

BIPOLAR ANALOG INTEGRATED CIRCUIT

μ PC1365C

PAL CHROMINANCE AND LUMINANCE PROCESSOR

SILICON BIPOLAR MONOLITHIC INTEGRATED CIRCUIT

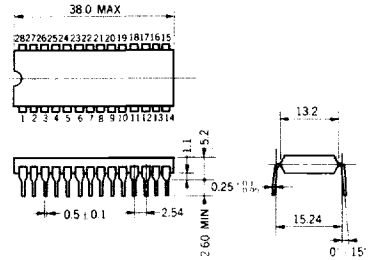
DESCRIPTION

μ PC1365C is a luminance and chrominance stage LSI for PAL system TV sets. It contains luminance amplifier, chroma IF amplifier, sub-carrier oscillator, PAL switching circuit, chroma demodulator, matrix circuit, and the other necessary additions. It puts out R,G,B primary colors. This LSI restores 100 % of the DC level. And it is easy to adapt remote control system to "BRIGHTNESS", "CONTRAST", and "COLOR SATURATION", as the control terminals are designed to high impedance.

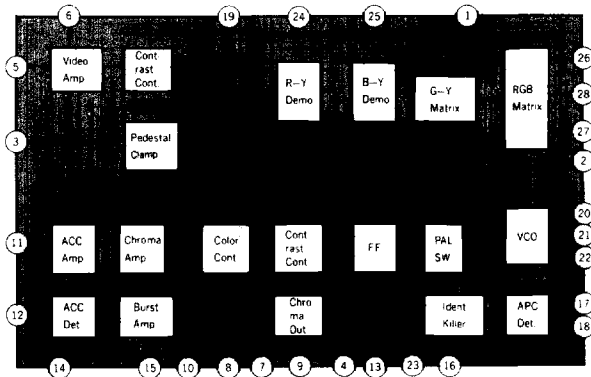
FEATURES

- This LSI has built-in function for PAL-SECAM dual system.
 - 1) Two ICs construction by NEC's SECAM IC μ PC1364C2.
 - 2) Only one 1-H delay line is required for dual system.
 - 3) Automatically switchable function for PAL/SECAM signals.
- This LSI can process both of the chrominance and the luminance signals.
- Due to DC control method for color, contrast, and brightness control, the wiring is rather easy and the expansion to remote control receiver are also rather easy.
- The level of color killer circuit can be adjusted from the outside and the color killer circuit has proper hysteresis characteristics.
- The input circuit require only the band pass filter and 4.43 MHz trap. Furthermore, the demodulated output are R,G,B signals. So that the chroma output stage are quite simplified.
- The contrast control can automatically adjust the levels of chroma and contrast luminance signal under the relation that the normal picture is always kept.
- The output terminals of demodulated chroma signals and all input circuits are protected by the surge protection diode.

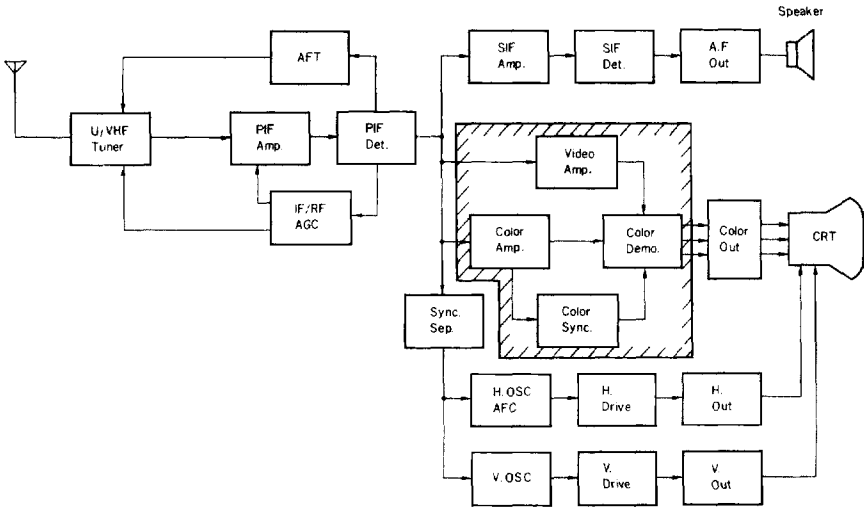
PACKAGE DIMENSIONS in millimeters



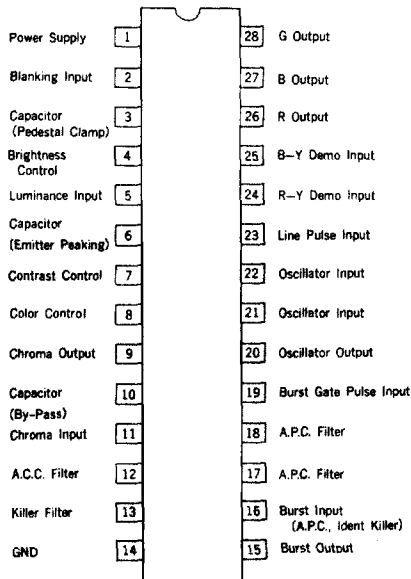
IC BLOCK DIAGRAM



TV BLOCK DIAGRAM



PIN CONNECTION (Top View)



μ PC1365C Standard Using Conditions

| | | |
|--|---------|-------------------|
| Supply Voltage | 12 | V |
| Chrominance Input Signal (Burst Signal Level) | 100 | mV _{p-p} |
| Luminance Input Signal | 1 | V _{p-p} |
| Gate Pulse Input Level | 3 | V _p |
| H. Pulse Input Level | 3 | V _p |
| Blanking Pulse Input Level | 3 | V _p |
| Demodulator Chrominance Input Signal | 0.2 | V _{p-p} |
| R,G,B Output Voltage (Black Level) | 2.0 | V |
| Color Saturation Controlling Voltage | 0 to 12 | V |
| Contrast Controlling Voltage | 0 to 12 | V |
| Brightness Controlling Voltage | 0 to 12 | V |

ABSOLUTE MAXIMUM RATINGS (T_a = +25 °C Unless otherwise)

