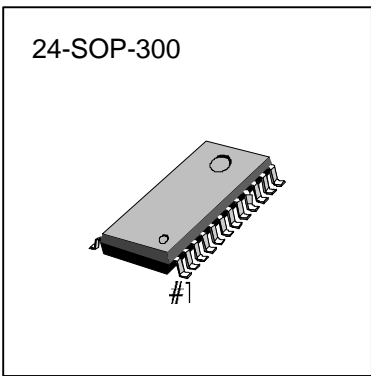


**RGB ENCODER FOR PAL/NTSC**

The KA2198BD is a monolithic circuit designed for RGB encoder of video system. This device provides encoding system of PAL and NTSC video signal. The KA2198BD contains matrix of R-Y/B-Y, modulator, pulse generator, regulator, built in BPF of chroma and delay line of luminance, Y/C output using S-VHS system. It is suitable for video equipment.



**FUNCTIONS**

- Regulator
- Mixer of R-Y, B-Y
- Modulator
- Pulse generator (ECL circuit)
- Audio buffer
- Clamp circuit
- Y-TRAP filter
- BPF & D.L circuit
- Y/C output driver

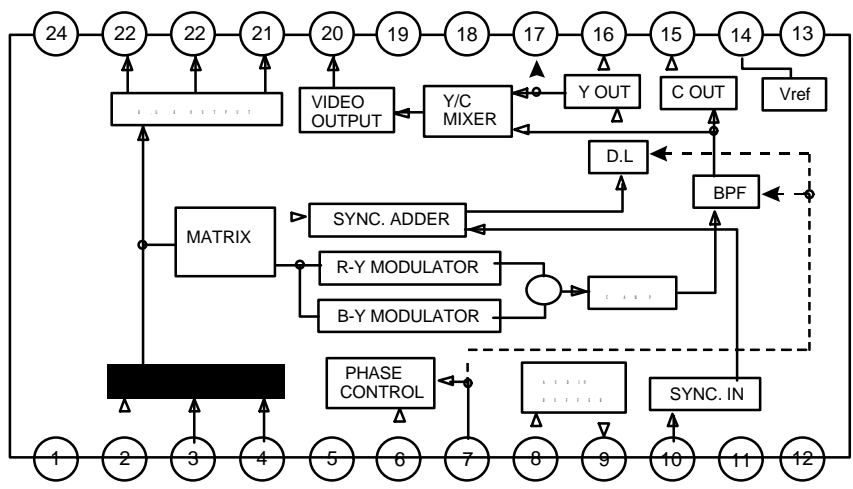
**ORDERING INFORMATION**

Device	Package	Operating Temperature
KA2198BD	24-SOP-300	-20°C~+65°C

**FEATURES**

- Lower operating voltage :  $V_{CC} = 5V$
- Stabilized bias condition in regulator
- Available PAL/NTSC system
- Included 75 ohm driver ( RGB output, composite video output, Y/C output)
- External fsc ( color sub-carrier)
- Include BPF & delay line
- Audio buffer circuit
- R-Y, B-Y modulator
- Available S-VHS
- High frequency response of luminance

**BLOCK DIAGRAM**



## PIN CONFIGURATION

Pin No.	DESCRIPTION	Pin No.	DESCRIPTION
1	GND1	13	N.C
2	R INPUT	14	2V REGULATOR
3	G INPUT	15	C.OUT
4	B INPUT	16	Y OUT
5	N.C	17	Y-TRAP FILTER
6	fsc INPUT	18	N.C
7	NTSC/PAL SW	19	VCC2
8	AUDIO IN	20	COMPOSITE VIDEO OUTPUT
9	AUDIO OUT	21	B OUTPUT
10	COMPOSITE SYNC. IN	22	G OUTPUT
11	N.C	23	R OUTPUT
12	VCC1	24	GND2

(note)  $V_{CC1}$ , GND1 : except output stage  
 $V_{CC2}$ , GND2 : output stage supply voltage

ABSOLUTE MAXIMUM RATINGS ( $T_A=25^\circ\text{C}$ )

