

# TA1275AZ

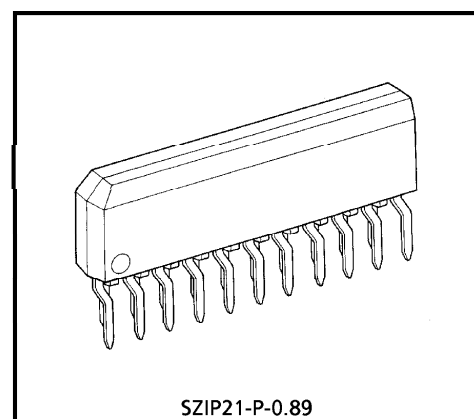
## SECAM DEMODULATOR PROCESSOR

TA1275AZ is the SECAM demodulation IC, which accomplishes a multicolor system with TB1231 series.

This IC requires very few external parts.

### FEATURES

- Working with TB1231 series, which is PAL/NTSC PIF/VIF/VIDEO/CHROMA/DEF processor.
- Built-in Bell filter
- Built-in FM demodulator with PLL circuit for color demodulation and SECAM identification
- DC voltage offset of demodulated signal adjuster
- Input terminals for external R-Y/B-Y signals

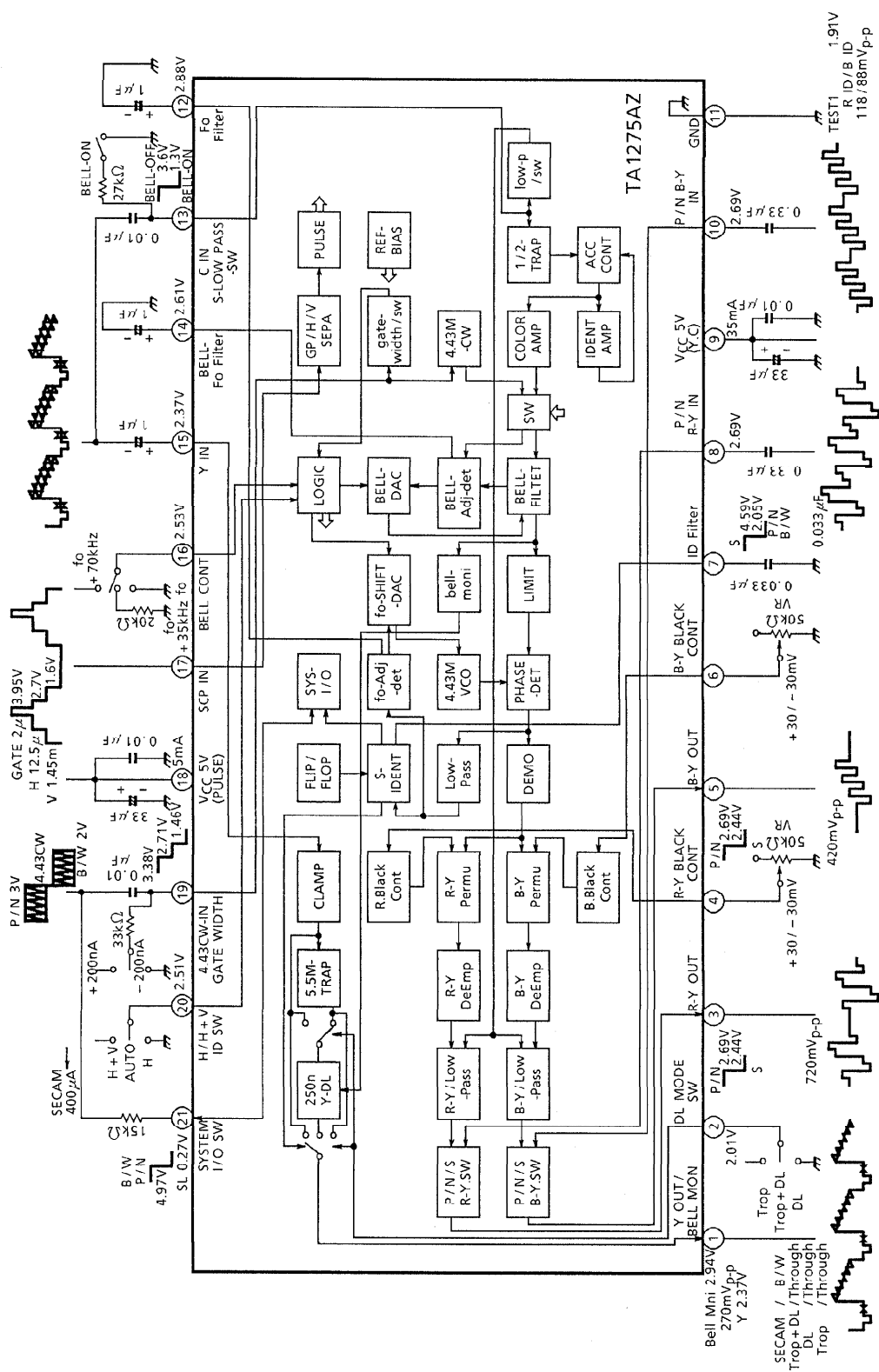


Weight : 1.0g (Typ.)

980508EBA1

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## BLOCK DIAGRAM



TA1275AZ-2

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

| CHARACTERISTIC                    | SYMBOL       | RATING         | UNIT                         |
|-----------------------------------|--------------|----------------|------------------------------|
| Supply Voltage                    | $V_{CCmax}$  | 8              | V                            |
| Signal Voltage at Each Input Pin  | $e_{inmax}$  | 5              | $V_{p-p}$                    |
| Power Consumption                 | $P_D$ (Note) | 780            | mW                           |
| Power Consumption Reduction Ratio | $1 / Q_{ja}$ | 6.3            | $\text{mW} / ^\circ\text{C}$ |
| Operating Temperature             | $T_{opr}$    | $-20 \sim 65$  | $^\circ\text{C}$             |
| Storage Temperature               | $T_{stg}$    | $-55 \sim 150$ | $^\circ\text{C}$             |

(Note) Refer to the figure below.

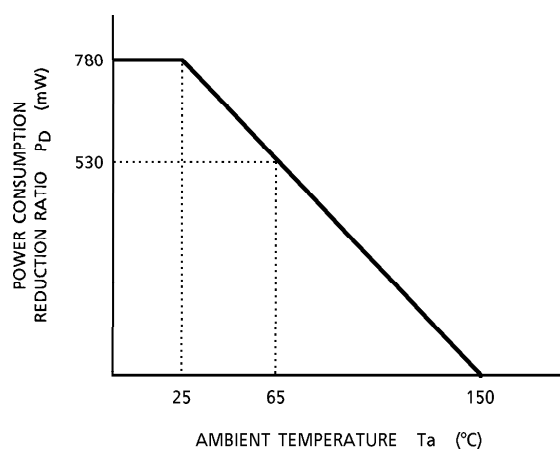


Fig. Power consumption reduction against higher temperature.

