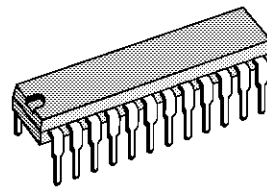


**VIDEO AND SOUND IF SYSTEM  
WITH AUDIO AND VIDEO SWITCHES**

PRELIMINARY DATA

- VIDEO PLL DEMODULATION
- SOUND PLL DEMODULATION
- NEGATIVE MODULATION
- AGC FOR BG STANDARD
- AUDIO SWITCH
- DC VOLUME CONTROL
- VIDEO SWITCH



**SHRINK24**  
(Plastic Package)

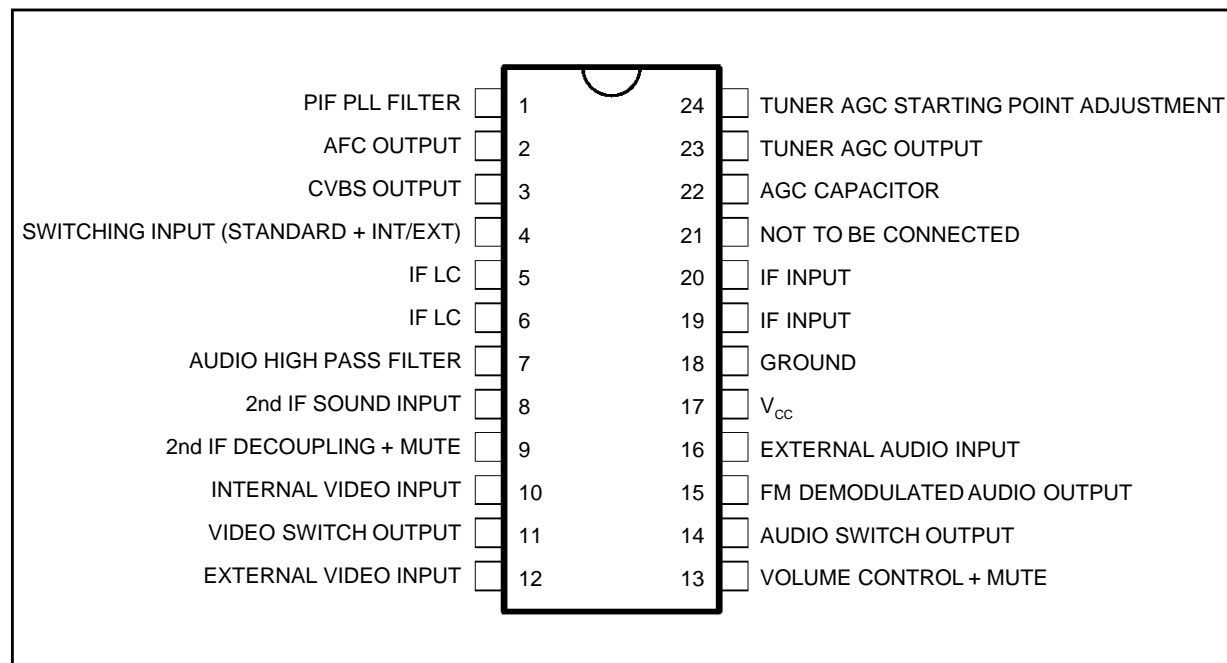
**ORDER CODE : STV8223**

**DESCRIPTION**

The STV8223 is a picture and sound IF processor for negative modulation application with very few external components and adjustments.

It provides the audio and video switches for one SCART plug application.

