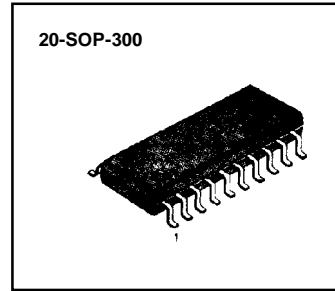


**GENERAL DESCRIPTION**

The KA2985BD is a monolithic integrated circuit of small out-line package designed for use in the UHF RF converter for SVR, VCR, video game machines and so on.



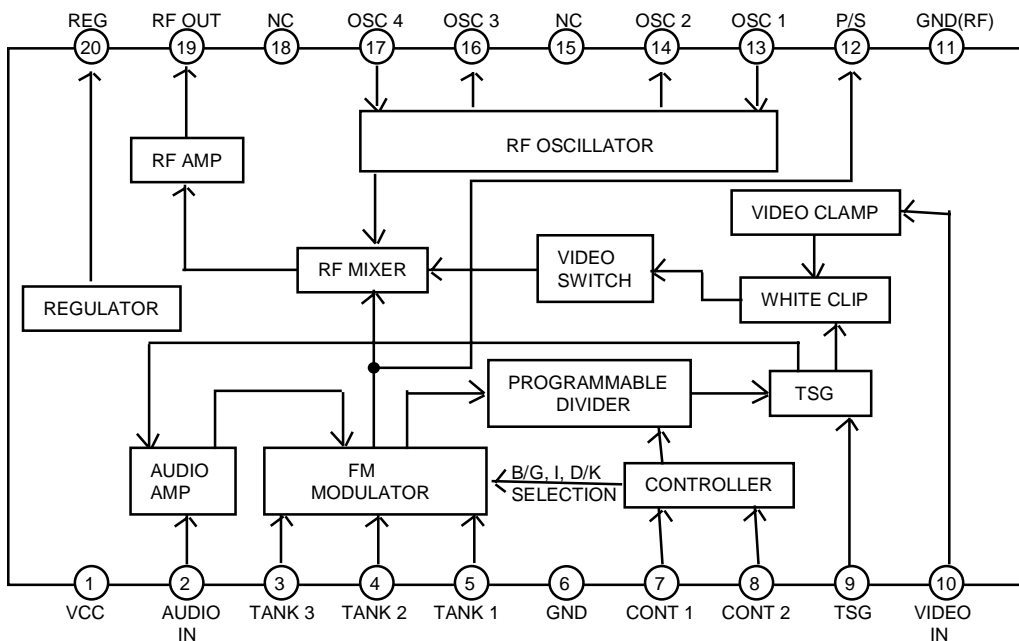
**FEATURES**

- Supply voltage=5V.
- FM audio modulation.
- Clipping of peak white level.
- Built-in Test Signal Generator.
- Operates the TSG block without external resonator.
- Negative video modulation.
- Picture to Sound ratio adjustment.
- Built-in Picture/Sound RF mixer.
- 3-Multi system(B/G, I, D/K)
- Operates on 400MHz to 700MHz wide band.

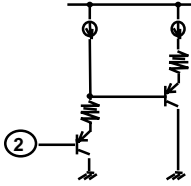
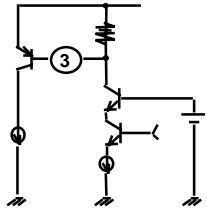
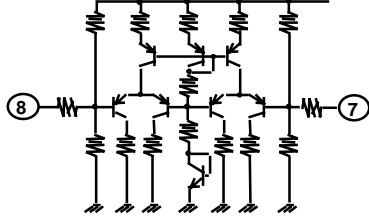
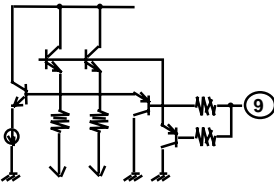
**ORDERING INFORMATION**

