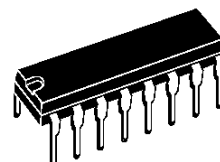


RGB SWITCHING CIRCUIT

- 25MHz BANDWIDTH
- CROSSTALK : 55dB
- SHORT CIRCUIT TO GROUND OR V_{CC} PROTECTED
- ANTI SATURATION GAIN CHANGING
- VIDEO SWITCHING



DIP16
(Plastic Package)

ORDER CODE : TEA5114A

DESCRIPTION

This integrated circuit provides RGB switching allowing connections between peri TV plug, internal RGB generator and video processor in a TV set.

The input signal black level is tied to the same reference voltage on each input in order to have no differential voltage when switching two RGB generators.

An AC output signal higher than 2 Vpp makes gain going slowly down to 0dB to protect the TV set video amplifier from saturation.

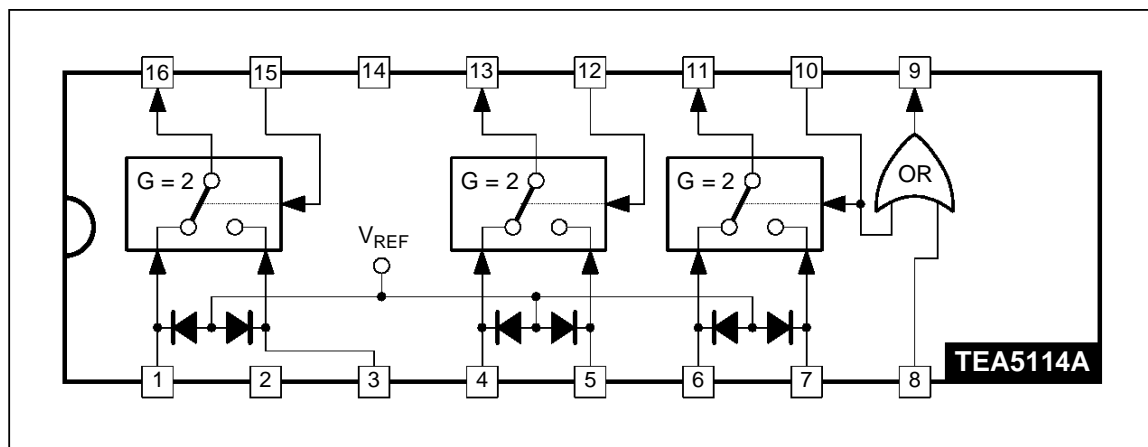
Fast blanking output is a logical OR between FB1 (Pin 8) and FB2 (Pin 10).

PIN CONNECTIONS

R_1 INPUT	1	16	R OUTPUT
GND	2	15	FB_R INPUT
R_2 INPUT	3	14	V_{CC}
G_1 INPUT	4	13	G OUTPUT
G_2 INPUT	5	12	FB_G INPUT
B_1 INPUT	6	11	B OUTPUT
B_2 INPUT	7	10	$FB_2 + FB_B$ INPUT
FB_1 INPUT	8	9	FB OUTPUT

5114A-01.EPS

BLOCK DIAGRAM



5114A-02.EPS

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CC}	Supply Voltage	18	V
T_j	Junction Temperature	- 40 to 150	°C
T_{stg}	Storage Temperature	- 40 to 150	°C
Z_L	Minimum Load Resistor on Each Output $V_{CC} = 12\text{ V}$ $V_{CC} = 10\text{ V}$	300 150	Ω
T_{amb}	Operating Ambient Temperature	0 to 70	°C

5114A-01.TBL

THERMAL DATA

Symbol	Parameter	Value	Unit
$R_{th(j-a)}$	Junction-ambient Thermal Resistance	80	°C/W

5114A-02.TBL

ELECTRICAL OPERATING CHARACTERISTICS

 $T_{amb} = 25\text{ °C}$, $V_{CC} = 12\text{ V}$, $Z_L\text{ (RGB)} = 300\text{ }\Omega$ $V_{CC} = 10\text{ V}$, $Z_L\text{ (RGB)} = 150\text{ }\Omega$ (unless otherwise specified)

Symbol	Parameter	Min.	Typ.	Max.	Unit
V_{CC}	Supply Voltage	9	12	13.2	V
I_{CC}	Supply Current without Load $V_{CC} = 12\text{ V}$	20	30	40	mA
V_{ON}	Black Level Output Voltage (on pins 11, 13, 16 square wave output signal 1 kHz - 1 Vpp) $T_j = 25\text{ °C}$ (5mV/°C typical variation)	1.8	2.5	2.9	V
G_{RGB}	Gain of Each Channel Pins 11, 13, 16 $F = 1\text{ MHz}$, $V_{in} = 0.5\text{ V}_{pp}$	5	5.5	6	dB
B_{RGB}	Bandwidth (- 3 dB) $V_O = 1\text{ V}_{pp}$	18	22		MHz
V_{GC}	Threshold Output Voltage for Gain Changing (- 0.5 dB)	2			V_{pp}
V_R	Video Rejection between Two Inputs R, G or B $F = 1\text{ MHz}$ Sinus $V_O = 1\text{ V}_{pp}$	50	55		dB
Z_{IRGB}	Input Impedance on Pins 1, 3, 4, 5, 6, 7 $V_O = 1\text{ V}_{pp}$	10			k Ω
Z_{ORGB}	R, G, B Output Impedance on Pins 11, 13, 16			15	Ω
T_{FB}	FB rising and falling time on pin 9. 1 Vpp Input Voltage Pins 8, 10		20		ns
V_{IHFB}	FB High Level Input Voltage on Pins 8, 10, 12, 15	1		4	V
V_{ILFB}	FB Low Level Input Voltage on Pins 8, 10, 12, 15	0		0.4	V
Z_{IFB}	Input Impedance on Pins 8, 10, 12, 15	0.7	1	1.3	k Ω
V_{OHFB}	High Level FB Output Voltage (pin 9) Input 1 V on Pins 8, 10	0.8	1	1.2	V
V_{OLFB}	Low Level FB Output (pin 9) Input 0 V on Pins 8, 10			0.3	V
Z_{OFB}	FB Output Impedance Pin 9 High Level			30	Ω
T_{dFBRGB}	Delay Time between FB Inputs and R, G, B Switching		20		ns

