

SANYO

No.2898

LA7323, 7323M

Monolithic Linear IC

**Single-Chip
HQ Luminance Signal Processor**

The LA7323,7323M are single-chip HQ (High Quality) VTR luminance signal processor ICs that contain a detail enhancer, a line noise canceler, etc. The LA7323,7323M can be used in conjunction with preamp/recording amp ICs LA7320 (2-head use) or LA7321 (4-head use) to perform all the functions of luminance signal processing.

Features

- Very streamlined ICs that are placed in very small-sized packages (LA7323:D1P30S, LA7323M:MFP30S) and use a minimum number of external parts. (There are no other ICs of this type that use less external parts than those the LA7323,7323M use.)
- Adjustment-free E/E level, white/dark clip level
- On-chip 75Ω video driver
- On-chip edit control function
- The video AGC range is so wide and satisfactory as to be suitable for copy guard.
- Excellent picture stability at the special PB mode because of on-chip PB dark clip circuit

Functions**REC section**

Video AGC, detail enhancer, nonlinear preemphasis, main preemphasis, white clip, dark clip, FM modulation $1/2f_H$ carrier shift

PB section

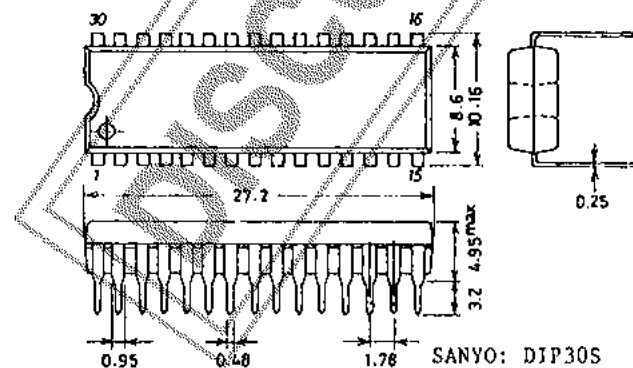
FM AGC, dropout compensation (base band), double limiter, FM demodulation, dynamic de-emphasis, line noise canceler, noise canceler, sync expansion, Y/C mix, muting, pseudo V insertion, pseudo H insertion, white peak clip, picture control, PB dark clip

REC/PB

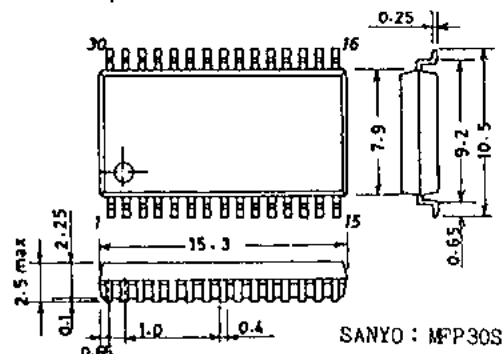
Sync separation, sync chip clamp, feedback clamp, video amp, 75Ω video driver

Note) The specifications for the LA7323M are not final. When ordering the LA7323M, check the delivery specification.

Case Outline 3061-D30SIC [LA7323]
(unit: mm)



Case Outline 3073A-M30IC [LA7323M]
(unit: mm)



Specifications and information herein are subject to change without notice.

SANYO Electric Co., Ltd. Semiconductor Overseas Marketing Div.
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N228TA.TS No.2898-1/13

LA7323,7323M

Maximum Ratings at $T_a = 25^\circ\text{C}$

| | | | |
|-----------------------------|------------------------------------|-------------|------------------|
| Maximum Supply Voltage | V_{CC} max | 7.0 | V |
| Allowable Power Dissipation | P_d max $T_a = 65^\circ\text{C}$ | 600 | mW |
| Operating Temperature | T_{opg} | -10 to +65 | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | -40 to +125 | $^\circ\text{C}$ |

Operating Conditions at $T_a = 25^\circ\text{C}$

| | | | |
|-------------------------|-------------|------------|---|
| Supply Voltage | V_{CC} | 5.0 | V |
| Operating Voltage Range | V_{CC} op | 4.8 to 5.5 | V |