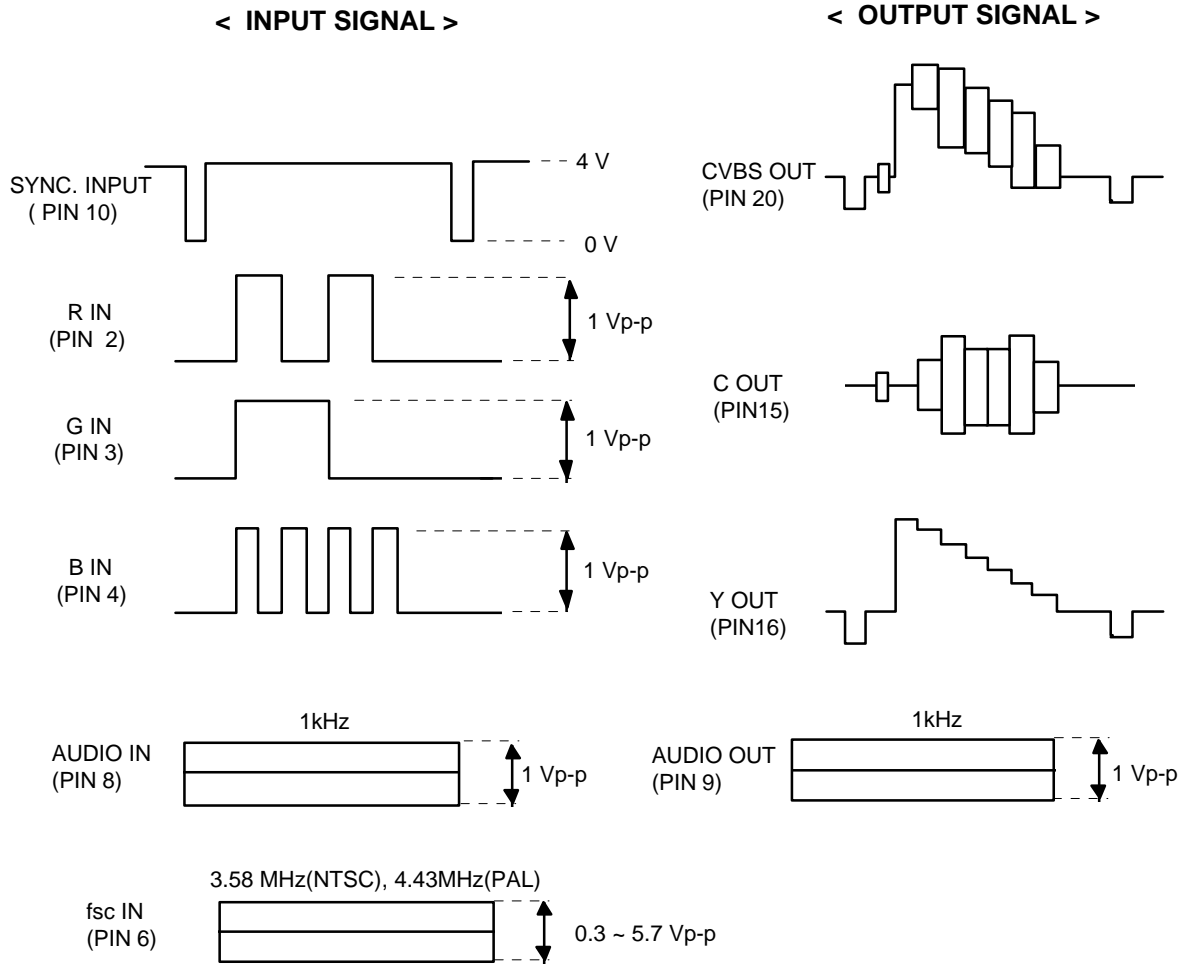
Characteristics	Symbol	Value	Unit
MAX Supply Voltage	$V_{CCMAX}$	10	V
Power Dissipation	$P_D$	1250	mW
Operating Temperature	$T_{OPR}$	-20~+70	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-55~+150	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS ( $T_A=25^\circ\text{C}$ ,  $V_{CC}=5\text{V}$ )

