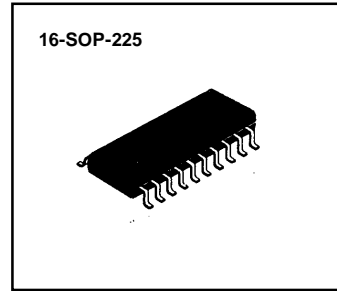


**GENERAL DESCRIPTION**

The KA2986D is a monolithic intergrated circuit of small out-line package designed for use in the UHF RF converter for VCDP and home appliances. The video and audio baseband signal carried by the UHF RF carrier is sent to the tuner of TV.



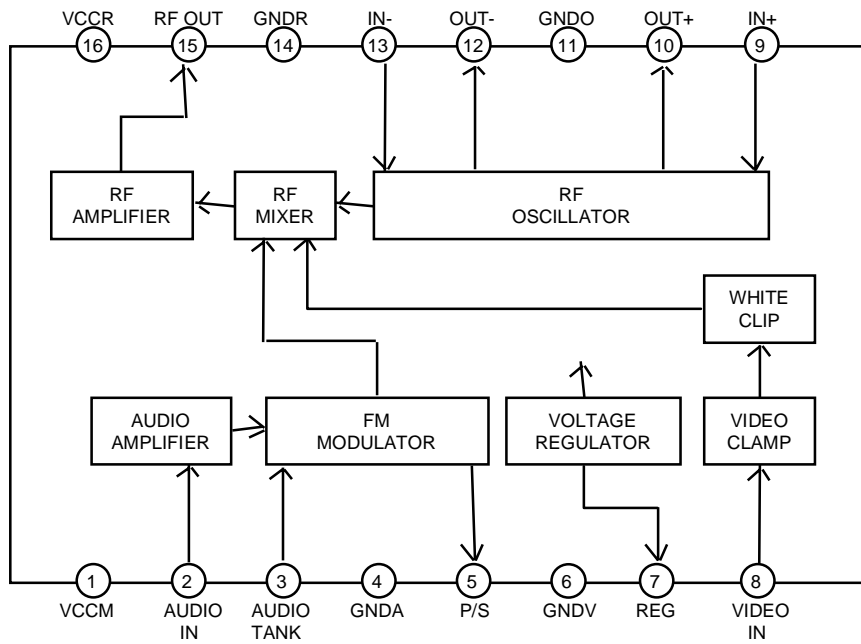
**FEATURES**

- FM audio modulation
- 5V supply voltage
- Picture to sound ratio adjustment
- Built-in mixer facilitates the RF unit design
- Operates on the 400MHz to 700MHz wide band
- Negative video modulation
- Clipping of peak white level

**ORDERING INFORMATION**

Device	Package	Operating Temperature
KA2986D	16-SOP-225	-20°C ~ +70°C

**BLOCK DIAGRAM**



**PIN DESCRIPTION**

Pin	I/O	Function	Equivalent Circuit	Description
1	-	VCCM	-	VCC (5V, Main except RF)
2	I	AUDIO IN		Typical Input = 1Vp-p, Maximum Input = 5Vp-p in the Application Circuit
3	I	AUDIO TANK		D/K(6.5MHz) System
4	-	GND A	-	Ground (Audio)
5 Adjust	O	P/S		Picture/Sound Carrier Ratio
6	-	GND V	-	Ground (Video)
7	O	REG		Regulator Output=4.0V

**PIN DESCRIPTION**

Pin	I/O	Function	Equivalent Circuit	Description
8	I	VIDEO IN		Clamp Level =2.66Vdc Input Level =0.50Vpp
9	I	IN+		RF oscillator input 1
10	O	OUT+		RF oscillator output 1
11	-	GNDO		Ground (Oscillator)
12	O	OUT-		RF oscillator output 2
13	I	IN-		RF oscillator input 2
14	-	GNDR	-	Ground ( RF )
15	O	RFO		RF output (DC=3.78V)
16	-	VCCR	-	VCC (5V, RF)

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

Charateristics	Symbol	Value	Unit
Power Supply	Vs	7	V
Operating Temperature	Topr	-20 ~ +70	°C
Storage Temperature	Tstg	-55 ~ +125	°C
Power Dissipation	Pdmax	500	mW

## ELECTRICAL CHARACTERISTICS

(VCC=5V, Ta=25°C, fp=591.25MHz±1MHz, fs=6.5MHz±100KHz, unless otherwise specified.)

