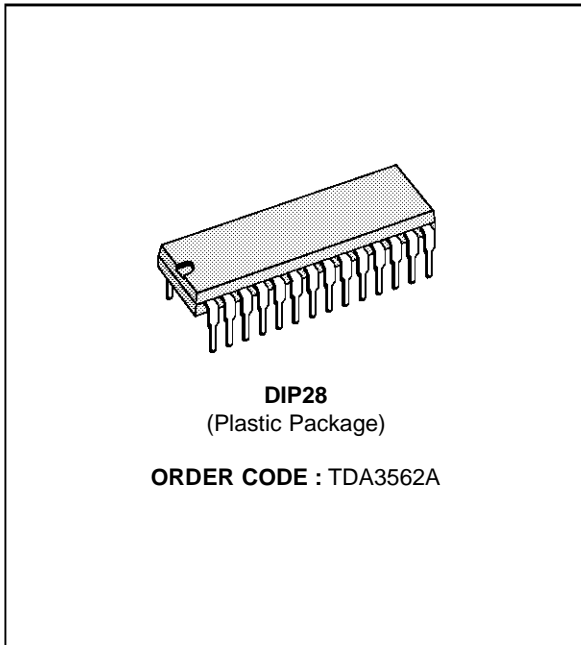


PAL/NTSC ONE-CHIP DECODER

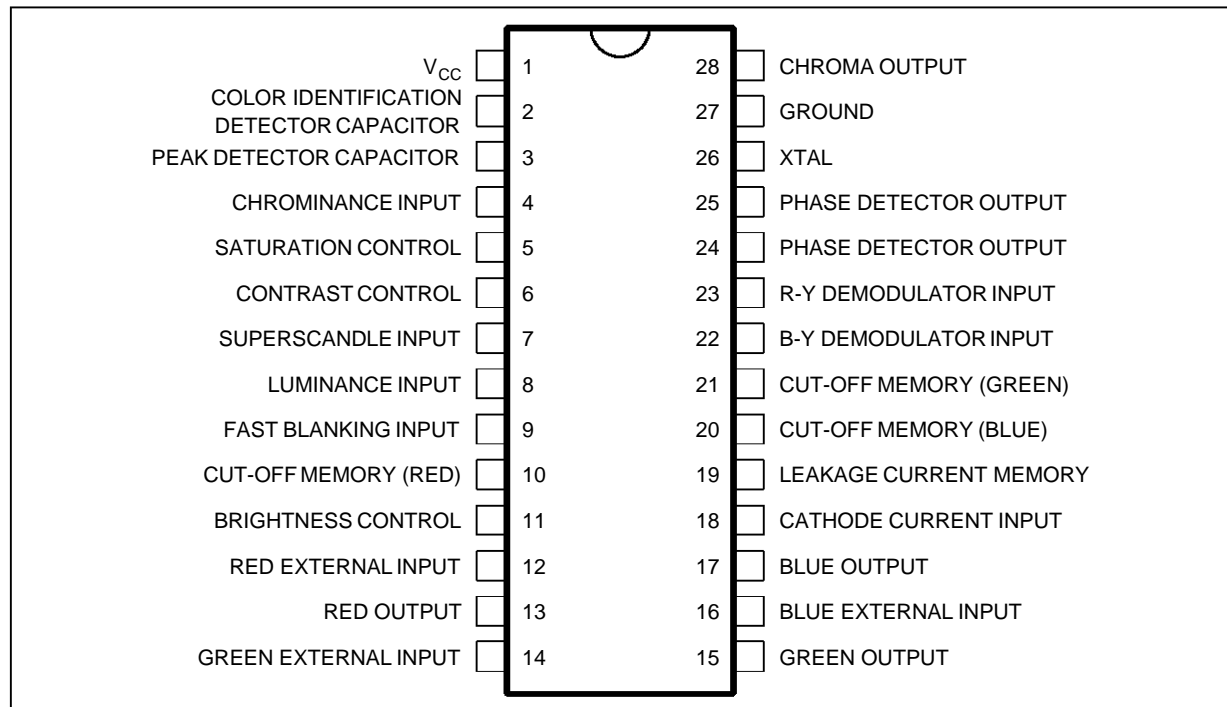
- CHROMINANCE SIGNAL PROCESSOR
- LUMINANCE SIGNAL PROCESSING WITH CLAMPING
- HORIZONTAL AND VERTICAL BLANKING
- LINEAR TRANSMISSION OF INSERTED RGB SIGNALS
- LINEAR CONTRAST AND BRIGHTNESS CONTROL ACTING ON INSERTED AND MATRIXED SIGNALS
- AUTOMATIC CUT-OFF CONTROL
- NTSC HUE CONTROL



