



PRODUCT SPECIFICATION

MODEL
TVF8831-BFF

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DESCRIPTION
**Desktop Video & FM
Radio System PALB/G**

TVF8831-BFF

FOR RF IN THE PC MULTI-MEDIA ENVIRONMENT

CUSTOMER APPROVAL

Preliminary Specification File
Under Integrated Circuits, Tuner

A	Original Release		
REV.	DESCRIPTION	DATE	SIGN
DESCRIPTION Desktop Video tuner system PAL B/G		APPROVAL DATE	CHECK DATE
DRAWING NO.		DESIGN DATE	
REVISIONS	PAGES TOTAL 15		



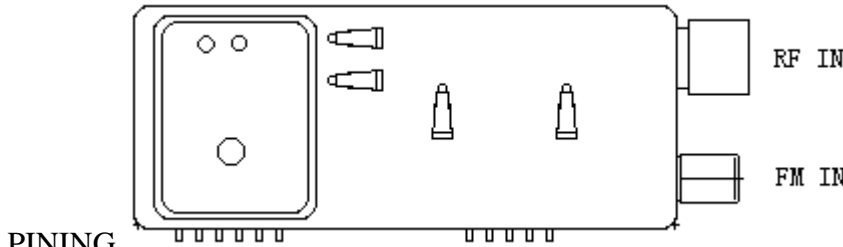
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DESCRIPTION
**Desktop Video &FM
Radio System PAL B/G**

NO	ITEM	SPECIFICATION												
1 .	GENERAL													
1 . 1	Supply Voltage	True 5V device (low power dissipation)												
1 . 2	Control system	I ² C bus control of tuning , address selection AFC status information												
1 . 3	Tuning System	PLL controlled tuning Programmable PLL step size (31.25,50 to 62.5kHz)												
1 . 4	IF System	True – synchronous vision IF demodulator (PLL) Ultra –linear FM PLL demodulator for FM radio broadcast												
1 . 5	Receiving System	Systems PAL B/G &D/K and FM radio broadcast												
1 . 6	Receiving Channels	Full frequency range from channel 1CH (48.25MHz) to channel 170 CH (863.25MHz)												
		<table border="1"> <thead> <tr> <th>BAND</th> <th>CHANNELS (MHz)</th> </tr> </thead> <tbody> <tr> <td>FM radio band</td> <td>87.5 to 108.00</td> </tr> <tr> <td>VHF LOW</td> <td>48.25 to 161.25</td> </tr> <tr> <td>VHF HIGH</td> <td>168.25 to 463.25</td> </tr> <tr> <td>UHF</td> <td>471.25 to 863.25</td> </tr> </tbody> </table>	BAND	CHANNELS (MHz)	FM radio band	87.5 to 108.00	VHF LOW	48.25 to 161.25	VHF HIGH	168.25 to 463.25	UHF	471.25 to 863.25		
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1 . 7	Intermediate Frequency	<table border="1"> <thead> <tr> <th>SYSTEM</th> <th>FREQUENCY(MHz)</th> </tr> </thead> <tbody> <tr> <td>Picture Carried</td> <td>38.90</td> </tr> <tr> <td>Color</td> <td>34.47</td> </tr> <tr> <td>Sound 1</td> <td>33.40</td> </tr> <tr> <td>Sound 2</td> <td></td> </tr> <tr> <td>FM</td> <td>10.7</td> </tr> </tbody> </table>	SYSTEM	FREQUENCY(MHz)	Picture Carried	38.90	Color	34.47	Sound 1	33.40	Sound 2		FM	10.7
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Picture Carried	38.90													
Color	34.47													
Sound 1	33.40													
Sound 2														
FM	10.7													
1 . 8	Antenna Input Impedance	VHF/UHF: 75 Ohm unbalanced												
1 . 9	Output	Demodulated video output ,AF sound output ,second sound IF output												
1.10	Weight	Approximately 50g												

