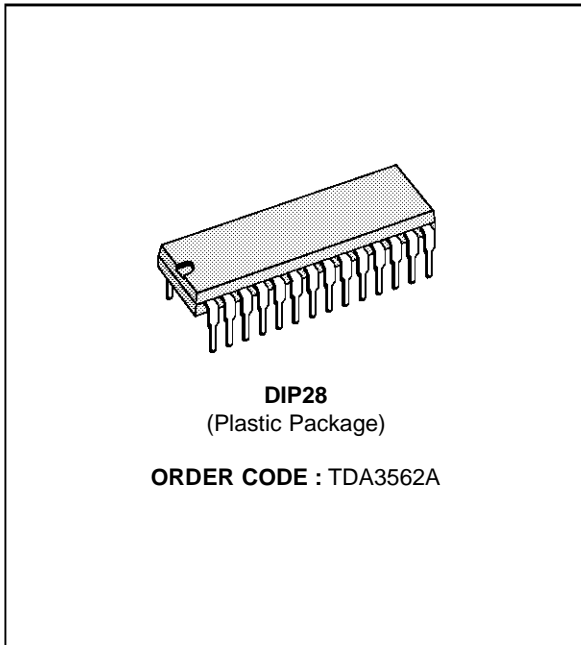


**PAL/NTSC ONE-CHIP DECODER**

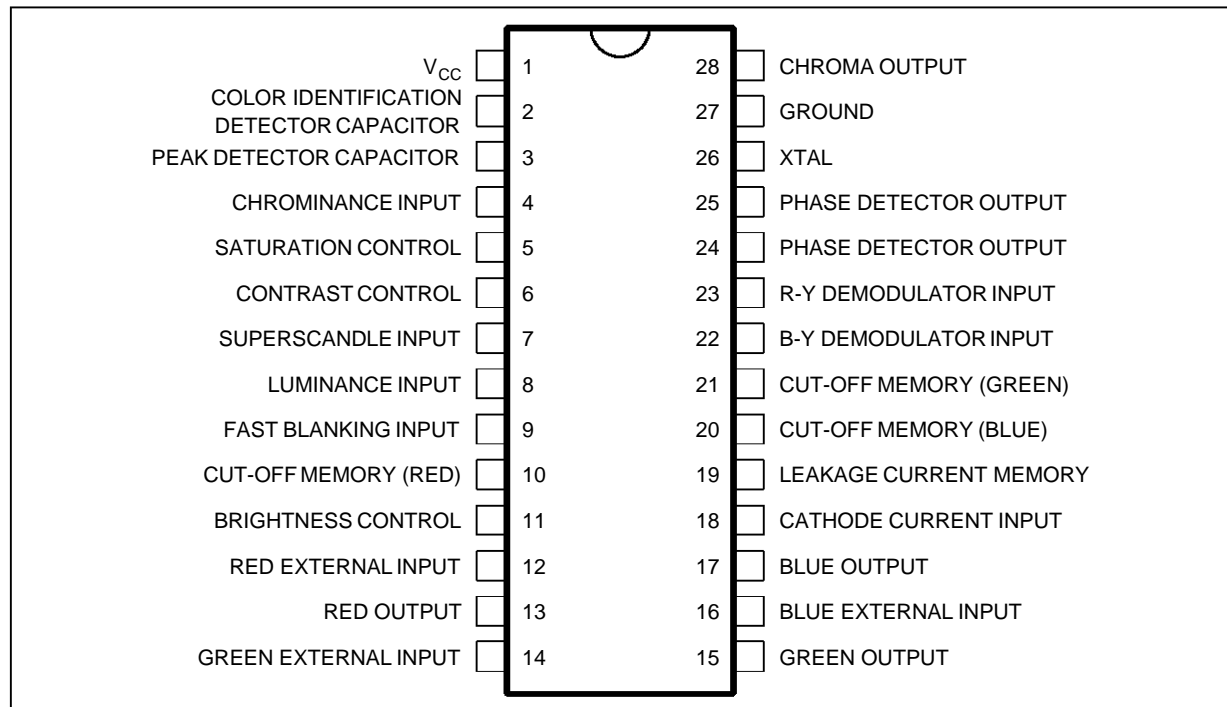
- CHROMINANCE SIGNAL PROCESSOR
- LUMINANCE SIGNAL PROCESSING WITH CLAMPING
- HORIZONTAL AND VERTICAL BLANKING
- LINEAR TRANSMISSION OF INSERTED RGB SIGNALS
- LINEAR CONTRAST AND BRIGHTNESS CONTROL ACTING ON INSERTED AND MATRIXED SIGNALS
- AUTOMATIC CUT-OFF CONTROL
- NTSC HUE CONTROL



