VIDEO PROCESSOR WITH RGB INSERTION

Technology: Bipolar

Features:

- o Capacitive coupling of colour difference-, Y input signals with black level clamping in the output stages
- o Linear saturation adjustment at the colour difference input stage
- o (G-Y)- and RGB matrix
- o Linear processing of inserted RGB-signals
- o Same black level for inserted as for matrixed signals
- o Linear contrast and brightness adjustment acting on inserted and matrixed signals

- o Peak white limiting
- o Horizontal and vertical blanking and black level clamping by a super sandcastle-pulse
- o White level adjustment by three electronic potentiometers
- o Emitter follower output stages as well as drivers for RGB-power stages
- o Three identical RGB channels

Case:

28-pin dual inline plastic

Absolute maximum ratings

Reference point Pin 24

Supply voltage	Pin 6	V_S	13.2	V
External voltages				
	Pin 10,21,22,23,25,26	V_{ext}	$0 \ldots V_S$	V
	Pin 16,19,20	V_{ext}	$0 \ldots 0.5 \ V_S$	V
	Pin 11	V_{ext}	$-0.5 \ldots +3$	V

No d.c. voltages allowed at Pin:

1,2,3,4,5,7,8,9,12,13,14,15,17,18,27,28

Currents	Pin 1,3,5	$-I_O$	3	mA
	Pin 19	I_I	10	mA
	Pin 20	I_I	5	mA
	Pin 25	$-I_I$	5	mA
Power dissipation $T_{amb} = 25\ °C$		P_{tot}	1.7	W
Junction temperature		T_j	125	°C
Ambient temperature range		T_{amb}	$- 0 \ldots + 70$	°C
Storage temperature range		T_{stg}	$-25 \ldots + 150$	°C
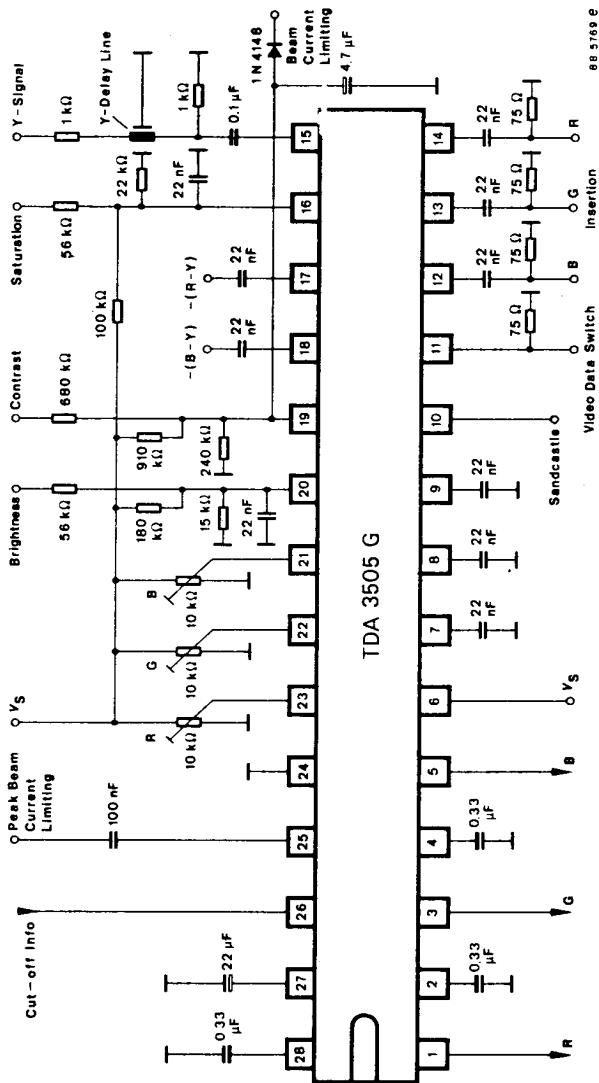
T1.2/1749.1288 E

TDA 3505 G

Application circuit

88 5769 e

Electrical characteristics

			Min.	Typ.	Max.

V_S = 12 V, Fig. 1, reference point Pin 24,
T_{amb} = 25 °C, unless otherwise specified

			Min.	Typ.	Max.
Supply voltage range	Pin 6	V_S	10.8		13.2 V
Supply current	Pin 6	I_S		85	mA

Colour difference stages

			Min.	Typ.	Max.
Input voltage -(B-Y)-signal Pin 18 for 75 % colour		V_{ipp}		1.33	V
Input resistance		R_i	100		kΩ
Input current during scanning		I_i			1 µA
Internal bias clamping voltage		V_I		4.2	V
Input voltage -(R-Y)-signal Pin 17 for 75 % colour		V_{ipp}		1.05	V
Input resistance		R_i	100		kΩ
Input current during, scanning		I_i			1 µA
Internal bias clamping voltage		V_I		4.2	V

Saturation

			Min.	Typ.	Max.
Control voltage range Pin 16 Δ_{Sat} = -20 ... +6 dB		V_I		2.1 ... 4.3	V
Control voltage for attenuation $d_{Sat} \geq 40$ dB		V_I			1.8 V
d_{Satnom} = 0 dB		V_I		3.1	V
Input current		I_I			20 µA

Luminance amplifier Pin 15

			Min.	Typ.	Max.
Comp. video signal amplitude		V_i		0.45	V
Input resistance		R_i	100		kΩ
Input current during scanning		I_i			1 µA
Internal bias voltage		V_I		2.7	V