NO	ITEM	SPECIFICATION																																				
1.11	Connection	<p style="text-align: right;">Antenna : RCA version</p>  <p style="text-align: left;">PINING</p>																																				
1.12	Terminal	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">SYMBOL</th> <th style="width: 10%;">PIN</th> <th style="width: 60%;">DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td>V_T</td> <td>1</td> <td>Tuning Voltage (see note)</td> </tr> <tr> <td>V_s</td> <td>2</td> <td>Supply Voltage tuner section: +5V</td> </tr> <tr> <td>SDA</td> <td>3</td> <td>I²C -bus Serial data</td> </tr> <tr> <td>SCL</td> <td>4</td> <td>I²C -bus Serial clock</td> </tr> <tr> <td>AS</td> <td>5</td> <td>I²C -bus Address select</td> </tr> <tr> <td>AF O/P right</td> <td>6</td> <td>FM radio right channel</td> </tr> <tr> <td>AF O/P left</td> <td>7</td> <td>FM radio left channel</td> </tr> <tr> <td>2nd IF Sound output</td> <td>8</td> <td>Second IF Sound output</td> </tr> <tr> <td>CVBS</td> <td>9</td> <td>Composite video baseboard signal output</td> </tr> <tr> <td>V_{IF}</td> <td>10</td> <td>Supply Voltage IF section: +5V</td> </tr> <tr> <td>AF Sound output</td> <td>11</td> <td>AF sound output</td> </tr> </tbody> </table> <p>Notes :</p> <p>1.1 pin for factory alignment and testing purposes only .pin must be left open circuit in normal use</p>	SYMBOL	PIN	DESCRIPTION	V _T	1	Tuning Voltage (see note)	V _s	2	Supply Voltage tuner section: +5V	SDA	3	I ² C -bus Serial data	SCL	4	I ² C -bus Serial clock	AS	5	I ² C -bus Address select	AF O/P right	6	FM radio right channel	AF O/P left	7	FM radio left channel	2nd IF Sound output	8	Second IF Sound output	CVBS	9	Composite video baseboard signal output	V _{IF}	10	Supply Voltage IF section: +5V	AF Sound output	11	AF sound output
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1.13	Operating Temp	-10 to +60 : (Standard +25)																																				
1.14	RH	0 to 90%: (Standard 60%)																																				
1.15	Storage Temp	-20 to +80 : (Standard +25)																																				

1.16 Maximum Supply Voltage to terminal

SYMBOL	PARAMETER	PIN	MIN	TYP	MAX	UNIT
Vs	Supply voltage	2	4.75	5.00	5.25	V
Vs (ripple)	Peak-to-peak ripple voltage susceptibility (at 5V+5%): 20Hz to 100KHz >100KHz to 500KHz		--	--	5 10	mVp- p mVp- p
Is	Supply current		--	--	120	mA
Vscl	SCL-bus input Voltage	3	-0.3	--	+5.25	V
VSDA	SDA-bus input Voltage	4	-0.3	--	+5.25	V
ISDA	SDA-bus current open collector		-1	--	+5	mA
VAS	Address select Voltage	5	--	--	+5.25	V
VAF right (FM)	FM right channel DC voltage	6	--	1.0	--	V
ZAF right (FM)	FM right channel load impedance parallel connected : Resistive valve Capacitate valve		-- --	50 9	-- --	K pF
VAF left (FM)	FM left channel DC voltage	7	--	1.0	--	V
ZAF left (FM)	FM left channel load impedance parallel connected : Resistive valve Capacitate valve		-- --	50 9	-- --	K pF
ZIF	2nd IF Sound output load impedance	8	0.5	--	--	K
ZCVBS	Compile Video Baseboard signal load impedance	9	--	75	--	
tL	CVBS Load dune constant		--	--	100	ns
Vs(IF)	IF supply voltage	10	4.75	5.0	5.25	V
IS(IF)	IF supply current		--	--	150	mA
ZAF	AF Sound output load impedance Resistive valve Capacitate valve	11	5.0 --	-- --	-- 4	K nF

1.17 OVERALL RERFORMANCE

Unless otherwise specified all electrical values for chapter " Overall performance " apply at the following conditions

SYMBOL	PARMETER	VAL UE	UNIT
Tamp	Ambient temperature	25 ± 5	
RH	Relative humidity	60 ± 5	%
Vs	Supply voltage(tuner and IF section)	5 ± 0.125	V
ZCVBS	Video output load impedance(DC)	75	
ZIF	IF sound output load impedance(DC)	>500	
TPR	Pre-heating time: (+5V at pin12)	10	minute
Zs(AE)	Aerial source impedance (unbalanced)	75	