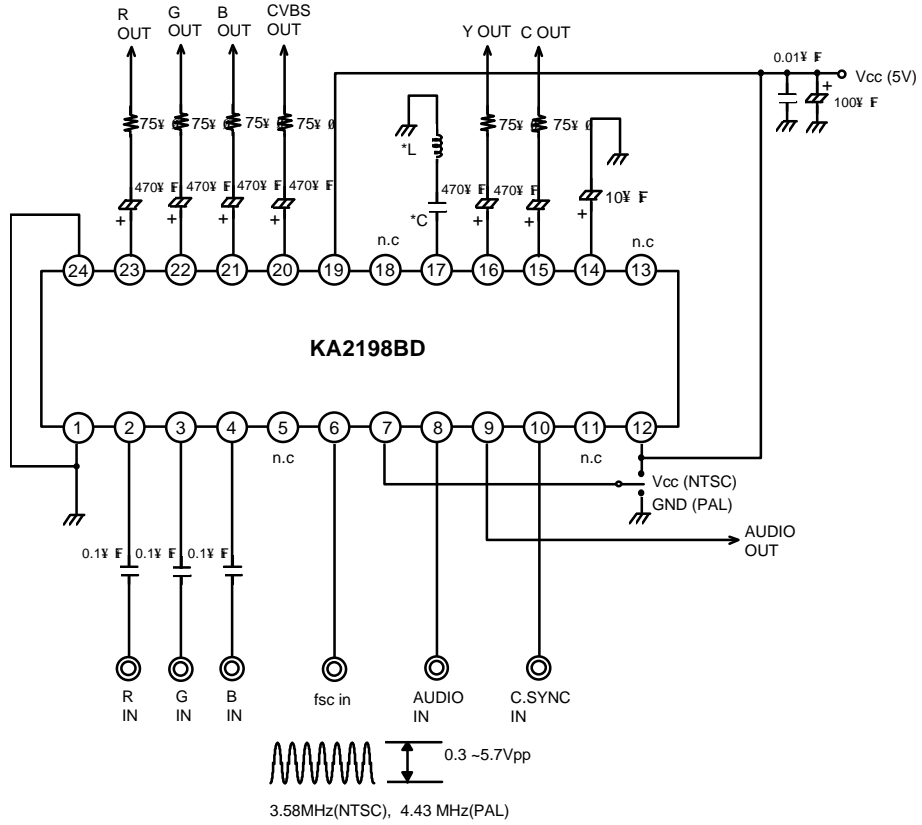
Characteristics	Symbol	Test Conditions	Min	Typ	Max	Unit
Supply Current 1	$I_{CC1}$	No signal input	25	39	49	mA
Supply Current 2	$I_{CC2}$		5.0	11	16	mA
R Output Voltage	$V_{OR}$	R,G,B input signals $V_{in}=1.0 V_{P-P}$ , $f=200\text{KHz}$	0.64	0.71	0.78	$V_{P-P}$
G Output Voltage	$V_{OG}$		0.64	0.71	0.78	$V_{P-P}$
B Output Voltage	$V_{OB}$		0.64	0.71	0.78	$V_{P-P}$
R Frequency Response	$R_{FC}$	R,G,B input signals $V_{in}=1.0 V_{P-P}$ , $f=200\text{KHz}$ (-3dB point)	5.0	-	-	MHz
G Frequency Response	$G_{FC}$		5.0	-	-	MHz
B Frequency Response	$B_{FC}$		5.0	-	-	MHz
Y Frequency Response	$Y_{FCN}$	Y OUT (-3dB point)	6.0	-	-	MHz
R 100% Y Level Ratio(CVBS)	$V_{YR1}$	R,G,B input signals $V_{in}=1.0 V_{P-P}$ (100% R,G,B / 100% Y)	0.19	0.21	0.25	-
G 100% Y Level Ratio(CVBS)	$V_{YG1}$		0.38	0.42	0.48	-
B 100% Y Level Ratio(CVBS)	$V_{YB1}$		0.07	0.08	0.09	-

