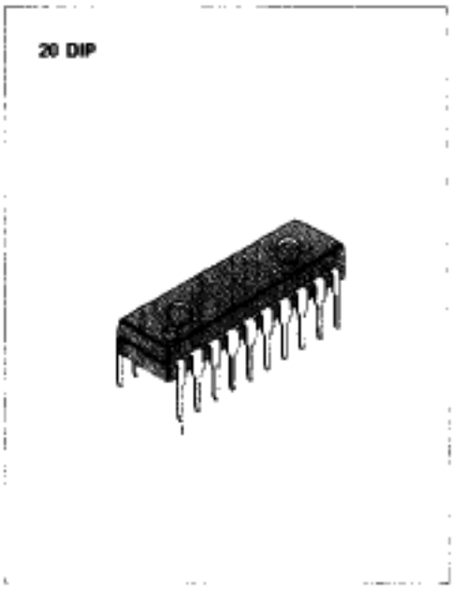
VIDEO & SOUND IF AMPLIFIER FOR TV SETS, VCRs

The KA2922/23 is a monolitic integrated circuit containting the VIF stage & SIF stage on a single chip in the 20 dual in-line package.

The use of the small sized package serves to make VCR tuner units smaller.

*KA2922: for forward AGC Type
*KA2923: for reverse AGC Type



FUNCTION

VIF Stage

- VIF Amplifier
- Video Det. (AM DET)
- AFT
- Video Mute
- VIF AGC Noise canceller
- RF AGC
- Band width Noise canceller

SIF Stage

- Sound Mute
- SIF limiter Amp
- FM Detector

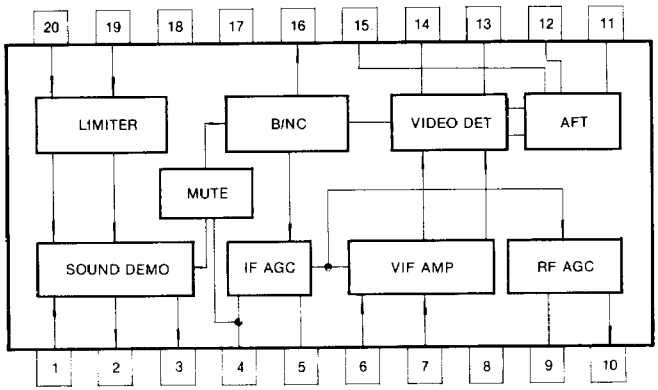
ORDERING INFORMATION

Device	Package	Operating Temperature
KA2922	20 DIP	−20 ~ +70°C
KA2923		

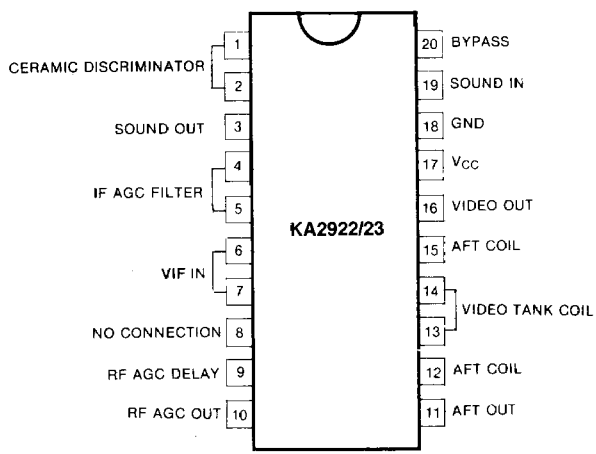
FEATURES

- **High-Gain VIF requiring no pre AMP**
- **Higher AGC Speed**
- **Non-Adjusting can be attained by using a ceramic discriminator because of FM detection being quadrature detection.**
- **Possible to mute video, sound for VCR**
- **Small-sized package**
- **Minimum number of external parts required**
- **Operable from a 9V supply**

BLOCK DIAGRAM



PIN CONFIGURATION



ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

Characteristic	Symbol	Value	Unit
Maximum Voltage	V_{CC} (Pin 17)	14	V
Minimum Voltage	V_{CC} (Pin 17)	9	V
Maximum Power Dissipation	P_D	1.0	W
Maximum Operating Temperature	T_{opr}	−20 ~ +70	°C
Storage Temperature	T_{stg}	−55 ~ +150	°C