Device	Package	Operating Temperature
KA2985BD	20-SOP-300	-20°C ~ +70°C

**BLOCK DIAGRAM**



**PIN CONFIGURATION**

Pin	I/O	Function	Equivalent Circuit	Description									
1	-	VCC	-	VCC (5V)									
2	I	Audio input		Typical input = 1Vp-p at App.input Maximum input=5Vp-p at									
3	I	Audio Tank3		D/K(6.5MHz) System									
4	I	Audio Tank2		I (6.0MHz) System									
5	I	Audio Tank1		B/G(5.5MHz) System									
6	-	GND	-	GND									
7	I	Control 1		<table border="1"> <tr> <td>Control1 Control2</td> <td>GND</td> <td>OPEN</td> </tr> <tr> <td>GND</td> <td>Not used</td> <td>Pin4(I)</td> </tr> <tr> <td>OPEN</td> <td>Pin5(B/G)</td> <td>Pin3(D/K)</td> </tr> </table>	Control1 Control2	GND	OPEN	GND	Not used	Pin4(I)	OPEN	Pin5(B/G)	Pin3(D/K)
Control1 Control2	GND	OPEN											
GND	Not used	Pin4(I)											
OPEN	Pin5(B/G)	Pin3(D/K)											
8	I	Control 2											
9	I	TSG		Video / TSG Mode control - Open : TSG Mode - GND : Video Mode									

**PIN CONFIGURATION**

Pin	I/O	Function	Equivalent Circuit	Description
10	I	Video input		Clamp level=2.66Vdc Input level =0.496Vpp
11	-	GND		GND
12	I	P/S		Picture/Sound Ratio adjust.
13	I	OSC1		RF oscillator input 1
14	O	OSC2		RF oscillator output1
15	-	NC		NC
16	O	OSC3		RF oscillator output2
17	I	OSC4		RF oscillator input2
18	-	NC		NC
19	O	RFO		RF output(DC=3.78V)

**PIN CONFIGURATION**

Pin	I/O	Function	Equivalent Circuit	Description
20	O	REG		Regulator output=4.0V

**ABSOLUTE MAXIMUM RATINGS (Ta=25 °C)**

Characteristics	Symbol	Value	Unit
Power Supply	Vs	7	V
Operating Temperature	Topr	-20 ~ +70	°C
Storage Temperature	Tstg	-55 ~ +150	°C
Power Dissipation	Pdmax	500	mW

**ELECTRICAL CHARACTERISTICS**

(VCC=5V, Ta=25°C, fp=591.25MHz±1MHz, fs=5.5MHz/6.0MHz/ 6.5MHz)

Characteristics Unit	Symbol	Test Condition	Min.	Typ.	Max.
Supply Voltage V	VCC	Audio/Video No input	4.5	5.0	5.5
Supply Current mA	ICC	Audio/Video No input	21	29	40
<b>TSG Characteristics</b>					
Modulation Depth %	Mtsg	Refer to Note 1	65	75	85
Video/ Sync Ratio	Tv/s	Refer to Note 1	6.8/3.2	7.0/3/0	7.2/2.8
H.sync Signal Period uS	Ts	Refer to Note 1	63	64	65
H.sync Signal Width uS	Hs	Refer to Note 1	3.5	4.0	4.5
White Signal Width uS	Hv	Refer to Note 1	3.5	4.0	4.5
1st Sync White Signal Rise Time uS	Tv (1)	Refer to Note 1	22	24	26
2nd Sync White Signal Rise Time uS	Tv (2)	Refer to Note 1	38	40	42

**ELECTRICAL CHARACTERISTICS**

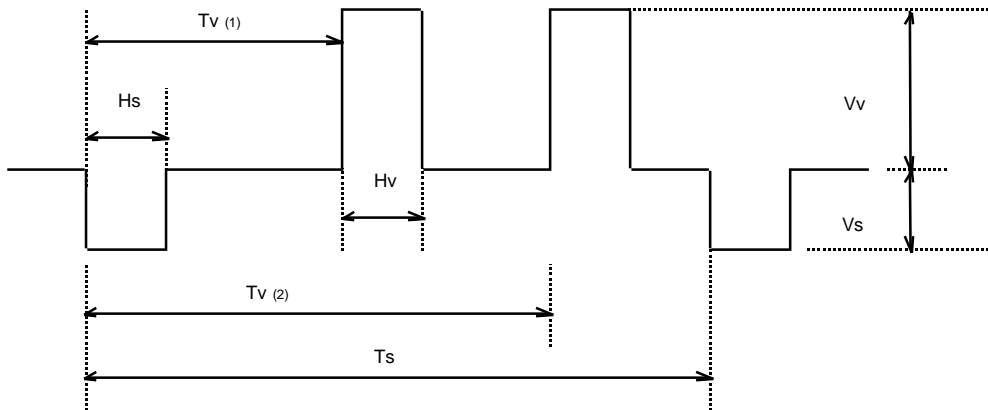
(VCC=5V, Ta=25℃, fp=591.25MHz±1MHz, fs=5.5MHz/6.0MHz/ 6.5MHz)