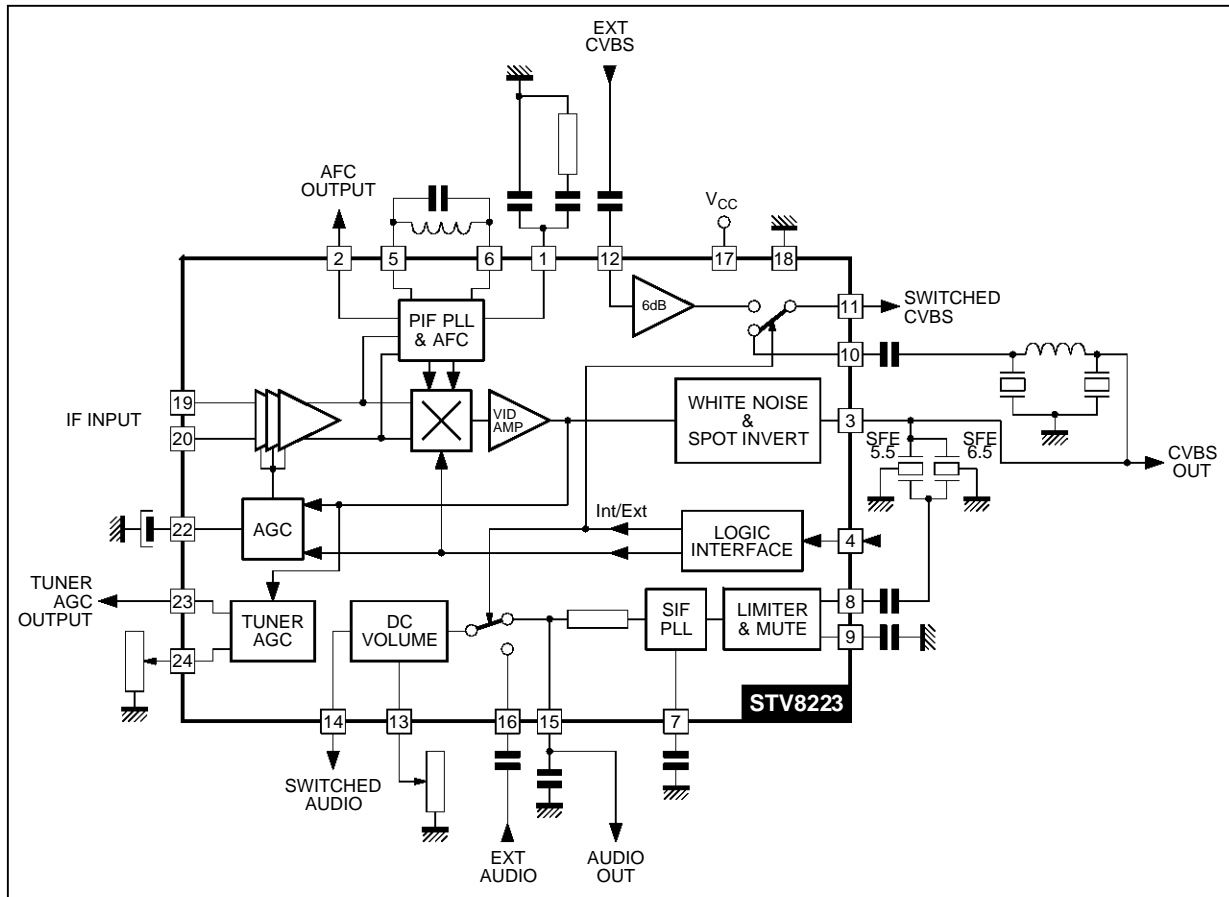
**PIN CONNECTIONS**



8223-01.EPS

# STV8223

## BLOCK DIAGRAM



8223-02.EPS

## ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
$V_S$	Supply Voltage	13.5	V
$V_x$	Tuner AGC Voltage	$V_{CC}$	V
$T_{stg}$	Storage Temperature	-40, +150	°C
$T_{oper}$	Operating Temperature	0, +70	°C

8223-01.TBL

## THERMAL DATA

Symbol	Parameter	Value	Unit
$R_{th(j-a)}$	Junction-ambient Thermal Resistance	Max. 75	°C/W

8223-02.TBL

**ELECTRICAL CHARACTERISTICS**

( $T_{amb} = 25^{\circ}\text{C}$ ,  $V_{CC} = 9\text{V}$ , IF input =  $10\text{mV}_{\text{RMS}}$  sync level at B/G, Video modulation DSB,  
 $D = 90\%$  at B/G,  $f_{\text{PC}} = 38.9\text{MHz}$ ,  $f_{\text{SC}} = 33.4\text{MHz}$ , Video BW =  $5\text{MHz}$ ,  
 Sound carrier input :  $5.5\text{MHz}$ ,  $10\text{mV}_{\text{RMS}}$ ,  $f_{\text{M}} = 1\text{kHz}$ , Audio BW =  $20\text{kHz}$ ,  $\Delta f = \pm 50\text{kHz}$ ,  
 Volume attenuation =  $0\text{dB}$ , unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
--------	-----------	-----------------	------	------	------	------

**SUPPLY**

$V_{CC}$	Voltage Operating		8	9	12.6	V
$I_{CC}$	Supply Current	$I_{17}$ , $V_{CC} = 9\text{V}$		70	95	mA

**IF AMPLIFIER**

$V_{19-20}$	Input Sensitivity (RMS)	-3dB Video at Output		70		$\mu\text{V}_{\text{RMS}}$
$R_{19-20}$	Differential Input Resistance			1.5		$\text{k}\Omega$
$C_{19-20}$	Differential Input Capacitance			2		pF
Gr	Gain Control Range			64		dB
	Max Input Signal	+1dB Video at Output		110		$\text{mV}_{\text{RMS}}$

**DEMODULATED VIDEO OUTPUT (Pin 3)**

$V_{A3}$	Amplitude	Top Sync to White	2	2.3	2.6	$V_{\text{PP}}$
$V_{S3}$	Top Sync Level	B/G	1.6	1.9	2.2	V
	Zero Carrier Level	B/G		4.3		V
BW	Bandwidth	-3dB Video Signal		9		MHz
Dg	Differential Gain			3	7	%
Dp	Differential Phase			3	7	Degree
$V_{r3}$	Residual Carrier Signal (RMS Value)			1	10	mV
$V_{r3}$	Residual 2nd Harmonic (RMS Value)			1	10	mV
$I_3$	Internal Bias of Emitter Follower		3	5		mA
S/N	Signal to Noise Ratio	Note 1		55		dB
	Intermodulation 1.07MHz	Note 2		50		dB
$V_{\text{WTH}}$	White Noise Threshold Voltage			4.6		V
$V_{\text{WIL}}$	White Noise Insertion Level			3.3		V
$V_{\text{BTH}}$	Black Noise Threshold Voltage			1.3		V
$V_{\text{BIL}}$	Black Noise Insertion Level			2.5		V

