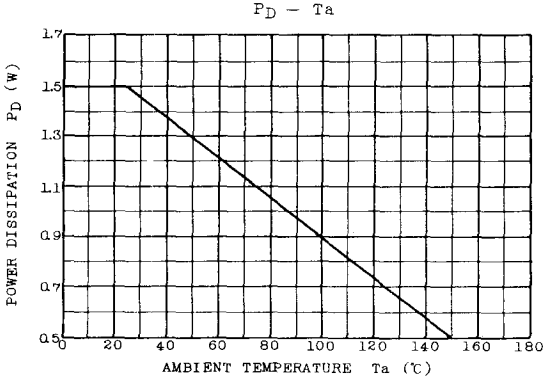
MAXIMUM RATINGS (Ta=25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}	18	V
Signal Level at Input Pin	e_{in}	5	V_{p-p}
Color Differential Output Current	I_O(DC)	3.5	mA
	I_O(AC)	5	mA_{p-p}
Line Clamp Pulse Input Voltage	e_p	±6	V
Field Branking Pulse Input Voltage	e_p	±5	V
Power Dissipation (Ta=25°C)	P_D	1.4	W
Operating Temperature	T_{opr}	-20 ~ 65	°C
Storage Temperature	T_{stg}	-65 ~ 150	°C

BLOCK DIAGRAM



P_D – Ta



DERATING CHARACTERISTICS

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

CHARACTERISTIC		SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Current		I_{CC}	Fig. 1	Note 1 $R_L=\infty$	20	30	40	mA
Power Dissipation		P_D	Fig. 1	Note 2 $R_L=\infty$	-	360	-	mW
SECAM/PAL Terminal DC Voltage		V_{12},V_{13} V_{14},V_{15}	Fig. 1	Note 3	1.65	1.95	2.25	V
Color Gain Control Terminal DC Voltage		V_{16}	Fig. 1	Note 4	4.9	5.6	6.3	V
PAL/SECAM Switching DC Level		V_{11SW}	Fig. 2	Note 5 R_L=2.7kΩ	2.0	2.8	3.6	V
Maximum Range In B-Y Output		$V_{OB\ MAX}$	Fig. 3	Note 6 R_L=2.7kΩ $V_{16}=V_{CC}$	6	-	-	V
Relative Ratio	B/R	B/R	Fig. 3	Note 7 R_L=2.7kΩ V_{in}=0.4V_{p-p}	-	1.55	-	-
	G/R	G/R			-	0.51	-	-
	G/B	G/B			-	0.19	-	-
Output Clamp Level		V_{OC2} V_{OC4} V_{OC6}	Fig. 4	Note 8 R_L=2.7kΩ V_{pc}=4V_{p-p}	6.3	7.4	8.5	V
Differential Voltage of Clamp Level		ΔV_{OC2-1} ΔV_{OC2-6} ΔV_{OC4-6}	Fig. 4	Note 9 R_L=2.7kΩ V_{pc}=4V_{p-p}	-0.3	0	+0.3	V
Output Blanking Level		V_{OB2} V_{OB4} V_{OB6}	Fig. 4	Note 10 R_L=2.7kΩ V_{pB}=4V_{p-p}	6.1	7.2	8.3	V
Differential Voltage of Blanking Level		ΔV_{OB2-4} ΔV_{OB2-6} ΔV_{OB4-6}	Fig. 4	Note 11 R_L=2.7kΩ V_{pB}=4V_{p-p}	-0.3	0	+0.3	V
Range of Uni-color Control		ΔV_{UC}	Fig. 3	Note 12 R_L=2.7kΩ $V_{16}=V_{CC}$ V_{in}=0.4V_{p-p}	10.6	12	13.8	dB
Crostalk Between PAL/SECAM		V_{CTP-S} V_{CTS-P}	Fig. 3	Note 13 R_L=2.7kΩ $V_{16}=V_{CC}$ V_{in}=0.4V_{p-p}	-	10	100	mV_{p-p}

CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Feedthrough Color Level		Fig. 3	Note 14 R_L=2.7kΩ $V_{16}=V_{CC}$ $V_{in}=0.4V_{p-p}$	-	5	20	mV_{p-p}
Maximum Color Gain		Fig. 3	Note 15 R_L=2.7kΩ $V_{16}=V_{CC}$ V_{11}=0V	18.5	21	24.5	dB
Minimum Calmp Pulse Input	V_C	Fig. 4	Note 16 R_L=2.7kΩ	2.0	-	-	V
Minimum Blanking Pulse Input	V_B	Fig. 4	Note 17 R_L=2.7kΩ	2.0	-	-	V
Clamp Level Change by Supply Voltage Variation	ΔV_{OC2V} ΔV_{OC4V} ΔV_{OC6V}	Fig. 4	R_L=2.7kΩ	0.4	0.66	0.9	V/V
Color Gain Change by Supply Voltage Variation		Fig. 3	R_L=2.7kΩ, $V_{16}=V_{CC}$ $V_{11}=V_{CC}$	-0.5	0	+0.5	dB/°C
Clamp Level Thermal Drift		Fig. 4	R_L=2.7kΩ	-3	-0.3	+2	mV/°C
Color Gain Thermal Drift		Fig. 3	R_L=2.7kΩ, $V_{16}=V_{CC}$ $V_{11}=V_{CC}$	-0.04	0	+0.04	dB/°C
Thermal Drift of Differential Output Voltage		Fig. 4	R_L=2.7kΩ	-2	0	+2	mV/°C
Color Control Characteristics (1)		Fig. 3	V_{11}=7 ~ 10V	8	10	12	dB
Color Control Characteristics (2)		Fig. 3	V_{11}=7.8 ~ 10V	1.5	3	4.5	dB
Output DC Level Change by Color Control Variation		-	-	-30	0	+30	mV
Output DC Level Voltage Difference Change by Color Control Variation		-	-	-30	0	+30	mV

Note 1. Supply Current
See Fig. 1

2. Power Dissipation
See Fig. 1 and P_O is as follows $P_D = V_{CC} \times I_{CC}$

3. SECAM/PAL Terminal DC Voltage
See Fig. 1

4. Color Gain Control Terminal DC Level
See Fig. 1

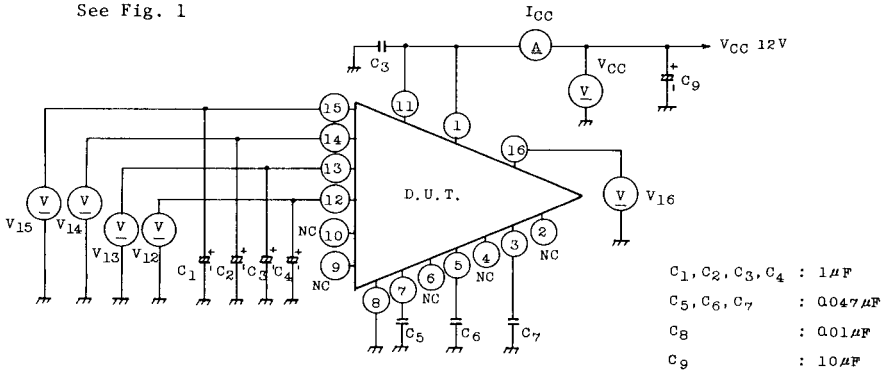


Fig. 1

5. PAL/SECAM Switching DC Level
See Fig. 2
V_{10} is the terminal voltage of subcolor control so that the B-Y output level will be Maximum 6db RF_{in}=0.4V_{p-p}, f=500kHz.

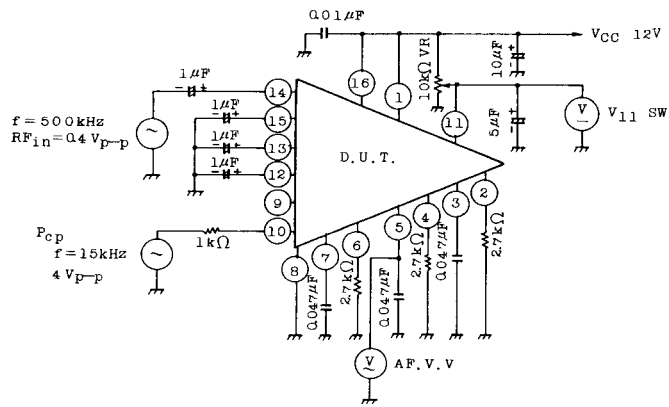


Fig. 2

Note 6. Maximum Rating In B-Y Output

See Fig. 3

V_{OB} Maximum is the output level of increasing input level until the B-Y output saturate at $V_{16}=V_{CC}$ (Color Gain Maximum)

7. Relative Ratio

See Fig. 3 $V_{16}=V_{CC}$

SECAM $V_{11}=V_{CC}$, SG_1, SG_2 short

. B/R is the ratio of B-Y output level to R-Y output level at V_{in12}, $V_{in13}=0.4V_{p-p}$ and f=500kHz.

. G/R is the ratio of G-Y output level to R-Y output level at $V_{in}=0.4V_{p-p}$, f=500kHz, $V_{in13}=0V$.

. G/B is the ratio of G-Y output level to B-Y output level at $V_{in14}=0.4V_{p-p}$, f=500kHz, $V_{in12}=0V$.

PAL $V_{11}=0V$, SG_3, SG_4 short

. B/R is the ratio of B-Y output level to R-Y output level at V_{in14}, $V_{in15}=0.4V_{p-p}$, f=500kHz.

. G/R is the ratio of G-Y output level to R-Y output level at $V_{in15}=0.4V_{p-p}$, f=500kHz, $V_{in14}=0V$.

. G/B is the ratio of G-Y output level to B-Y output level at $V_{in14}=0.4V_{p-p}$, f=500kHz, $V_{in15}=0V$.