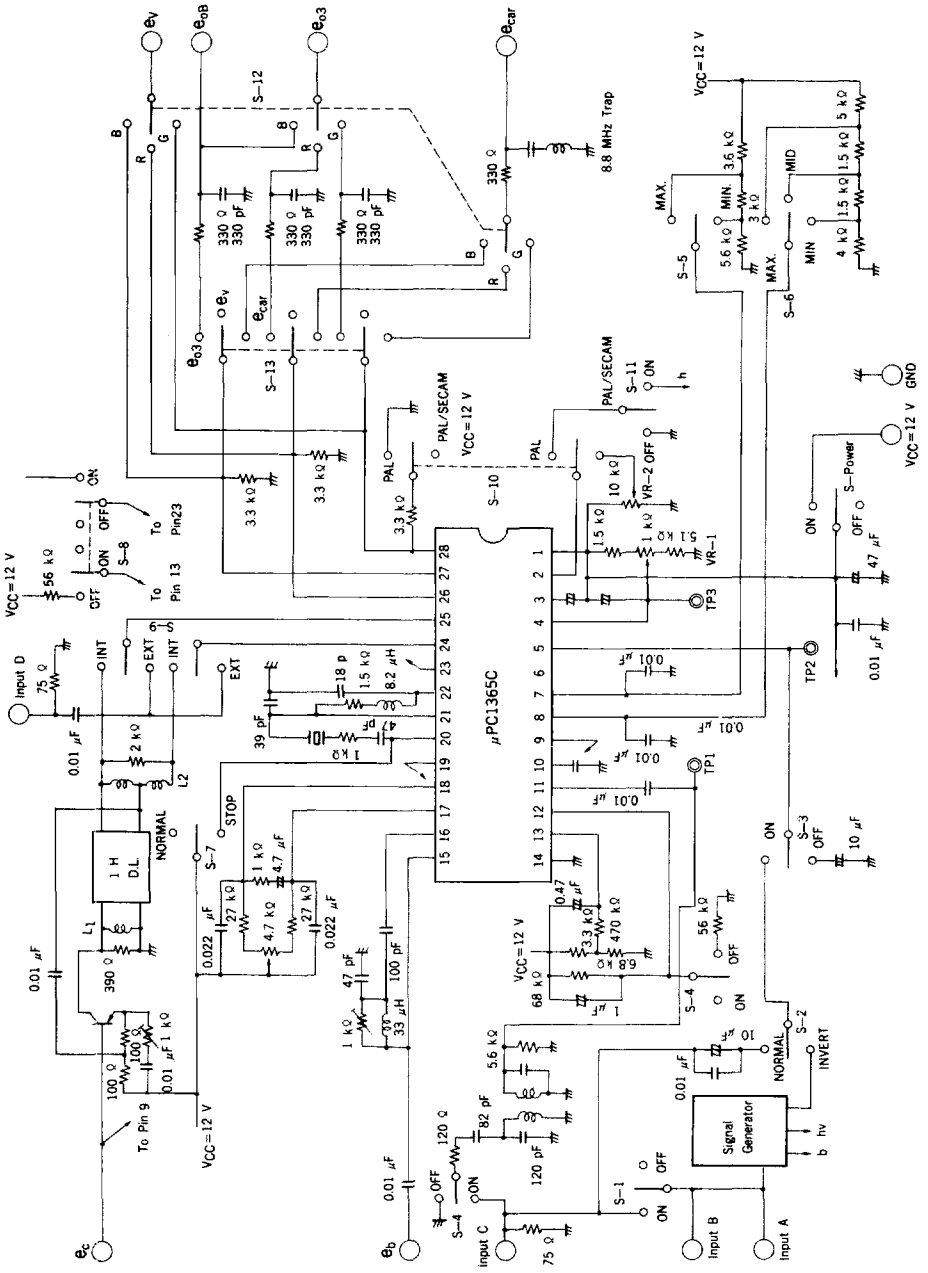
| | | | |
|-----------------------|------------------------------|-------------|------------------|
| Supply Voltage | V _{CC} | 15 | V |
| Power Dissipation | Pd (T _a = +70 °C) | 750 | mW |
| Signal Input Voltage | e _i | 5 | V _{p-p} |
| Pulse Input Voltage | e _p | ±6 | V |
| Operating Temperature | T _{opt} | -20 to +70 | °C |
| Storage Temperature | T _{stg} | -40 to +125 | °C |

ELECTRICAL CHARACTERISTICS (Ta = 25 °C unless otherwise noted, VCC = 12 V)