TDA 3505 G

RGB-Channels		Min.	Typ.	Max.	
Signal switch Pin 11					
Signal insertion: "ON"	V_I	0.9		3	V
"OFF"	V_I			0.4	V
Input current	I_I		- 100 ... + 200		µA
RGB insertion inputs Pin 12,13,14					
Black-white input signal	V_{Ipp}		1		V
$V_{11} \leqq 0.4$ V [1])	V_I		4.3		V
$V_{11} \geqq 0.9$ V [1]) ..	V_I		4.4		V
Input currents during scanning	I_i			1	µA
Contrast Pin 19					
Control voltage range $\Delta_{Contr} = -18 ... + 3$ dB	V_I		2 ... 4.3		V
Control voltage $d_{Contr\ nom} = 0$ dB	V_I		3.6		V
$d_{Contr} = -6$ dB	V_I		2.8		V
Input current $V_{25} \gtrsim 6$ V	I_i			2	µA
Peak beam current limiting					
Internal bias voltage Pin 25	V_I		5.5		V
Input resistance Pin 25	R_i		10		kΩ
Contrast control input current $V_{25} = 5.1$ V Pin 19	I_I		17		mA
Brightness Pin 20					
Control voltage range	V_I	1		3	V
Input current	I_I			10	µA
Control voltage for nom. black level	V_I		2		V
Black level change in the control range w.r.t. the nom. black-white signal			± 50		%

100

	Min.	Typ.	Max.	

Internal signal limiting
w.r.t. the nom. black-white
signal and nom. black level

	Min.	Typ.	Max.	
in "black" direction		- 25		%
in "white" direction		120		%

White adjustment   Pin 21,22,23

AC amplification [2)]

			Min.	Typ.	Max.	
$V_{21} = V_{22} = V_{23} = 5.5$ V	G_v			100		%
$V_{21} = V_{22} = V_{23} = 0$ V	G_v			60		%
$V_{21} = V_{22} = V_{23} = 12$ V	G_v			140		%
Input resistance	R_i			20		$k\Omega$

RGB emitter follower outputs Pin 1,3,5

Nom.: Contr, Sat, white adjustment

Output signals

		Min.	Typ.	Max.	
Black-white	V_{Opp}		2		V
Black level without cut off control $V_2 = V_4 = V_{28} = 10$ V	V_0		6.7		V
Current of the internal current sources	I		3		mA
Cut off control range	ΔV_0		4.6		V

Cut off control   Pin 26

		Min.	Typ.	Max.	
Input voltage range	V_I	0		6.5	V
Voltage difference between cut off [3)] and leakage current levels	ΔV_I		0.5		V
Input voltage clamping during flyback	V_I		0		V

[1)] During clamping pulse time the inserted signals are clamped at the black level of the RGB signals matrixed by the colour difference - and Y-stages ($V_{11} \leqq 0.4$ V). At $V_{11} \geqq 0.9$ V the inserted signals are clamped at an internal bias voltage.

[2)] If the inputs for white adjustment (Pin 21, 22, 23) are not connected there is an internal bias voltage of 5.5 V.

[3)] Black level at the measured channel at nom. value where is in other two channels at ultra black level. By leakage current measure: all three channels gated at ultra black level.

TDA 3505 G

			Min.	Typ.	Max.	
Amplifications						
Nom.: Contr, Sat, white adjustment Reference point Pin 15						
Voltage amplification	Pin 1,3,5	G_v		16		dB
Frequency response B = 0 ... 5 MHz		d			3	dB
(R-Y)-signal, reference point Pin 17						
Voltage amplification Output R	Pin 1	G_v		6		dB
Frequency response B = 0 ... 2 MHz	Pin 1	d			3	dB
(B-Y)-signal, reference point Pin 18						
Voltage amplification Output B	Pin 5	G_v		6		dB
Frequency response B = 0 ... 2 MHz	Pin 5	d			3	dB
RGB insertion signals						
Reference point Pin 12,13,14						
Voltage amplification	Pin 1,3,5	G_v		6		dB
Frequency response B = 0 ... 6 MHz	Pin 1,3,5	d			3	dB
Sandcastle Detector Pin 10						
With 3 thresholds for separation of sandcastle pulse						
H- and V-pulses						
blanking to ultra black (-25 %)		V_i	2		3	V
H-pulse		V_i	4		5	V
Clamping pulse $t_p \geqq 3.5$ µs		V_i	7.5			V
No gating		V_i			1	V
Input current		$-I_I$			110	µA
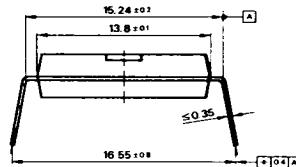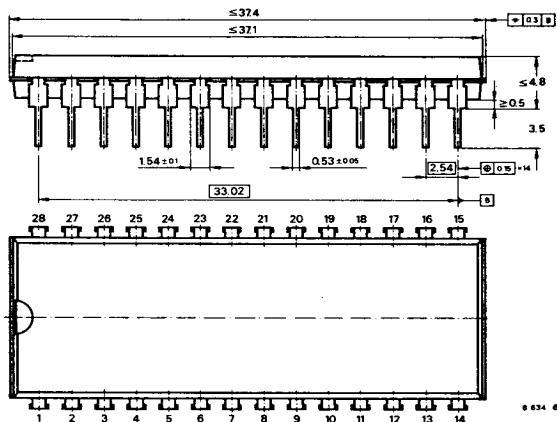
Dimensions in mm

≤37.4
≤37.1
≤4.8
≥0.5
3.5
1.54±0.1
0.53±0.05
2.54
33.02

15.24±0.2
13.8±0.1
≤0.35
16.55±0.8

28 27 26 25 24 23 22 21 20 19 18 17 16 15
1 2 3 4 5 6 7 8 9 10 11 12 13 14

Case:

JEDEC MO 015
DIP 28-leads