DESCRIPTION

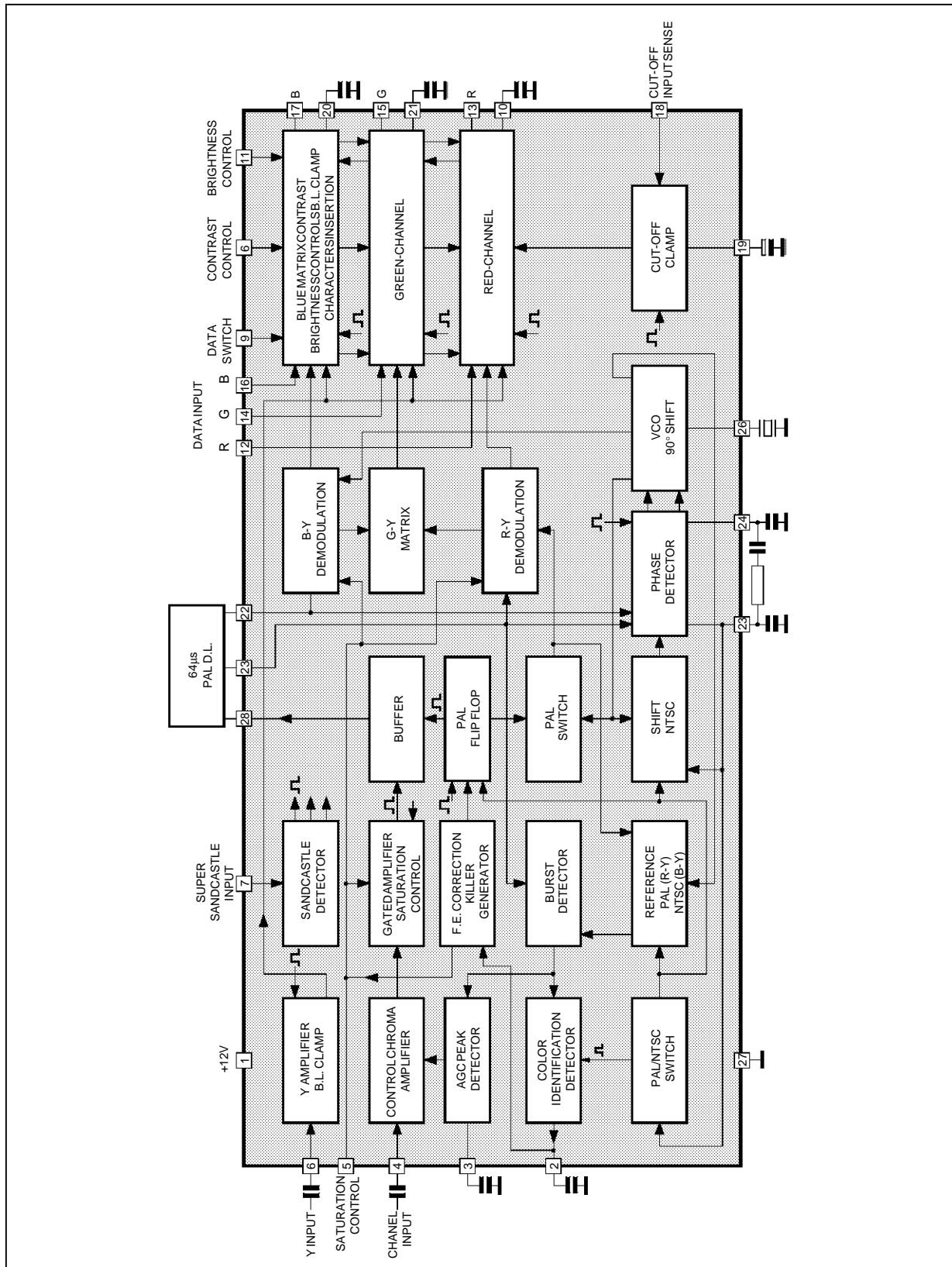
The TDA3562A is a monolithic IC designed as decode PAL and/or NTSC colour television standards and it combines all functions required for the identification and demodulation of PAL and NTSC signals.