NO.	ITEM	SPECIFICATION						Notes
2.	ELECTRICAL CHARACTERISTICS							
			Min	Typ	Max	Unit	Condition	
2.1	V _{SWR}				5 4		Referred to 75 impedance (worst case on or between picture and sound carrier at maximum gain): all channel in TV mode FM (center of channel)	
2.2	Vant				46	dB μV	<1.75 GHz	
2.3	Image rejection (nominal gain to 10 gain reduction)	VHF LOW VHF HIGH UHF	55 55 46	70 70		dB		
2.4	IF rejection (picture)		60			dB		
2.5	1/2 IF susceptibility off-air UHF		60 56			dB	Up to 40dB gain control up to 30 dB minimum gain control	
2.6	Cross modulation in -channel in -band VHF LOW (n ± 2) VHF HIGH (n ± 3) UHF (n ± 5) out of band		65 78 78 84 --	100	--	dB μV		
2.7	Breakthrough susceptibility channel A to 69		60	--	--	dB μV		
2.8	Oscillator Voltage at all pins		--	--	70	dB μV		
2.9	OSC lock-in time		--	--	150	ms	Change pump logio high	
2.10	The Video signal-to-Sound interference ratio with the tuner exposed to sound singles in the audio frequency range 100Hz to 10KHz and sound pressure levels up to 105dB (20 μ pa)		40	--	--	dB		
	Audio S/N radio		40	--	--	dB		
2.11	Electrostatic discharge (ESD) on all pins		2	--	--	kV		

NO	ITEM	SPECIFICATION					
3	Video and audio characteristics						
		Test Point	MIN	TYP	MAX	UNIT	CONDITION
3 . 1	CVBS characteristics: Video amplitude signal at pin 9 DC level sync pulse at pin 9	9	0.75 --	0.95 0.70	1.15 --	V V	Standard color bar 87.5% white 100%
3 . 2	Video amplitude drop with respect to modulation 0.1 MHz at Tamb=45 At 1 MHz At 2 MHz At 3 MHz At 4 MHz At 4.43 MHz	9	-1.0 -1.5 -2.5 -4.0 -8.0	-- -- -- -- --	+1.0 +1.5 +1.5 +2.0 +3.0	dB dB dB dB dB	
3 . 3	Sound carrier rejection	9	40	--	--	dB	
3 . 4	Residual 40.4 MHz signal in video channel :level of 1.5 MHz	9	--	--	68	dB μV	
3 . 5	Residual 77.8 MHz signal in video channel	9	--	--	80	dB μV	
3.6	Second IF sound output level at of 6.0&6.5 MHz	8	84	--	--	dB μV	
3.7	Test on 2T pules at Tamb =45 2T pulse/bar response 2T pulse response	9	-2.8 --	-- --	+2.8 +3.5	% %	
3.8	CVBS S/N (unweighted)	9	41	--	--	dB	
3.9	Gain limited sensitivity at 1dB reduction of video output	9	--	--	30	dB μV	
3.10	Maximum useable single input signal	90	80	--	--	dB μV	
3 . 11	Audio characteristics: AF output level measured via LP 20KHz filter RMS detector ,50 μs de-emphasis THD(total Harmonic Distortion)measured via LP 20KHz filter, RMS detector 50 us de-emphasis S/N measured via CCIR filter, peak CCIR detector 50 us de-emphasis	11	250 -- 44	350 -- --	500 0.5 --	mV % dB	1KHz FM 50% MOD
3.12	AM oppression ratio	11	40	--	--	kHz	
3.13	Aerial input level for S/N =41 dB		--	--	41	dB	

NO	ITEM	SPECIFICATION					
		Test Point	MIN	TYP	MAX	UNIT	CONDITION
4	FM radio characteristics						
4 . 1	Limiting sensitivity for (S+N)/N		-- --	7 30	30 40	dB μ V dB μ V	
4 . 2	S/N radio Mono at f = 22.5kHz Mono at f = 75.0kHz Stereo		55 65 55	58 68 63	-- -- --	dB dB dB	
4 . 3	FM image rejection		53	65	--	dB	
4 . 4	Effective selectivity S300		50	--	--	dB	
4 . 5	Frequency response : Lower – 3.0 dB point Upper –3.0dB point		-- 14	20 18	40 --	Hz kHz	
4.6	AM suppression		33	--	--	dB	
4.7	FM AF output level at terminal 6/7 (RMS value) Mono Stereo		40 120	57 175	74 230	mV mV	
4.8	Stereo separation		33	--	--	dB	
4.9	Total harmonic distortion Stereo at 1kHz During Overmodulation at f= \pm 100kHz		-- 14	0.8 1.5	1.5 3	% %	