**DESCRIPTION**

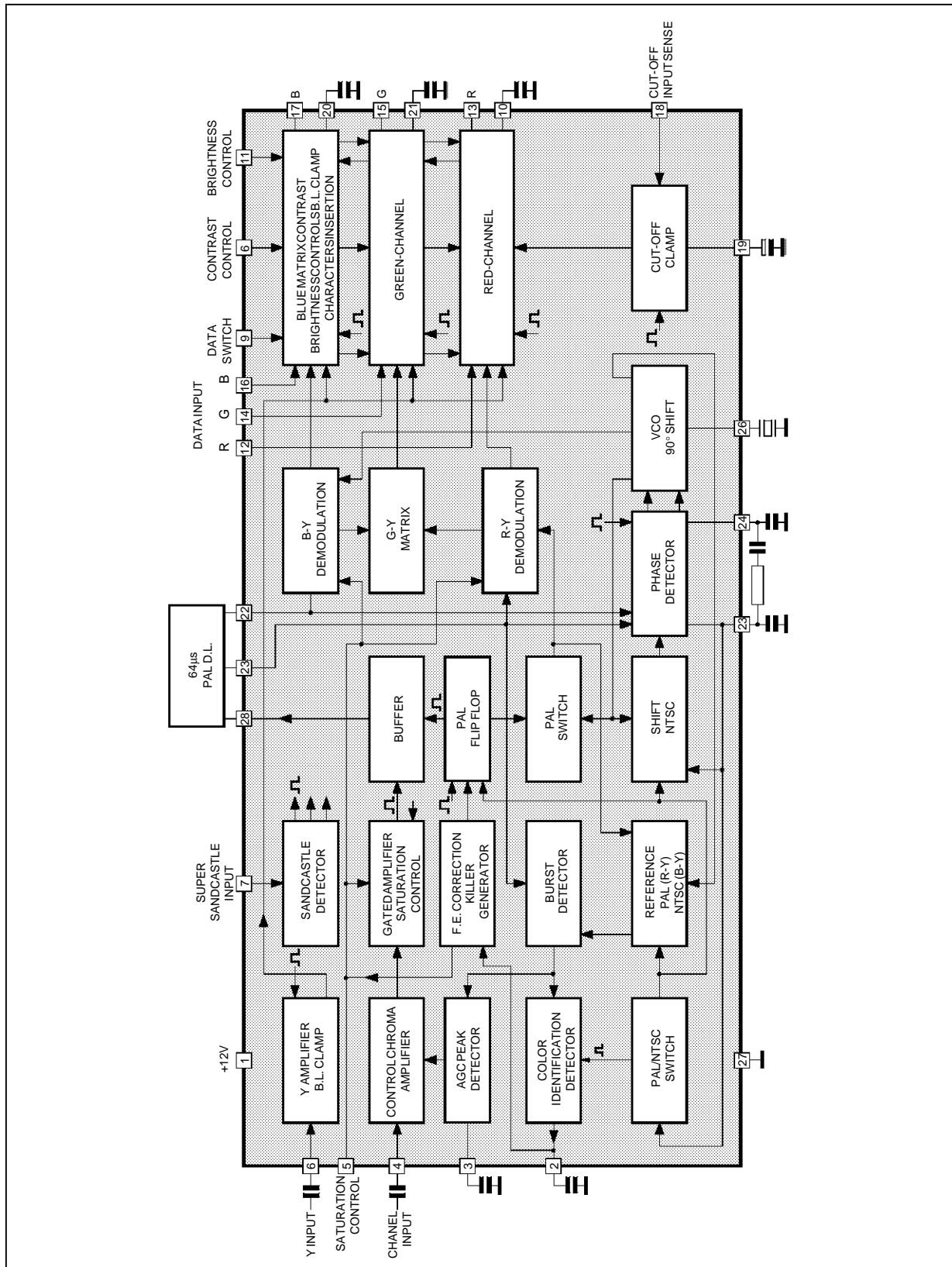
The TDA3562A is a monolithic IC designed as decode PAL and/or NTSC colour television standards and it combines all functions required for the identification and demodulation of PAL and NTSC signals.