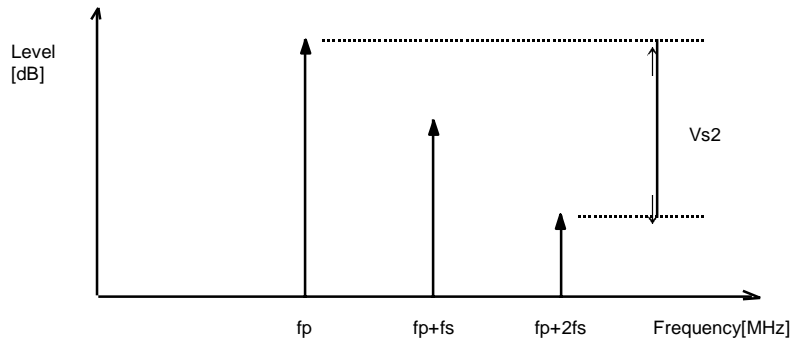
Characteristics Unit	Symbol	Test Condition	Min.	Typ.	Max.	
Supply Voltage	VCC	Audio/Video No input	4.5	5.0	5.5	V
Supply Current mA	ICC	Audio/Video No input	17.5	23.5	29.5	
<b>Video Characteristics</b>						
Modulation Depth %	Mp	Input=0.95Vp-p 100% White Signal	76	82	88	
Video Signal to Noise dB	Vs/n	Measured by S/N Meter Weight off, MOD 80% APL	50	--	--	
Max.Modulation Depth %	Mpmax	Input=1.15Vp-p 100% White Signal	86	--	97	
Sync Crush Level %	Vv/s	0.95Vp-p 100% White VideoSignal {1-(Vsync/Vwhite)*2.5}*100%	--	--	10	
Amplitude Frequency Response dB	Vfr	SIN 0.95Vp-p, 0.5MHz ~ 5MHz Reference : 1 MHz	-2	0	+2	
Differential Gain %	DG	Stair Step APL 10~90%	-5	--	+5	
Differential Phase deg	DP	Stair Step APL 10~90%	-5	--	+5	
<b>Audio Characteristics</b>						
Max FM Modulation Depth %	Msmax	Input=5Vp-p, SIN 1KHz	350	--	650	
2nd High Harmonic Level dB	Vs2	Refer to Note 1	46	50	--	
Signal to Noise Ratio dB	As/n	Input=1.0Vp-p, SIN 1KHz	50	--	--	
FM Modulation Depth %	Ms	60% FM, Video=Stair Step Input=1.0Vp-p, SIN 1KHz (±50 KHz = 100%)	75	95	110	
FM Distortion %	Athd	Audio Mod.Depth=60%, SIN 1KHz	--	0.3	1.0	
Amplitude Frequency Response	Afr	Audio=SIN 1.0Vp-p, 20Hz ~ 10KHz (Reference = 1KHz)	-2	-	+2	dB
<b>Output Characteristics</b>						
RF Output Level dBuV	Vo	Audio/Video No input	78.5	81.0	83.5	
Picture/Sound Ratio dB	P/S	Audio/Video No input	10.0	12.5	15.0	
Chroma Beat dB	Vcb	Refer to Note 2	61	--	--	
Frequency Drift as Voltage KHz	ΔF	Vcc=4.5V ~ 5.5V	0	--	+200	

1. RF 2nd Harmonic Level (Vo2) : 25dB (Min),  
Note 3 : ESD Susceptibility is follows :

2. In Band Spurious (Vis) : 53dB (Min), 58dB (Typ)  
HBM (Human Body Model) : ±2000V (Test Conditions : C=100pF, R=1.5kΩ)  
MM (Machine Model) : ±200V (Test Conditions : C=200pF, R=0)  
CDM(Charged Device model) : ±800V