**AGC CIRCUIT (BG MODE)**

$I_{22C}$	Charging Current		550	950	1300	$\mu\text{A}$
$I_{22D}$	Discharge Current		12	20	28	$\mu\text{A}$
C/D	Charging/Discharging Ratio			45		

**TUNER AGC**

$I_{23}$	Sinked Current		1.4	2.1	2.8	mA
S23	Current Slope	$R = 3\text{k}\Omega$ on Pin 24		300		$\mu\text{A}/\text{dB}$

**AFC**

	AFC Slope			0.2		$\mu\text{A}/\text{kHz}$
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Notes : 1.  $\frac{S}{N} = 20 \log 10 \frac{V_{\text{out black white}}}{V_{\text{N}} (\text{mV}_{\text{RMS}})}$  at BW =  $5\text{MHz}$

2. Video carrier relative level =  $0\text{dB}$ , Chroma subcarrier level =  $-3.2\text{dB}$ , Sound carrier relative level =  $-20\text{dB}$

8223-03.TBL

**ELECTRICAL CHARACTERISTICS** (continued)

( $T_{amb} = 25^{\circ}\text{C}$ ,  $V_{CC} = 9\text{V}$ , IF input =  $10\text{mV}_{RMS}$  sync level at B/G, Video modulation DSB,  $D = 90\%$  at B/G,  $f_{PC} = 38.9\text{MHz}$ ,  $f_{SC} = 33.4\text{MHz}$ , Video BW =  $5\text{MHz}$ , Sound carrier input :  $5.5\text{MHz}$ ,  $10\text{mV}_{RMS}$ ,  $f_M = 1\text{kHz}$ , Audio BW =  $20\text{kHz}$ ,  $\Delta f = \pm 50\text{kHz}$ , Volume attenuation =  $0\text{dB}$ , unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
--------	-----------	-----------------	------	------	------	------

**FM SOUND DEMODULATION**

$V_{8S}$	Input Sensitivity	-3dB FM detected signal		60		$\mu\text{V}$
$R_8$	Limiter Input Resistance			1.2		$\text{k}\Omega$
AMR	Amplitude Modulation Rejection	Note 3	40	53		dB
SVR	Supply Voltage Rejection Ratio			TBF		dB
$V_{15}$	Detected Audio Output Signal			1		$\text{V}_{RMS}$
THD	Total Harmonic Distortion			0.2	1	%
$R_{15}$	Internal Deemphasis Resistor		600	750	900	$\Omega$
S/N	Signal to Noise Ratio	Note 4, Weighted CCIR 468-4		55		dB

**VOLUME CONTROL**

$V_C$ Range	Control Range			80		dB
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**AUDIO SWITCH**

$R_{16}$	Input Resistance		40	65		$\text{k}\Omega$
CRtk	Crosstalk		70	80		dB
EXTHD	THD on External Signal	$V_{IN} = 2\text{V}_{RMS}$ , Attenuation = $0\text{dB}$		0.05	0.3	%

**VIDEO SWITCH**

$V_{DC12}$	DC Input Level	No signal	1.6	1.9	2.2	V
$V_{S12}$	Top Sync. Clamp Level			1.8		V
$V_{11}$	DC Output Level	No signal	1.4	1.7	2	V
$V_{S11}$	Top Sync. Clamp Level			1.5		V
	Crosstalk			55		dB
GEX	Gain from Ext. Input to Output		5.5	6	6.5	dB
	Output Swing		4			V
$I_{12}$	Input Current	$V_{12} = V_{DC12} = 1.5\text{V}$		1	5	$\mu\text{A}$
VBW	Bandwidth	$V_{IN} = 1\text{V}_{PP}$		15		MHz
$G_{IN}$	Gain from Int. Input to Output		-0.5	0	+0.5	dB

**MUTE (Pin 9 or Pin 13)**

$V_9$	Threshold Voltage			2.1		V
$V_9$	DC Level when Mute Disabled	High impedance controlling circuit		2.8		V
$V_{13}$	Threshold			0.3		V

**CONTROL INPUT**

	Negative Modulation	Video : External - Audio : External Video : Internal - Audio : Internal	7.2		1.8	V V
--	---------------------	--	-----	--	-----	--------