## RECOMMENDED CONDITION IN USE

| CHARACTERISTIC               | DESCRIPTION                   | MIN. | TYP. | MAX. | UNIT              |
|------------------------------|-------------------------------|------|------|------|-------------------|
| Supply Voltage               | pin 9, 18                     | 4.5  | 5.0  | 5.5  | —                 |
| Y Input Signal Level         | white : 100%, including sync. | 0.9  | 1.0  | 1.1  | V <sub>p-p</sub>  |
| Color Difference Input Level | Burst level                   | 270  | 300  | 330  | mV <sub>p-p</sub> |
| SCP Input Level              | G level                       | 3.25 | 4.0  | 5.0  | V                 |
|                              | H level                       | 1.95 | 2.1  | 2.6  |                   |
|                              | V level                       | 1.1  | 1.25 | 1.4  |                   |

## ELECTRICAL CHARACTERISTICS

(YC V<sub>CC</sub> / PULSE V<sub>CC</sub> = 5V, Ta = 25°C, Unless otherwise specified)

Current consumption

| PIN NAME                | SYMBOL           | TEST CIR-<br>CUIT | MIN. | TYP. | MAX. | UNIT |
|-------------------------|------------------|-------------------|------|------|------|------|
| V <sub>CC</sub> (Y / C) | I <sub>CC1</sub> | —                 | 32.0 | 38.5 | 48.1 | mA   |
| V <sub>CC</sub> (PULSE) | I <sub>CC2</sub> | —                 | 5.6  | 6.7  | 8.4  |      |

## TERMINAL VOLTAGE

| PIN No. | PIN NAME                  | SYMBOL          | TEST CIR-CUIT | MIN. | TYP. | MAX. | UNIT |
|---------|---------------------------|-----------------|---------------|------|------|------|------|
| 1       | Y OUT                     | V <sub>1</sub>  | —             | 2.35 | 2.55 | 2.75 | V    |
| 2       | MODE SW                   | V <sub>2</sub>  | —             | 1.80 | 2.00 | 2.20 |      |
| 3       | R-Y OUT                   | V <sub>3</sub>  | —             | 2.10 | 2.40 | 2.70 |      |
| 4       | R-Y BLACK CONTROL         | V <sub>4</sub>  | —             | 2.30 | 2.50 | 2.70 |      |
| 5       | B-Y OUT                   | V <sub>5</sub>  | —             | 2.10 | 2.40 | 2.70 |      |
| 6       | B-Y BLACK CONTROL         | V <sub>6</sub>  | —             | 2.30 | 2.50 | 2.70 |      |
| 7       | S-ID FILTER (killer OFF)  | V <sub>7</sub>  | —             | 4.25 | 4.55 | 4.85 |      |
| 8       | EXT. R-Y IN               | V <sub>8</sub>  | —             | 2.40 | 2.60 | 2.80 |      |
| 10      | EXT. B-Y IN               | V <sub>10</sub> | —             | 2.40 | 2.60 | 2.80 |      |
| 12      | F0-ADJ. FILTER            | V <sub>12</sub> | —             | 2.55 | 3.00 | 3.45 |      |
| 13      | C IN                      | V <sub>13</sub> | —             | 3.50 | 3.70 | 3.90 |      |
| 14      | BELL ADJ. FILTER          | V <sub>14</sub> | —             | 2.20 | 2.50 | 2.80 |      |
| 15      | Y IN                      | V <sub>15</sub> | —             | 2.30 | 2.50 | 2.70 |      |
| 16      | BELL CONTROL              | V <sub>16</sub> | —             | 4.80 | 5.00 | 5.20 |      |
| 19      | 4.43MHz CW-IN             | V <sub>19</sub> | —             | 2.50 | 2.75 | 3.00 |      |
| 20      | ID SW                     | V <sub>20</sub> | —             | 2.30 | 2.50 | 2.70 |      |
| 21      | SECAM ID I/O (killer OFF) | V <sub>21</sub> | —             | 0.00 | 0.20 | 0.60 |      |

(Note) Pin 3, 5, 7, 12 and 18 are weak against static electricity and surge impulse. Please take confer measure to meet, if necessary.

| TERMINAL INTERFACE |          |                                                                                                                                                                                                                                                                                                     |                   |
|--------------------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| PIN No.            | PIN NAME | FUNCTION                                                                                                                                                                                                                                                                                            | INTERFACE CIRCUIT |
| 1                  | Y OUT    | <p>The output pin for Y signal. Standard output level is 1.0V<sub>p-p</sub>. The 5.5MHz trap filter and delay line on the Y signal processing is controlled by the switch on pin #2.</p> <p>The output signal of the bell filter can be monitored on this pin by switching pin #13 for testing.</p> |                   |
| 2                  | MODE SW  | <p>The pin for controlling the Y processing mode.</p> <p>to VCC : 5.5MHz trap<br/>open : 5.5MHz trap + D. L.<br/>to GND : DL</p>                                                                                                                                                                    |                   |

| PIN No. | PIN NAME          | FUNCTION                                                                                                                                                                                                                                      | INTERFACE CIRCUIT | INPUT/OUTPUT SIGNAL |
|---------|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------------|
| 3       | R-Y OUT           | <p>The output pin for demodulated R-Y signal. Standard output level is 0.7V<sub>p-p</sub> with standard color bar signal. R-Y processor has a LPF to eliminate the carrier components.</p>                                                    |                   | —                   |
| 4       | R-Y BLACK CONTROL | <p>The pin for controlling the black offset level. Adjusting range is within <math>\pm 30\text{mV}</math>. (This pin should be opened in the case of using with TB1231, because TB1231 has an IIC BUS control for SECAM black alignment.)</p> |                   | —                   |

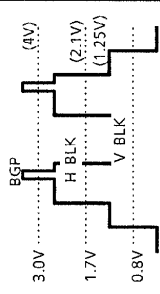
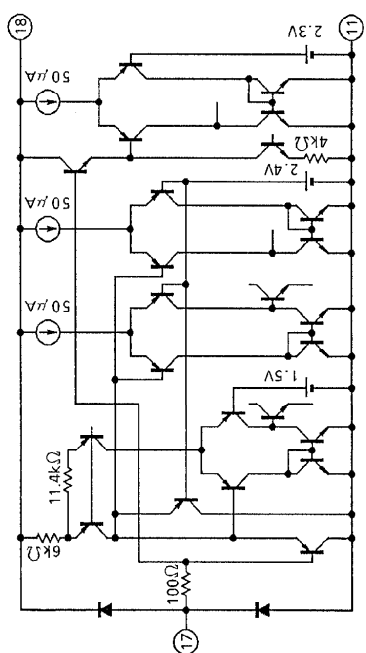
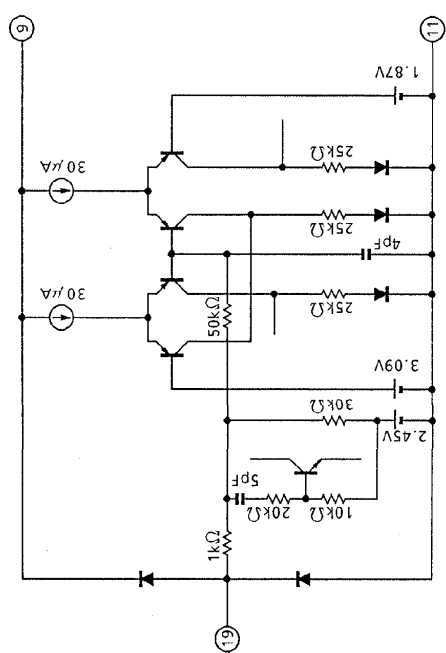
| PIN No. | PIN NAME          | FUNCTION                                                                                                                                                                                                                                      | INTERFACE CIRCUIT | INPUT/OUTPUT SIGNAL |
|---------|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------------|
| 5       | B-Y OUT           | <p>The output pin for demodulated B-Y signal. Standard output level is 0.56V<sub>p-p</sub>. B-Y processor has a LPF to eliminate the carrier components.</p>                                                                                  |                   | —                   |
| 6       | B-Y BLACK CONTROL | <p>The pin for controlling the black offset level. Adjusting range is within <math>\pm 30\text{mV}</math>. (This pin should be opened in the case of using with TB1231, because TB1231 has an IIC BUS control for SECAM black alignment.)</p> |                   | —                   |