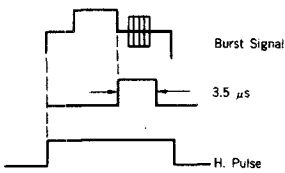
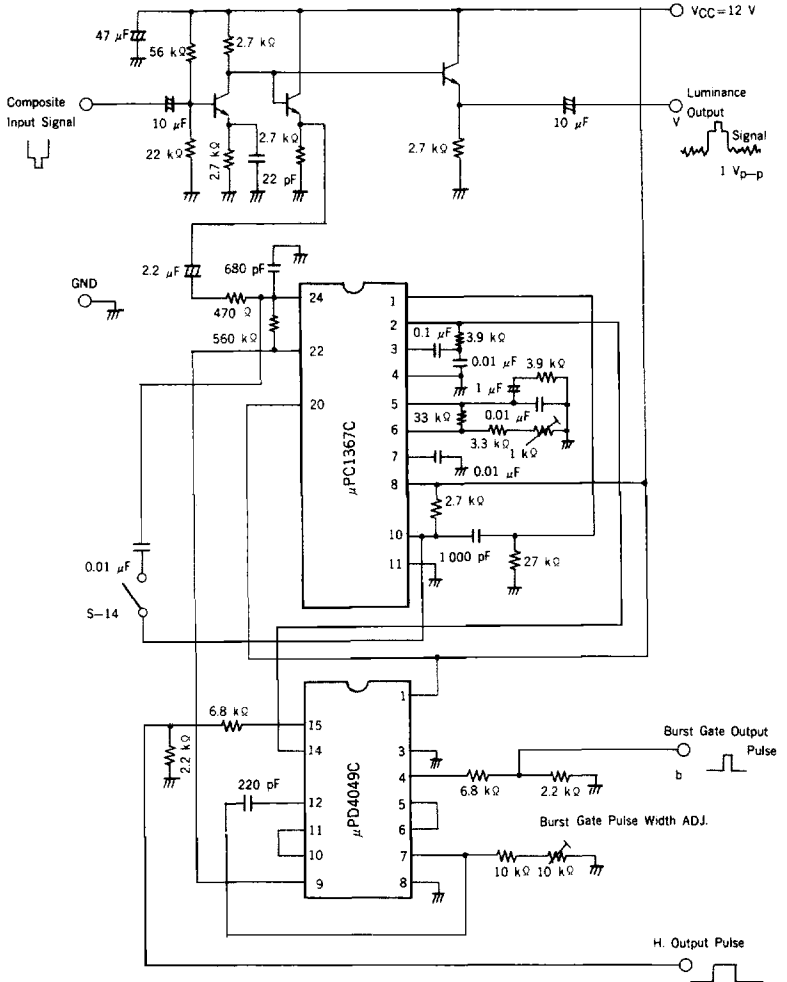
| NO | CHARACTERISTIC | SYMBOL | TEST CKT | MIN. | TYP. | MAX | UNIT | TEST CONDITION |
|----|--|--------------|----------|------|------|------|-------------------|---|
| 1 | Burst Output Voltage | E_b | 1 | 0.9 | 1.2 | 1.6 | V_{p-p} | Input 100 mV _{p-p} Rainbow color bar signal |
| 2 | ACC Range | ACC | 1 | 0.6 | 0.8 | 1.0 | times | Input 10 mV _{p-p} Burst Output/ E_b |
| 3 | Chroma Output Voltage 1 | E_{c1} | 1 | 0.5 | 0.7 | 1.0 | V_{p-p} | Input 100 mV _{p-p} Rainbow color bar signal Saturation control MAX |
| 4 | Chroma Output Voltage 2 | E_{c2} | 1 | | 0.2 | | V_{p-p} | Input 100 mV _{p-p} Rainbow color bar signal Saturation control MID |
| 5 | Chroma Output Voltage 3 | E_{c3} | 1 | | | 6 | mV _{p-p} | Input 100 mV _{p-p} Rainbow color bar signal Saturation control MIN |
| 6 | Killer Sensitivity | E_k | 1 | -34 | -40 | -46 | dB | 0 dB = Input 100 mV _{p-p} Rainbow color bar signal Killer ON Input level |
| 7 | Killer Hysteresis | E_{kh} | 1 | - | 1 | 2 | dB | Killer ON-OFF Input level |
| 8 | Oscillator Controlling Sensitivity | β | 2 | 1.3 | 1.8 | 2.3 | Hz/mV | Measure Vp Voltage at Burst frequency fo ± 100 Hz |
| 9 | Phase Detector Sensitivity | μ | 2 | 20 | 40 | 60 | mV/degree | Measure Vp Voltage at Burst frequency fo ± 100 Hz |
| 10 | Phase error | $\Delta\phi$ | 2 | - | 1.5 | 3.0 | degree/100 Hz | Burst frequency fo ± 100 Hz |
| 11 | APC Pull-in frequency Range | f_p | 2 | ±300 | ±500 | - | Hz | Changing frequency of Burst signal |
| 12 | APC Detector Output balance Voltage | V_p | 2 | -100 | 0 | +100 | mV | No Input signal at Pin 16 |
| 13 | B-Y Output Voltage | E_{o1} | 1 | 1.5 | 2.0 | 2.5 | V_{p-p} | Input 0.2 V _{p-p} f = 4.44 MHz 10 kHz beat Output signal |
| 14 | Ratio of R-Y to B-Y | R/B | 1 | 0.49 | 0.56 | 0.63 | times | Input 0.2 V _{p-p} f = 4.44 MHz 10 kHz beat Output signals |
| 15 | Ratio of G-Y to B-Y | G/B | 1 | 0.30 | 0.34 | 0.38 | times | Input 0.2 V _{p-p} f = 4.44 MHz 10 kHz beat Output signals |
| 16 | Relative Output Phase B-Y to R-Y | $\angle R$ | 1 | 85 | 90 | 95 | degree | Input 0.2 V _{p-p} f = 4.44 MHz |
| 17 | Relative Output Phase B-Y to G-Y | $\angle G$ | 1 | 228 | 236 | 244 | degree | Input 0.2 V _{p-p} f = 4.44 MHz |
| 18 | Maximum Color Difference Output Voltage | E_{o2} | 1 | 4.5 | 5.5 | - | V_{p-p} | Input 1.2 V _{p-p} f = 4.44 MHz 10 kHz beat Output signal at B-Y Output Pin |
| 19 | Output Residual Carrier level | E_{car} | 1 | - | - | 100 | mV _{p-p} | No Input signal at Pin 24 and 25 |
| 20 | Overall color Difference Output Voltage at B-Y signal | E_{o3} | 1 | 1.0 | 1.7 | 2.5 | V_{p-p} | Saturation control MID Input 100 mV _{p-p} Rainbow color bar signal Contrast control MAX |
| 21 | Overall color Difference Output Variable Range by Contrast | E_{oc} | 1 | 15 | 17 | 19 | dB | Input 100 mV _{p-p} Rainbow color bar signal Contrast control MAX/MIN |
| 22 | Luminance Gain | A_v1 | 1 | 4.1 | 4.6 | 5.1 | times | Input 1 V _{p-p} Color bar 100 % White signal Contrast control MAX |