NO	ITEM	SPECIFICATION
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Digital AFC Status

Parameter	Conditions	Frequency (KHz)	Digital read-out
ADC word at I ² C- bus During read operation	Input voltage at pin 10:0.0 to 0.15 Vs	-125	00
	Input voltage at pin 10:0.15 to 0.30 Vs	-62.5	01
	Input voltage at pin 10:0.30 to 0.45 Vs	0	02
	Input voltage at pin 10:0.45 to 0.60 Vs	+62.5	03
	Input voltage at pin 10:0.60 to 1.00 Vs	+125	04

APPLICATION INFORMATION

A detailed description of the I²C- bus specification, with applications, is given in brochure " the I²C-bus and how to use it ". This brochure may be ordered using the number 9398 393 40011

WRITE mode

BYTE	BITS								
	7 MSB	6	5	4	3	2	1	0	(1) A
Address byte	1	1	0	0	0	MA1	MA0	0	A
Program divider byte 1	0	N ₁₄	N ₁₃	N ₁₂	N ₁₁	N ₁₀	N ₉	N ₈	A
Program divider byte 2	N ₇	N ₆	N ₅	N ₄	N ₃	N ₂	N ₁	N ₀	A
Control information byte 1	1	CP	T ₂	T ₁	T ₀	RSA	RSB	OS	A
Control information byte 2	P ₇	P ₆	P ₅	P ₄	P ₃	P ₂	P ₁	P ₀	A

Note

- 1. A=Acknowledge
- Address selection
- V_s=+5V(PLL supply voltage)

NO	ITEM	SPECIFICATION
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MA1	MA0	Address	VOLTAGE AT PIN 7(see note1)
0	0	C0	0 to 0.1 Vs
0	1	C2	0.2 to 0.3 Vs
1	0	C4	0.4 to 0.6 Vs
1	1	C8	0.9 to 1 Vs

Note :

0. IF the AS pin is left floating, the internal bias will automatically set address to C2 .
Programmable divider setting (bytes 1 and 2)

Divider ratio:

$$N=16 \times \{f_{RF}(pc) + f_{IF}(pc)\}, \text{ where } (pc) \text{ is picture carrier and } f_{RF} \text{ and } f_{IF} \text{ are expressed in MHz.}$$

$$f_{osc}=N/16(\text{MHz})$$

$$N=(8192 \times n_{13})+(4096 \times n_{12})+(2048 \times n_{11})+(1024 \times n_{10})+(512 \times n_9)+(256 \times n_8)+$$

$$(128 \times n_7)+(64 \times n_6)+(32 \times n_5)+(16 \times n_4)+(8 \times n_3)+(4 \times n_2)+(2 \times n_1)+n_0$$

Control byte

Change pump settings:

CP=1, for fast tuning

CP=0, for moderate speed tuning with slightly better residual oscillator FM

Test mode settings :

T2=T1=0; T0=1,for normal operation

PLL disabling :

OS=0,for normal operation

OS=1,for switching the change pump to the high impedance state.

Ratio select bits	MSA	MSB	STEP SIZE							
	X	0	50KHz							
	0	1	31.25KHz(for normal picture search)							
Ports byte Band switching	BAND		BIT(1)							
			P7	P6	P5	P4	P3	P2	P1	P0
	FM band		1	0	1	0		1		
	Low band		1	0	1	0		0		
	Mid band		1	0	0	1		0		
	High band		0	0	1	1		0		
	TV mode									
	Power down mode see note 1						0	0	0	1
	System 1 negative mode						0	0	0	0
	FM radio mode									
	AFC; see note 2						0	1	0	1
	RF; see note 3						0	1	0	0
	Mono						0	1	1	0
Mute						1	1	0	0	

Note :

1. If the TV function is not required ,the tuner can be switching to power-down mode .In this mode the tuner reduces the current consumption by up to 100 mA.
- 2 .By this setting the FM radio AFC status can be read from the A/D bits in the status byte.
3. By this setting the RF input level can be read from the A/D bits in the status byte.