ELECTRICAL CHARACTERISTICS

PIF Section (Ta = 25°C, V_{CC} = 12V, fp = 45.75MHz, fm = 15KHz)

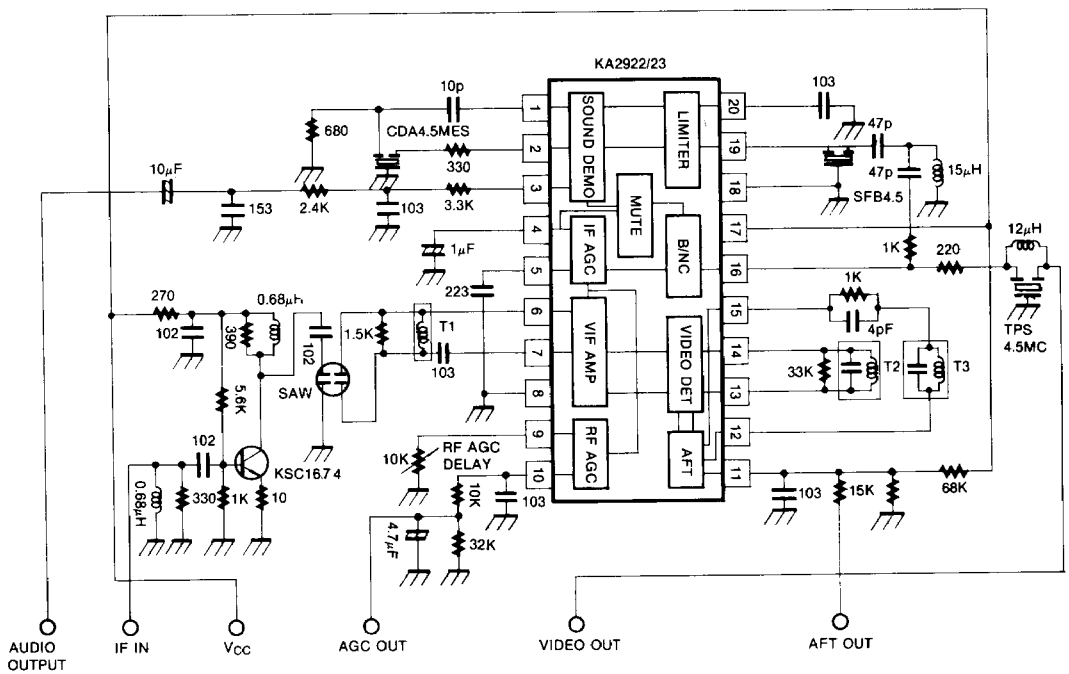
*KA2923

Characteristic	Symbol	Test Condition	Spec			Unit
			Min	Typ	Max	
Total Supply Current	I_{17}	$V_I = 0$	42	58	74	mA
Maximum RF AGC Voltage	$V_{10}H$	Pin 4 (1.5V)	10	10.5	11	V
		Pin 4 (7V)*	8.5	8.9	9.2	V
Minimum RF AGC Voltage	$V_{10}L$	Pin 4 (7V)		0	0.5	V
		Pin 4 (1.5V)*		0	0.5	V
Video Output Voltage	V_{16}	DC	5.6	6.1	6.6	V
AFT Output Voltage	V_{11}	DC	4.5	6.58	7.5	V
Input Sensitivity	V_I	AM = 40%, $V_O = 0.8V_{p\text{-}p}$	30	36	42	dBμ
AGC Range	G_R	AM = 40%, $V_O = 0.8V_{p\text{-}p}$	57	65		dB
Video Output Amplitude	V_O (16)	$V_I = 10mV_{rms}$, AM = 78%	1.9	2.2	2.5	$V_{p\text{-}p}$
Carrier Leakage	C_L	$V_I = 100mV_{rms}$, AM = 78%	50	55		dB
Maximum AFT Voltage	$V_{11}H$	$V_I = 10mV_{rms}$, 45.75MHz ± 1.5MHz	11	11.4		V
Minimum AFT Voltage	$V_{11}L$	$V_I = 10mV_{rms}$, 45.75MHz ± 1.5MHz		0.5	1.0	V
AFT Det. Sensitivity	S_f	$V_I = 10mV_{rms}$, Sweep	80	110	150	mV/KHz
White Noise Thres. Level	VW_{TH}	$V_I = 10mV_{rms}$, Sweep	6.4	6.8	7.2	V
White Noise Clamp Level	VW_{CL}	$V_I = 10mV_{rms}$, Sweep	4.2	4.6	5.0	V
Black Noise Thres. Level	VB_{TH}	$V_I = 10mV_{rms}$, Sweep	2.1	2.4	2.7	V
Black Noise Clamp Level	VB_{CL}	$V_I = 10mV_{rms}$, Sweep	3.8	4.2	4.6	V
Sync Tip Level Voltage	V_{sync}	$V_I = 10mV_{rms}$	3.3	3.6	3.9	V