| NO | CHARACTERISTIC | SYMBOL | TEST CKT | MIN. | TYP. | MAX | UNIT | TEST CONDITION |
|----|---|--|----------|------|------|------|-------|---|
| 23 | Relative Ratio of Luminance Gain | $\Delta Av1$ | 1 | — | 1.0 | 1.1 | times | Input 1 V _{p-p} Color bar 100 % White signal Contrast control MAX |
| 24 | Luminance Gain Variable Range by Contrast | E_{vc} | 1 | 15 | 17 | 19 | dB | Input 1 V _{p-p} Color bar 100 % White signal Contrast control MAX/MIN |
| 25 | Differential Gain | D.G. | 1 | — | — | 6 | % | Input 1 V _{p-p} Stair step signal RGB Output, Black level = 2 V |
| 26 | DC Restoration | T _{DC} | 1 | 90 | 95 | 100 | % | Input 1 V _{p-p} Stair step signal APL = 10 to 90 % |
| 27 | Luminance Amp Frequency Characteristic | f _v | 1 | 4.0 | 5.5 | — | MHz | Input 0.1 V _{r.m.s.} Sine wave signal, -3 dB down Pin 6 open |
| 28 | Brightness Controlling Sensitivity | BR | 1 | 3.8 | 4.3 | 4.8 | — | Quiescent Output Voltage = 2 to 5V, (V26, V27, V28) Sensitivity 3 V/ΔV4 |
| 29 | Maximum R,G,B Output Voltage | E _{OM} | 1 | 7 | — | — | V | Brightness Controlling Voltage = 12 V |
| 30 | Quiescent Output Voltage | E _o | 1 | 2.5 | 3.3 | 4.1 | V | No Luminance Input signal Brightness V4 = 9 V Contrast MAX VCO operating |
| 31 | Quiescent Output Voltage Temperature Coefficient | E _{O-T} | 1 | -2 | 0 | +2 | mV/°C | R,G,B Output T _a = -20 to +70 °C V26 = 3.5 V at T _a = 25 °C |
| 32 | Difference Output Voltage | $\begin{cases} E_{R-G} \\ E_{G-B} \\ E_{B-R} \\ E_{x-y} \end{cases}$ | 1 | -300 | 0 | +300 | mV | V26 = 3.5 V VCO operating |
| 33 | Difference Output Voltage Temperature Coefficient | $\Delta E_{x-y}/\Delta T$ | 1 | — | 0 | 60 | mV | V26 = 3.5 V at T _a = 25 °C T _a = -20 to +70 °C |
| 34 | Supply Current | I _{CC} | 3 | 32 | 43 | 54 | mA | V _{CC} = 12 V |
| 35 | Changing Black level by Contrast | ΔE_{oc} | 1 | -100 | 0 | +100 | mV | No Luminance Input signal V26 = 2 V at Contrast MAX Contrast control MAX/MIN |
| 36 | Minimum Gate Pulse Input Voltage | V _{G (min)} | | — | — | 2 | V | Pin 19 |
| 37 | Blanking Pulse Input Voltage Range | V _B | | 1.8 | — | 5 | V | Pin 2 |
| 38 | Minimum FF Trigger Input Voltage | V _{FF (min)} | | — | — | 1.5 | V | Pin 23 |

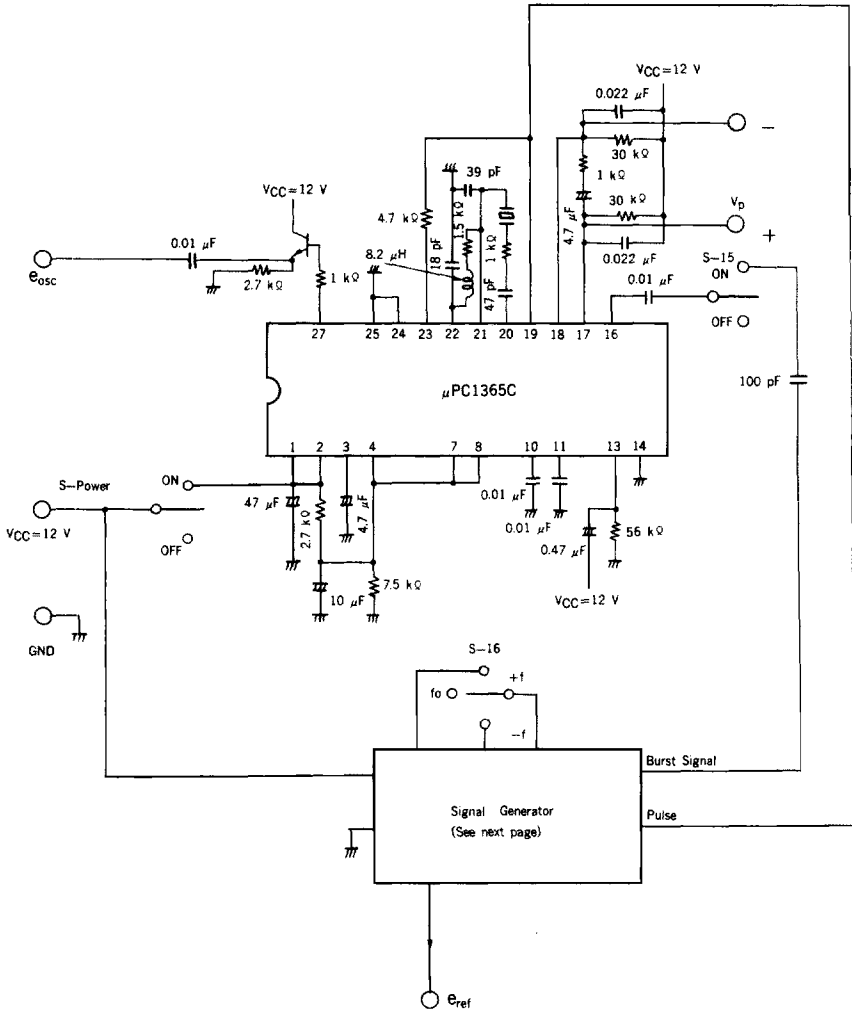
μPC1365C TEST CIRCUIT 1



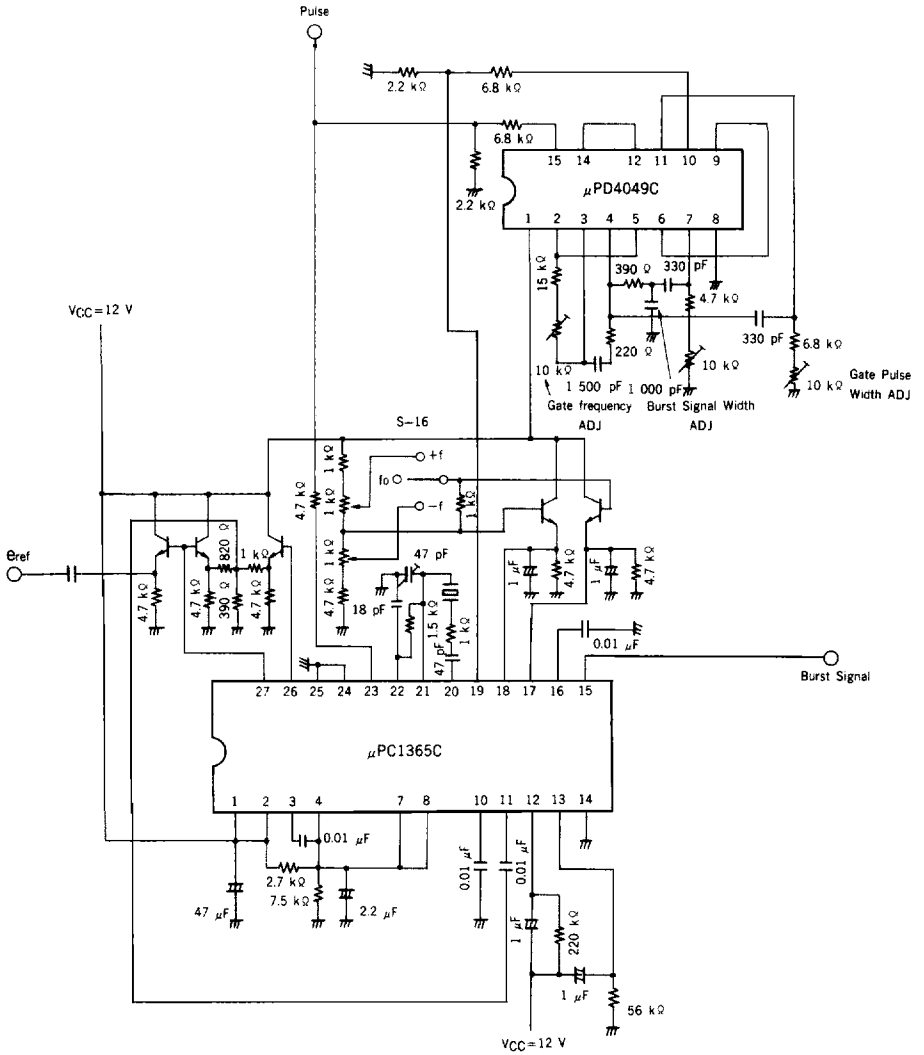
μPC1365C Signal Generator (TEST CIRCUIT 1)