Operating Characteristics at $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{V}$

| No. | Characteristic | Symbol | Test Conditions | | min | typ | max | unit | |
|-----|------------------------------|-----------|-----------------|--------|---|------|------|------|-----------|
| | | | Input | Output | | | | | |
| | (REC Mode) | | | | | | | | |
| 1 | Current Dissipation REC | I_{CCR} | T22 | | P_{in} 22 flow-in current at $V_{CC}: 5.0V$ | 50 | 65 | 80 | mA |
| 2 | AGC Control | C_{AGC} | T24 | T6 | V_i : 1.0Vp-p video (0dB) Adjust VR2 so that output 0.5 Vp-p is obtained | | | | |
| 3 | AGC Control Voltage | V_{AGC} | T24 | T19 | V_i : 1.0Vp-p video, output DC level | 4.3 | 4.5 | 4.7 | V |
| 4 | AGC Detection Voltage | V_{AD} | T24 | T27 | V_i : 1.0Vp-p video, output DC level | 1.3 | 1.45 | 1.6 | V |
| 5 | EE Output Level-1 | V_{EE1} | T24 | T21A | V_i : 1.0Vp-p video, output level | 0.95 | 1.00 | 1.05 | Vp-p |
| 6 | EE Output Level-2 | V_{EE2} | T24 | T21A | V_i : 4.0Vp-p video, output level | 1.00 | 1.15 | 1.30 | Vp-p |
| 7 | AGC Control Characteristic-1 | AGC1 | T24 | T7 | (+12dB) V_i : 4.0Vp-p video, output level | 1.07 | 1.17 | 1.27 | Vp-p |
| 8 | AGC Control Characteristic-2 | AGC2 | T24 | T7 | (+6dB) V_i : 2.0Vp-p video, output level | 1.01 | 1.05 | 1.07 | Vp-p |
| 9 | AGC Control Characteristic-3 | AGC3 | T24 | T7 | (-6dB) V_i : 0.5Vp-p video, output level | 0.93 | 0.95 | 0.99 | Vp-p |
| 10 | AGC Control Characteristic-4 | AGC4 | T24 | T7 | V_i : 0.7Vp-p lumi (+12dB sync) V_i : 1.2Vp-p sync sync level | 280 | 350 | 420 | mV pp |
| 11 | AGC Control Characteristic-5 | AGC5 | T24 | T7 | V_i : 0.7Vp-p lumi (+6dB sync) V_i : 0.6Vp-p sync sync level | 240 | 310 | 380 | mV pp |
| 12 | AGC Control Characteristic-6 | AGC6 | T24 | T7 | V_i : 0.7Vp-p lumi (-6dB sync) V_i : 0.15Vp-p sync sync level | 150 | 200 | 250 | mV p-p |

Note) The AGC characteristics must meet the copy guard test tape (VAG-1) requirements. (AGC level 40% or less)

