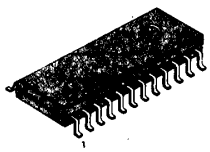
RGB ENCODER

The KA2197 is a monolithic integrated circuit designed for RGB encoder of video system. This device contains matrix of R-Y/B-Y, modulator, pulse generator, regulator and built in BPF of chroma and delay line of luminance and Y/C output using S-VHS system.
The KA2197D is suitable for video equipment.

24-SOP



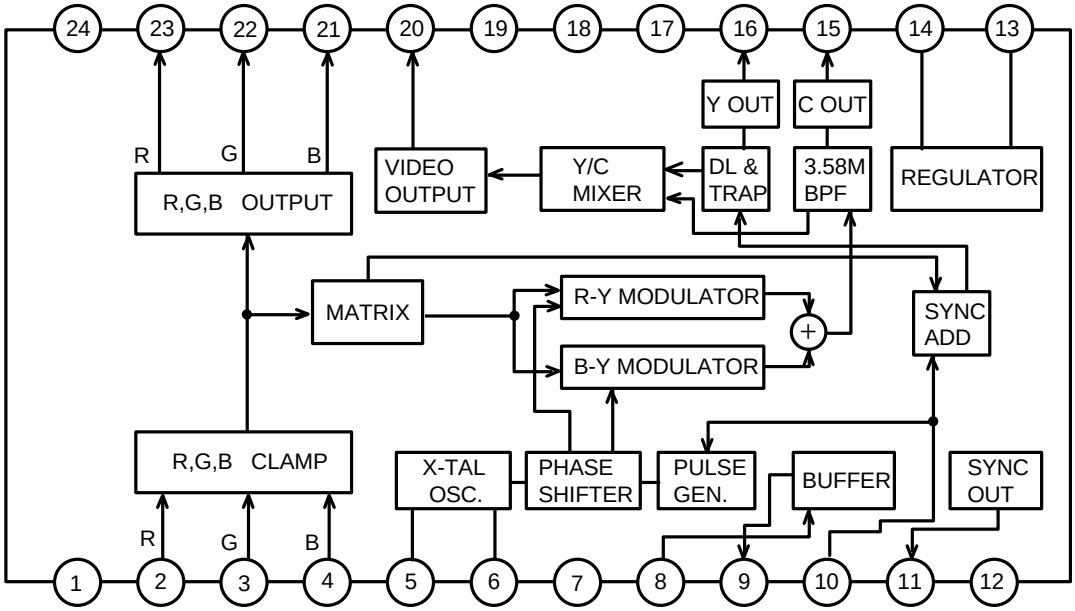
FUNCTIONS

- Regulator
- Mixer of R-Y, B-Y
- Modulator
- Pulse generator
- Audio buffer
- X-tal oscillator
- Clamp circuit
- BPF & D.L circuit
- Y/C output

ORDERING INFORMATION

Device	Package	Operating Temperature
KA2197D	24SOP	-20°C ~+70°C

BLOCK DIAGRAM



PIN CONFIGURATION

Pin No.	DESCRIPTION	Pin NO	DESCRIPTION
1	GND 1	13	REGULATOR CURRENT SINK
2	RED INPUT	14	2V REGULATOR OUTPUT
3	GREEN INPUT	15	C OUT
4	BLUE INPUT	16	Y OUT
5	X-TAL OUT	17	N.C
6	X-TAL IN	18	N.C
7	N.C	19	VCC 2
8	AUDIO IN	20	COMPOSITE VIDEO OUTPUT
9	AUDIO OUT	21	BLUE OUTPUT
10	COMPOSITE SYNC INPUT	22	GREEN OUTPUT
11	COMPOSITE SYNC OUTPUT	23	RED OUTPUT
12	VCC 1	24	GND 2

* VCC 1, GND 1 : EXCEPT OUTPUT STAGE
* VCC 2, GND 2 : OUTPUT STAGE

ABSOLUTE MAXIMUM RATINGS (TA=25°C)

Characteristic	Symbol	Value	Unit
Supply Voltage	V_{CC}	10	V
Power dissipation	P_D	1250	mW
Operating Temperature	T_{OPR}	-20~+70	°C
Storage Temperature	T_{STG}	-55~+150	°C