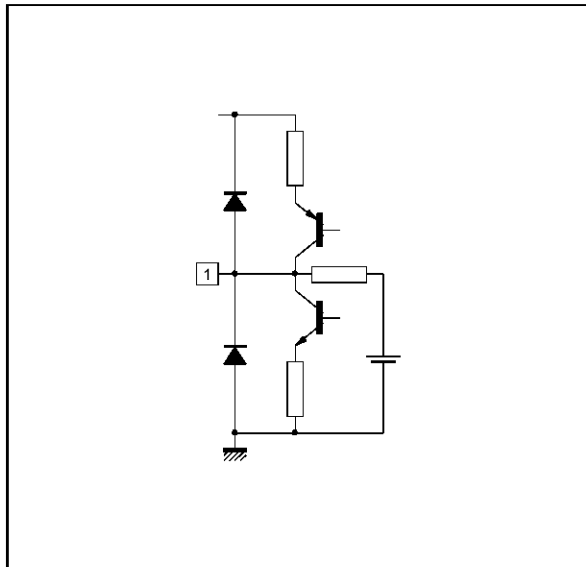
**Notes :** 3.  $AMR = 20 \log \frac{V_{15} (mV_{RMS})}{V_{AM}}$  (dB) where  $V_{AM}$  = output amplitude in AM for  $f_M = 1\text{kHz}$  and  $m = 30\%$

4.  $\frac{S}{N} = 20 \log \frac{V_{15} (mV_{RMS})}{V_N (mV_{RMS})}$  (dB)