TELEGRAM EXAMPLES (WRITE MODE)

Start –Adb –Ack – Db1 – ACK – Db2 – Ack – Cb – Ack –Pd –Ack - Stop

Start –Adb –Ack – Cb – Ack – Pd – Db1 – Ack - Db2 – Ack – Stop

Start –Adb –Ack – Db1– Ack – Db2 – Ack - Cb– Ack – Stop

Start –Adb –Ack – Db1– Ack – Db2 – Ack – Stop

Where:Start = start condition

Adb = address byte

Ack = acknowledge byte

Db1 = divider byte 1

Db2 = divider byte 2

Cb = control byte

Pb = ports byte

Stop = stop condition

Remark :for channel selection involving band switching ,and to ensure smooth tuning to the desired channel without causing unnecessary change pump action ,it is recommended to consider the difference between wanted channel frequency (fw) and current channel frequency (fc):

if $fw < fc$,use telegram as :

Start – Adb – Ack – Db1 – Ack – Db2 – Ack – Cb – Ack – Pb – Ack – Stop

if $fw < fc$, use telegram as :

Start – Adb – Ack – Cb – Ack –Pb – Ack – Db1 – Ack – Db2 – Ack – Stop

Unnecessary change pump action will result in very low tuning (TV 0V) which may drive the oscillator to extreme conditions

READ mode

The in – lock can be read by setting the R/W bits to 1.

BYTE	BITS								
	7 MSB	6	5	4	3	2	1	0 LSB	A(5)
Address byte	1	1	0	0	0	MA1	MA0	1	A
Status byte	POR	FL	12	11	10	A2	A	A0	A

NOTES:

1. POR = Power On Reset, POR is internally set to 1 in case Vs drops below 3V ,The POR bit is reset when an end of data is detected by the PLL IC .
2. FL = In-lock flange, FL=1: loop is phase-lock. The loop must be phase during at least 8 periods of the intenal 7.8125 kHz reference frequency before the FL flag is internally set to 1.
3. 12,11and 10=digital information for I/O ports P2, P1 and P0 respectively
4. A2 ,A1 and A0 = built – in 5 – level A/D converter on I/O port p6 , AFC information to the controller of the IF section is available on pin 10 (see table “ digital AFC Status ”)
5. A = Acknowledge

TELEGAMPLES EXAMPLES (READ MODE)

Start-Adb-Ack-STB-Ack-STBDb2-Stop(no Ack form processor=End-of –data)

Start-Adb-Ack-STB-Stop –(no Ack form processor =End-of –data)

Where:

STB = status bytes

频 率 表

单位: MHz

BAND	CHANNEL NO.	PICTURE FREQ.	SOUND FREQ.	LOCAL OSC FREQ.	IMAGE FREQ.
VHF LOW	1	48.25	53.75	87.15	126.05
	2	55.25	60.75	94.15	133.05
	3	62.25	67.75	101.15	140.05
	4	69.25	74.75	108.15	147.05
	5	76.25	81.75	115.15	154.05
	6	83.25	88.75	122.15	161.05
	7	90.25	95.75	129.15	168.05
	8	97.25	102.75	136.15	175.05
	9	105.25	110.75	144.15	183.05
	10	112.25	117.75	151.15	190.05
	11	119.25	124.75	158.15	197.05
	12	126.25	131.75	165.15	204.05
	13	133.25	138.75	172.15	211.05
	14	140.25	145.75	179.15	218.05
	15	147.25	152.75	186.15	225.05
	16	154.25	159.75	193.15	232.05
	17	161.25	166.75	200.15	239.05
VHF HIGH	18	168.25	173.25	207.15	246.05
	19	175.25	180.75	214.15	253.05
	20	182.25	187.75	221.15	260.05
	21	189.25	194.75	228.15	267.05
	22	196.25	201.75	235.15	274.05
	23	203.25	208.75	242.15	281.05
	24	210.25	215.75	249.15	288.05
	25	217.25	222.75	256.15	295.05
	26	224.25	229.75	263.15	302.05
	27	231.25	236.75	270.15	309.05
	28	238.25	243.75	277.15	316.05
	29	245.25	250.75	284.15	323.05
	30	252.25	257.75	291.15	330.05
	31	259.25	264.75	298.15	337.05
	32	266.25	271.75	305.15	344.05
	33	273.25	278.75	312.15	351.05
	34	280.25	285.75	319.15	358.05