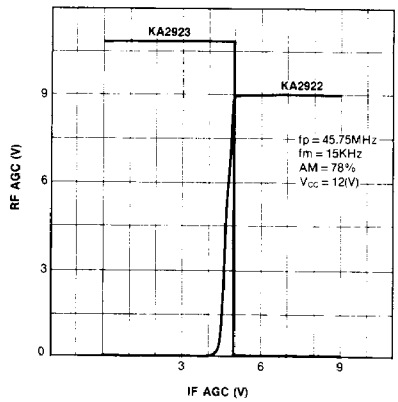
SIF Section (Ta = 25°C, V_{CC} = 12V, fs = 4.5MHz, fm = 400Hz, f = ± 25KHz)

Characteristic	Symbol	Test Condition	Spec			Unit
			Min	Typ	Max	
SIF Det. Output Voltage	V_O (5)	f = ± 25KHz, fm = 400Hz $V_I = 100mV_{rms}$	450	680	850	mV_{rms}
Distortion	THD	f = ± 25KHz, fm = 400Hz $V_I = 100mV_{rms}$		0.5	1.3	%
AM Rejection	AMR	f = ± 25KHz, AM = 30% $V_I = 100mV_{rms}$	50	60		dB
SIF Limiting Voltage	Vi_{lim}	V_O = −3dB		200	500	μV_{rms}

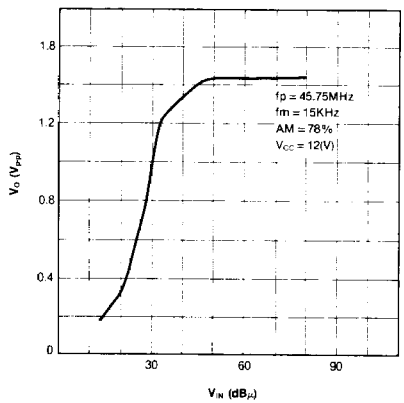
TYPICAL APPLICATION CIRCUIT



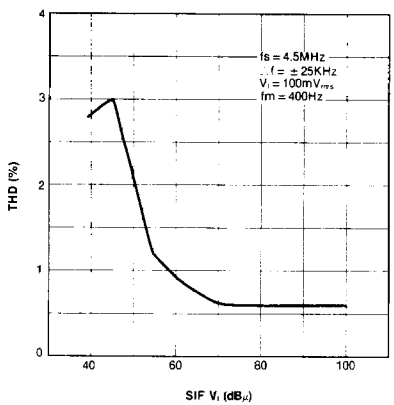
VIF AGC-RF AGC



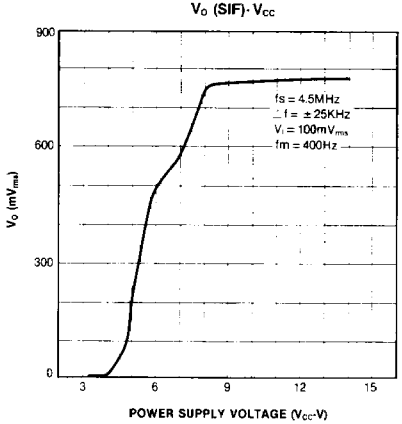
V_O (VIF)-V_I (VIF)



THD - V_I



V_O (SIF)-V_{CC}



AFT (VTG)-VIF (freq.)