Characteristics Unit	Symbol	Test Condition	Min.	Typ.	Max.	
<b>Video Characteristics</b>						
Modulation Depth	Mp	0.9Vp-p 100% White Signal	75	81	87	%
Video Signal to Noise	Vs/n	Measured by S/N Meter Weight off, MOD 80% APL	50	--	--	dB
Max.Modulation Depth	Mpmax	Input=1.5Vp-p Signal	86	--	97	%
Sync Crush Level	Vv/s	0.9Vp-p 100% White Signal {1-(Vsync/Vwhite)*2.5}*100%	--	-	10	%
Amplitude Frequency Response	Vfr	SIN 0.9Vp-p, 0.5MHz ~ 5MHz Reference : 1 MHz	-2	0	+2	dB
Differential Gain	DG	0.9Vp-p, Stair Step Signal	--	2	5	%
Differential Phase	DP	0.9Vp-p, Stair Step Signal	--	2	5	deg
<b>Audio Characteristics</b>						
Max FM Modulation Depth	Msmax	Audio Signal=5Vp-p, SIN 1KHz	350	--	650	%
2nd High Harmonic Level	Vs2	Refer to Note 2	46	50	--	dB
Signal to Noise Ratio	As/n	Audio Signal=1.0Vp-p, SIN 1KHz	50	--	--	dB
FM Modulation Depth %	Ms	Audio Signal=1.0Vp-p, SIN 1KHz  (±50 KHz = 100%)	75	--	110	
FM Distortion	Athd	Audio Mod.Depth=60%	--	0.3	1.0	%
Amplitude Frequency Response	Afr	SIN 1.0Vp-p, 20Hz ~ 10KHz (Ref = 1KHz)	-2	0	+2	dB
<b>Output Characteristics</b>						
RF Output Level dBuV	Vo	Without Video & Audio Signal	79.0	81.5	84.0	
Picture/Sound Ratio	P/S	Without Video & Audio Signal	10.0	12.5	15.0	dB
Chroma Beat	Vcb	Refer to Note 3	61	--	--	dB
RF 2nd Harmonic Level (Note 4)	Vo2		25	--	--	dB
In Band Spurious (Note 4)	Vis		53	58	--	dB
Freq. Drift as Voltage	ΔF	Vcc=4.5V ~ 5.5V	0	--	+200	KHz

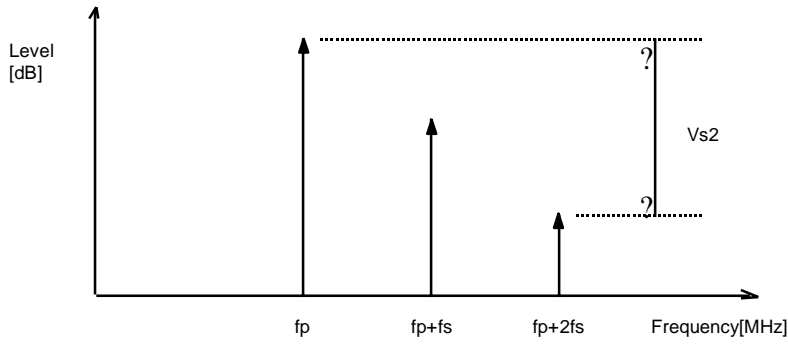
Note 4: These are only for IC design guarantee items, not for test guarantee items of mass production.