μ PC1365C TEST CIRCUIT 2



μPC1365C Signal Generator (TEST CIRCUIT 2)



| | | | | | | | | | | |
|-------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------------------------|-----------------|-----------------|-----------------|-----------------|
| | e _b | ACC | e _{c1} | e _{c2} | e _{c3} | e _k , e _{kh} | e _{o1} | R/B | G/B | ⊥ R |
| S-1 Input | ON | OFF | ON | ON | ON | OFF | ON | ON | ON | ON |
| S-2 Lum | INV | INV | INV | INV | INV | INV | INV | INV | INV | INV |
| S-3 Lum | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| S-4 Chro. | ON | ON | ON | ON | ON | ON | OFF | OFF | OFF | OFF |
| S-5 Cont. | MAX | MAX | MAX | MAX | MAX | MAX | MAX | MAX | MAX | MAX |
| S-6 Satu. | MID | MID | MAX | MID | MIN | MID | MID | MID | MID | MID |
| S-7 VCO | NORM | NORM | NORM | NORM | NORM | NORM | NORM | NORM | NORM | NORM |
| S-8 FF. | ON | ON | ON | ON | ON | ON | OFF | OFF | OFF | OFF |
| S-9 Dem. | INT | INT | INT | INT | INT | INT | EXT | EXT | EXT | EXT |
| S-10 Syst. | PAL | PAL | PAL | PAL | PAL | PAL | PAL | PAL | PAL | PAL |
| S-11 Blk | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| S-12 Output | B | B | B | B | B | B | B | R | G | R |
| S-13 Output | e _{o3} | e _{o3} | e _{o3} | e _{o3} | e _{o3} | e _{o3} | e _{o3} | e _{o3} | e _{o3} | e _{o3} |
| S-14 | OFF | OFF | OFF | OFF | OFF | OFF | ON | ON | ON | ON |

| | | | | | | | | | | |
|---------------|--|-----------------------|----------------|----------------|----------------|-----------------------|-----------------|-----------------------------------|-----------------------------------|-----------------------------------|
| VR-1 | Be trimmed V26 = 3.5 V by Brightness VR (VR-1) | | | | | | | | | |
| VR-2 | | | | | | | | | | |
| Input | A | A = SG B - C = ATT | A | A | A | A = SG B - C = ATT | D = SG | D = SG | D = SG | D = SG |
| SG | Rainbow | | | | | | f = 4.44 MHz | | | |
| Measure Point | e _b | e _b | e _c | e _c | e _c | e _c | e _{oB} | e _{oB} , e _{o3} | e _{oB} , e _{o3} | e _{oB} , e _{o3} |
| | Oscilloscope | | | | | | | | Phase Meter | |
| | ATT | | | | ATT | | | | AC Volt meter | |

| | | | | | | | | | | |
|---------------|--|-----------------|------------------|-----------------|-----------------|--|-----------------|----------------|----------------|----------------|
| | LG | e _{o2} | e _{car} | e _{o3} | e _{oc} | Av1, ΔAv1 | e _{vc} | DG | TDC | f _v |
| S-1 Input | ON | ON | ON | ON | ON | ON | ON | ON | ON | OFF |
| S-2 Lum. | INV | INV | INV | INV | INV | INV | INV | INV | INV | NORM |
| S-3 Lum. | OFF | OFF | OFF | OFF | OFF | ON | ON | ON | ON | ON |
| S-4 Chro. | OFF | OFF | OFF | ON | ON | OFF | OFF | OFF | OFF | OFF |
| S-5 Cont. | MAX | MAX | MAX | MAX | MAX, MIN | MAX | MAX, MIN | MAX | MAX | MAX |
| S-6 Satu. | MID | MID | MID | MID | MID | MID | MID | MID | MID | MID |
| S-7 VCO | NORM | NORM | NORM | NORM | NORM | STOP | STOP | STOP | STOP | STOP |
| S-8 FF. | OFF | OFF | OFF | ON | ON | OFF | OFF | OFF | OFF | OFF |
| S-9 Dem. | EXT | EXT | EXT | INT | INT | EXT | EXT | EXT | EXT | EXT |
| S-10 Syst. | PAL | PAL | PAL | PAL | PAL | PAL | PAL | PAL | PAL | PAL |
| S-11 Blk | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| S-12 Output | G | B | BRG | B | B | BRG | B | BRG | B | BRG |
| S-13 Output | e _{o3} | e _{o3} | e _{o3} | e _{o3} | e _{o3} | e _v | e _v | e _v | e _v | e _v |
| S-14 | ON | ON | ON | OFF | OFF | OFF | OFF | OFF | OFF | ON |
| | | | | | | | | | | |
| | | | | | | | | | | |
| VR-1 | Be trimmed V26 = 3.5 V by Brightness VR (VR-1) | | | | | Be trimmed V26 = 2 V by Brightness VR (VR-1) | | | | V26 = 3.5 V |
| VR-2 | | | | | | | | | | |
| | | | | | | | | | | |
| Input | D = SG | D = SG | - | A | A | A | A | A | A | C = SG |
| SG | f = 4.44 MHz | | - | Rainbow | | Video SG 100 % White | | Stair Step | | SG = CW |
| Measure Point | e _{oB} , e _{o3} | e _{oB} | e _{car} | e _{o3} | e _{o3} | e _v | e _v | e _v | e _v | e _v |
| | Phase Meter | Oscilloscope | | | | | | Vector scope | Oscilloscope | RF Volt meter |