PIN CONNECTIONS



3562A-01.EPS

BLOCK DIAGRAM



3562A-02.EPS

ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | Value | Unit |
|----------------|---|------------|------------------|
| V_S | Supply Voltage | 13.2 | V |
| P_{tot} | Power Dissipation at $T_{amb} = 65\text{ }^\circ\text{C}$ | 1.7 | W |
| T_{stg}, T_j | Storage and Junction Temperature | - 25, +150 | $^\circ\text{C}$ |
| T_{amb} | Ambient Temperature Range | 0, +70 | $^\circ\text{C}$ |

3562A-01.TBL

THERMAL DATA

| Symbol | Parameter | Value | Unit |
|-----------------|-------------------------------------|--------|---------------------------|
| $R_{th\ j-amb}$ | Thermal Resistance Junction-ambient | Max 40 | $^\circ\text{C}/\text{W}$ |

3562A-02.TBL

ELECTRICAL CHARACTERISTICS

Test conditions unless otherwise specified : Supply voltage, Pin 1 at 12 V - $T_{amb} = 25\text{ }^\circ\text{C}$

Input signals : Luminance input signal $V_8 = 0.48 V_{PP}$ (Composite video signal (100 % white))
 Chrominance input signal $V_4 = 0.39 V_{PP}$ (Colour bar signal with 75 % colour saturation and chrominance to burst ratio = 2.2 : 1)

Data input signals $V_{12, 14, 16} = 1.4 V_{PP}$ (Including neg.going sync. pulse)

Control inputs at nominal value : Pin 6 Nom. contrast = max. contrast - 5dB
 Pin 5 Nom. saturation = max. saturation - 6 dB
 Pin 11 Nom. brightness = 2V, Pin 9 at 0.4 V

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|--------|-----------|-----------------|------|------|------|------|
|--------|-----------|-----------------|------|------|------|------|

SUPPLY INPUT (pin 1)

| | | | | | | |
|--|----------------------|---------------------|------|----|------|----|
| | Supply Voltage Range | | 10.8 | | 13.2 | V |
| | Supply Current | $V_1 = 12\text{ V}$ | | 80 | 110 | mA |

LUMINANCE INPUT (pin 8)

| | | | | | | |
|--|------------------------|--|--|-----|-----|---------------|
| | Composite Input Signal | | | | 0.8 | V_{pp} |
| | Input Current | | | 0.1 | 1 | μA |

CHROMINANCE INPUT (pin 4)

| | | | | | | |
|--|-------------------|--|----|----|------|------------------|
| | Input Signal | | 40 | | 1100 | mV_{PP} |
| | Input Resistance | | | 10 | | $\text{K}\Omega$ |
| | Input Capacitance | | | | 6.5 | pF |

SUPER SANDCASTLE INPUT (pin 7)

| | | | | | | |
|--|---|---|-----|--------|------------|--------------------------------------|
| | Gating & Clamping Level | | 7.5 | | | V |
| | H-pulse Separating Level | | 4 | | 5 | V |
| | V-pulse Separating Level | | 2 | | 3 | V |
| | Forbidden Range | | | 1 to 2 | | V |
| | Input Current | $V_7 = 0\text{ to }1\text{ V}$ $V_7 = 1\text{ to }8.5\text{ V}$ $V_7 = 8.5\text{ to }12\text{ V}$ | | 50 | - 460 2 | μA μA mA |
| | Delay Between Black Level Clamping Pulse and Gating Pulse | | | 0.6 | | μs |

DATA BLANKING INPUT (pin 9)

| | | | | | | |
|--|-------------------------------------|--|-----|--|-----|------------------|
| | Input Voltage for no Data Insertion | | | | 0.4 | V |
| | Input Voltage for Data Insertion | | 0.9 | | 3 | V |
| | Input Resistance | | 7 | | 13 | $\text{k}\Omega$ |

"BLACK CURRENT" STABILIZATION INPUT (pin 18)

| | | | | | | |
|--|--|--|-----|---|---|---|
| | D. C. Bias Voltage | | 3.5 | 5 | 7 | V |
| | Internal Limiting Threshold | | | 9 | | V |
| | Switching Threshold for "Black Current" ON | | | 8 | | V |

3562A-03.TBL

ELECTRICAL CHARACTERISTICS (continued)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|--|---|-----------------|------|------|------|------|
| "BLACK CURRENT" STABILIZATION INPUT (pin 18) (continued) | | | | | | |
| | Difference between Input Voltage for "BlackCurrent" and Leakage Current | | | 0.5 | | V |
| | Input Resistance during Scan | | | 1.5 | | kΩ |
| | Input Current during "Black Current" Measurement | | | | 2 | μA |
| | Input Current during Scan | | | | 10 | mA |