**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	$^\circ\text{C/W}$

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	$\mu\text{A}$

**CHROMINANCE INPUT (pin 4)**

	Input Signal		40		1100	$\text{mV}_{PP}$
	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	$\mu\text{A}$ $\mu\text{A}$ mA
	Delay Between Black Level Clamping Pulse and Gating Pulse			0.6		$\mu\text{s}$

**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
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"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 <sub>9</sub> = 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 $\Omega$
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	$\mu$ 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 $\Omega$
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		$\Omega$
Pin 26	Input Capacitance				10	pF
	Pull-in Range	(see note 5)	500	700		Hz
	Phase Shift for $\pm 400$ 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

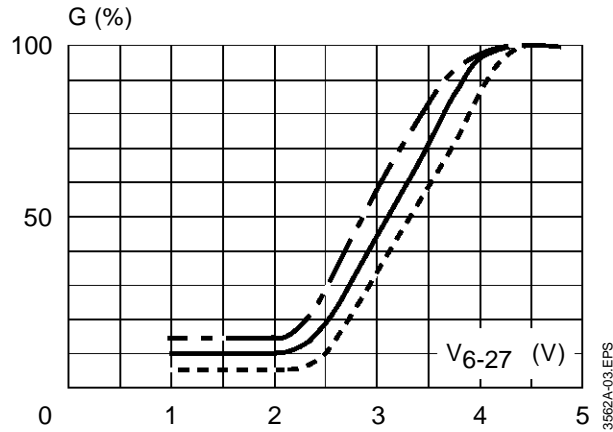
Pins 24, 25	PAL-on Operating Range		9		11	V
Pins 24, 25	Threshold for NTSC-on			8.8		V
$J_{24} + J_{25}$	Avarage Output Current	Key Pulse = $4 \mu$ s		90		$\mu$ A
	Hue Control		$\pm 30$			$^\circ$ C
Pins 24, 25	Hue Control Voltage		7.5		8.5	V

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

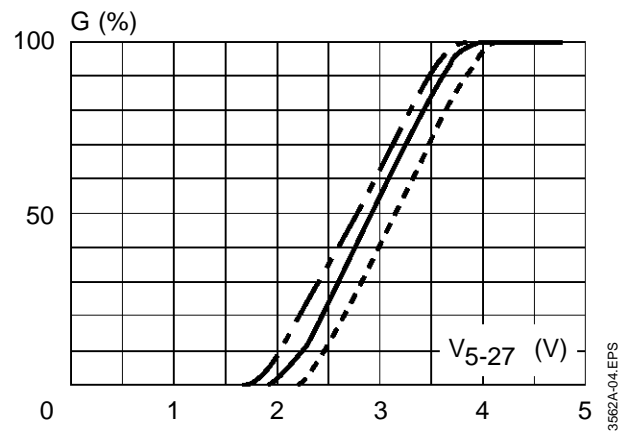
(5) All frequency variations are referred to 4.4 MHz carrier frequency.

