



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).

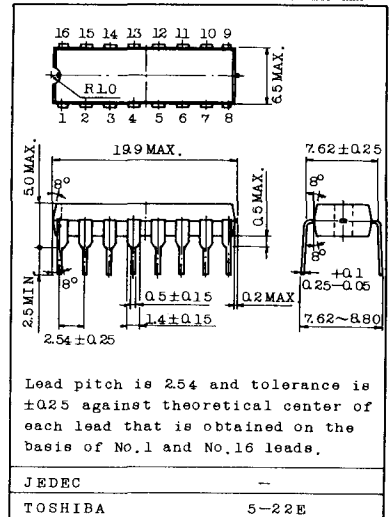
FUNCTION

- . 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
- . Automatically 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.

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

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 ($T_a=25^\circ\text{C}$)	P_D	1.4	W
Operating Temperature	T_{opr}	$-20 \sim 65$	$^\circ\text{C}$
Storage Temperature	T_{stg}	$-65 \sim 150$	$^\circ\text{C}$

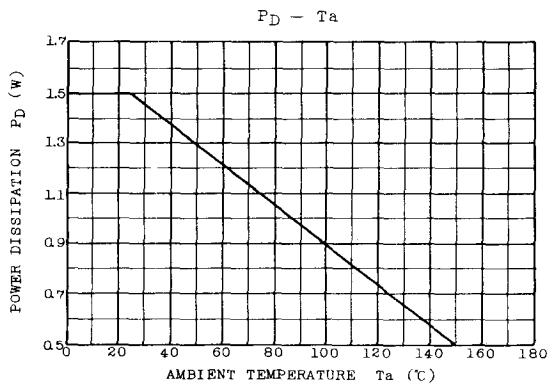
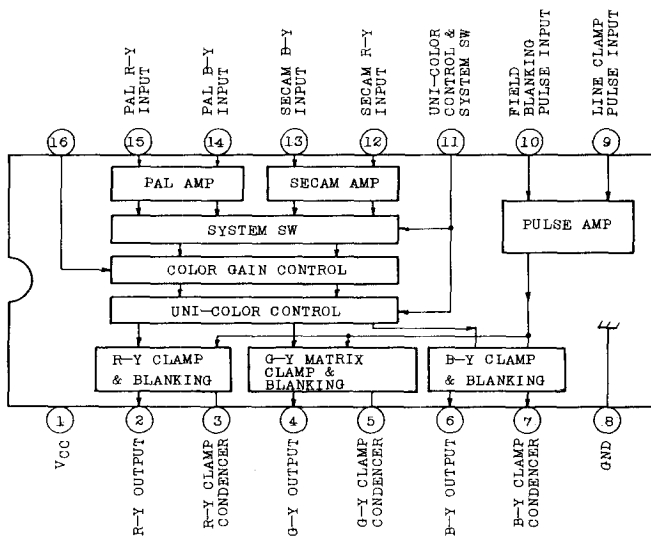


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BLOCK DIAGRAM



DERATING CHARACTERISTICS

ELECTRICAL CHARACTERISTICS ($T_a=25^{\circ}\text{C}$, $V_{CC}=12\text{V}$)

CHARACTERISTIC		SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Current		ICC	Fig. 1	Note 1 $R_L=\infty$	20	30	40	mA
Power Dissipation		PD	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		$V_{11\text{SW}}$	Fig. 2	Note 5 $R_L=2.7\text{k}\Omega$	2.0	2.8	3.6	V
Maximum Range In B-Y Output		$V_{\text{OB MAX}}$	Fig. 3	Note 6 $R_L=2.7\text{k}\Omega$ $V_{16}=V_{CC}$	6	-	-	V
Relative Ratio	B/R	B/R	Fig. 3	Note 7 $R_L=2.7\text{k}\Omega$ $V_{in}=0.4V_{p-p}$	-	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 $R_L=2.7\text{k}\Omega$ $V_{pc}=4V_{p-p}$	6.3	7.4	8.5	V
Differential Voltage of Clamp Level		$\Delta V_{\text{OC2-1}}$ $\Delta V_{\text{OC2-6}}$ $\Delta V_{\text{OC4-6}}$	Fig. 4	Note 9 $R_L=2.7\text{k}\Omega$ $V_{pc}=4V_{p-p}$	-0.3	0	+0.3	V
Output Blanking Level		V_{OB2} V_{OB4} V_{OB6}	Fig. 4	Note 10 $R_L=2.7\text{k}\Omega$ $V_{pB}=4V_{p-p}$	6.1	7.2	8.3	V
Differential Voltage of Blanking Level		$\Delta V_{\text{OB2-4}}$ $\Delta V_{\text{OB2-6}}$ $\Delta V_{\text{OB4-6}}$	Fig. 4	Note 11 $R_L=2.7\text{k}\Omega$ $V_{pB}=4V_{p-p}$	-0.3	0	+0.3	V
Range of Uni-color Control		ΔV_{UC}	Fig. 3	Note 12 $R_L=2.7\text{k}\Omega$ $V_{16}=V_{CC}$ $V_{in}=0.4V_{p-p}$	10.6	12	13.8	dB
Crosstalk Between PAL/SECAM		$V_{\text{CTP-S}}$ $V_{\text{CTS-P}}$	Fig. 3	Note 13 $R_L=2.7\text{k}\Omega$ $V_{16}=V_{CC}$ $V_{in}=0.4V_{p-p}$	-	10	100	mV _{p-p}