RGB - OUTPUTS (Pins 13, 15, 17)

| | | | | | | |
|--|---------------------------------|--|------|----|------|------|
| | Output Resistance | | | 50 | | Ω |
| | Current Source | | 2 | 3 | | mA |
| | Peak Output Level | | 10.7 | | 11.3 | V |
| | Residual 4.4 MHz at RGB Outputs | | | | 100 | mVpp |
| | Residual 8.8 MHz at RGB Outputs | | | | 150 | mVpp |

LUMINANCE CHANNEL

| | | | | | | |
|--|---|---------------|-----|----------|-----|-----|
| | Frequency Resp. of Total Lumin. Amplifiers | f = 0 to 5MHz | | -1 | -3 | dB |
| | RGB Output Signal (black to white) | | 3.5 | 4 | 4.5 | Vpp |
| | Relative Spread of RGB - Output Signals | | | | 1 | dB |
| | Contrast Control Range | (see fig. 1) | | -5 to 10 | | dB |
| | Tracking Over 10 dB Contrast Control | | | 0 | | dB |
| | Contrast Control Input Current | | | | 15 | μA |
| | Blanking Level of RGB - Output Signals | | | 1 | 1.2 | V |
| | Difference Between Blanking Levels, | | 0 | | | mV |
| | Differential Drift of Blanking Levels | ΔT = 40 °C | | 0 | | mV |
| | Brightness Control Input Current | | | | 5 | μA |
| | Brightness Control Range | (see fig. 3) | | 1 to 3 | | V |
| | Relation Ship between Black Level Variation and Brightness Control Variation | (see fig. 3) | | 1.3 | | V/V |
| | Black Level of RGB Output Signals | (see note 4) | | 3 | | V |
| | Difference between Black Levels | (see note 4) | | 0 | | mV |
| | Tracking Over Brightness Control | | | | 2 | % |
| | Differential Drift of Black Levels | ΔT = 40 °C | | | 20 | mV |
| | Drift of Black Level Versus 10 % Variation of Supply Voltage and Contrast Control | | | | 20 | mV |

"CUT OFF CURRENT" REGULATION

| | | | | | | |
|--|---|--------------|-----|---|----|----|
| | RGB Output Level of the "3L Windows" after Switch-on | | 7.5 | | | V |
| | RGB Outputs Level of the "3L Windows" after Cut off Current Stabilization | (see note 4) | 1 | 3 | 5 | V |
| | RGB Output Range | | 1 | | 5 | V |
| | Charge/Discharge Current during Measuring Time (3L windows) at Pins 10, 19, 20 and 21 | | | 1 | | mA |
| | Leakage Currents Flowing into Pins 10, 20 and 21 during Scan | | | | 50 | nA |

RGB DATA INSERTION

| | | | | | | |
|--|---|----------------------------|--|---|-----|-----|
| | Data RGB Output Signal | V ₉ = 0.9 to 3V | | 4 | | Vpp |
| | Differential Amplitude Error between RGB Output Signal and Data Output Signal | | | | 10 | % |
| | Differential Error between Black Levels of RGB Output Signals and Black Levels of Data Output Signals | | | | 200 | mV |

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ELECTRICAL CHARACTERISTICS (continued)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|--------------------------------|---|----------------------|------|------|------|------|
| RGB DATA INSERTION (continued) | | | | | | |
| | Rise Time of Data Output Signal | | | 50 | 80 | ns |
| | Differential Delay | | | 0 | 40 | ns |
| | Attenuation of RGB Output Signal | $V_g = 0.9$ to 3 V | | 46 | | dB |
| | Frequency Response for $f = 0$ to 5 MHz | | | - 1 | - 3 | dB |

CHROMINANCE CHANNEL

| | | | | | | |
|--------|---|---------------|-----|--------------|------|------------|
| Pin 4 | Chrominance Input Signal | | 40 | | 1100 | mVpp |
| Pin 4 | Input Resistance | | | 10 | | k Ω |
| Pin 4 | Input Capacitance | | | | 6.5 | pF |
| | ACC Control Range | | 30 | | | dB |
| Pin 28 | Burst Change Over 30 dB ACC Range | | | | 1 | dB |
| | Saturation Control Range | (see fig. 2) | | - 44 to 6 | | dB |
| Pin 5 | Sat. Control Input Current | | | | 20 | μ A |
| Pin 28 | Chrominance Output Voltage | $V_5 = 4.2$ V | 4 | | | Vpp |
| | Burst Input Signal at Pins 22 and 23 | | | 100 | | mVpp |
| | Input Resist. Bet. Pins 22, 23 and Ground | | | 1 | | k Ω |
| Pin 28 | Phase Shift Bet. Burst and Chrom. Signal | | - 5 | 0 | 5 | $^\circ$ |
| Pin 2 | Voltage at Nom. Input Signal | | | 4.7 | | V |
| Pin 2 | Voltage without Input Signal | | | 2.6 | | V |
| Pin 2 | Identificaton-on Voltage | | | 2.1 | | V |
| Pin 2 | Colour-off Voltage | | | 3.4 | | V |
| Pin 2 | Colour-on Voltage | | | 3.6 | | V |
| Pin 3 | Voltage at Nom. Input Signal | | | 5.1 | | V |