3562A-05.TBL

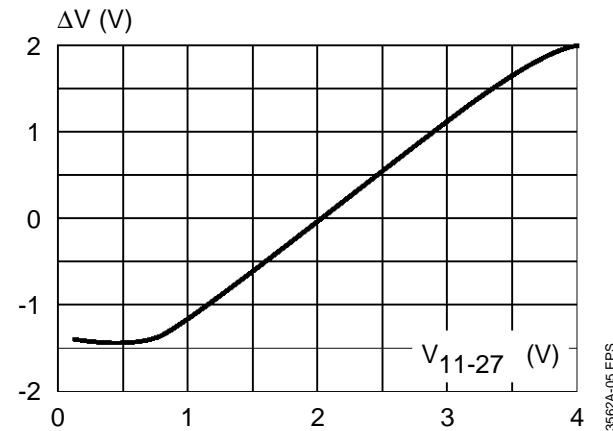
**Figure 1 : Contrast Control Voltage Range**



**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 ( $\Delta V$ ) versus control voltage ( $V_{11} - V_{12}$ ).**



**Figure 4 : Hue Control Voltage Range**

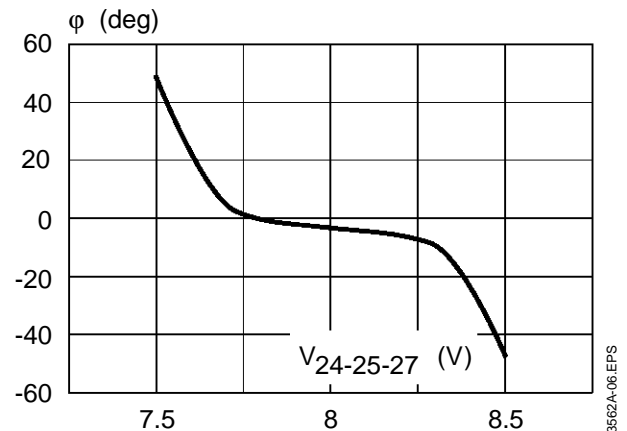
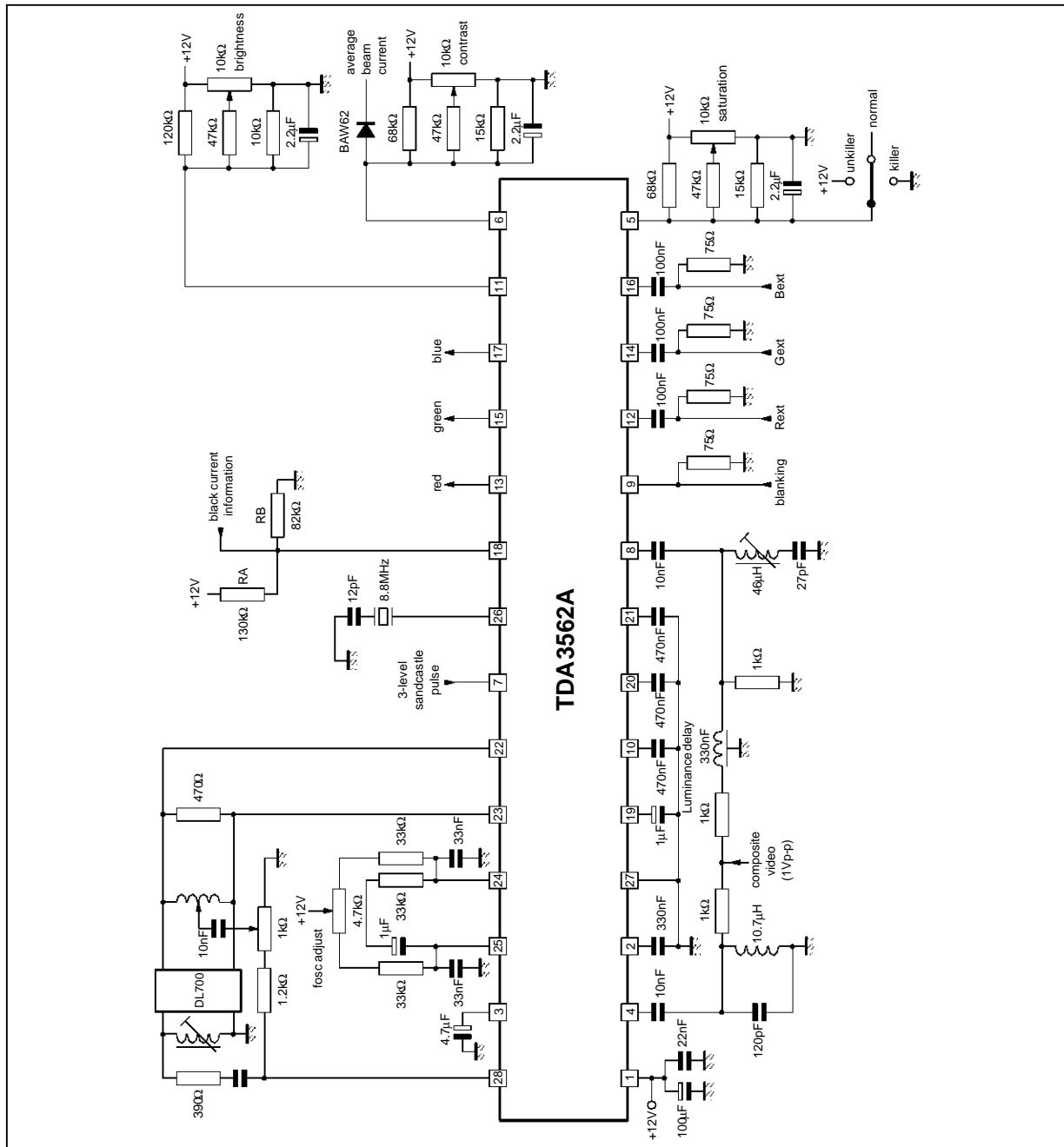
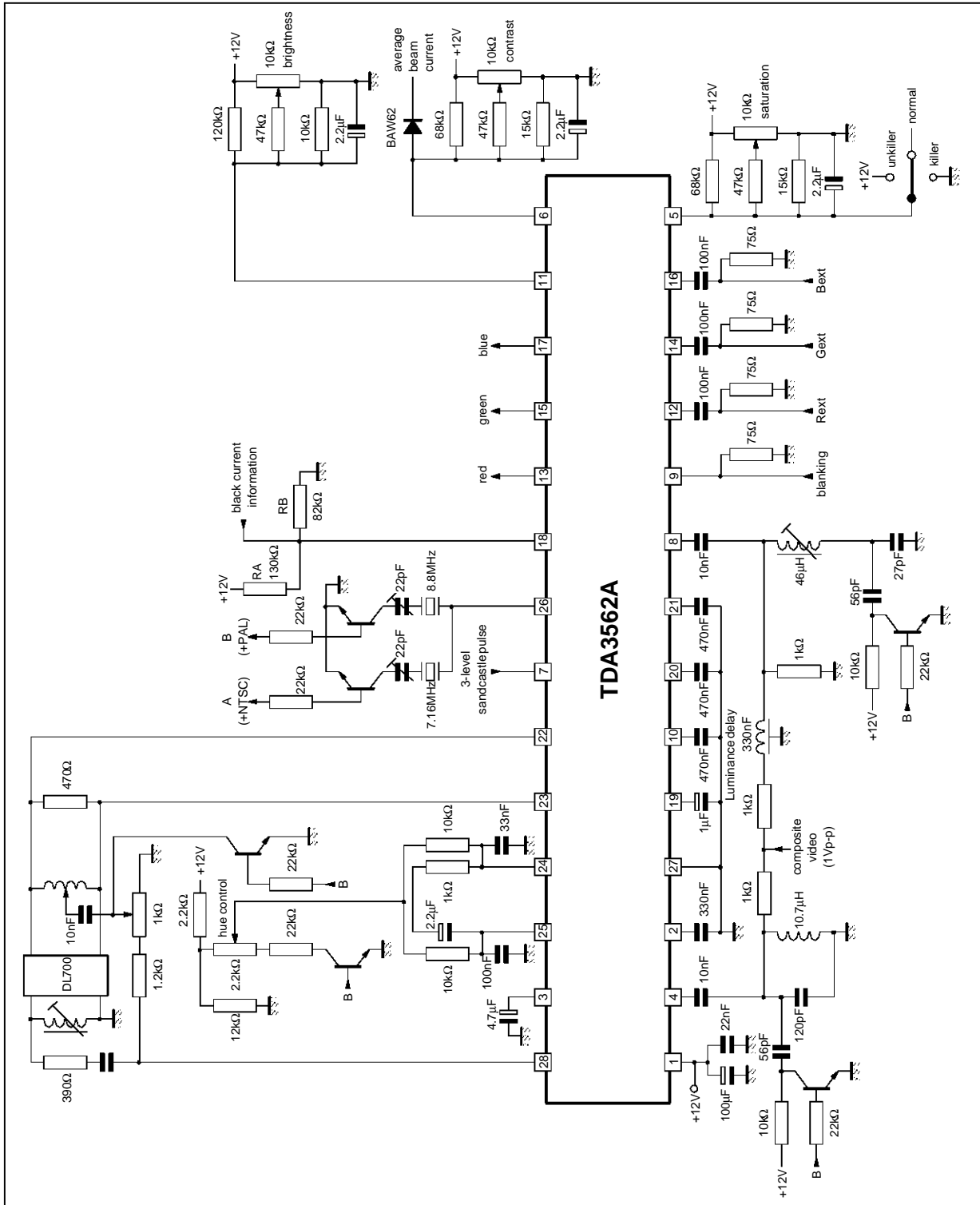