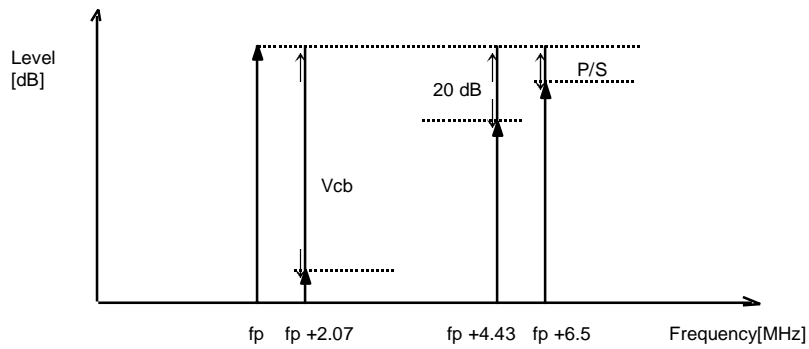
**\* NOTES**

1. Audio 2nd High Harmonic Level

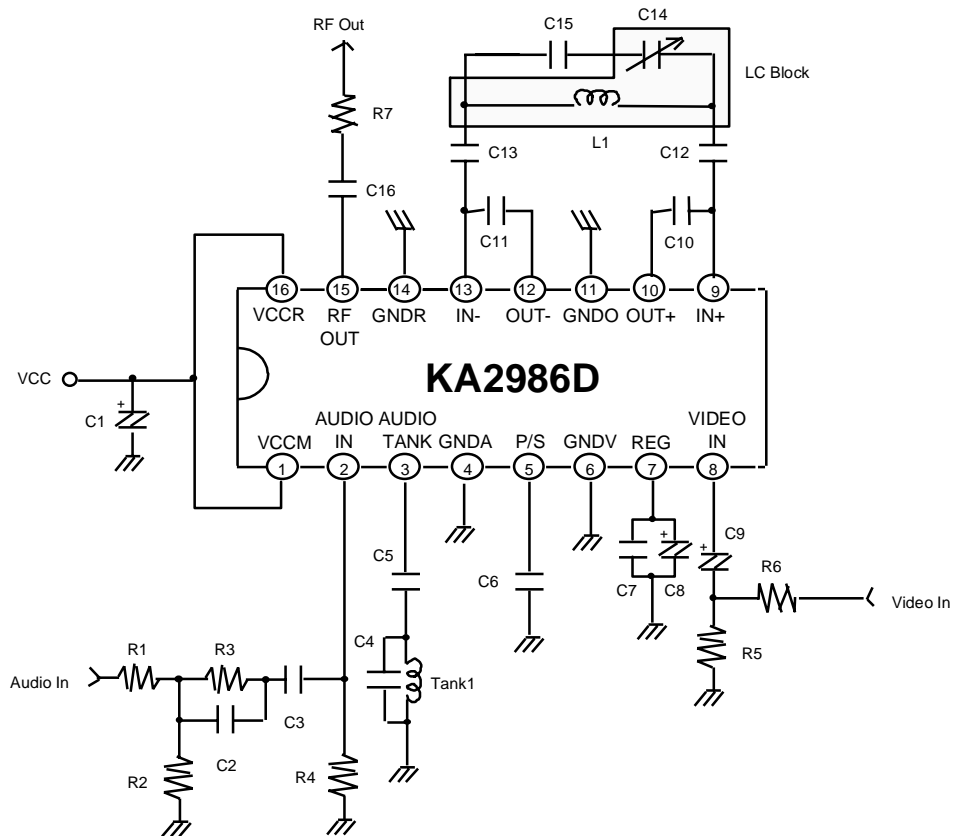


2. Chroma Beat

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	4.7uF	C8	4.7uF	C15	12P	R1	33K	L1	Fixed
C2	220P	C9	0.68uF	C16	5P	R2	15K	TANK1	
C3	100N	C10	1P			R3	270K	*LC Block	
C4	39P	C11	1P			R4	20K		
C5	1N	C12	2P			R5	510		
C6	1P	C13	2P			R6	510		
C7	100N	C14	Adjust			R7	56		

\* Chun-Nil in Korea

**PACKAGE DIMENSIONS**

(16-SOP-225)

Dimensions in millimeters / inches