COLOUR DEMODULATORS AND G-Y MATRIX

| | | | | | | |
|--|---------------------|-------------|--------|--------|--------|--|
| | Ratio (B-Y) / (R-Y) | | 1.60 | 1.78 | 1.96 | |
| | Ratio (G-Y) / (R-Y) | (B - Y) = 0 | - 0.46 | - 0.51 | - 0.56 | |
| | Ratio (G-Y) / (B-Y) | (R - Y) = 0 | - 0.14 | - 0.19 | - 0.24 | |

REFERENCE OSCILLATOR

| | | | | | | |
|--------|--|--------------|-----|-------|----|------------|
| | Oscillator Frequency | | | 2 fcs | | MHz |
| | Temp. Coefficient of Oscillator Frequency | (see note 5) | | - 2 | | Hz/k |
| Pin 26 | Input Resistance | | | 400 | | Ω |
| Pin 26 | Input Capacitance | | | | 10 | pF |
| | Pull-in Range | (see note 5) | 500 | 700 | | Hz |
| | Phase Shift for ± 400 Hz Deviation | | | | 5 | $^\circ$ C |
| | Phase Shift between (R - Y) and (R - Y) Ref.Signal | | | | 5 | $^\circ$ C |
| | Phase Shift between (R - Y) and (B - Y) Ref.Signal | | 85 | 90 | 95 | $^\circ$ C |

NTSC OPERATION

| | | | | | | |
|-------------------|------------------------|-----------------------|----------|-----|-----|------------|
| Pins 24, 25 | PAL-on Operating Range | | 9 | | 11 | V |
| Pins 24, 25 | Threshold for NTSC-on | | | 8.8 | | V |
| $J_{24} + J_{25}$ | Avarage Output Current | Key Pulse = 4μ s | | 90 | | μ A |
| | Hue Control | | ± 30 | | | $^\circ$ C |
| Pins 24, 25 | Hue Control Voltage | | 7.5 | | 8.5 | V |

(4) The levels depend on the application circuit and on the spread and drift of picture tube guns.

(5) All frequency variations are referred to 4.4 MHz carrier frequency.

3562A-05.TBL

Figure 1 : Contrast Control Voltage Range

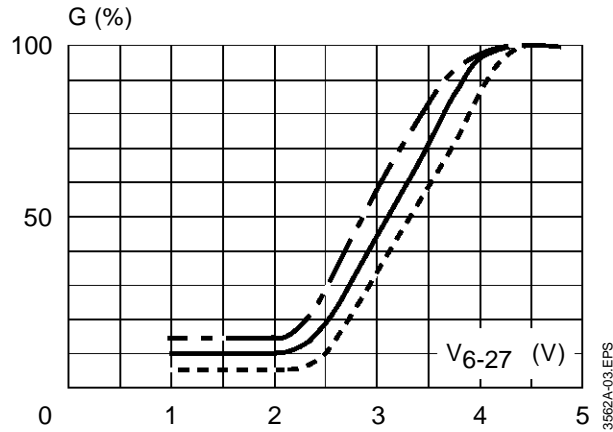


Figure 2 : Saturation Control Voltage Range

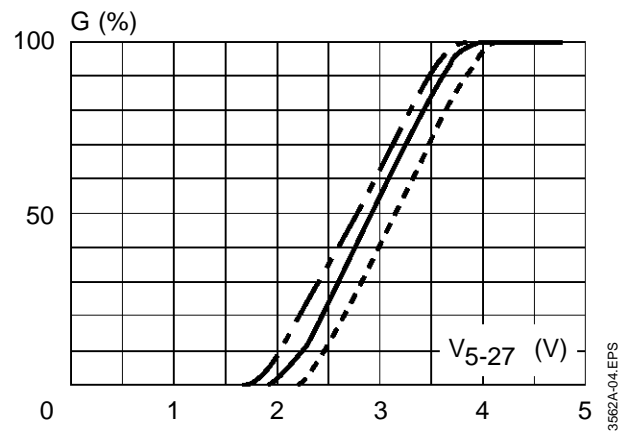


Figure 3 : Difference between signal black level and measuring level (3L windows after cut off current stabilization) at the RGB outputs (ΔV) versus control voltage ($V_{11} - V_{12}$).