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| No. | Characteristic | Symbol | Test Conditions | | min | typ | max | unit | |
|-----|--|------------------|-----------------|--------|--|------|------|------|------------------|
| | | | Input | Output | | | | | |
| | (REC Mode) | | | | | | | | |
| 13 | Sync Separation Output Level | V _{SY} | T24 | T17 | V _i : 1.0V _{p-p} video, output pulse peak | 3.5 | 3.8 | 4.4 | V _{p-p} |
| 14 | Sync Separation Pulse Width | P _{WSY} | T24 | T17 | V _i : 1.0V _{p-p} video, output pulse width | 4.0 | 4.3 | 4.6 | μs |
| 15 | Sync Separation Leading Edge Delay Time | Δt _{ey} | T24 | T17 | V _i : 1.0V _{p-p} video | 1.0 | 1.4 | 1.8 | μs |
| 16 | Sync Separation Threshold Level | T _{HSY} | T24 | T17 | Input level 1.0V _{p-p} : 0dB when input level is attenuated and output pulse width becomes wider than sync separation pulse width by 1μs. | | -16 | -14 | dB |
| 17 | Preamphasis Voltage Gain | G _{PE} | T6A | T2 | V _i : 500mV _{p-p} (0dB) f: 10kHz | -1.0 | 0 | 0.5 | dB |
| 18 | Detail Enhancer Response Characteristic-1 | G _{DE1} | T6A | T2 | V _i : 500mV _{p-p} (0dB) f: 2MHz G _{PE} : 0dB | 0 | 0.15 | 0.5 | dB |
| 19 | Detail Enhancer Response Characteristic-2 | G _{DE2} | T6A | T2 | V _i : 158mV _{p-p} (-10dB) f: 2MHz G _{PE} : 0dB | 0.3 | 0.6 | 0.9 | dB |
| 20 | Detail Enhancer Response Characteristic-3 | G _{DE3} | T6A | T2 | V _i : 50mV _{p-p} (-20dB) f: 2MHz G _{PE} : 0dB | 1.3 | 1.9 | 2.5 | dB |
| 21 | Detail Enhancer Response Characteristic-4 | G _{DE4} | T6A | T2 | V _i : 15.8mV _{p-p} (-30dB) f: 2MHz G _{PE} : 0dB | 1.9 | 2.5 | 3.1 | dB |
| 22 | Detail Enhancer Response Characteristic-5 | G _{DE5} | T6A | T2 | V _i : 5mV _{p-p} (-40dB) f: 2MHz G _{PE} : 0dB | 1.9 | 2.7 | 3.5 | dB |
| 23 | Nonlinear Emphasis Response Characteristic-1 | G _{NE1} | T6A | T2 | V _i : 500mV _{p-p} (0dB) f: 2MHz G _{PE} : 0dB | 0.5 | 1.4 | 2.3 | dB |
| 24 | Nonlinear Emphasis Response Characteristic-2 | G _{NE2} | T6A | T2 | V _i : 158mV _{p-p} (-10dB) f: 2MHz G _{PE} : 0dB | 2.6 | 3.8 | 5.2 | dB |
| 25 | Nonlinear Emphasis Response Characteristic-3 | G _{NE3} | T6A | T2 | V _i : 50mV _{p-p} (-20dB) f: 2MHz G _{PE} : 0dB | 4.9 | 6.4 | 7.9 | dB |
| 26 | Nonlinear Emphasis Response Characteristic-4 | G _{NE4} | T6A | T2 | V _i : 15.8mV _{p-p} (-30dB) f: 200kHz G _{PE} : 0dB | 0.7 | 1.4 | 2.1 | dB |
| 27 | Main Emphasis Response Characteristic-1 | G _{ME1} | T6A | T2 | V _i : 50mV _{p-p} (-20dB) f: 200kHz G _{PE} : 0dB | 4.9 | 5.2 | 5.5 | dB |
| 28 | Main Emphasis Response Characteristic-2 | G _{ME2} | T6A | T2 | V _i : 50mV _{p-p} (-20dB) f: 2MHz G _{PE} : 0dB | 13.1 | 13.6 | 14.1 | dB |
| 29 | White Clip Level | L _{WC} | T6A | T2 | V _i : 0.5V _{p-p} video | 187 | 195 | 203 | % |
| 30 | Dark Clip Level | L _{DC} | T6A | T2 | V _i : 0.5V _{p-p} video | -48 | -55 | -62 | % |