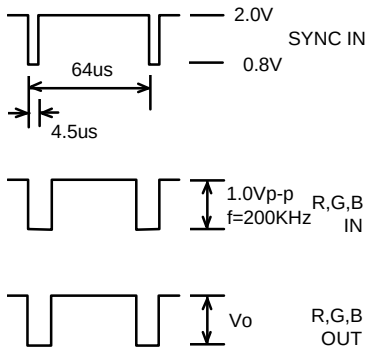
ELECTRICAL CHARACTERISTICS(T_A=25°C, V_{CC}=5V)

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Supply Current 1	I_{CC1}	No Signal input	29	39	49	mA
Supply Current 2	I_{CC2}	No Signal input	6.0	11	16	mA
R Output Voltage	V_O	R_{IN} =1 V_{P-P}	0.64	0.71	0.78	V_{P-P}
G Output Voltage	V_O	G_{IN} =1 V_{P-P}	0.64	0.71	0.78	V_{P-P}
B Output Voltage	V_O	B_{IN} =1 V_{P-P}	0.64	0.71	0.78	V_{P-P}
R Frequency Response	f_C	R, G, B f = 200 KHz	5	-	-	MHz
G Frequency Response	f_C	-dB POINT	5	-	-	MHz
B Frequency Response	f_C		5	-	-	MHz
Sync. Level	V_{OS}	Condition:R, G, B and	0.26	0.29	0.33	V
R 100% Y Level	V_O	C Sync. input	0.19	0.21	0.25	V
G 100% Y Level	V_O	Measure Composite	0.38	0.42	0.48	V
B 100% Y Level	V_O	Video Output	0.07	0.08	0.09	V

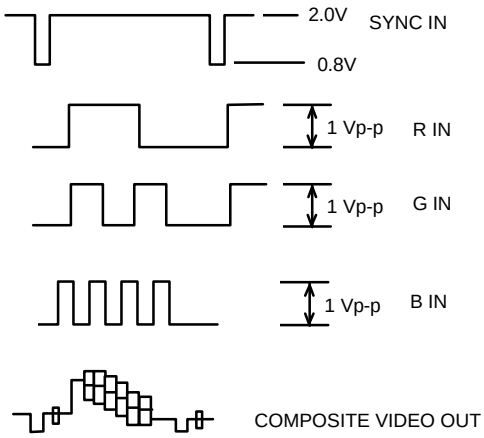
Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
While 100% Y level	V_O	Composite Video Output	0.64	0.71	0.82	V
Differiential Gain	DG		-	-	3.0	%
Differiential Phase	DP		-	-	3.0	deg
Burst Level	V_{OB}		0.22	0.29	0.34	V_{P-P}
R Chroma Ratio	R/BN		2.8	3.15	3.5	times
G Chroma Ratio	G/BN		2.65	2.95	3.25	times
B Chroma Ratio	B/BN		2.01	2.24	2.57	times
R Phase	SR		94	104	114	deg
G Phase	SG		231	241	251	deg
B Phase	SB		337	347	357	deg
Burst Width	T_{WB}		2.5	2.75	3.6	us
Burst Position	T_{DB}		0.45	0.5	0.75	us
Carrier Leakage	VI		-	-	30	mV_{P-P}
C Sync. Output Level	V_{OS}		0.2	0.29	0.4	V_{P-P}
Audio Buffer Gain	G_A	$1V_{P-P}$, f=1KHz	-1.0	0	1.0	dB
Audio Freq. Response	F_A	-3dB	30	-	-	KHz
Audio Distortion	THD	$1V_{P-P}$, f=1KHz	-	-	1.0	%
Sync. Level	Y(CS)	Y OUTPUT	0.26	0.29	0.33	V_{P-P}
R 100% Y Level	Y(R)		0.19	0.21	0.25	V
G 100% Y Level	Y(G)		0.38	0.42	0.48	V
B 100% Y Level	Y(B)		0.07	0.08	0.09	V
White 100% Y Level	Y(W)		0.64	0.71	0.82	V
Burst Level	C(BN)	C OUTPUT	0.22	0.29	0.34	V_{P-P}
R Chroma ratio	C(R/BN)		2.80	3.15	3.50	time
G Chroma ratio	C(G/BN)		2.65	2.95	3.25	time
B Chroma ratio	C(B/BN)		2.01	2.24	2.47	time