5114A-03.TBL

The diagram illustrates the internal structure of the TEA5114A IC, which is a monolithic integrated circuit. The chip is shown with its 16 pins, numbered 1 through 16. The internal circuitry includes a central core with various functional blocks and control lines.

Inputs: The inputs are labeled R1, R2, G1, G2, B1, and B2, located at the bottom of the chip. They are connected to the internal circuitry through a network of resistors and capacitors. The input section includes a 6x 75Ω resistor network and a 6x 47nF capacitor network.

Outputs: The outputs are labeled R, G, and B, located at the top of the chip. They are connected to the internal circuitry through a network of resistors and capacitors. The output section includes a 3x ZL resistor network.

Control and Timing: The chip includes several control and timing pins:

- FAST BLANKING INPUT:** Pin 8, connected to the internal circuitry.
- FAST BLANKING OUTPUT:** Pin 9, connected to the internal circuitry.
- SWITCHES CONTROL:** Pins 10, 11, and 12, connected to the internal circuitry.
- B + FB2:** Pin 13, connected to the internal circuitry.
- G:** Pin 14, connected to the internal circuitry.
- R:** Pin 15, connected to the internal circuitry.

Power and Biasing: The chip is powered by a Vcc supply (Pin 16) and a 1μF capacitor. A 100nF capacitor is connected to the internal circuitry. The chip also includes a 6x 47nF capacitor network and a 6x 75Ω resistor network.

Internal Structure: The internal structure of the TEA5114A is shown with various functional blocks and control lines. The chip is divided into several sections, including the input section, the central core, and the output section. The internal circuitry includes a network of resistors, capacitors, and transistors.

$V_{CC} = 12V$ $Z_L \geq 300\Omega$
 $V_{CC} = 10V$ $Z_L \geq 150\Omega$

TO VIDEO PROCESSOR

Typical output Signal 1Vpp

$0.1\mu F$

Z_L

V_{CC}

$4.7\mu F$

$G = 2$

V_{REF}

OR

TEA5114A

6 x 100nF

39Ω

39Ω

R1

G1

B1

FB1

1st GENERATOR

B2

G2

R2

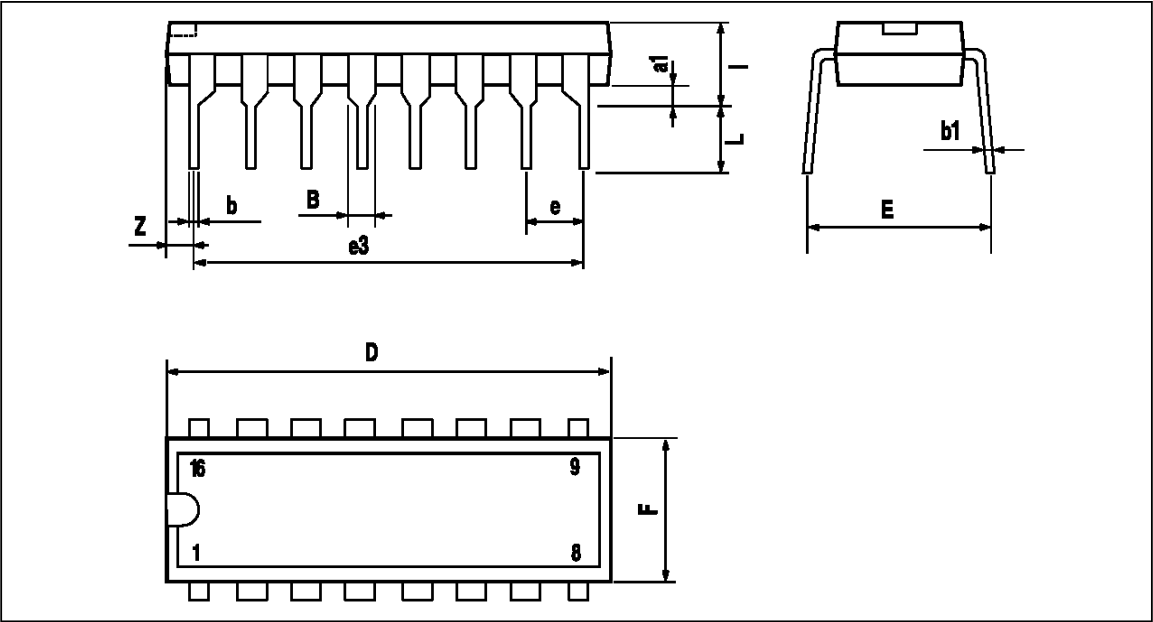
2nd GENERATOR

39Ω

39Ω

Peritelevision plug standard input value 1Vpp

PACKAGE MECHANICAL DATA
16 PINS – PLASTIC DIP



Dimensions	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
a1	0.51			0.020		
B	0.77		1.65	0.030		0.065
b		0.5			0.020	
b1		0.25			0.010	
D			20			0.787
E		8.5			0.335	
e		2.54			0.100	
e3		17.78			0.700	
F			7.1			0.280
I			5.1			0.201
L		3.3			0.130	
Z			1.27			0.050

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