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| No. | Characteristic | Symbol | Test Conditions | | min | typ | max | unit | |
|-----|--------------------------------------|-----------------------|-----------------|--------|---|------|------|------|------------------|
| | | | Input | Output | | | | | |
| | (REC Mode) | | | | | | | | |
| 31 | FM Modulator Output Level | V _{FM} | — | T30 | Output level when output frequency is set to 4MHz with VR1 at no load mode | 1.3 | 1.5 | 1.7 | V _{p-p} |
| 32 | FM Modulator 2nd Distortion | H _{MOD} | T6 | T30 | 8MHz component / 4MHz component ratio obtained in above-mentioned state | | -40 | -35 | dB |
| 33 | FM Modulator Modulation Sensitivity | S _{MOD} | T6 | T30 | Output frequency change 2×(f _{4.0} - f _{3.5}) when DC 3.5V, 4.5V are applied to pin 6 | 1.6 | 2.0 | 2.4 | MHz |
| 34 | FM Modulator Linearity | L _{MOD} | T6 | T30 | Output frequency when 3.75V DC is applied to pin 6 : f _{3.75} $L_{MOD} = \frac{f_{3.75} - (f_{4.0} + f_{3.5}) / 2}{S_{MOD}} \times 100$ | 3.0 | 0 | 3.0 | % |
| 35 | EP 1/2 Carrier Shift-1 | C _{S1} | T6 | T2 | Output frequency change at SW12 : 1 SW13 : 1→2 | 6.0 | 7.5 | 9.0 | kHz |
| | (PB Mode) | | | | | | | | |
| 1 | Current Dissipation | I _{CCP} | T22 | | Pin 22 flow-in current at V _{CC} : 5.0V | 65 | 80 | 95 | mA |
| 2 | FM AGC Detection Voltage-1 | V _{FD1} | T26 | T27 | V _i : 200mV _{p-p} (0dB) f : 4MHz | 0.80 | 0.90 | 1.00 | V |
| 3 | FM AGC Detection Voltage-2 | V _{FD2} | T26 | T27 | V _i : 400mV _{p-p} (+6dB) f : 4MHz | 1.05 | 1.15 | 1.25 | V |
| 4 | FM AGC Detection Voltage-3 | V _{FD3} | T26 | T27 | V _i : 50mV _{p-p} (-12dB) f : 4MHz | 0.69 | 0.69 | 0.79 | V |
| 5 | Dropout Detection Level | I _{DOC1} | T26 | T28 | Input level when T28 Low→High is caused by input f : 4MHz High→Low | 4.0 | 5.0 | 6.0 | mV _{pp} |
| 6 | Dropout Reset Level | I _{DOC2} | T26 | T28 | Input level when T28 High→Low is caused by input f : 4MHz High→Low | 4.8 | 6.0 | 7.2 | mV _{pp} |
| 7 | Dropout Detection Pulse Output Level | V _{DOC} | — | T28 | Output DC level at no input mode | 3.5 | 3.9 | 4.4 | V _{p-p} |
| 8 | FM Demodulation Voltage-1 | V _{DEM4} (1) | T26 | T7A | V _i : 200mV _{p-p} (0dB) f : 4MHz output voltage | 1.1 | 1.30 | 1.5 | V |
| 9 | FM Demodulation Voltage-2 | V _{DEM4} (2) | T26 | T7A | V _i : 400mV _{p-p} (+6dB) f : 4MHz output voltage | 1.1 | 1.30 | 1.5 | V |
| 10 | FM Demodulation Voltage-3 | V _{DEM4} (3) | T26 | T7A | V _i : 50mV _{p-p} (-12dB) f : 4MHz output voltage | 1.1 | 1.30 | 1.5 | V |

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| No. | Characteristic | Symbol | Test Conditions | | min | typ | max | unit | |
|-----|-------------------------------|--------------|-----------------|--------|--|------|------|------|-----------|
| | | | Input | Output | | | | | |
| | (PB Mode) | | | | | | | | |
| 11 | FM Demodulation Sensitivity-1 | $S_{DEM(1)}$ | T26 | T7A | V_i : 200mVp-p, f: 2MHz output voltage $V_{DEM2(1)}$ V_i : 200mVp-p, f: 6MHz output voltage $V_{DEM6(1)}$ Calculate using $S_{DEM(1)} = (V_{DEM2(1)} - V_{DEM6(1)}) / 4$ | 0.16 | 0.20 | 0.24 | V/ MHz |
| 12 | FM Demodulation Sensitivity-2 | $S_{DEM(2)}$ | T26 | T7A | V_i : 400mVp-p, f: 2MHz output voltage $V_{DEM2(2)}$ V_i : 400mVp-p, f: 6MHz output voltage $V_{DEM6(2)}$ Calculate using $S_{DEM(2)} = (V_{DEM2(2)} - V_{DEM6(2)}) / 4$ | 0.16 | 0.20 | 0.24 | V/ MHz |
| 13 | FM Demodulation Sensitivity-3 | $S_{DEM(3)}$ | T26 | T7A | V_i : 50mVp-p, f: 2MHz output voltage $V_{DEM2(3)}$ V_i : 50mVp-p, f: 6MHz output voltage $V_{DEM6(3)}$ Calculate using $S_{DEM(3)} = (V_{DEM2(3)} - V_{DEM6(3)}) / 4$ | 0.16 | 0.20 | 0.24 | V/ MHz |
| 14 | FM Demodulation Linearity-1 | $L_{DEM(1)}$ | — | — | $L_{DEM(1)} = \frac{V_{DEM4(1)} - (V_{DEM2(1)} + V_{DEM6(2)}) / 2}{V_{DEM2(1)} - V_{DEM6(1)}} \times 100$ | -3.5 | 0 | 3.5 | % |
| 15 | FM Demodulation Linearity-2 | $L_{DEM(2)}$ | — | — | $L_{DEM(1)} = \frac{V_{DEM4(1)} - (V_{DEM2(1)} + V_{DEM6(2)}) / 2}{V_{DEM2(2)} - V_{DEM6(2)}} \times 100$ | -3.5 | 0 | 3.5 | % |
| 16 | FM Demodulation Linearity-3 | $L_{DEM(3)}$ | — | — | $L_{DEM(1)} = \frac{V_{DEM4(1)} - (V_{DEM2(1)} + V_{DEM6(2)}) / 2}{V_{DEM2(3)} - V_{DEM6(3)}} \times 100$ | -3.5 | 0 | 3.5 | % |
| 17 | Carrier Leak-1 | $C_L(1)$ | T26 | T7 | V_i : 200mVp-p, f: 4MHz Output frequency 4MHz component / 8MHz component ratio | | -40 | -35 | dB |
| 18 | Carrier Leak-2 | $C_L(2)$ | T26 | T7 | V_i : 400mVp-p, f: 4MHz Output frequency 4MHz component / 8MHz component ratio | | -40 | -35 | dB |
| 19 | Carrier Leak-3 | $C_L(3)$ | T26 | T7 | V_i : 50mVp-p, f: 4MHz Output frequency 4MHz component / 8MHz component ratio | | -40 | -35 | dB |