| PIN No. | PIN NAME    | FUNCTION                                                                                                                                                                                                                             | INTERFACE CIRCUIT | INPUT / OUTPUT SIGNAL |
|---------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-----------------------|
| 7       | S-ID FILTER | <p>The pin for connecting the SECAM ident filter capacitor.</p> <p>A too big capacitor causes a time delay to get color signal on a picture, and a weak RF signal performance would getting worth if the capacitor is too small.</p> |                   | —                     |
| 8       | EXT. R-Y IN | <p>The input pin for external R-Y signal. The gain of the internal amplifier is 0dB.</p>                                                                                                                                             |                   | —                     |
| 9       | 5V VCC      | <p>The VCC pin for Y/C processing block.</p>                                                                                                                                                                                         | —                 | —                     |

| PIN No. | PIN NAME       | FUNCTION                                                                                                                                                                                                                          | INTERFACE CIRCUIT | INPUT / OUTPUT SIGNAL |
|---------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-----------------------|
| 10      | EXT. B-Y IN    | The input pin for external B-Y signal. The gain of the internal amplifier is 0dB.                                                                                                                                                 |                   | —                     |
| 11      | GND            | The GND pin.                                                                                                                                                                                                                      | —                 | —                     |
| 12      | FO-ADJ. FILTER | The pin for connecting a capacitor for automatic adjusting circuit.<br>A too big capacitor causes a time delay to get color signal on a picture, and the picture noise, flicker, would be appeared if the capacitor is too small. |                   | —                     |

| PIN No. | PIN NAME            | FUNCTION                                                                                                                                                                                                                                                                                                                                                       | INTERFACE CIRCUIT | INPUT / OUTPUT SIGNAL |
|---------|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-----------------------|
| 13      | C IN                | <p>The chroma signal input pin. Apply composite signal through 0.01<math>\mu</math>F of coupling capacitor. Standard input signal level is 1V<sub>p-p</sub>.</p> <p>The bell monitor switch for testing is overlaid on this pin. When connecting this pin to GND through 27k<math>\Omega</math>, the bell filter output is observed on the pin #1 (Y-OUT).</p> |                   | —                     |
| 14      | BELL-ADJ.<br>FILTER | <p>The pin for connecting the filter capacitor for the bell filter <math>f_0</math>, 4.286MHz.</p> <p>A too big capacitor causes a time delay on bell filter <math>f_0</math> adjusting, and picture would be noisy if it is too small.</p>                                                                                                                    |                   | —                     |

| PIN No. | PIN NAME     | FUNCTION                                                                                                                                                                                                                                                                                                                                  | INTERFACE CIRCUIT | INPUT / OUTPUT SIGNAL |
|---------|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-----------------------|
| 15      | Y IN         | <p>The Y signal input pin.<br/>Apply the composite signal into this pin through a coupling capacitor.<br/>The standard input level is 1.0V<sub>p-p</sub>.</p>                                                                                                                                                                             |                   | —                     |
| 16      | BELL CONTROL | <p>The pin for selecting the bell filter <math>f_0</math>.</p> <p><math>f_0 + 70\text{kHz}</math> : OPEN<br/>(<math>\approx V_{CC}</math>)</p> <p><math>f_0 + 35\text{kHz}</math> : <math>20\text{k}\Omega</math> to GND<br/>(<math>\approx 1.7\text{V}</math>)</p> <p><math>f_0</math> : to GND<br/>(<math>\approx 0\text{V}</math>)</p> |                   | —                     |

| PIN No. | PIN NAME      | FUNCTION                                                                                                                                                                                                                                                                                                         | INTERFACE CIRCUIT                                                                   | INPUT / OUTPUT SIGNAL |
|---------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------|
| 17      | S.C.P. IN     | <p>The pin for input the sand castle pulse, SCP.</p>                                                                                                                                                                          |   | —                     |
| 18      | 5V VCC        | VCC pin for logic block.                                                                                                                                                                                                                                                                                         | —                                                                                   | —                     |
| 19      | 4.43MHz CW-IN | <p>The pin for input 4.43MHz of carrier wave for self adjustment circuit. Input 500mV<sub>p-p</sub> sine wave through a coupling capacitor.</p> <p>The switch for changing the gate pulse width is overlaid on this pin.</p> <p>+200nS : to VCC thru 33kΩ</p> <p>0nS : open</p> <p>–200nS : to GND thru 33kΩ</p> |  | —                     |

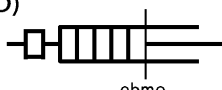
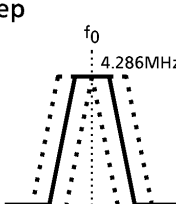
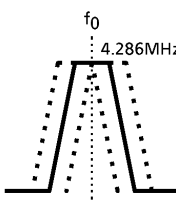
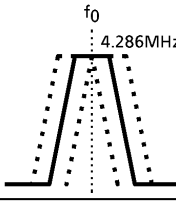
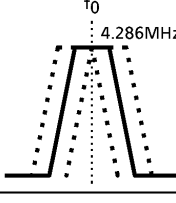
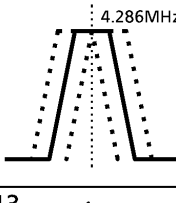
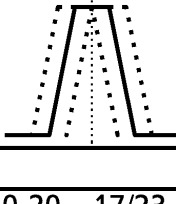
| PIN No. | PIN NAME     | FUNCTION                                                                                                                                                                                                                                                                                                                                                                                                                    | INTERFACE CIRCUIT | INPUT / OUTPUT SIGNAL |
|---------|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-----------------------|
| 20      | ID SW        | <p>The switch pin for selecting the ID detection mode.</p> <p>H + V : connected to <math>V_{CC}</math></p> <p>Auto search (H, V, H + V) : opened</p> <p>H : connected to GND</p>                                                                                                                                                                                                                                            |                   |                       |
| 21      | SECAM ID I/O | <p>The interface pin to the main processor (i.e., TB1231).</p> <p>This input/output interface pin sinks two value of current corresponded to the ID level of the SECAM input signal.</p> <p>Strong SECAM : <math>420\mu A</math></p> <p>SECAM : <math>180\mu A</math></p> <p>This pin turns the internal/external switch by the input DC voltage.</p> <p>Internal : GND~2.5V</p> <p>External : 2.5V~<math>V_{CC}</math></p> |                   |                       |