Figure 5 : Application Diagram showing the TDA3562A for a PAL Decoder



3562A-07.EPS

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

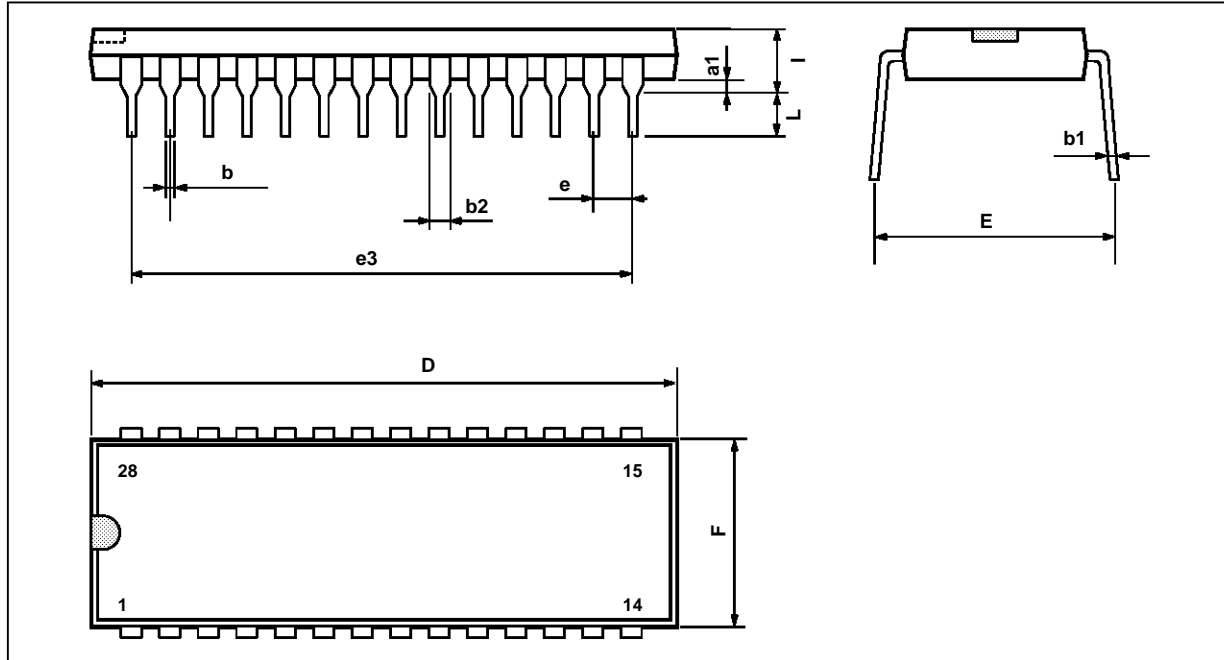


3562A-08.EPS



**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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