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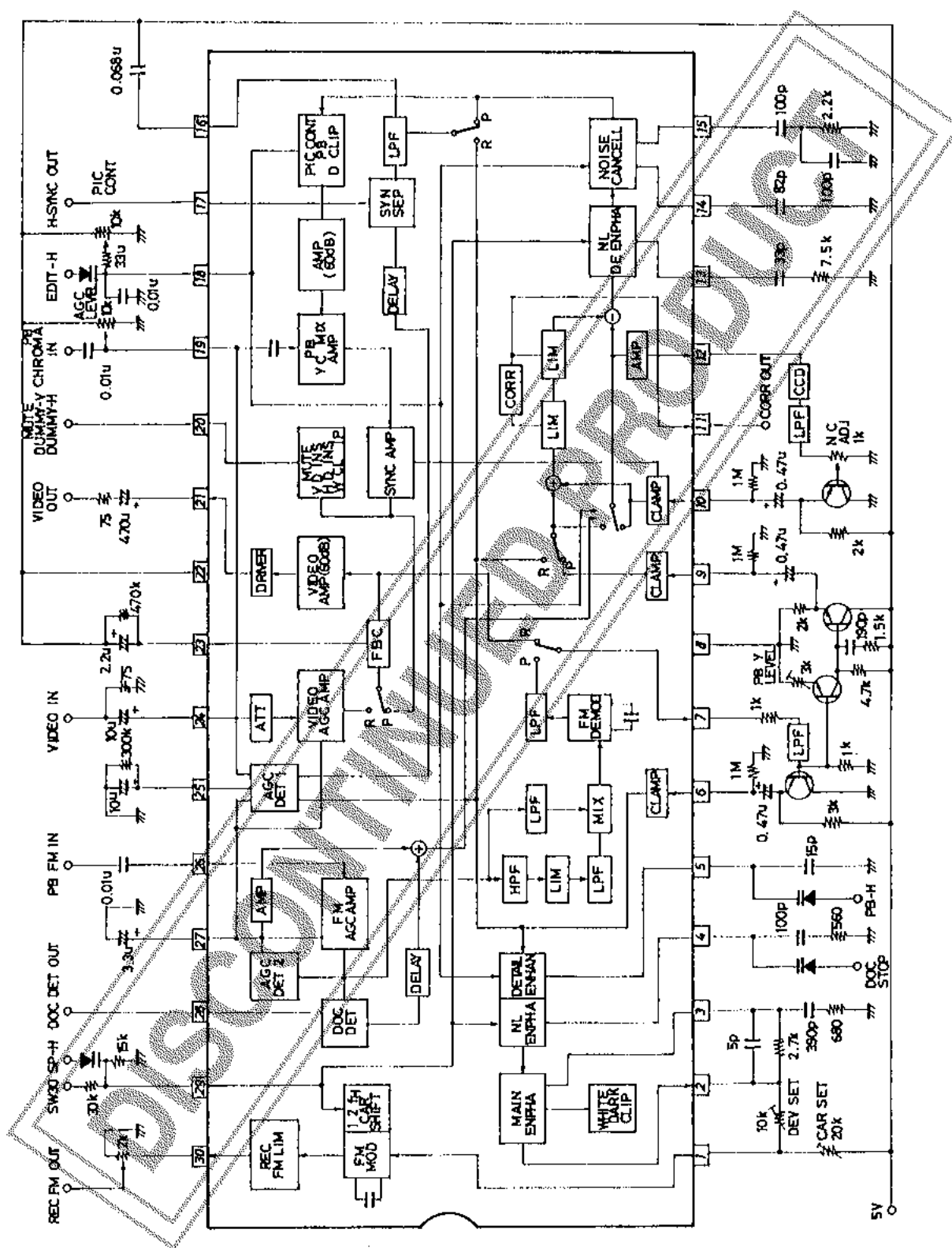
| No. | Characteristic | Symbol | Test Conditions | | min | typ | max | unit | |
|-----|--|-----------|-----------------|--------|---|-------|------|------|----------|
| | | | Input | Output | | | | | |
| | (PB Mode) | | | | | | | | |
| 20 | PB Output Level (Through Gain) | V_{PB} | T9.10 | T21A | V_i : 300mVp-p (0dB) f : 10kHz | 4.8 | 5.8 | 6.8 | dB |
| 21 | PB Output Frequency Characteristic | F_{PB} | T9.10 | T21A | V_i : 300mVp-p, f : 3MHz Output level / V_{PB} (10kHz) | -0.6 | -0.3 | 0 | dB |
| 22 | Noise Limiter Level | N_{LIM} | T10 | T21A | V_i : 100mVp-p f : 100kHz | 45 | 60 | 72 | mV pp |
| 23 | Noncorrelation Detection Level | L_H | | T11 | T10: 3.9V, T9: 3.9V, ΔV when voltage only applied to T9 is increased and T11 output level is changed from Low to High | 65 | 80 | 95 | mV |
| 24 | Noncorrelation Detection Pulse Output Level | V_H | | T11 | Output level when above mentioned T11 output is at High | 3.5 | 3.8 | 4.4 | Vp-p |
| 25 | De-emphasis Response Characteristic-2 | G_{D2} | T9.10 | T21A | V_i : 158mVp-p (-10dB) f : 2MHz V_{PB} : 0dB | -3.1 | -2.2 | -1.3 | dB |
| 26 | De-emphasis Response Characteristic-3 | G_{D3} | T9.10 | T21A | V_i : 50mVp-p (-20dB) f : 2MHz V_{PB} : 0dB | -4.7 | -3.8 | -2.9 | dB |