频 率 表

单位: MHz

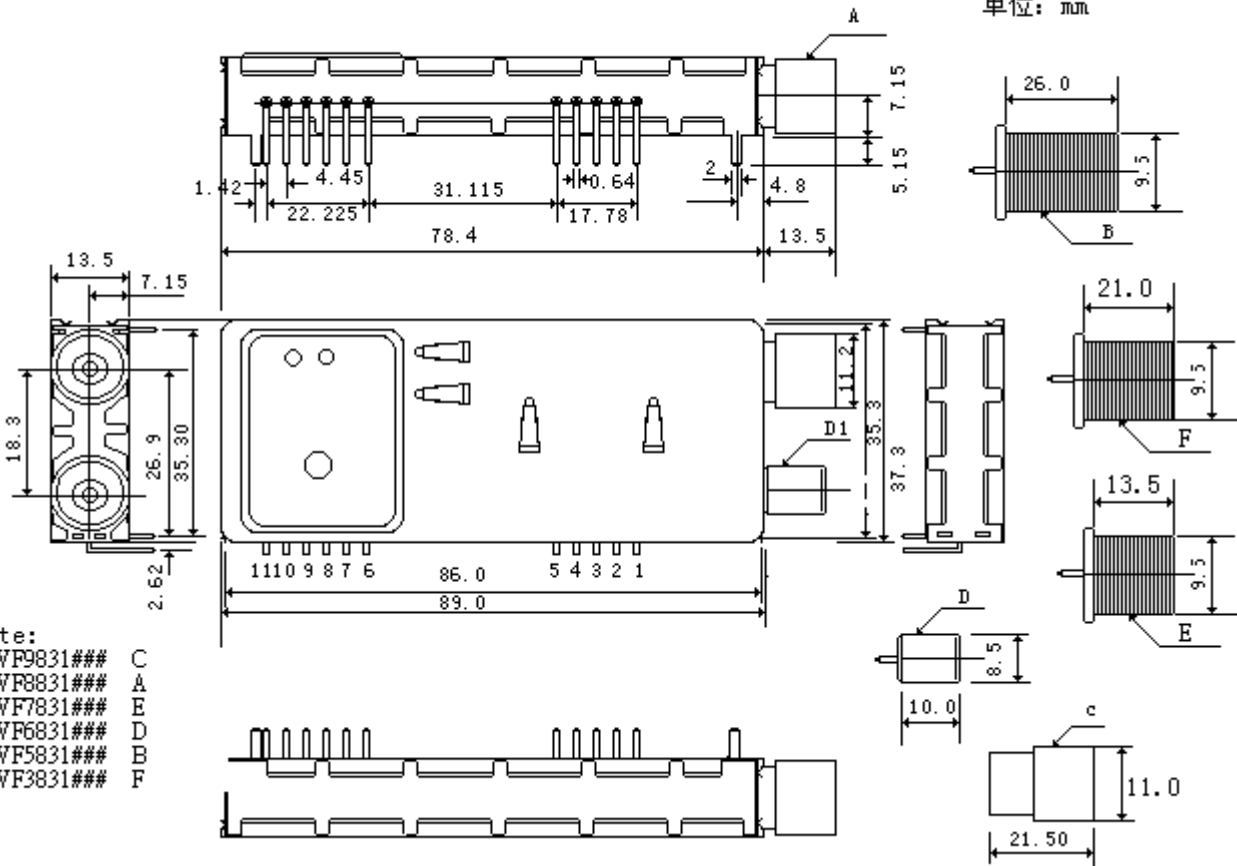
BAND	CHANNEL NO.	PICTURE FREQ.	SOUND FREQ.	LOCAL OSC FREQ.	IMAGE FREQ.
VHF HIGH	35	287.25	292.75	326.15	365.05
	36	294.25	299.75	333.15	372.05
	37	303.25	308.75	342.15	381.05
	38	311.25	316.75	350.15	389.05
	39	319.25	324.75	358.15	397.05
	40	327.25	332.75	366.15	405.05
	41	335.25	340.75	374.15	413.05
	42	343.25	348.75	382.15	421.05
	43	351.25	356.75	390.15	429.05
	44	359.25	364.75	398.15	437.05
	45	367.25	372.75	406.15	445.05
	46	375.25	380.75	414.15	453.05
	47	383.25	388.75	422.15	461.05
	48	391.25	396.75	430.15	469.05
	49	399.25	404.75	438.15	477.05
	50	407.25	412.75	446.15	485.05
	51	415.25	420.75	454.15	493.05
	52	423.25	428.75	462.15	501.05
	53	431.25	436.75	470.15	509.05
	54	439.25	444.75	478.15	517.05
55	447.25	452.75	486.15	525.05	
56	455.25	460.75	494.15	533.05	
57	463.25	468.75	502.15	541.05	
UHF	121	471.25	476.75	510.15	549.05
	122	479.25	484.75	518.15	557.05
	123	487.25	492.75	526.15	565.05
	124	495.25	500.75	534.15	573.05
	125	503.25	508.75	542.15	581.05
	126	511.25	516.75	550.15	589.05
	127	519.25	524.75	558.15	597.05
	128	527.25	532.75	566.15	605.05
	129	535.25	540.75	574.15	613.05
	130	543.25	548.75	582.15	621.05
	131	551.25	556.75	590.15	629.05
	132	559.25	564.75	598.15	637.05
	133	567.25	572.75	606.15	645.05