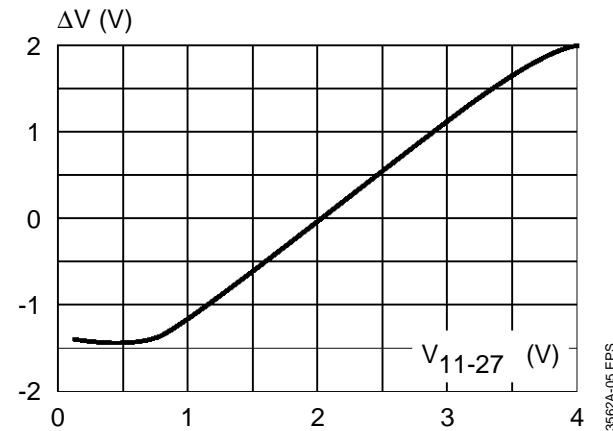


Figure 4 : Hue Control Voltage Range

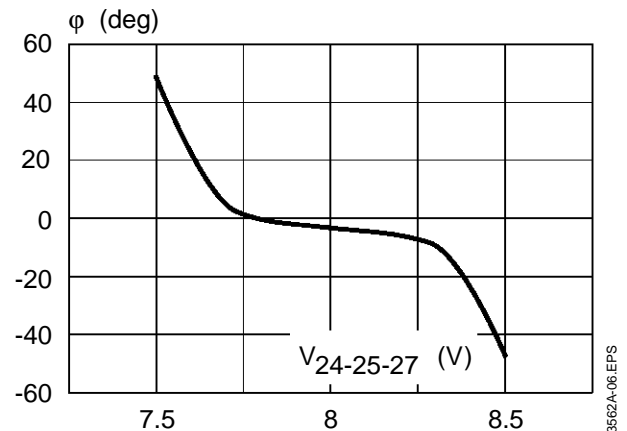
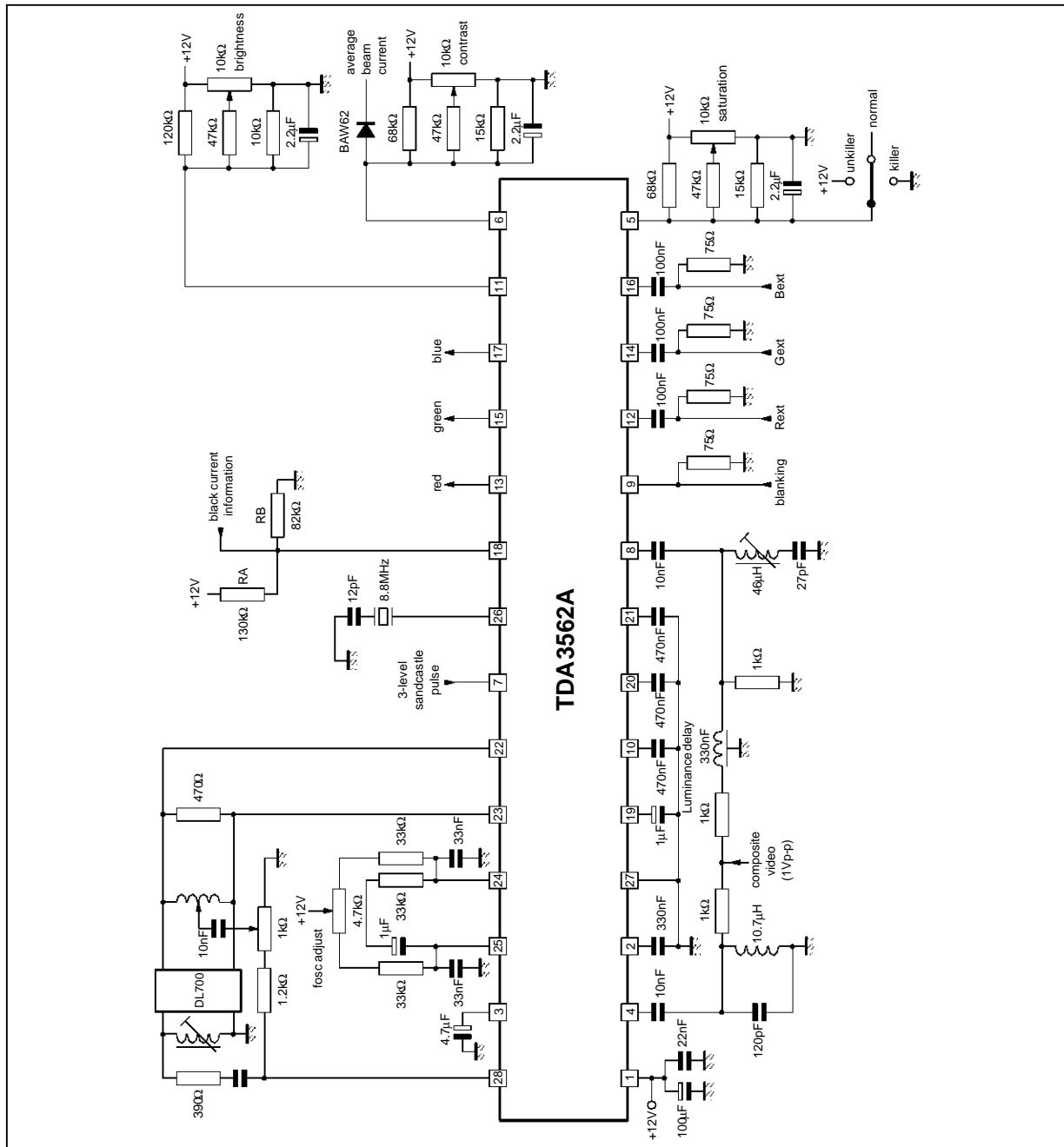