| 27 | De-emphasis Response Characteristic-4 | G_{D4} | T9.10 | T21A | V_i : 158mVp-p (-10dB) f : 200kHz V_{PB} : 0dB | -1.2 | -0.7 | -0.2 | dB |
| 28 | HP-noise Canceler Response Characteristic-1 | G_{N1} | T9.10 | T21A | V_i : 158mVp-p (-10dB) f : 1MHz V_{PB} : 0dB | -1.7 | -1.2 | -0.7 | dB |
| 29 | HP-noise Canceler Response Characteristic-2 | G_{N2} | T9.10 | T21A | V_i : 50mVp-p (-20dB) f : 1MHz V_{PB} : 0dB | -4.3 | -3.3 | -2.3 | dB |
| 30 | HP-noise Canceler Response Characteristic-3 | G_{N3} | T9.10 | T21A | V_i : 15.8mVp-p (-30dB) f : 1MHz V_{PB} : 0dB | -10.0 | -8.5 | -7.0 | dB |
| 31 | PIC-cont Hardware Response Characteristic-1 | G_{PH1} | T9.10 | T21A | V_i : 150mVp-p f : 1MHz V_{PB} : 0dB | 2.7 | 3.7 | 4.7 | dB |
| 32 | PIC-cont Hardware Response Characteristic-2 | G_{PH2} | T9.10 | T21A | V_i : 150mVp-p f : 2MHz V_{PB} : 0dB | 4.9 | 5.9 | 6.9 | dB |
| 33 | PIC-cont Software Response Characteristic-1 | G_{PS1} | T9.10 | T21A | V_i : 150mVp-p f : 1MHz V_{PB} : 0dB | -4.0 | -3.0 | -2.0 | dB |
| 34 | PIC-cont Software Response Characteristic-2 | G_{PS2} | T9.10 | T21A | V_i : 150mVp-p f : 2MHz V_{PB} : 0dB | -7.6 | -6.6 | -5.6 | dB |
| 35 | Chroma Amp Voltage Gain | G_C | T19A | T21 | V_i : 100mVp-p f : 3MHz | 11.0 | 12.0 | 13.0 | dB |