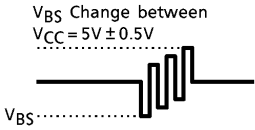
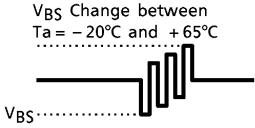
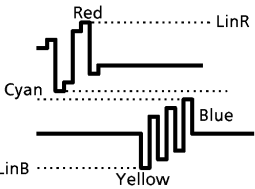
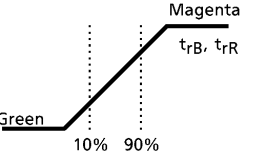
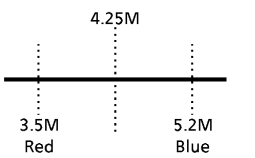
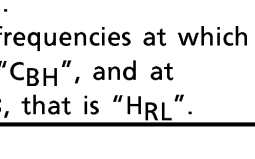
AC CHARACTERISTIC (Unless otherwise specified,  $V_{CC} = 5V$  (9 & 18pin),  $T_a = 25^\circ C$ )

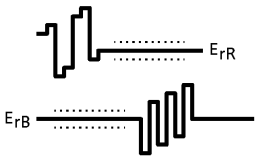
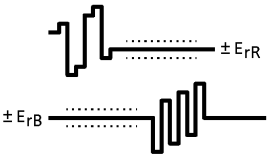
| No. | ITEM                                   | SYMBOL                                                  | TEST CIR-CUIT | TEST CONDITION | RATING                   |                          |                          | UNIT                          |
|-----|----------------------------------------|---------------------------------------------------------|---------------|----------------|--------------------------|--------------------------|--------------------------|-------------------------------|
|     |                                        |                                                         |               |                | MIN.                     | TYP.                     | MAX.                     |                               |
| 1   | Bell Monitor Output Amplitude          | ebmo                                                    | —             | (Note 1)       | 170                      | 260                      | 350                      | mV (p-p)                      |
| 2   | Bell / Filter $f_0$                    | $f_{0B-C}$                                              | —             | (Note 2)       | - 23                     | 0                        | 30                       | kHz                           |
| 3   | Bell / Filter $f_0$ Variable Range     | $f_{0B-H}$<br>$f_{0B-L}$                                | —             | (Note 3)       | + 40<br>+ 10             | + 70<br>+ 35             | + 100<br>+ 60            | kHz<br>kHz                    |
| 4   | Bell / Filter $f_0$ $V_{CC}$ Drift     | $\Delta f_{0BELV}$                                      | —             | (Note 4)       | - 25                     | 0                        | + 25                     | kHz                           |
| 5   | Bell / Filter $f_0$ Thermal Drift      | $\Delta f_{0BELT}$                                      | —             | (Note 5)       | - 30                     | 0                        | + 30                     | kHz                           |
| 6   | Bell / Filter Q                        | $Q_{BEL}$                                               | —             | (Note 6)       | 14                       | 16                       | 18                       | —                             |
| 7   | Color Difference Output Amplitude      | $V_{BS}$<br>$V_{RS}$                                    | —             | (Note 7)       | 0.39<br>0.5              | 0.56<br>0.7              | 0.73<br>0.99             | V (p-p)<br>V (p-p)            |
| 8   | Color Difference Relative Amplitude    | R / B-S                                                 | —             | (Note 8)       | 1.24                     | 1.35                     | 1.52                     | —                             |
| 9   | Color Difference S / N                 | $SNB-S$<br>$SNR-S$                                      | —             | (Note 9)       | - 40<br>- 40             | - 46<br>- 46             | —<br>—                   | dB<br>dB                      |
| 10  | Color Difference Output $V_{CC}$ Drift | $\Delta V_{BVH}$<br>$\Delta V_{BVL}$                    | —             | (Note 10)      | - 8<br>- 8               | 0<br>0                   | + 8<br>+ 8               | %<br>%                        |
| 11  | Color Difference Output Thermal Drift  | $\Delta V_{BTH}$<br>$\Delta V_{BTL}$                    | —             | (Note 11)      | - 8<br>- 8               | 0<br>0                   | + 8<br>+ 8               | %<br>%                        |
| 12  | Linearity                              | $LinB$<br>$LinR$                                        | —             | (Note 12)      | 93<br>93                 | 100<br>100               | 107<br>107               | %<br>%                        |
| 13  | Rising Time                            | $t_{rR}$<br>$t_{rB}$                                    | —             | (Note 13)      | —<br>—                   | 1.3<br>1.3               | 2.0<br>2.0               | $\mu s$<br>$\mu s$            |
| 14  | Demodulation Hold Range                | $H_{RL}$<br>$H_{BH}$                                    | —             | (Note 14)      | —<br>4.75                | 3.5<br>5.2               | 3.9<br>—                 | MHz<br>MHz                    |
| 15  | Demodulation Capture Range             | $C_{RL}$<br>$C_{BH}$                                    | —             | (Note 15)      | —<br>4.75                | 3.5<br>5.2               | 3.9<br>—                 | MHz<br>MHz                    |
| 16  | Killer Operation Input Level           | $e_{SK}$<br>$e_{SC}$                                    | —             | (Note 16)      | 0.5<br>0.5               | 1<br>1                   | 2<br>2                   | mV (p-p)<br>mV (p-p)          |
| 17  | Carrier Remains on Demodulated Output  | $C_{LRS}$<br>$C_{LBS}$                                  | —             | (Note 17)      | —<br>—                   | 3<br>3                   | 10<br>10                 | mV (p-p)<br>mV (p-p)          |
| 18  | Black Level Offset                     | $E_{rR}$<br>$E_{rB}$                                    | —             | (Note 18)      | - 30<br>- 30             | 0<br>0                   | + 30<br>+ 30             | mV<br>mV                      |
| 19  | ID Voltage                             | $V_{21color}$<br>$V_{21B/W}$                            | —             | (Note 19)      | 0.12<br>4.25             | 0.2<br>4.55              | 0.6<br>4.85              | V<br>V                        |
| 20  | ID Current                             | $I_{21strong}$<br>SECAM<br>$I_{21SECAM}$<br>$I_{21B/W}$ | —             | (Note 20)      | 310<br>133<br>—          | 420<br>180<br>0          | 530<br>225<br>10         | $\mu A$<br>$\mu A$<br>$\mu A$ |
| 21  | System SW Threshold Level              | $V_{21P/N}$<br>$V_{21S}$                                | —             | (Note 21)      | 2.3<br>2.3               | 2.5<br>2.5               | 2.7<br>2.7               | V<br>V                        |
| 22  | Color Difference Output DC Level       | $V_{3P/N}$<br>$V_{5P/N}$<br>$V_{3S}$<br>$V_{5S}$        | —             | (Note 22)      | 2.3<br>2.3<br>2.1<br>2.1 | 2.6<br>2.6<br>2.4<br>2.4 | 2.9<br>2.9<br>2.7<br>2.7 | V<br>V<br>V<br>V              |