**\* NOTES**

1. TSG(Test Signal Generator) Output

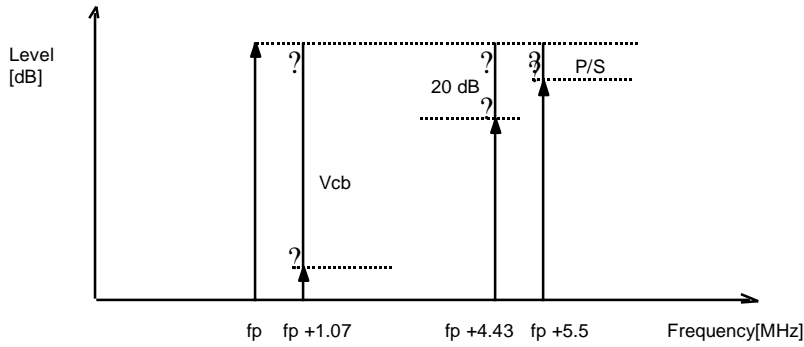


2. Audio 2nd High Harmonic Level

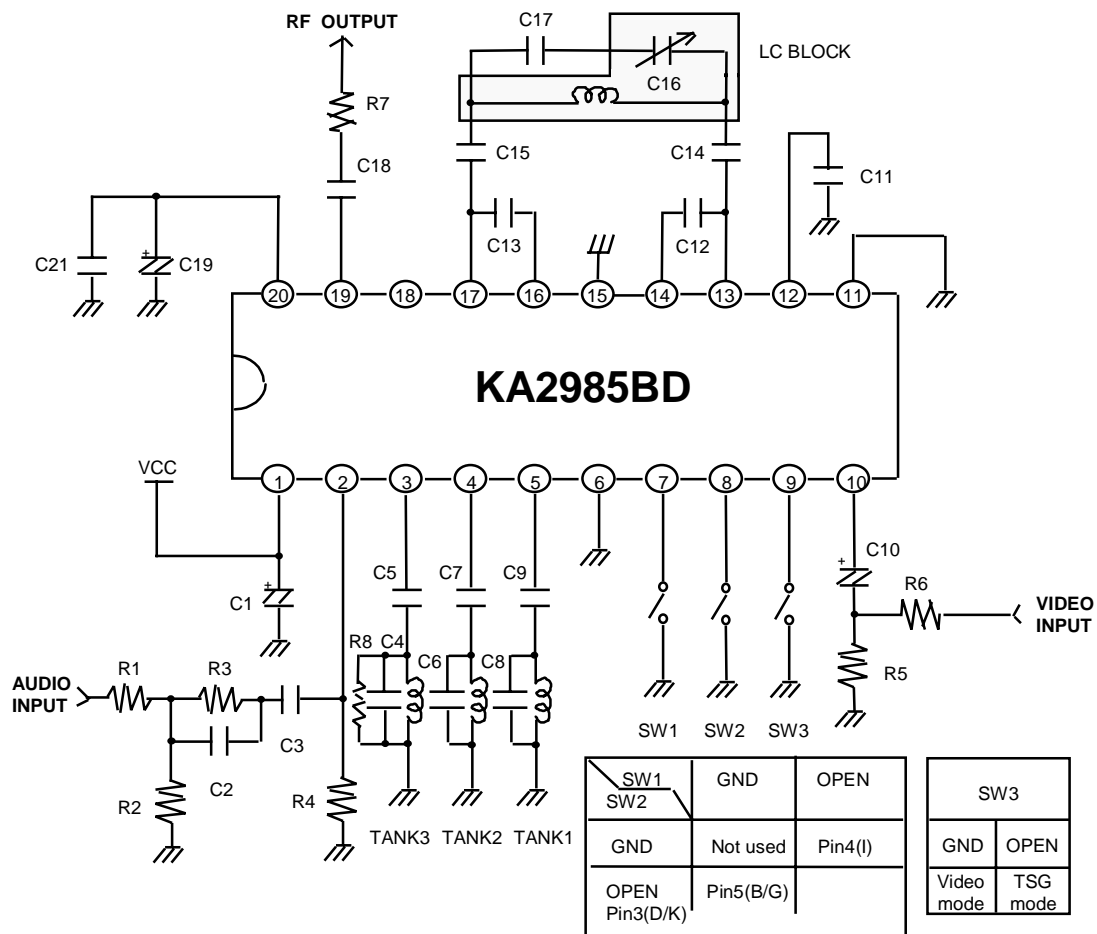


3. Chroma Beat

Measure under the condition of the video input in which the frequency is 4.43MHz sinusoidal wave and the level is 20dB lower than  $f_p$  level.



**TEST & APPLICATION CIRCUIT**



RECOMMENDED PART LIST									
Part No	Value	Part No	Value	Part No	Value	Part No	Value	Part No	Value
C1	6.8uF	C8	39P	C15	2P	R1	33K	R8	56K
C2	220P	C9	1N	C16	Adjust	R2	15K	TANK1	
C3	100N	C10	0.68uF	C17	12P	R3	270K	TANK2	
C4	39P	C11	2P	C18	5P	R4	20K	TANK3	
C5	1N	C12	2P	C19	6.8uF	R5	560		
C6	39P	C13	2P			R6	560		
C7	1N	C14	2P	C21	100N	R7	47		

**PACKAGE DIMENSIONS**

(20-SOP-300)

Dimensions in millimeters / inches