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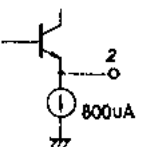
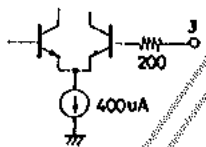
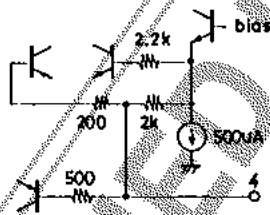
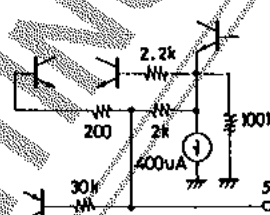
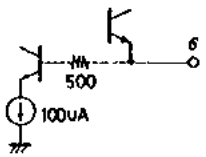
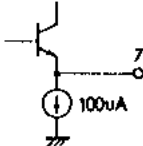
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| No. | Characteristic | Symbol | Test Conditions | | min | typ | max | unit | |
|-----|-------------------------------------|------------|-----------------|--------|---|------|------|------|------|
| | | | Input | Output | | | | | |
| | (PB Mode) | | | | | | | | |
| 36 | Chroma Amp Frequency Characteristic | F_C | T19A | T21 | V_i : 100mVp-p, f: 4MHz, output level / G_C (3MHz) output ratio | -0.5 | 0 | dB | |
| 37 | Sync Expansion Ratio | L_{SYNC} | T9.10 | T21 | V_i : 0.5Vp-p video (lumi: 0.35, sync: 0.15) Sync / output peak ratio | 30.0 | 31.5 | 33.0 | % |
| 38 | Pseudo V Insertion Level | L_{VD} | T9.10 | T21 | V_i : 0.5Vp-p video Output DC difference between output sync chip potential at S11: 1 and output sync chip potential at S11: 3 | -80 | 0 | +80 | mV |
| 39 | Pseudo H Insertion Level | L_{HD} | T9.10 | T21 | V_i : 0.5Vp-p video Output DC difference between output pedestal potential at S11: 1 and output pedestal potential at S11: 2 | 0 | 75 | 150 | mV |
| 40 | PB Peak Clip Level | P_C | T9.10 | T21 | V_i : 0.75Vp-p video Output peak | 2.4 | 2.5 | 2.6 | Vp-p |
| 41 | DS Amp Voltage Gain | G_{DS} | T9 | T12 | V_i : 500mVp-p f: 10kHz | -0.5 | 0 | 0.5 | dB |