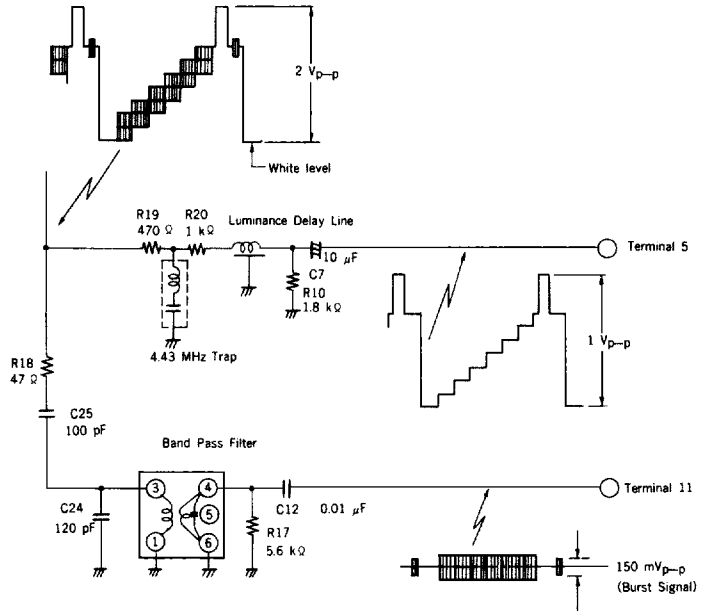
| | BR | E _{0M} | E ₀ , E _{0-T} | *E _{x-y} ΔE _{x-y} /ΔT | ΔE _{oc} | V _G (min) | V _B | V _{FF} |
|---------------|--------------------|----------------------|-----------------------------------|--|-----------------------|----------------------|----------------|-----------------|
| S-1 Input | ON | ON | ON | ON | ON | | | |
| S-2 Lum. | INV | INV | INV | INV | INV | | | |
| S-3 Lum. | OFF | OFF | OFF | OFF | OFF | | | |
| S-4 Chro. | OFF | OFF | OFF | OFF | OFF | | | |
| S-5 Cont. | MAX | MAX | MAX | MAX | MAX, MIN | | | |
| S-6 Satu. | MID | MID | MID | MID | MID | | | |
| S-7 VCO | NORM | NORM | NORM | NORM | NORM | | | |
| S-8 FF. | OFF | OFF | OFF | OFF | OFF | | | |
| S-9 Dem. | EXT | EXT | EXT | EXT | EXT | | | |
| S-10 Syst. | PAL | PAL | PAL | PAL | PAL | PAL | PAL | PAL |
| S-11 Blk | OFF | OFF | OFF | OFF | OFF | | | |
| S-12 Output | BRG | BRG | BRG | RG | B | | | |
| S-13 Output | e ₀₃ | e ₀₃ | e ₀₃ | e ₀₃ | e ₀₃ | | | |
| S-14 | ON | ON | ON | ON | ON | | | |
| VR-1 | See TEST Condition | TP = V _{CC} | TP = 9 V | V ₂₆ = 3.5 V | V ₂₆ = 2 V | | | |
| VR-2 | | | | | | | | |
| Input | | | | | | | | |
| SG | | | | | | | | |
| Measure Point | E ₀₃ | e ₀₃ | e ₀₃ | e ₀₃ , e _{0v} | e ₀₃ | | | |
| | DC Voltmeter | | | | | | | |

6

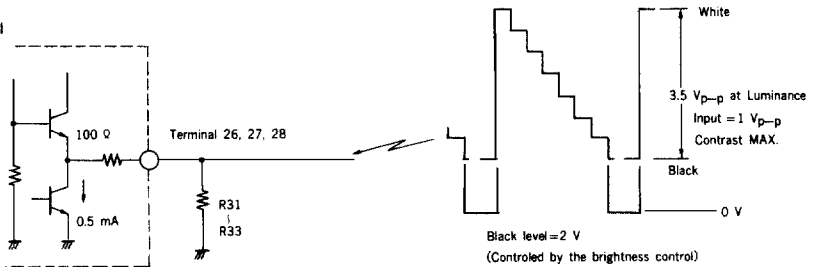
| | β | μ | $\Delta\phi$ | f_p | V_p |
|---------------------|---------------------------|--|--------------------------|----------------------------|--------------|
| S-15 $f_o \pm f$ | ON | ON | ON | OFF ON ON OFF | OFF |
| S-16 Burst | | +f (100 Hz) -f (100 Hz) | | +f (300 Hz) -f (300 Hz) | f_o |
| | | | | | |
| | | | | | |
| Measure Point | V_p e_{ref} | V_p e_{ref}, e_{osc} | e_{ref}, e_{osc} | e_{ref} | V_p |
| | f.Counter DC Voltmeter | Phase Meter f.Counter DC Voltmeter | Phase Meter f.Counter | f.Counter | DC Voltmeter |

μ PC1365C Input and Output signals

Luminance Input Signal



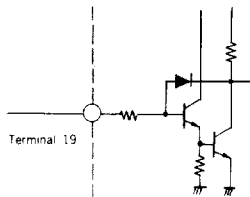
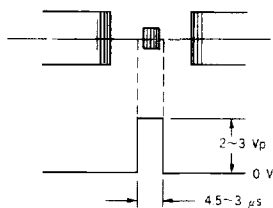
Output Signal



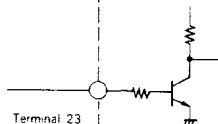
μPC1365C Input Pulse

Burst Gate Pulse

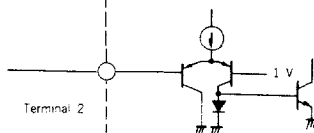
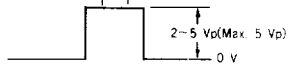
Burst signal = 100 ~ 200 mVp-p
at Terminal 11