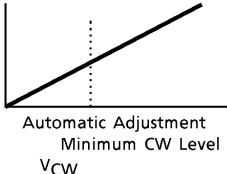
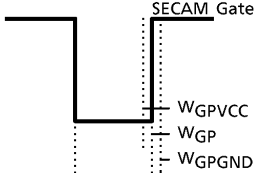
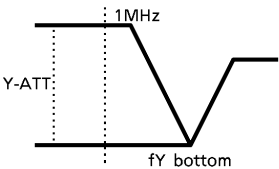
| No. | ITEM                                                | SYMBOL            | TEST CIR-<br>CUIT | TEST CONDITION | RATING |      |      | UNIT     |
|-----|-----------------------------------------------------|-------------------|-------------------|----------------|--------|------|------|----------|
|     |                                                     |                   |                   |                | MIN.   | TYP. | MAX. |          |
| 23  | R-Y / B-Y Color Black Level Control Characteristics | $\Delta E_{rR} +$ | —                 | (Note 23)      | 27     | 30   | 33   | mV       |
|     |                                                     | $\Delta E_{rR} -$ |                   |                | - 33   | - 30 | - 27 | mV       |
|     |                                                     | $\Delta E_{rB} +$ |                   |                | 27     | 30   | 33   | mV       |
|     |                                                     | $\Delta E_{rB} -$ |                   |                | - 33   | - 30 | - 27 | mV       |
| 24  | Ext. Color Difference Gain                          | $G_{EXTR}$        | —                 | (Note 24)      | 0.8    | 1.0  | 1.2  | —        |
|     |                                                     | $G_{EXTB}$        |                   |                | 0.8    | 1.0  | 1.2  | —        |
| 25  | 4.43MHz CW Min. Input Level                         | $V_{CW}$          | —                 | (Note 25)      | 200    | —    | —    | mV (p-p) |
| 26  | Gate Pulse Width Variable Range                     | $W_{GPVCC}$       | —                 | (Note 26)      | 1.7    | 1.8  | 1.9  | $\mu s$  |
|     |                                                     | $W_{GP}$          |                   |                | 1.9    | 2.0  | 2.1  | $\mu s$  |
|     |                                                     | $W_{GPGND}$       |                   |                | 2.1    | 2.2  | 2.3  | $\mu s$  |
| 27  | Y DL Characteristics (at 3MHz)                      | $t_{YDL}$         | —                 | (Note 27)      | 180    | 250  | 360  | —        |
| 28  | Y Trap Characteristics                              | $f_{0Y5.5}$       | —                 | (Note 28)      | 4.5    | 5.5  | 6.5  | MHz      |
|     |                                                     | $G_{at f_0}$      |                   |                | 20     | 35   | —    | dB       |
| 29  | Y Input Dynamic Range                               | $DR_{YS}$         | —                 | (Note 29)      | 1.2    | 1.5  | 1.8  | V (p-p)  |
|     |                                                     | $DR_{YBW}$        |                   |                | 1.2    | 1.5  | 1.8  | V (p-p)  |
| 30  | Y Gain                                              | $G_{YS}$          | —                 | (Note 30)      | 0.8    | 1.0  | 1.2  | —        |
|     |                                                     | $G_{YBW}$         |                   |                | 0.8    | 1.0  | 1.2  | —        |

TEST CONDITION (Unless otherwise specified,  $V_{CC} = 5V$  (9 & 18pin),  $T_a = 25^\circ C$ )

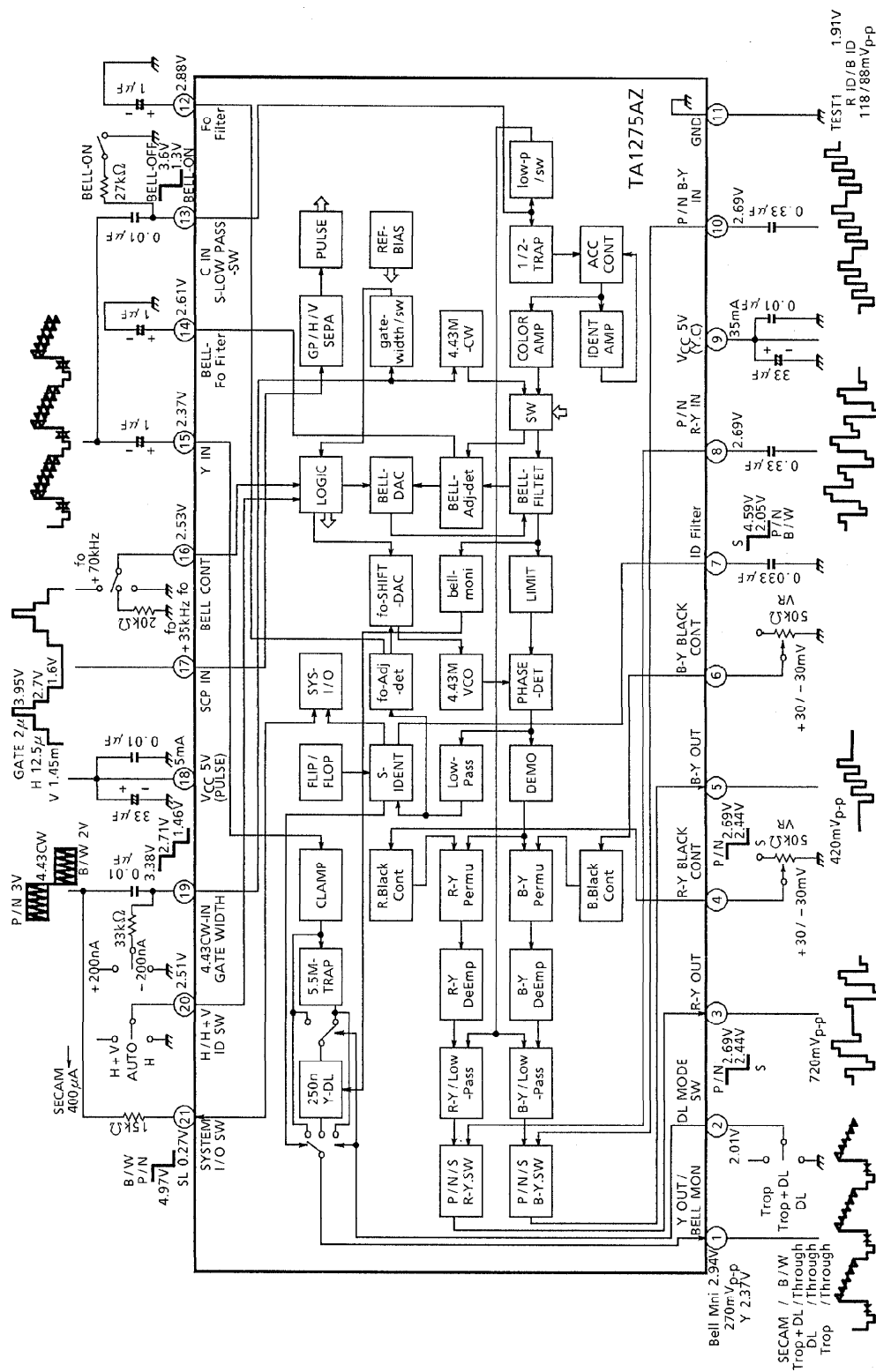
| NOTE | ITEM                               | TEST CONDITION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|------|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | Bell Monitor Output Amplitude      | <p>(1) : Input a 75% color bar signal (200mV<sub>p-p</sub> at R ID) into Pin 13.</p> <p>(2) : Connect pin 13 to GND through 27k<math>\Omega</math>.</p> <p>(3) : Measure R-Y ID amplitude at Pin 1, that is "ebmo".</p>                                                                                                                                                                                                                                            |
| 2    | Bell / Filter $f_0$                | <p>(1) : Input a 20mV<sub>p-p</sub> sine wave whose frequency is sweep into Pin 13.</p> <p>(2) : Connect pin 13 to GND through 27k<math>\Omega</math>.</p> <p>(3) : Keep pin 16 GND.</p> <p>(4) : Measure the frequency at which Pin 1 output is the biggest, that is "<math>f_{0BEL}</math>".</p> <p>(5) : Calculate : "<math>f_{0B-C} = f_{0BEL} - 4,286</math> [kHz]."</p>                                                                                      |
| 3    | Bell / Filter $f_0$ Variable Range | <p>(1) : Input a 20mV<sub>p-p</sub> sine wave whose frequency is sweep into Pin 13.</p> <p>(2) : Connect pin 13 to GND through 27k<math>\Omega</math>.</p> <p>(3) : Measure the frequency at which Pin 1 output is the biggest when <math>V_{CC}</math> is 5.5V / 4.5V, that is <math>f_{0BEL5.5} / f_{0BEL4.5}</math>.</p> <p>(4) : Calculate : "<math>f_{0B-H} = f_{0BELH} - 4,286</math> [kHz]."<br/>"<math>f_{0B-L} = f_{0BELL} - 4,286</math> [kHz]."</p>    |
| 4    | Bell / Filter $f_0$ VCC Drift      | <p>(1) : Input a 20mV<sub>p-p</sub> sine wave whose frequency is sweep into Pin 13.</p> <p>(2) : Connect pin 13 to GND through 27k<math>\Omega</math>.</p> <p>(3) : Pin 16 is GND.</p> <p>(4) : Measure the frequency at which Pin 1 output is the biggest when <math>V_{CC}</math> is 5.5V / 4.5V, that is <math>f_{0BEL5.5} / f_{0BEL4.5}</math>.</p> <p>(5) : Calculate : "<math>\Delta f_{0BELV} = f_{0BEL5.5} - f_{0BEL4.5}</math>".</p>                    |
| 5    | Bell / Filter $f_0$ Thermal Drift  | <p>(1) : Input a 20mV<sub>p-p</sub> sine wave whose frequency is sweep into Pin 13.</p> <p>(2) : Connect pin 13 to GND through 27k<math>\Omega</math>.</p> <p>(3) : Pin 16 is GND.</p> <p>(4) : Measure the frequency at which Pin 1 output is the biggest when atmosphere is <math>-20^\circ C / +65^\circ C</math>, that is <math>f_{0BEL-20} / f_{0BEL+65}</math>.</p> <p>(5) : Calculate : "<math>\Delta f_{0BELT} = f_{0BEL-20} - f_{0BEL+65}</math>".</p>  |
| 6    | Bell / Filter Q                    | <p>(1) : Input a 20mV<sub>p-p</sub> sine wave whose frequency is sweep into Pin 13.</p> <p>(2) : Connect pin 13 to GND through 27k<math>\Omega</math>.</p> <p>(3) : Pin 16 is GND.</p> <p>(4) : Observe the frequency response of Pin 1 output.</p> <p>(5) : Calculate : "<math>Q_{BEL} = (MAX - 3dB \text{ Band Width}) / f_{0BEL}</math>".</p>                                                                                                                 |
| 7    | Color Difference Output Amplitude  | <p>(1) : Input a 75% color bar (200mV<sub>p-p</sub> at R ID) into Pin 13.</p> <p>(2) : Measure the R-Y output amplitude at Pin 3, that is "<math>V_{RS}</math>".</p> <p>(3) : Measure the B-Y output amplitude at Pin 5, that is "<math>V_{BS}</math>".</p>                                                                                                                                                                                                      |