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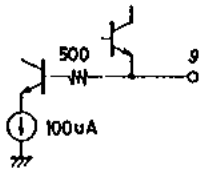
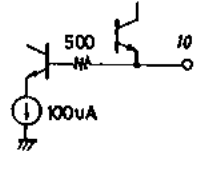
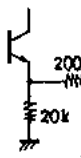
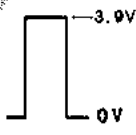

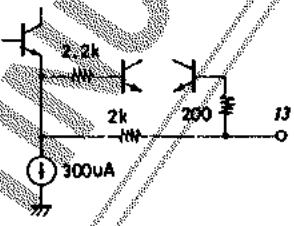
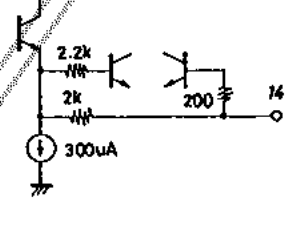
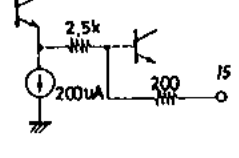


Pin Description

| Pin No. | Pin Function | Interface | Typical DC | Remarks |
|---------|-----------------------------|---|-------------------------|---------|
| 1 | FM MOD-IN |  | $\frac{2.4}{(3.4)}$ | |
| 2 | PRE-MEPH OUT |  | $\frac{2.4}{(2.5)}$ | |
| 3 | MAIN-EMPH FEEDBACK IN |  | $\frac{2.4}{(2.2)}$ | |
| 4 | NL-EMPH FIL DOC STOP |  | $\frac{2.95}{(2.75)}$ | |
| 5 | DETAIL-FIL PB-H |  | $\frac{2.55}{}$ | |
| 6 | REC CLAMP IN |  | $\frac{3.2}{}$ | |
| 7 | REC AGC OUT PB DEMOD OUT |  | $\frac{V_{sync}}{2.35}$ | |
| 8 | GND | | | |

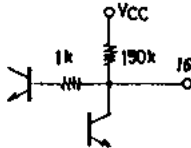
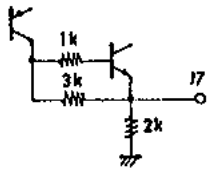

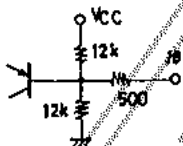
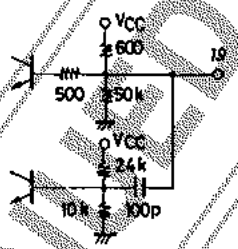

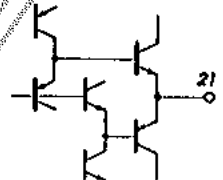
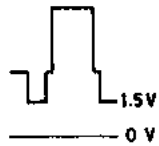
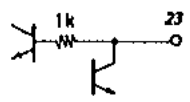
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| Pin No. | Pin Function | Interface | Typical DO | Remarks |
|---------|---------------------|---|---------------|---|
| 9 | PB CLAMP-IN |  | 3.2 | |
| 10 | YD CLAMP-IN |  | 3.2 3.2 | |
| 11 | CORR DET. OUT |  | |  |
| 12 | CCD DRIVE |  | 2.75 2.75 | |
| 13 | N.L DE-EMPHA FIL |  | (4.5) 2.8 | |
| 14 | NOICAN FIL-1 |  | (4.5) 2.8 | |
| 15 | NOICAN FIL-2 |  | (4.5) 4.15 | |

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| Pin No. | Pin Function | Interface | Typical DC | Remarks |
|---------|----------------------------|--|-------------------|---------|
| 16 | SYNC SEP FIL |  | $\frac{3.5}{3.5}$ | |
| 17 | H-SYNC-OUT |   | | |
| 18 | PIC-CONT |  | | |
| 19 | PB CHROMA IN |  | $\frac{3.7}{3.7}$ | |
| 20 | MUTE DUMMY-V DUMMY-H |  | | |
| 21 | VIDEO-OUT |   | | |
| 22 | Vcc | | | |
| 23 | F.B.C-FIL |  | $\frac{3.2}{3.2}$ | |

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| Pin No. | Pin Function | Interface | Typical DC | Remarks |
|---------|---------------|-----------|---------------------|---------|
| 24 | VIDEO-IN | | $\frac{3.3}{3.3}$ | |
| 25 | AGC-FIL-1 | | $\frac{3.1}{(4.0)}$ | |
| 26 | PB-FM-IN | | $\frac{(3.6)}{3.7}$ | |
| 27 | AGC-FIL-2 | | $\frac{1.4}{0.9}$ | |
| 28 | DOC DET OUT | | | |
| 29 | SP-H SW-30 | | | |
| 30 | REC-FM OUT | | | |

The application circuit diagrams and circuit constants herein are included as an example and provide no guarantee for designing equipment to be mass-produced.
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