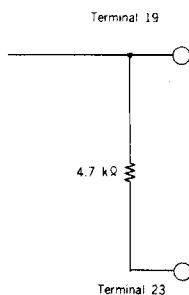
Line Pulse



**Blanking Pulse
(Line Pulse and
Field Pulse)**



**In case of commonly
using of Input Pulse**



μPC1365C

*Color, Contrast and Brightness controlling circuit

- VR1 ; Brightness Control
- VR102 ; Sub Brightness
- VR2 ; Contrast Control
- VR103 ; Sub Contrast
- VR3 ; Color Control
- VR104 ; Sub Color

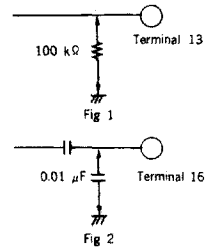
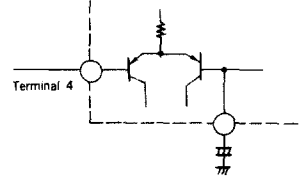
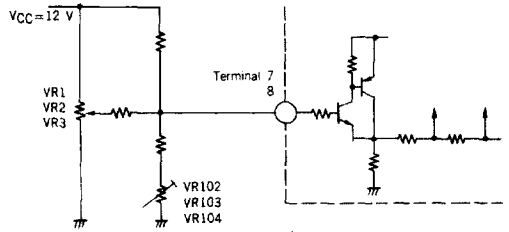
- V7 (Contrast) 5.5 to 7.0 to 8.5 V
- V8 (Color) 4.0 to 5.5 to 7.0 V
- V2 (Brightness) 8.2 to 8.7 to 9.2 V

*Color Killer Setting VR105

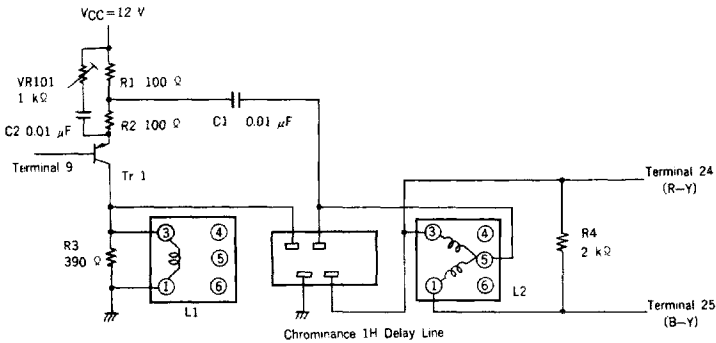
*APC Setting

Method; 1; Be connected Resistor (100 kΩ) between the Terminal 13 and GND as shown Fig. 1 (Killer OFF)

- 2; Be connected Capacitor (0.01 μF) between the Terminal 16 and GND as shown Fig. 2 (Burst Input OFF)
- 3; Be trimmed 4.433 618 MHz by using VR107