8223-04.TBL

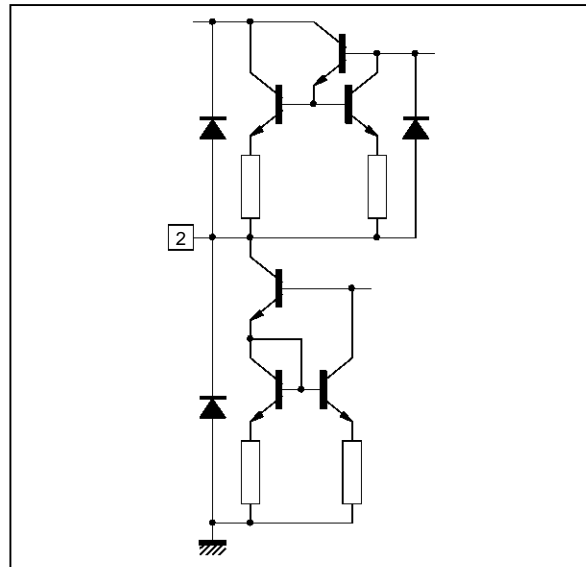
INPUT/OUTPUT PIN CONFIGURATION

Figure 1 : PIF PLL Filter



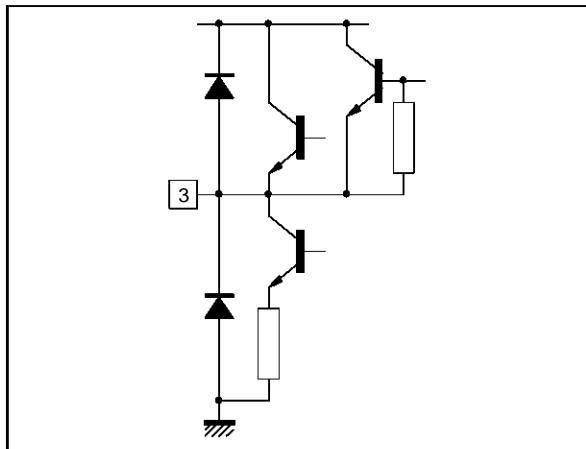
8223A-03.EPS

Figure 2 : AFC Output



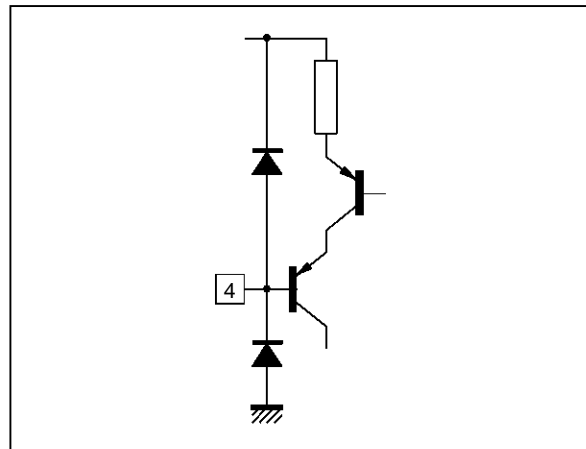
8223A-04.EPS

Figure 3 : CVBS Output



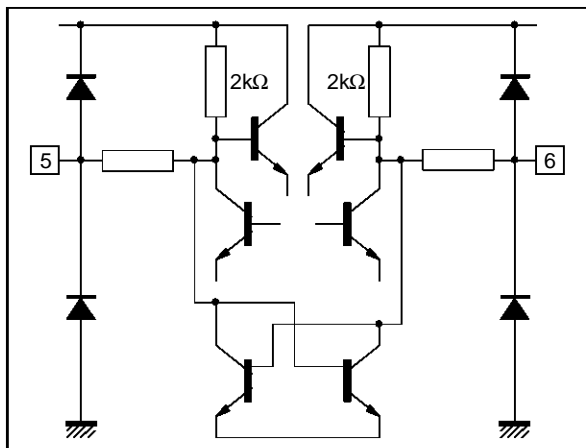
8223A-05.EPS

Figure 4 : Switching Input Standard + INT/EXT



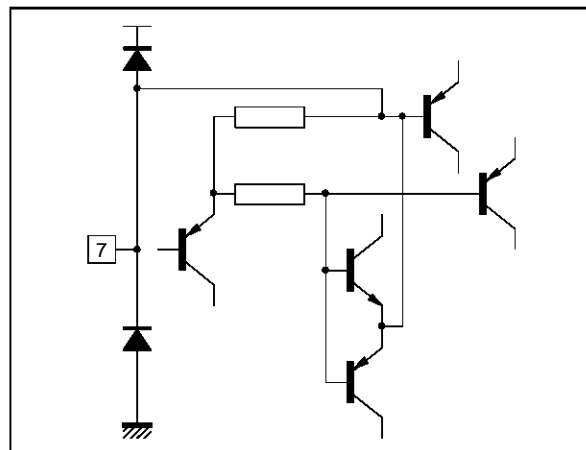
8223A-06.EPS

Figure 5 : IFLC



8223A-07.EPS

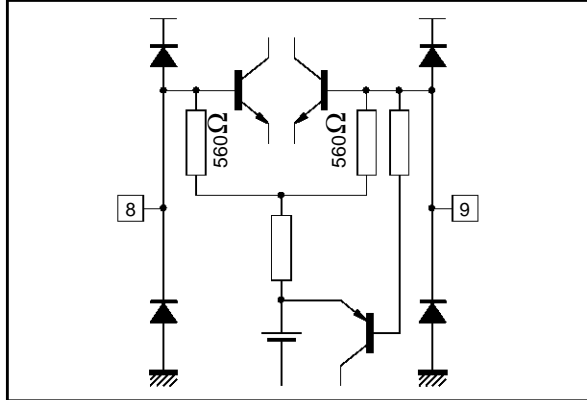
Figure 6 : Audio High Pass Filter



8223A-08.EPS

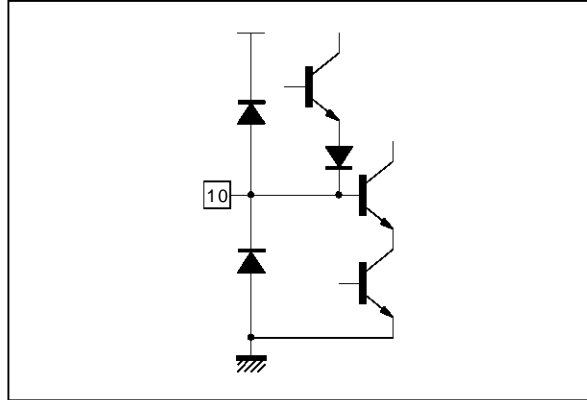
INPUT/OUTPUT PIN CONFIGURATION (continued)