| NOTE | ITEM                                          | TEST CONDITION                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------|-----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8    | Color Difference Relative Amplitude           | Calculate : "R/B-S" = $V_{RS}/V_{BS}$ .                                                                                                                                                                                                                                                                                                                                                                                                           |
| 9    | Color Difference S/N                          | (1) : Input a 200mV <sub>p-p</sub> non-modulated chroma signal into Pin 13.<br>(2) : Measure the amplitude of noise on Pin 3, that is $n_R$ .<br>(3) : Measure the amplitude of noise on Pin 5, that is $n_B$ .<br>(4) : Calculate : "SNB-S" = $20\log(2\sqrt{2V_{BS}/n_B})$<br>"SNR-S" = $20\log(2\sqrt{2V_{RS}/n_R})$                                                                                                                           |
| 10   | Color Difference Output V <sub>CC</sub> Drift | (1) : Input a 75% color bar (200mV <sub>p-p</sub> at R ID) into Pin 13.<br>(2) : Measure the B-Y output amplitude at Pin 5 when V <sub>CC</sub> is 5.5V/4.5V, that is $V_{BS5.5}/V_{BS4.5}$ .<br>(3) : Calculate : " $\Delta V_{BVH}$ " = $(V_{BS5.5} - V_{BS})/V_{BS} \times 100$ [%]<br>" $\Delta V_{BVL}$ " = $(V_{BS4.5} - V_{BS})/V_{BS} \times 100$ [%]  |
| 11   | Color Difference Output Thermal Drift         | (1) : Input a 75% color bar (200mV <sub>p-p</sub> at R ID) into Pin 13.<br>(2) : Measure the B-Y output amplitude at Pin 5 when atmosphere is -20°C / +65°C, that is $V_{BS-20}/V_{BS+65}$ .<br>(3) : Calculate : " $V_{BSTH}$ " = $(V_{BS+65} - V_{BS})/V_{BS} \times 100$ [%]<br>" $V_{BSTL}$ " = $(V_{BS-20} - V_{BS})/V_{BS} \times 100$ [%]              |
| 12   | Linearity                                     | (1) : Input a 75% color bar (200mV <sub>p-p</sub> at R ID) into Pin 13.<br>(2) : Measure the amplitude between Black and Cyan/Red, that is $V_{Cyan}/V_{Red}$ .<br>(3) : Measure the amplitude between Black and Yellow/Blue, that is $V_{Yellow}/V_{Blue}$ .<br>(4) : Calculate : "LinR" = $V_{Cyan}/V_{Red}$<br>"LinB" = $V_{Yellow}/V_{Blue}$             |
| 13   | Rising Time                                   | (1) : Input a 75% color bar (200mV <sub>p-p</sub> at R ID) into Pin 13.<br>(2) : Measure the rising time (from 10% to 90%) between Green and Magenta at Pin 3 / Pin 5, that is " $t_{rR}$ " / " $t_{rB}$ ".                                                                                                                                                  |
| 14   | Demodulation Hold Range                       | (1) : Input a 200mV <sub>p-p</sub> , 2MHz sine wave into Pin 13.<br>(2) : Increasing the input frequency, measure the frequencies at which demodulated output appears at Pin 3, that is " $C_{RL}$ ", and at which demodulates output disappears at Pin 5, that is " $H_{BH}$ ".                                                                             |
| 15   | Demodulation Capture Range                    | (3) : Input a 200mV <sub>p-p</sub> , 7MHz sine wave into Pin 13.<br>(4) : Decreasing the input frequency, measure the frequencies at which demodulated output appears at Pin 5, that is " $C_{BH}$ ", and at which demodulated output disappears at Pin 3, that is " $H_{RL}$ ".                                                                             |