Characteristics	Symbol	Test Conditions	Min	Typ	Max	Unit
100% Y Level ( CVBS )	V <sub>YW1</sub>		0.64	0.71	0.82	V <sub>P-P</sub>
Sync. Level 1 ( CVBS )	V <sub>SNC1</sub>		0.26	0.29	0.33	V <sub>P-P</sub>
R 100% Y Level Ratio ( Y OUT )	V <sub>YR2</sub>	R,G,B input signal V <sub>in</sub> =1.0V <sub>P-P</sub> (100% R,G,B / 100% Y)	0.19	0.21	0.25	-
G 100% Y Level Ratio ( Y OUT )	V <sub>YG2</sub>		0.38	0.42	0.48	-
B 100% Y Level Ratio ( Y OUT )	V <sub>YB2</sub>		0.07	0.08	0.09	-
100% Y Level ( Y OUT )	V <sub>YW2</sub>		0.64	0.71	0.82	V <sub>P-P</sub>
Sync. Level 1 ( Y OUT )	V <sub>SNC2</sub>		0.26	0.29	0.33	V <sub>P-P</sub>
Audio Buffer Gain	G <sub>a</sub>	Audio Input 100KHz, 1V <sub>P-P</sub>	-1.0	1.0	1.1	dB
Audio Frequency Response	F <sub>a</sub>		30	-	-	KHz
Audio Distortion	THD		-	-	1.0	%
<b>NTSC mode</b>						
R Chroma Ratio 1 ( CVBS )	R/B1	fsc input 3.58MHz, 400mV <sub>P-P</sub> ( check CVBS out )	2.70	3.15	3.50	-
G Chroma Ratio 1 ( CVBS )	G/B1		2.55	2.95	3.25	-
B Chroma Ratio 1 ( CVBS )	B/B1		1.90	2.24	2.47	-
Burst level 1 ( CVBS )	Vob1		0.20	0.29	0.34	V <sub>P-P</sub>
R Chroma Ratio 2 ( C OUT )	R/B2	fsc input 3.58MHz, 400mV <sub>P-P</sub> ( check C out )	2.70	3.15	3.50	-
G Chroma Ratio 2 ( C OUT )	G/B2		2.55	2.95	3.25	-
B Chroma Ratio 2 ( C OUT )	B/B2		1.90	2.24	2.47	-
Burst level 2 ( C OUT )	Vob2		0.20	0.29	0.34	V <sub>P-P</sub>
R Phase ( CVBS )	SR <sub>N</sub>	fsc input 3.58MHz, 400mV <sub>P-P</sub> ( check CVBS out )	94	104	114	deg
G Phase ( CVBS )	SG <sub>N</sub>		231	241	251	deg
B Phase ( CVBS )	SB <sub>N</sub>		337	347	357	deg
Burst Width	T <sub>WN</sub>		2.5	2.75	3.6	usec
Burst Position	T <sub>PN</sub>		0.45	0.5	0.75	usec
Carrier Leakage	CL	CVBS out, Y out	-	-	0.03	V <sub>P-P</sub>
<b>PAL mode</b>						
R Chroma Ratio 3 ( CVBS )	R/B3	fsc input 3.58MHz, 400mV <sub>P-P</sub> ( check CVBS out )	2.70	3.15	3.50	-
G Chroma Ratio 3 ( CVBS )	G/B3		2.55	2.95	3.25	-
B Chroma Ratio 3 ( CVBS )	B/B3		1.90	2.24	2.47	-
Burst level 3 ( CVBS )	Vob3		0.20	0.29	0.34	V <sub>P-P</sub>
R Chroma Ratio 4 ( C OUT )	R/B4	fsc input 3.58MHz, 400mV <sub>P-P</sub> ( check C out )	2.80	3.15	3.50	-
G Chroma Ratio 4 ( C OUT )	G/B4		2.65	2.95	3.25	-
B Chroma Ratio 4 ( C OUT )	B/B4		2.01	2.24	2.47	-
Burst level 4 ( CVBS )	Vob4		0.20	0.29	0.34	V <sub>P-P</sub>
R Phase ( CVBS )	SR <sub>P</sub>	fsc input 3.58MHz, 400mV <sub>P-P</sub> ( check CVBS out )	94	104	114	deg
G Phase ( CVBS )	SG <sub>P</sub>		231	241	251	deg
B Phase ( CVBS )	SB <sub>P</sub>		337	347	357	deg
Burst Width	T <sub>WP</sub>		2.0	2.25	2.5	usec
Burst Position	T <sub>PP</sub>		0.35	0.45	0.55	usec
PAL Burst Phase 1	P1	CVBS out, Y out	125	135	145	deg
PAL Burst Phase 2	P2		215	225	235	deg
Y Frequency Response	Y <sub>FCP</sub>	Y output (-3dB point)	6.0	-	-	MHz

TEST WAVEFORM



APPLICATION CIRCUIT



SYSTEM	Fo(MHz)	★L(uH)	★C(pF)
NTST	3.57	100	20
PAL	4.43	82	15

# KA2198BD

# RGB ENCODER FOR PAL/NTSC