**Figure 7 :** 2CD IF Sound Input (Pin 8)  
2CD IF Decoupling + Mute (Pin 9)



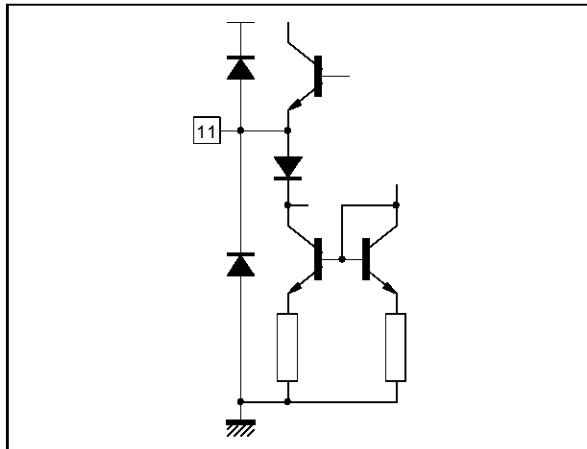
8223A-09.EPS

**Figure 8 :** Internal Video Input



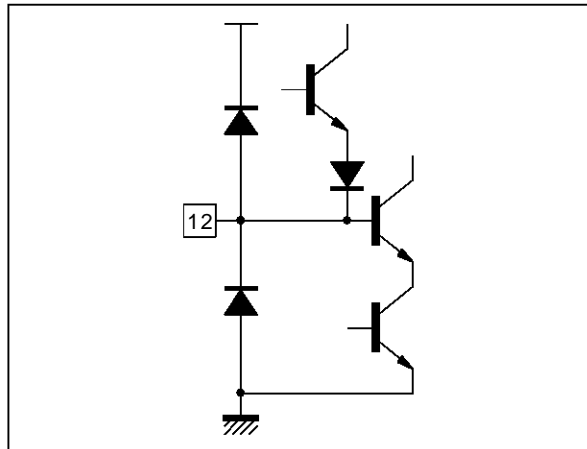
8223A-10.EPS

**Figure 9 :** Video Switch Output



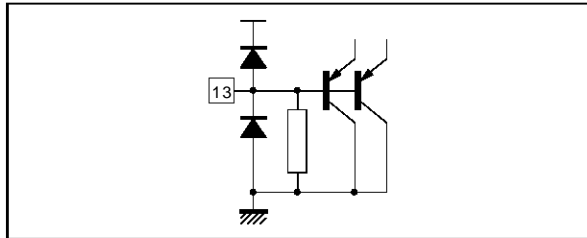
8223A-11.EPS

**Figure 10 :** External Video Input



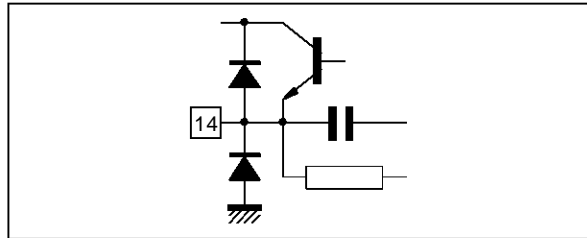
8223A-12.EPS

**Figure 11 :** Volume Control + Mute



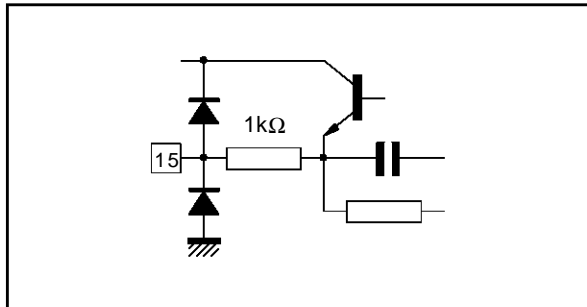
8223A-13.EPS

**Figure 12 :** Audio Switch Output



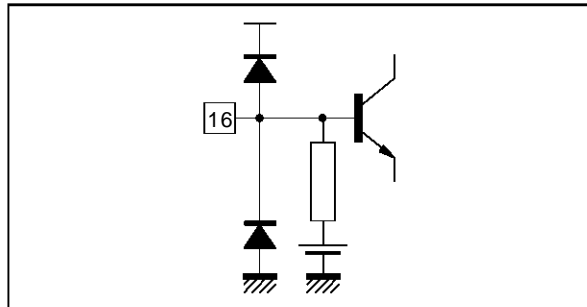
8223A-14.EPS

**Figure 13 :** FM Demodulated Audio Output



8223A-15.EPS

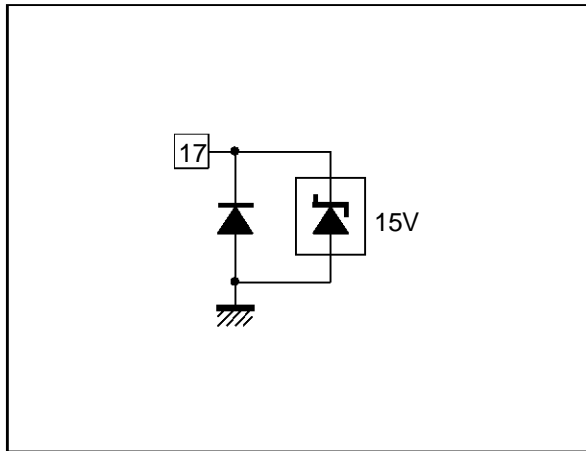
**Figure 14 :** External Audio Input



8223A-16.EPS

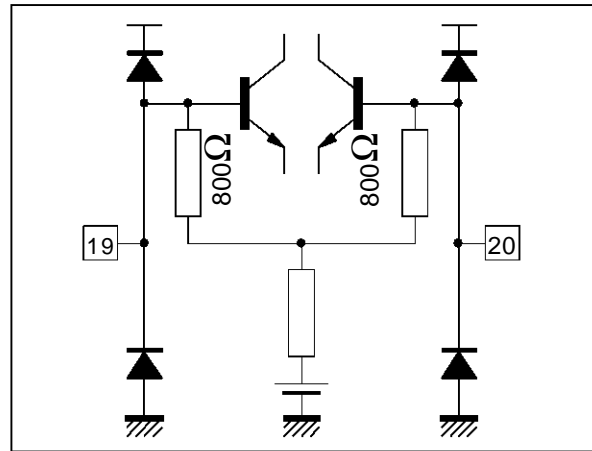
INPUT/OUTPUT PIN CONFIGURATION (continued)