TEST WAVEFORM

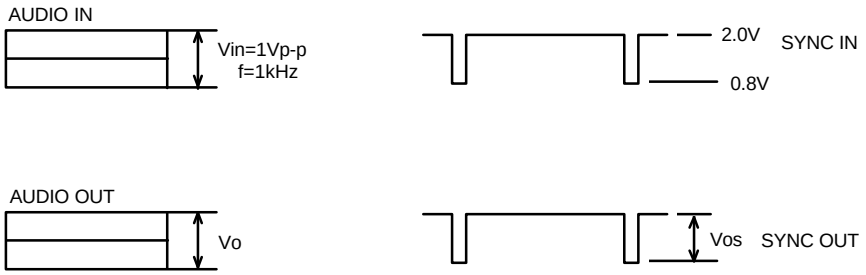
*R,G,B OUT



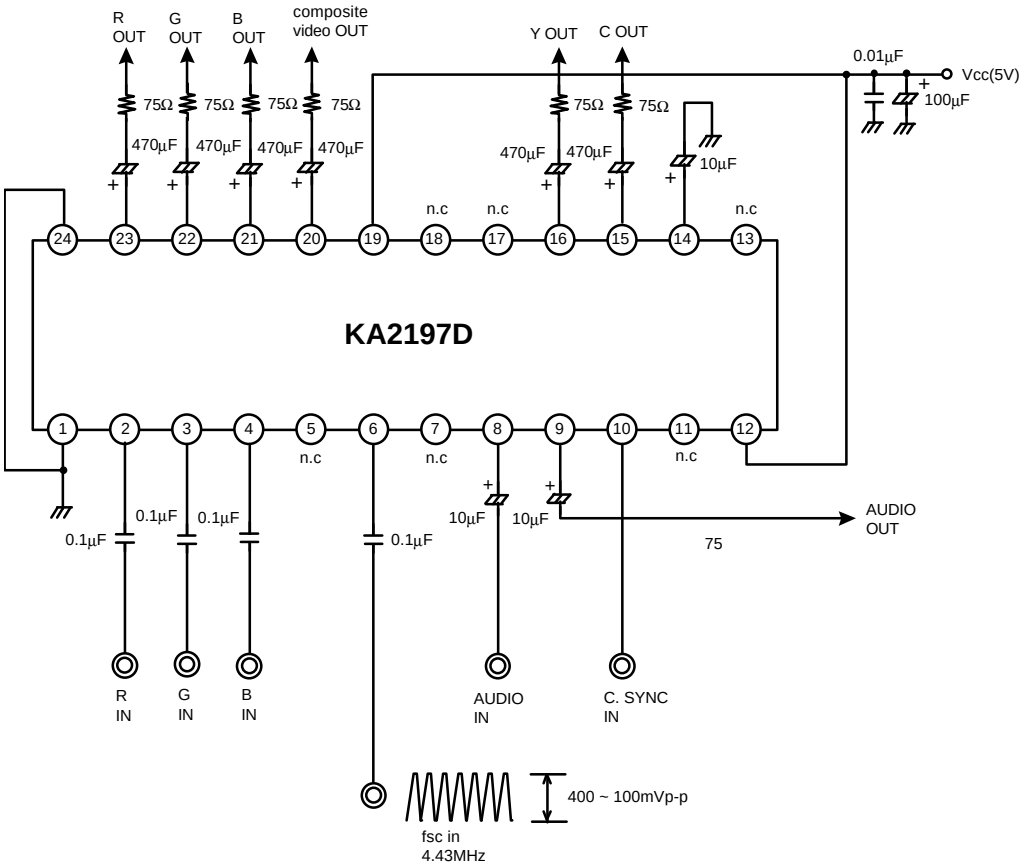
* COMPOSITE VIDEO OUT



*AUDIO OUT



APPLICATION CIRCUIT



** only using external fsc input