| NOTE | ITEM                                        | TEST CONDITION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 16   | Killer ON/OFF Level                         | (1) : Input a 75% color bar (200mV <sub>p-p</sub> at R ID) into Pin 13.<br>(2) : Decreasing the input amplitude, measure the amplitude at which demodulated outputs disappear at Pin 3 and Pin 5, that is "e <sub>SK</sub> ".<br>(3) : Increasing the input amplitude from 0mV <sub>p-p</sub> , measure the amplitude at which demodulated outputs appears at Pin 3 and Pin 5, that is "e <sub>SC</sub> ".                                                                                                                                                                                                                                                                                                                                                |
| 17   | Carrier Remains on Demodulated Output       | (1) : Input a 200mV <sub>p-p</sub> non-modulated chrome signal into Pin 13.<br>(2) : Measure the amplitude of 4.25MHz signal at Pin 3, that is "CL <sub>RS</sub> ".<br>(3) : Measure the amplitude of 4.406MHz signal at Pin 5, that is "CL <sub>BS</sub> ".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 18   | Black Level Offset                          | (1) : Input a 200mV <sub>p-p</sub> non-modulated chrome signal into Pin 13.<br>(2) : Pin 4 and Pin 6 are opened.<br>(3) : Measure the difference between picture period and blanking period at Pin 3 / Pin 5, that is "E <sub>RR</sub> " / "E <sub>RB</sub> ".                                                                                                                                                                                                                                                                                                                                                                                                         |
| 19   | ID Voltage                                  | (1) : Input a 75% color bar (200mV <sub>p-p</sub> at R ID) into Pin 13.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 20   | ID Current                                  | (2) : Measure the voltage and input current of Pin 21, that are "V <sub>21color</sub> " and "I <sub>21color</sub> ".<br>(3) : No input on Pin 13.<br>(4) : Measure the voltage and input current of Pin 21, that are "V <sub>21B/W</sub> " and "I <sub>21B/W</sub> ".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 21   | System SW Threshold Level                   | (1) : Input a 200mV <sub>p-p</sub> , 15kHz sine wave into Pin 8 and Pin 10.<br>(2) : No input Pin 13.<br>(3) : Increasing the Pin 21 voltage from 0V, measure the voltage at which 15kHz sine wave appears at Pin 3 and Pin 5, that is "V <sub>21PIN</sub> ".<br>(4) : Decreasing the Pin 21 voltage from 4V, measure the voltage at which 15kHz sine wave disappears at Pin 3 and Pin 5, that is "V <sub>21S</sub> ".                                                                                                                                                                                                                                                                                                                                    |
| 22   | Color Difference Output DC Level            | (1) : No input on Pin 13.<br>(2) : Measure the DC voltage on Pin 3 / Pin 5 when Pin 21 is 4V, that is "V <sub>3PIN</sub> " / "V <sub>5PIN</sub> ".<br>(3) : Measure the DC voltage on Pin 3 / Pin 5 when Pin 21 is 0V, that is "V <sub>3S</sub> " / "V <sub>5S</sub> ".                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 23   | R-Y B-Y Black Level Control Characteristics | (1) : Input a 75% color bar (200mV <sub>p-p</sub> at R ID) into Pin 13.<br>(2) : Measure the difference between picture period and blanking period at Pin 3 when Pin 4 is 4V / 0V, that is E <sub>RR+</sub> / E <sub>RR-</sub> .<br>(3) : Measure the difference between picture period and blanking period at Pin 5 when Pin 6 is 4V / 0V, that is E <sub>RB+</sub> / E <sub>RB-</sub> .<br>(4) : Calculate : "ΔE <sub>RR+</sub> " = E <sub>RR+</sub> - E <sub>RR-</sub><br>"ΔE <sub>RR-</sub> " = E <sub>RR-</sub> - E <sub>RR+</sub><br>"ΔE <sub>RB+</sub> " = E <sub>RB+</sub> - E <sub>RB-</sub><br>"ΔE <sub>RB-</sub> " = E <sub>RB-</sub> - E <sub>RB+</sub>  |