Figure 15 : Vcc



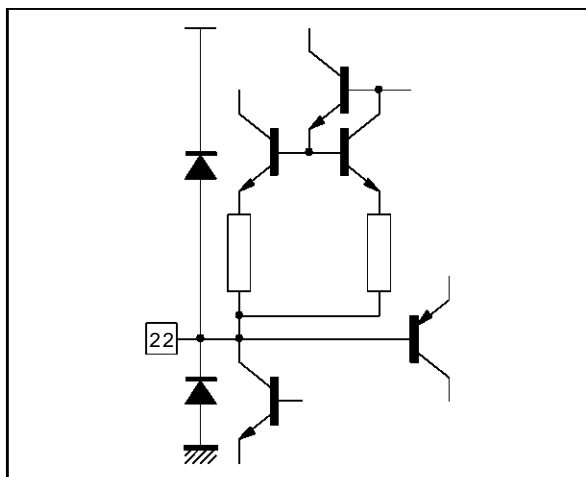
8223A-17.EPS

Figure 16 : IF Input



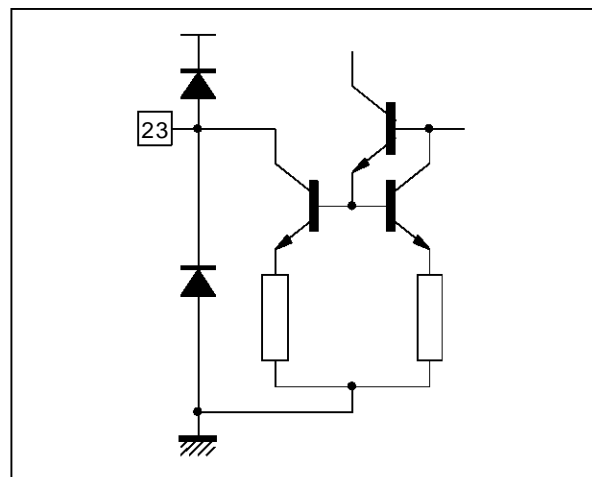
8223A-18.EPS

Figure 17 : AGC Capacitor



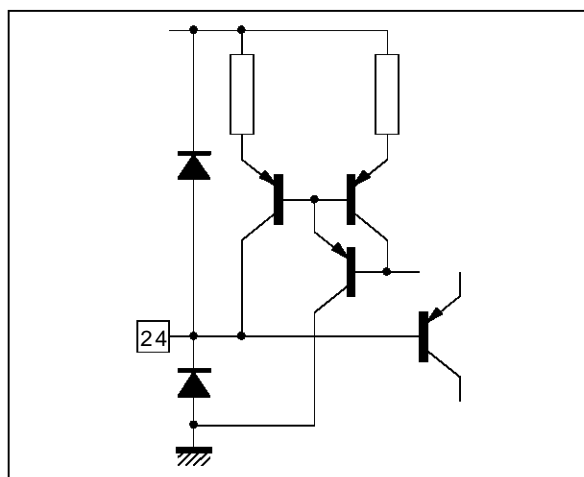
8223A-20.EPS

Figure 18 : Tuner AGC Output



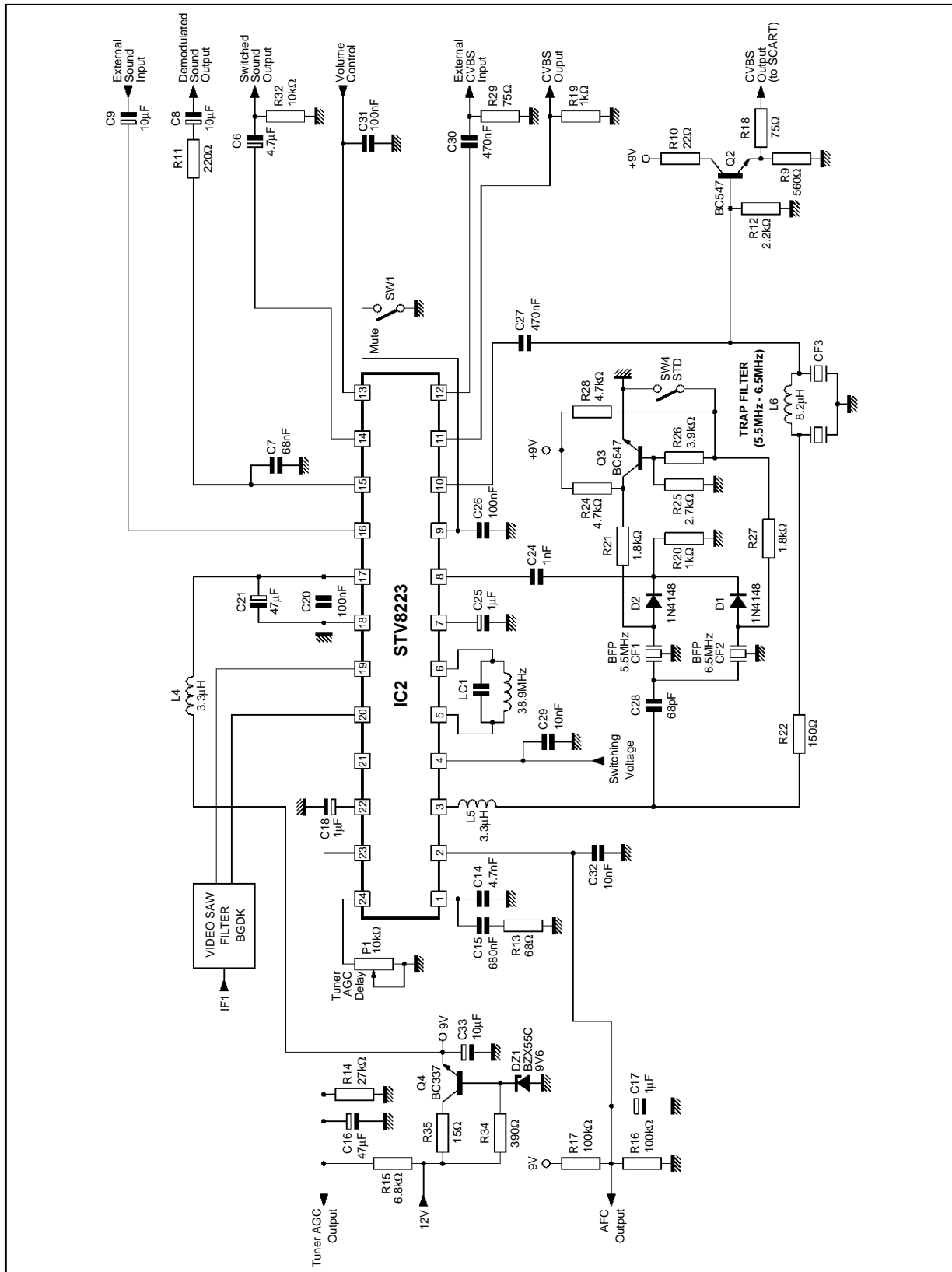
8223A-21.EPS

Figure 19 : Tuner AGC Starting Point Adjustment



8223A-22.EPS

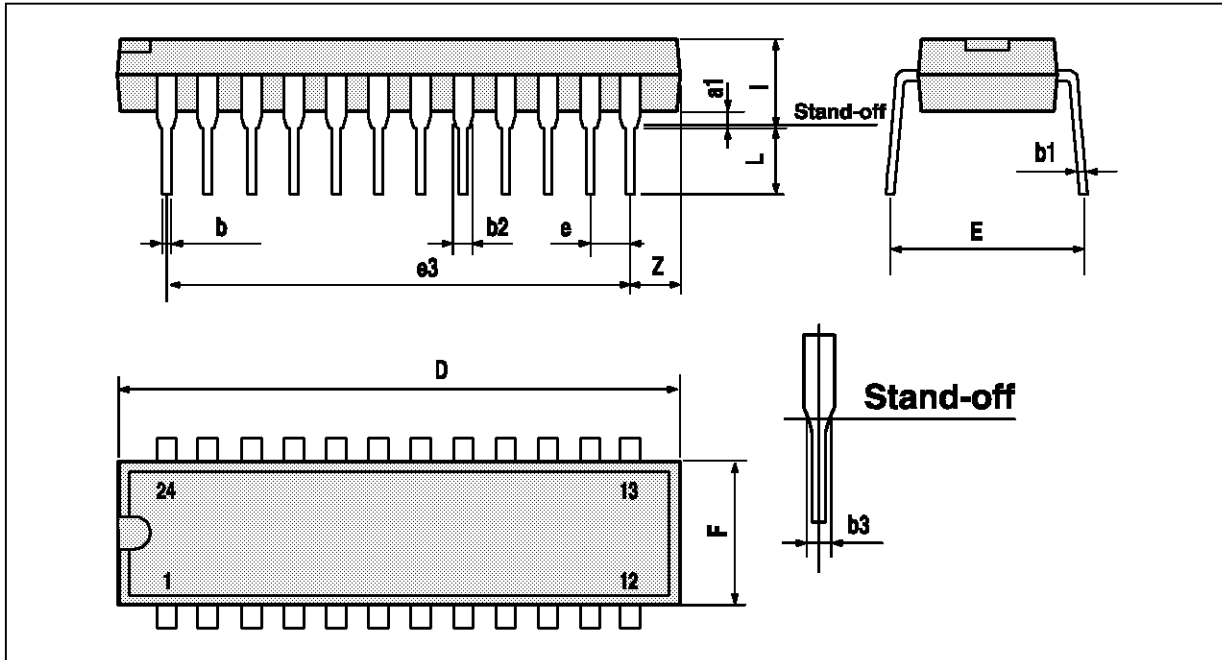
APPLICATION DIAGRAM



8223-23.EPS



**PACKAGE MECHANICAL DATA**  
 24 PINS - PLASTIC SHRINK DIP



PMSDIP24.WMF

Dimensions	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A		3.3			0.130	
a1	0.51			0.020		
b	0.35		0.59	0.014		0.023
b1	0.2		0.36	0.008		0.014
b2	0.75		1.42	0.030		0.056
b3	0.75			0.030		
D			23.11			0.910
E	7.95		9.73	0.313		0.383
e		1.778			0.070	
e3		19.558			0.770	
e4		7.62			0.300	
F			6.86			0.270
i			5.08			0.200
L	2.54			0.100		

SDIP24.TBL

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