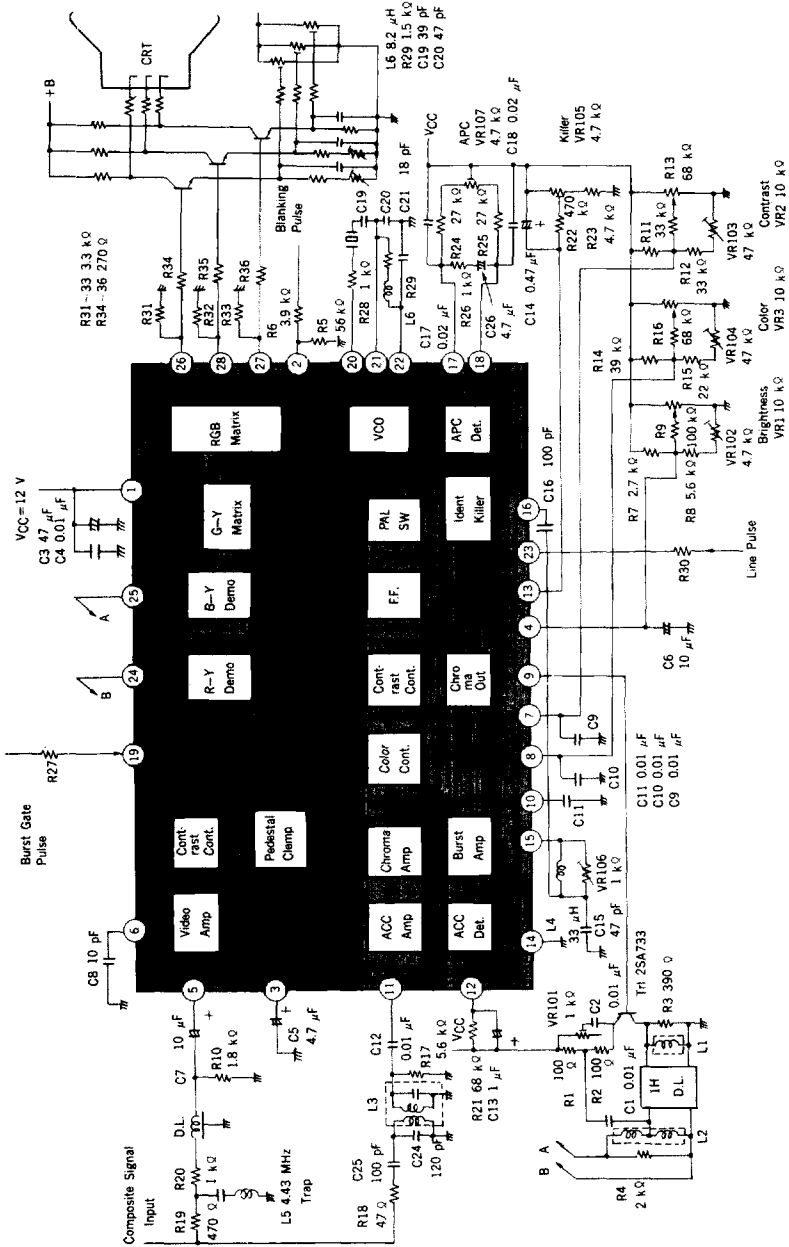


*1H Delay Line Circuit

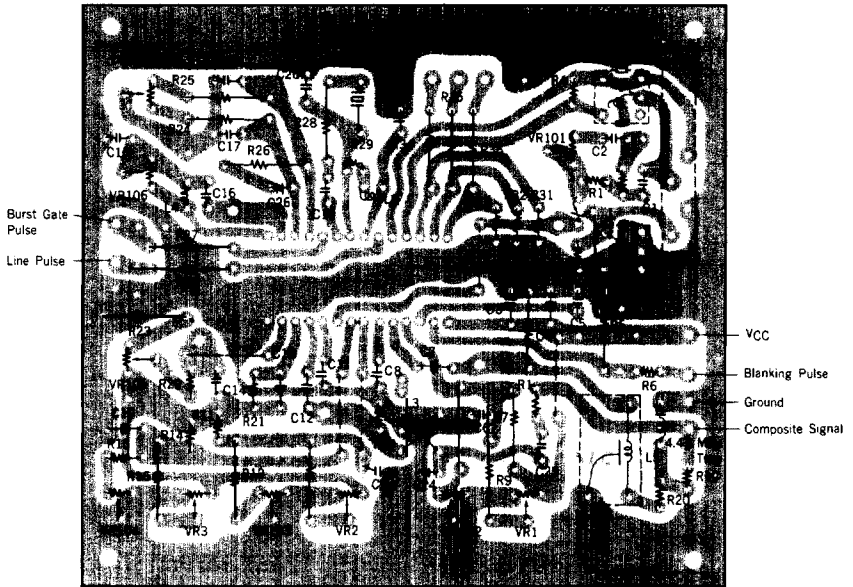


- L1 ; Pre Chrominance Delay Line Terminating Coil
- L2, VR101 ; Delay Phase and Amplitude Adjustment
- VR106 ; Sub carrier Phase Adjustment

The Block Diagram and External Components for μPC1365C



Printed Circuit Board Pattern (Bottom View)

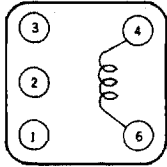


μPC1365C Table of the external components

| Symbol | Value | Symbol | Value | Symbol | Value |
|--------|----------|--------|------------------------------------|----------|--|
| R1 | 100 Ω | C1 | 0.01 μF | VR-1 | 10 kΩ Brightness |
| R2 | 100 Ω | C2 | 0.01 μF | VR-2 | 10 kΩ Contrast |
| R3 | 390 Ω | C3 | 47 μF | VR-3 | 10 kΩ Color Saturation |
| R4 | 2 kΩ | C4 | 0.01 μF | VR101 | 1 kΩ D.L. Level |
| R5 | (56 kΩ) | C5 | 4.7 μF | VR102 | 4.7 kΩ Sub Brightness |
| R6 | (39 kΩ) | C6 | 10 μF | VR103 | 47 kΩ Sub Contrast |
| R7 | 2.7 kΩ | C7 | 10 μF | VR104 | 47 kΩ Sub Color Saturation |
| R8 | 5.6 kΩ | C8 | 10 pF | VR105 | 4.7 kΩ Killer Adj |
| R9 | 68 kΩ | C9 | 0.01 μF | VR106 | 1 kΩ Phase Adj |
| R10 | 1.8 kΩ | C10 | 0.01 μF | VR107 | 4.7 kΩ APC Adj |
| R11 | 33 kΩ | C11 | 0.01 μF | L1 | D.L. Matching Coil Type No TKRNS 24984NK (Toko Corp.) |
| R12 | 33 kΩ | C12 | 0.01 μF | L2 | D.L. Matching Coil Type No TKRNS 24985VN (Toko Corp.) |
| R13 | 68 kΩ | C13 | 1 μF | L3 | Band Pass Filter Type No 163NEF1148WWJ(Toko Corp.) |
| R14 | 39 kΩ | C14 | 0.47 μF | L4 | 33 μH |
| R15 | 22 kΩ | C15 | 47 pF | L5 | 4.43 MHz Trap Type No LCS2H1H-102 (TDK Corp.) |
| R16 | 68 kΩ | C16 | 100 pF | L6 | 8.2 μH |
| R17 | 5.6 kΩ | C17 | 0.022 μF | Tr1 | 2SA733 (NEC) |
| R18 | 47 Ω | C18 | 0.022 μF | Xtal | 4.43 MHz C _L = 16 pF or 20 pF |
| R19 | 470 Ω | C19 | 39 pF(Xtal C _L = 16 pF) | L.D.L. | Luminance Delay Line Type No CTS-1804C(Showa Densei Corp.) |
| R20 | 1 kΩ | C20 | 68 pF(Xtal C _L = 20 pF) | 1 H D.L. | 1 H Delay Line Type No EFD EN (Matsushita Corp.) |
| R21 | 58 kΩ | C21 | 47 pF | | |
| R22 | 470 kΩ | C22 | 18 pF | | |
| R23 | 4.7 kΩ | C23 | -- | | |
| R24 | 27 kΩ | C24 | -- | | |
| R25 | 27 kΩ | C25 | 120 pF | | |
| R26 | 1 kΩ | C26 | 100 pF | | |
| R27 | (1.2 kΩ) | | 4.7 μF | | |
| R28 | 1 kΩ | | | | |
| R29 | 1.5 kΩ | | | | |
| R30 | (1.2 kΩ) | | | | |
| R31 | 3.3 kΩ | | | | |
| R32 | 3.3 kΩ | | | | |
| R33 | 3.3 kΩ | | | | |
| R34 | 270 Ω | | | | |
| R35 | 270 Ω | | | | |
| R36 | 270 Ω | | | | |

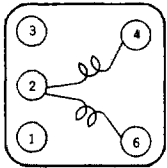
1 H Delay Line Matching Coil Specification

L1 Input Coil
(PAL)



Type No. TKRNS - 24984NK
Product TOKO Corp.
 f_0 ; 4.43 MHz
6-4 ; 18 T
Cout ; 330 pF (4-6)
Qu ; 59 ± 20 %
Wire Material ; 0.1 / UEW

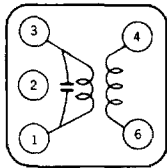
L2 Output Coil



Type No. TKRNS - 24985VN
Product TOKO Corp.
 f_0 ; 4.43 MHz
4-2 ; 18 T
2-6 ; 18 T
Cout ; 75 pF (4-6)
Qu ; 44 ± 20 %
Wire Material ; 0.1 / 2UEW

Chrominance Input Coil Specification

L3 Input Coil
(PAL)



Type No. 163NEF - 1148WWJ
Product TOKO Corp.
 f_0 ; 4.43 MHz
6-4 ; 35 1/4 T
3-1 ; 76 T
Cout ; PH 47 pF
Wire Material ; 0.1 / UEW