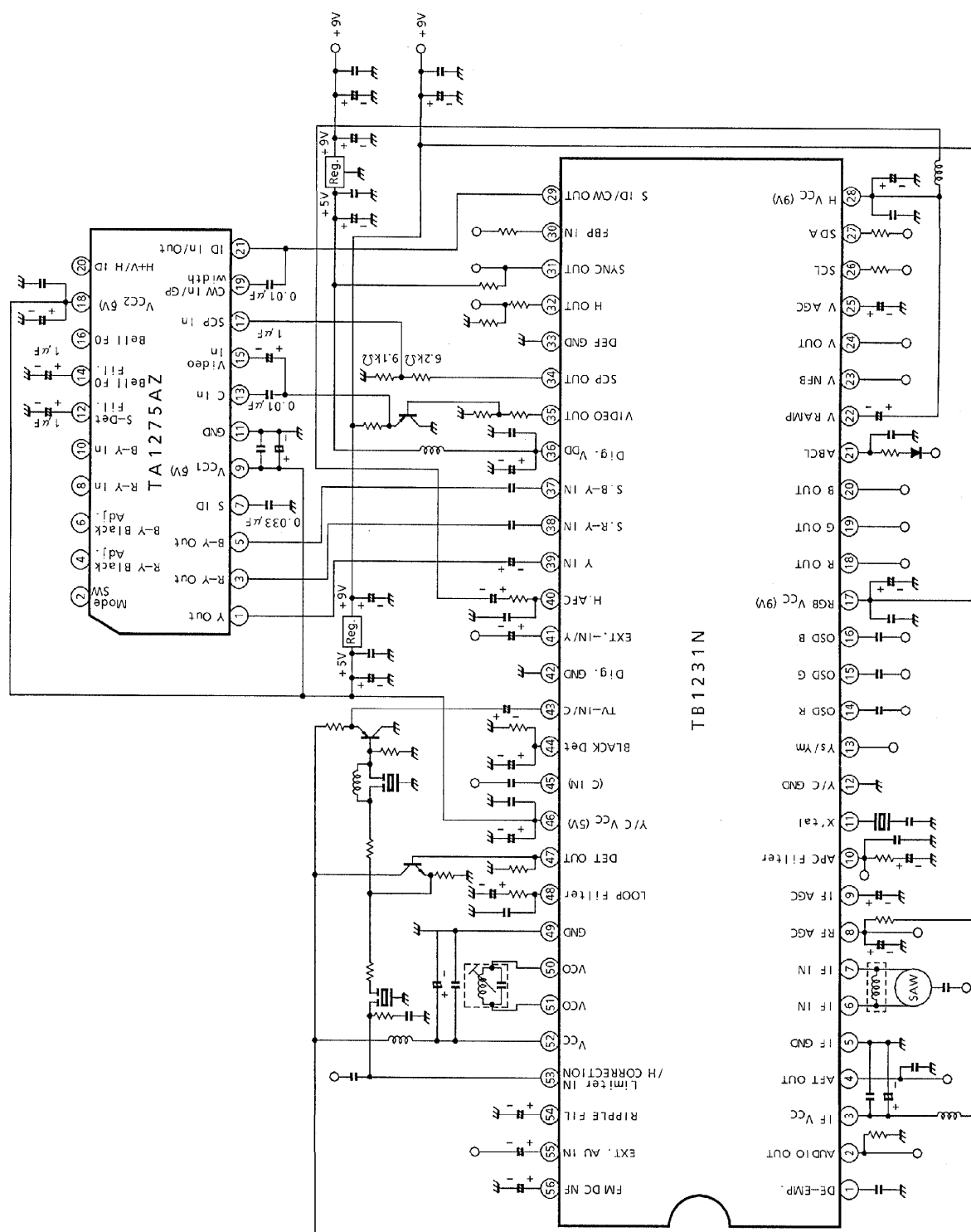
| NOTE | ITEM                            | TEST CONDITION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 24   | Ext. Color Difference Gain      | (1) : Input a 200mV <sub>p-p</sub> , 15kHz sine wave into Pin 8 and Pin 10.<br>(2) : Supply 4V to Pin 21.<br>(3) : Measure the output amplitudes at Pin 3 and Pin 5, that are V <sub>EXTR</sub> and V <sub>EXTB</sub> .<br>(4) : Calculate : "G <sub>EXTR</sub> " = V <sub>EXTR</sub> / 200 [mV]<br>"G <sub>EXTB</sub> " = V <sub>EXTB</sub> / 200 [mV]                                                                                                                                                            |
| 25   | 4.43MHz CW Min. Input Level     | (1) : Input a 75% color bar (200mV <sub>p-p</sub> at R ID) into Pin 13.<br>(2) : Increasing an amplitude of 4.43MHz Continuous Wave inputted into Pin 19 from 0mV <sub>p-p</sub> , measure the amplitude at which color difference signals appear at Pin 3 and Pin 5, that is "V <sub>CW</sub> ".<br>                                                                                                                           |
| 26   | Gate Pulse Width Variable Range | (1) : Input a 75% color bar (200mV <sub>p-p</sub> at R ID) into Pin 13.<br>(2) : Connecting the Pin 7 to GND via 1kΩ, observe the gate pulse at Pin 7.<br>(3) : Measure the gate pulse widths when Pin 19 is opened, connected to V <sub>CC</sub> / GND, that are "W <sub>GP</sub> ", "W <sub>GPVCC</sub> " and "W <sub>GPGND</sub> ".<br>                                                                                     |
| 27   | Y DL Characteristics            | (1) : Connect the Pin 7 to V <sub>CC</sub> via 10kΩ.<br>(2) : Connect the Pin 2 to GND.<br>(3) : Measure the delay time between Pin 15 input and Pin 1 output, that is "t <sub>YDL</sub> ".                                                                                                                                                                                                                                                                                                                        |
| 28   | Y Trap Characteristics          | (1) : Input a sweep signal with sync. (1V <sub>p-p</sub> ).<br>(2) : Connect the Pin 7 to V <sub>CC</sub> via 10kΩ.<br>(3) : Connect the Pin 2 to V <sub>CC</sub> .<br>(4) : Observing the frequency response at Pin 1, measure the frequency at which the attenuation is maximum, that is "f <sub>0Y5.5</sub> " and measure the attenuation at f <sub>0Y5.5</sub> against the one at 1MHz, that is "G <sub>Y5.5</sub> ".<br> |
| 29   | Y Input Dynamic Range           | (1) : Connect the Pin 7 to V <sub>CC</sub> via 10kΩ.<br>(2) : Increasing the amplitude of Y signal inputted into Pin 15, measure the amplitude at which the output signal from Pin 1 begins to be distorted, that is "DR <sub>YS</sub> ".<br>(3) : Open the Pin 7.<br>(4) : Repeat (2), that is "DR <sub>YBW</sub> ".                                                                                                                                                                                              |
| 30   | Y Gain                          | (1) : Input a 1V <sub>p-p</sub> Y signal into Pin 15.<br>(2) : Connect the Pin 7 to V <sub>CC</sub> via 10kΩ.<br>(3) : Measure the gain between Pin 15 input and Pin 1 output, that is "G <sub>YS</sub> ".<br>(3) : Open the Pin 7.<br>(4) : Repeat (3), that is "G <sub>YBW</sub> ".                                                                                                                                                                                                                              |

## TEST CIRCUIT



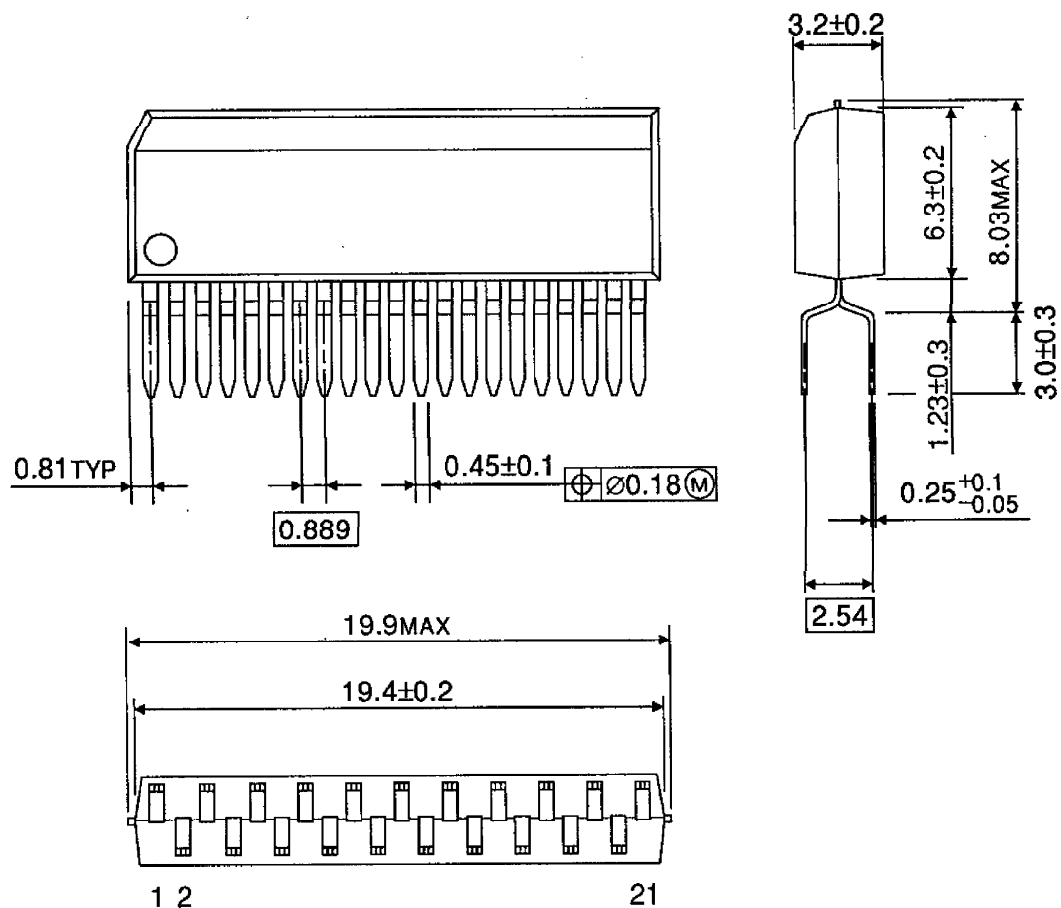
TA1275AZ-21

## APPLICATION CIRCUIT



**OUTLINE DRAWING**  
SZIP21-P-0.89

Unit : mm



Weight : 1.0g (Typ.)