Video Processor with RGB Insertion

Technology: Bipolar

Features

- Capacitive coupling of color difference-, Y input signals with black level clamping in the output stages
- Linear saturation adjustment at the color difference input stage
- (G-Y)- and RGB matrix
- Linear processing of inserted RGB-signals
- Same black level for inserted as for matrixed signals
- Linear contrast and brightness adjustment acting on inserted and matrixed signals
- Peak white limiting
- Horizontal and vertical blanking and black level clamping by a super sandcastle-pulse
- White level adjustment by three electronic potentiometers
- Emitter follower output stages as well as drivers for RGB-power stages
- Three identical RGB channels

Case: 28-pin dual inline plastic

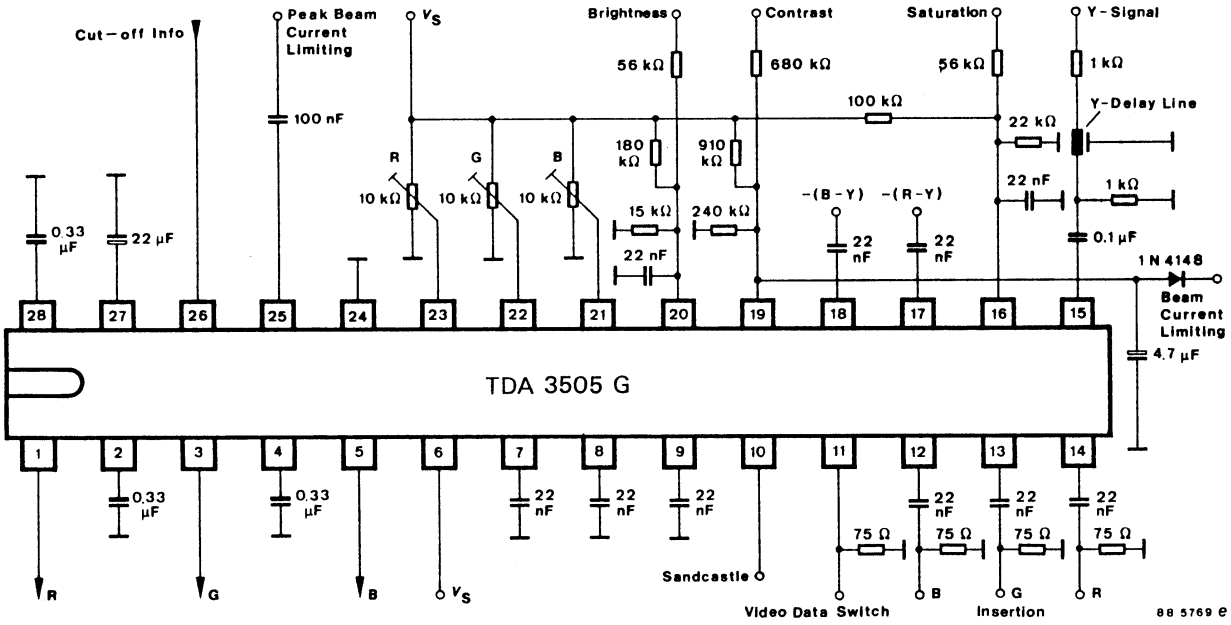


Figure 1 Application circuit

Absolute Maximum Ratings

Reference point Pin 24

Parameters		Symbol	Value	Unit
Supply voltage	Pin 6	V_S	13.2	V
External voltages	Pins 10, 21, 22, 23, 25 and 26 Pins 16, 19 and 20 Pin 11 No dc voltages allowed at Pins: 1 to 5, 7 to 9, 12 to 15, 17, 18, 27 and 28	V_{ext}	0 to V_S 0 to 0.5 V_{SS} –0.5 to +3	V
Currents	Pins 1, 3 and 5 Pin 19 Pin 20 Pin 25	$-I_o$ I_I I_I $-I_I$	3 10 5 5	mA mA mA mA
Power dissipation	T_{amb} = 25°C	P_{tot}	1.7	W
Junction temperature		T_j	125	°C
Ambient temperature range		T_{amb}	0 to +70	°C
Storage temperature range		T_{stg}	–25 to +150	°C

Electrical Characteristics

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

Parameters	Test Conditions / Pins	Symbol	Min.	Typ.	Max.	Unit
Supply voltage	Pin 6	V_S	10.8		13.2	V
Supply current	Pin 6	I_S		85		mA
Color difference stages						
Input voltage	–(B-Y)-signal for 75% color Pin 18 –(R-Y)-signal for 75% color Pin 17	V_{ipp}		1.33 1.05		V
Input resistance	Pins 17 and 18	R_i	100			kΩ
Input current during scanning	Pins 17 and 18	I_i			1	µA
Internal bias clamping voltage	Pins 17 and 18	V_I		4.2		V
Saturation						
Control voltage range	Δ_{Sat} = –20 to +6 dB Pin 16	V_I		2.1 to 4.3		V
Control voltage for attenuation	$d_{Sat} \geq$ 40 dB d_{satnom} = 0 dB	V_I		3.1	1.8	V
Input current		I_I			20	µA