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

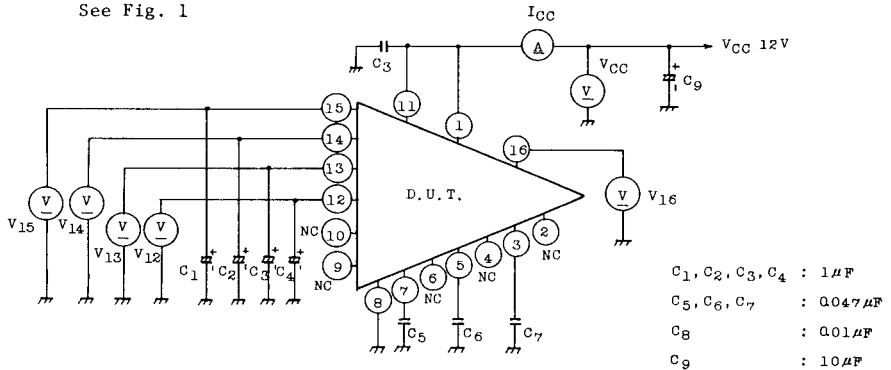


Fig. 1

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 $RF_{in} = 0.4 V_{p-p}$, $f = 500 kHz$.

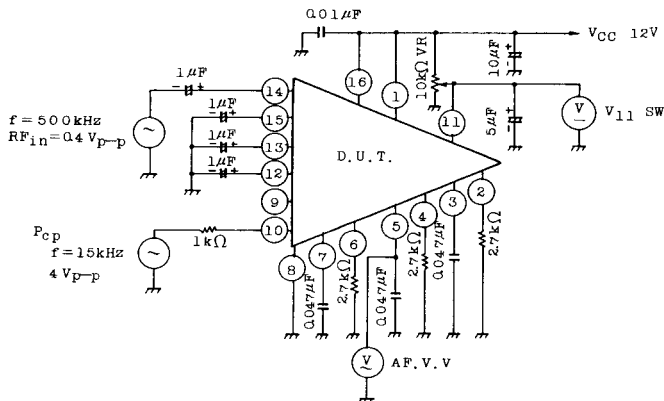


Fig. 2



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 $V_{in14}=0.4V_{p-p}$, $f=500kHz$, $V_{in15}=0V$.

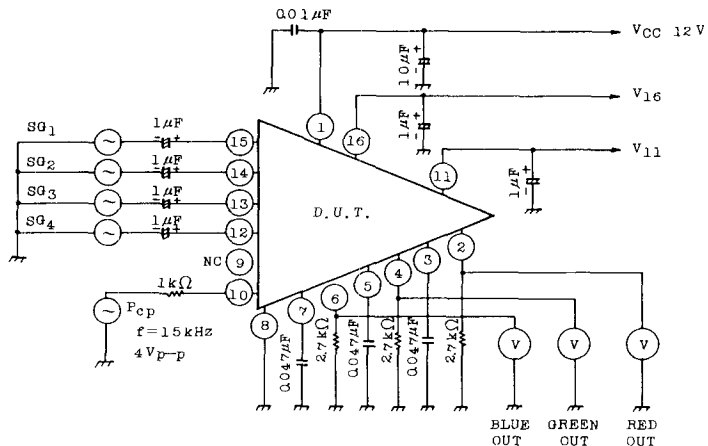


Fig. 3

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=10 μs .

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.

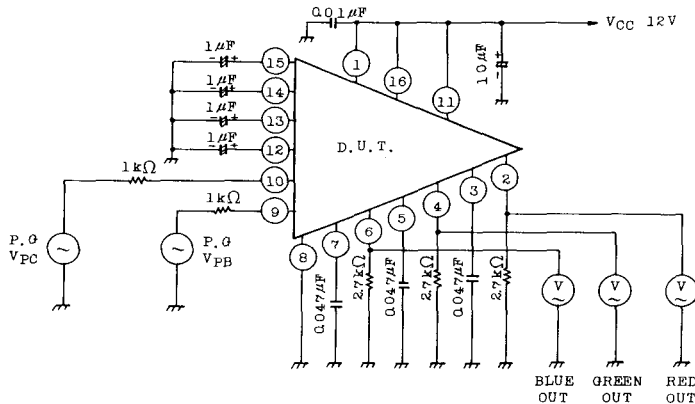


Fig. 4

12. Range of Uni-color Control

See Fig. 3

ΔV_{UC} is the differential level of red output so that V_{I1} will get from switch voltage (SECAM SIDE) to V_{CC} at SG_1 , SG_2 , SG_3 ; Short $V_{I6}=V_{CC}$, SG_4 ; 0.4 V_{p-p} and $f=500kHz$.



Note 13. PAL/SECAM Cross Talk

See Fig. 3

. PAL→SECAM

V_{CTP-S} is each output level at SG₁, SG₂ ; 0.4V_{p-p}
SG₃, SG₄ ; Short and V₁₁=V_{CC}.

. SECAM→PAL

V_{CTS-P} is each output level at SG₁, SG₂ ; Short,
SG₃, SG₄ ; 0.4V_{p-p} and V₁₁=0V.

14. Feed through Color Level

See Fig. 3

. SECAM

Feed through color level is the each output level (B-Y, G-Y and B-Y out)
at V₁₁=V_{CC} and SG₃, SG₄=0.4V_{p-p}.

. PAL

Feed through color level is the each output level (R-Y, G-Y and B-Y out)
at V₁₁=0V and SG₁, SG₂=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 V₁₁=V_{CC}.

. PAL

Maximum color gain is the ratio of PAL B-Y input to PAL B-Y output at
V₁₁=0V.

16. Minimum Clamp Pulse Input

See Fig. 4

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

17. Minimum Blanking Pulse Input

See Fig. 4

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