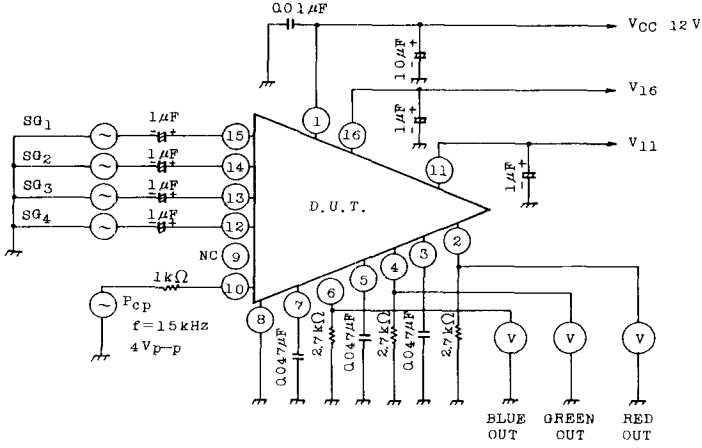


Fig. 3

Note 8. Output Clamp Level

See Fig. 4

V_{OC2}, V_{OC4} and V_{OC6} is the each output level (in R-Y, G-Y and B-Y out) during clamping at V_{PB}=0V, V_{PC}=4V_{p-p}, f=15kHz and pulse width=10μs.

9. Differential Voltage of Clamp Level

ΔV_{OC2-4}, ΔV_{OC2-6} and ΔV_{OC4-6} is the each differential voltage, voltage among R-Y, G-Y and B-Y output at output clamp level.

10. Output Blanking Level

See Fig. 4

V_{OB2}, V_{OB4} and V_{OB6} is the each output level (R-Y, G-Y and B-Y out) during blanking at V_{PC}=0V, V_{PB}=4V_{p-p}, f=60Hz and pulse width=10ms.

11. Differential Voltage of Blanking Level

ΔV_{OB2-4}, ΔV_{OB2-6}, and ΔV_{OC4-6} is the each differential voltage among R-Y, G-Y and B-Y output at output blanking level.

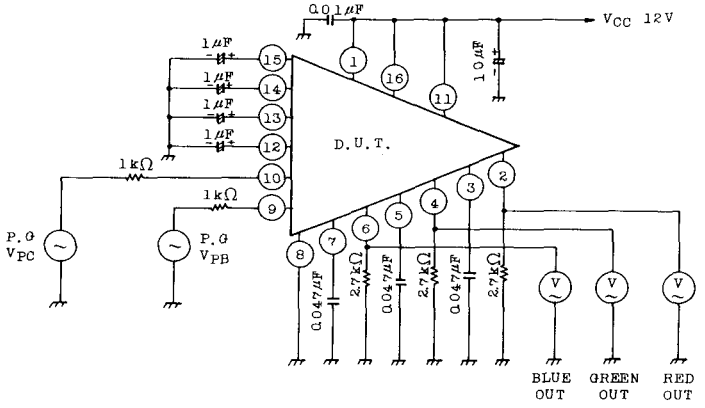


Fig. 4

12. Range of Uni-color Control

See Fig. 3

ΔV_{UC} is the differential level of red output so that V_{11} will get from switch voltage (SECAM SIDE) to V_{CC} at SG_1, SG_2, SG_3 ; Short V_{16}=V_{CC}, SG_4 ; 0.4V_{p-p} and f=500kHz.

Note 13. PAL/SECAM Cross Talk

See Fig. 3

. PAL→SECAM

V_{CTP-S} is each output level at SG_1, SG_2 ; $0.4V_{p-p}$
SG_3, SG_4 ; Short and $V_{11}=V_{CC}$.

. SECAM→PAL

V_{CTS-P} is each output level at SG_1, SG_2 ; Short,
SG_3, SG_4 ; $0.4V_{p-p}$ and $V_{11}=0V$.

14. Feed throuth Color Level

See Fig. 3

. SECAM

Feed through color level is the each output level (B-Y, G-Y and B-Y out) at $V_{11}=V_{CC}$ and SG_3, $SG_4=0.4V_{p-p}$.

. PAL

Feed through color level is the each output level (R-Y, G-Y and B-Y out) at $V_{11}=0V$ and SG_1, $SG_2=0.4V_{p-p}$.

15. Maximum Color Gain

See Fig. 3

. SECAM

Maximum color gain is the ratio of SECAM B-Y input to SECAM B-Y output at $V_{11}=V_{CC}$.

. PAL

Maximum color gain is the ratio of PAL B-Y input to PAL B-Y output at $V_{11}=0V$.

16. Minimum Clamp Pulse Input

See Fig. 4

V_C is the minimum clamp pulse input so that the output will be clampling.

17. Minimum Blanking Pulse Input

See Fig. 4

V_B is the minimum blanking pulse input so that the output will be blanking.