频 率 表

单位: MHz

BAND	CHANNEL NO.	PICTURE FREQ.	SOUND FREQ.	LOCAL OSC FREQ.	IMAGE FREQ.
UHF	134	575.25	580.75	614.15	653.05
	135	583.25	588.75	622.15	661.05
	136	591.25	596.75	630.15	669.05
	137	599.25	604.75	638.15	677.05
	138	607.25	612.75	646.15	685.05
	139	615.25	620.75	654.15	693.05
	140	623.25	628.75	662.15	701.05
	141	631.25	636.75	670.15	709.05
	142	639.25	644.75	678.15	717.05
	143	647.25	652.75	686.15	725.05
	144	655.25	660.75	694.15	733.05
	145	663.25	668.75	702.15	741.05
	146	671.25	676.75	710.15	749.05
	147	679.25	684.75	718.15	757.05
	148	687.25	692.75	726.15	765.05
	149	695.25	700.75	734.15	773.05
	150	703.25	708.75	742.15	781.05
	151	711.25	716.75	750.15	789.05
	152	719.25	724.75	758.15	797.05
	153	727.25	732.75	766.15	805.05
	154	735.25	740.75	774.15	813.05
	155	743.25	748.75	782.15	821.05
	156	751.25	756.75	790.15	829.05
	157	759.25	764.75	798.15	837.05
	158	767.25	772.75	806.15	845.05
	159	775.25	780.75	814.15	853.05
	160	783.25	788.75	822.15	861.05
	161	791.25	796.75	830.15	869.05
	162	799.25	804.75	838.15	877.05
	163	807.25	812.75	846.15	885.05
	164	815.25	820.75	854.15	893.05
	165	823.25	828.75	862.15	901.05
	166	831.25	836.75	870.15	909.05
167	839.25	844.75	878.15	917.05	
168	847.25	852.75	886.15	925.05	
169	855.25	860.75	894.15	933.05	
170	863.25	868.75	902.15	941.05	

单位: mm



Note:
TVF9831### C
TVF8831### A
TVF7831### E
TVF6831### D
TVF5831### B
TVF3831### F

SYMBOL	PIN	DESCRIPTION
V _T	1	Tuning Voltage (see note)
V _S	2	Supply Voltage tuner section: +5V
SDA	3	I ² C-bus Serial data
SCL	4	I ² C -bus Serial clock
AS	5	I ² C -bus address select
AF O/P right	6	FM radio right cannel
AF O/P left	7	FM radio left cannel
2 nd IF Sound output	8	Second IF Sound output
CVBS	9	Composite Video Baseboard signal output
V _{IF}	10	Supply Voltage IF section: +5V
AF Sound output	11	AF sound output

Notes :

1. 1 pin for factory alignment and testing purposes only ,pin must be left open circuit in normal use .