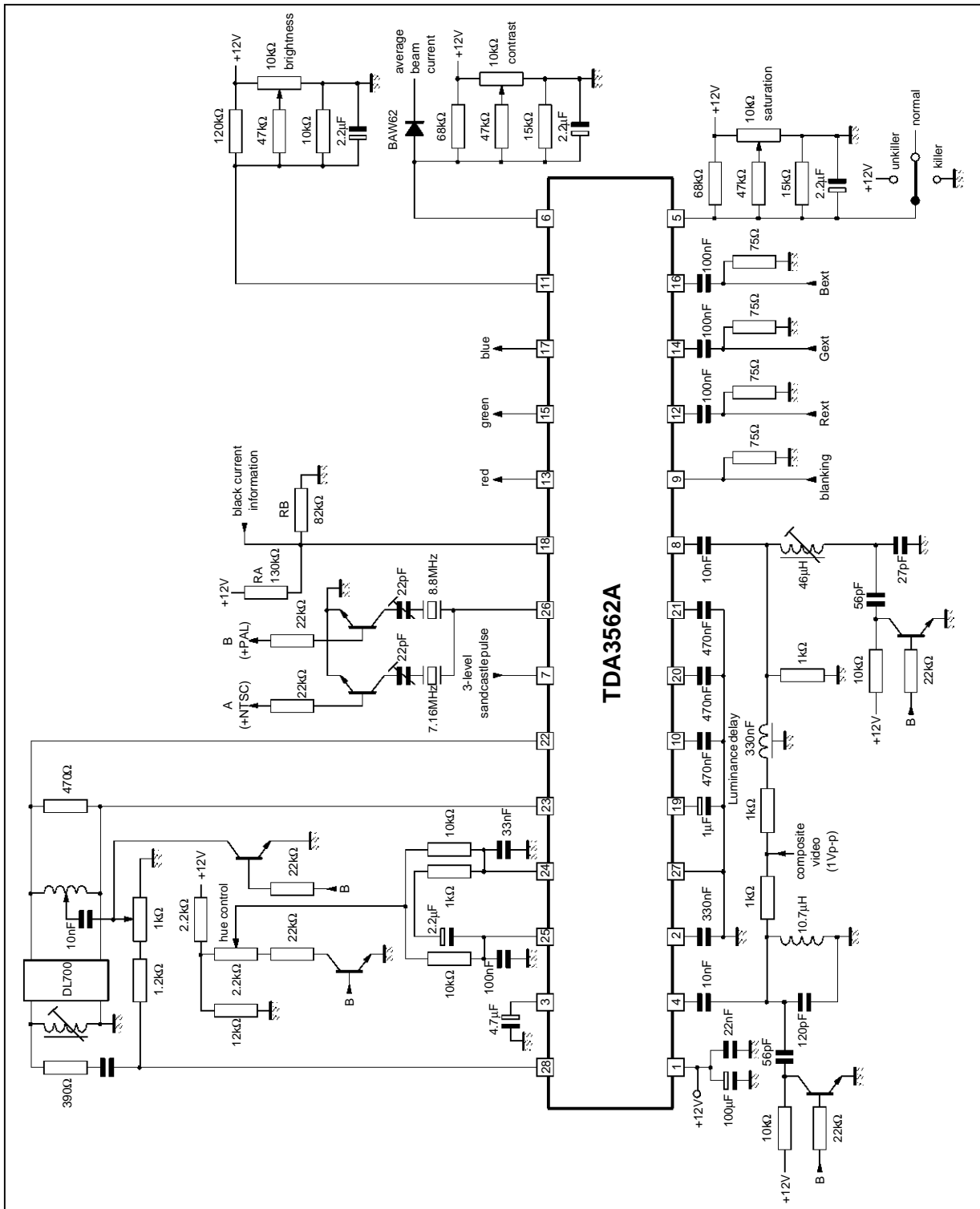
Figure 5 : Application Diagram showing the TDA3562A for a PAL Decoder