Parameters	Test Conditions / Pins	Symbol	Min.	Typ.	Max.	Unit
Luminance amplifier	Pin 15					
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
RGB-Channels, signal switch pin 11						
Signal insertion	"ON" "OFF"	V_I	0.9		3 0.4	V
Input current		I_I		–100 to + 200		µA
RGB insertion inputs	Pins 12, 13 and 14					
Black-white input signal	 $V_{11} \leq 0.4$ V [1] $V_{11} \geq 0.9$ V [1]	V_{Ipp} V_I V_I		1 4.3 4.4		V
Input currents during scanning		I_i			1	µA
Contrast	Pin 19					
Control voltage range	Δ_{Contr} = –18 to +3 dB	V_I		2 to 4.3		V
Control voltage	$d_{Contr\ nom}$ = 0 dB $d_{Contr\ nom}$ = –6 dB	V_I		3.6 2.8		V
Input current	$V_{25} \geq 6$ 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		%
Internal signal limiting w.r.t. the nom. black-white signal and nom. black level	"black" direction "white" direction			–25 120		%
White adjustment	Pins 21, 22 and 23					
AC amplification [2]	$V_{21,22,23}$ = 5.5 V = 0 V = 12 V	G_v		100 60 140		%
Input resistance		R_i		20		kΩ

Parameters	Test Conditions / Pins	Symbol	Min.	Typ.	Max.	Unit
RGB emitter follower outputs Pins 1, 3 and 5						
Nom.: Contr, Sat, white adjustment Output signals	Black-white	V_{0pp}		2		V
Black level without cut off control	$V_{2,4,28}$ = 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						
Input voltage range		V_I	0		6.5	V
Voltage difference between cut off and leakage current levels [3]		ΔV_I		0.5		V
Input voltage clamping during flyback		V_I		0		V
Amplifications, nom.: Contr, Sat, white adjustment, reference point Pin 15						
Voltage amplification	Pins 1, 3 and 5	G_v		16		dB
Frequency response	B = 0 to 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 to 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 to 2 MHz Pin 5	d			3	dB
RGB insertion signals, reference point Pins 12, 13 and 14						
Voltage amplification	Pins 1, 3 and 5	G_v		6		dB
Frequency response	B = 0 to 6 MHz Pins 1, 3 and 5	d			3	dB
Sandcastle detector with 3 thresholds for separation of sandcastle pulse, pin 10						
H- and V-pulses blanking to ultra black (–25 %) H-pulse		V_i V_i	2 4		3 5	V V
Clamping pulse	$t_p \geq 3.5$ µs	V_I	7.5			V
No gating		V_I			1	V
Input current		$-I_I$			110	µA

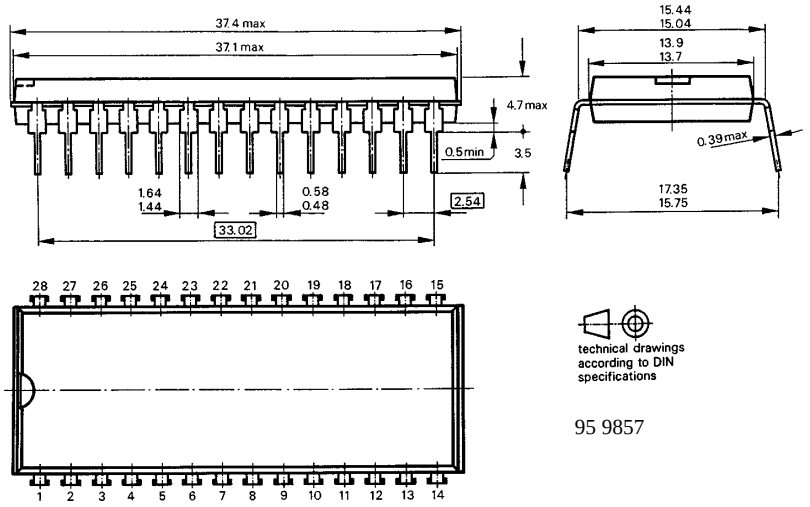
[1] During clamping pulse time the inserted signals are clamped at the black level of the RGB signals matrixed by the color difference – and Y-stages ($V_{11} \leq 0.4$ V). At $V_{11} \geq 0.9$ V the inserted signals are clamped at an internal bias voltage.

[2] If the inputs for white adjustment (Pins 21, 22 and 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.

Dimensions in mm

Package: DIP 28



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