3562A-07.EPS

TDA3562A

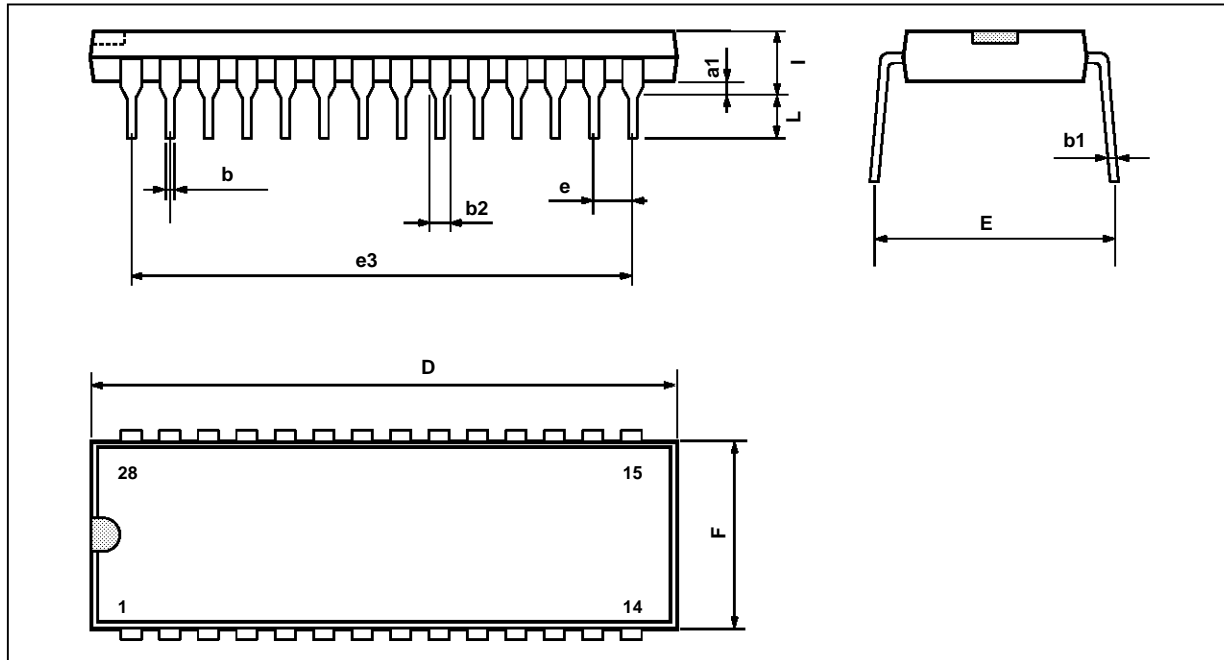
Figure 6 : Application Diagram showing the TDA3562A for a PAL/NTSC Decoder



3562A-08.EPS

PACKAGE MECHANICAL DATA

28 PINS - PLASTIC 28



PM-DIP28.EPS

| Dimensions | Millimeters | | | Inches | | |
|------------|-------------|-------|-------|--------|-------|-------|
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| a1 | | 0.63 | | | 0.025 | |
| b | | 0.45 | | | 0.018 | |
| b1 | 0.23 | | 0.31 | 0.009 | | 0.012 |
| b2 | | 1.27 | | | 0.050 | |
| D | | | 37.4 | | | 1.470 |
| E | 15.2 | | 16.68 | 0.598 | | 0.657 |
| e | | 2.54 | | | 0.100 | |
| e3 | | 33.02 | | | 1.300 | |
| F | | | 14.1 | | | 0.555 |
| i | | 4.445 | | | 0.175 | |
| L | | 3.3 | | | 0.130 | |

DIP28.TEL

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