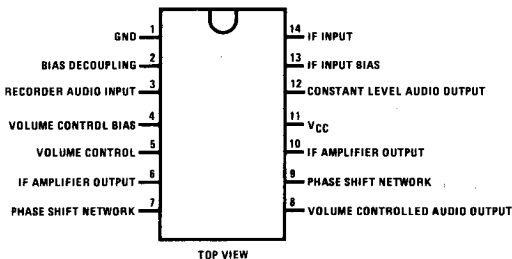
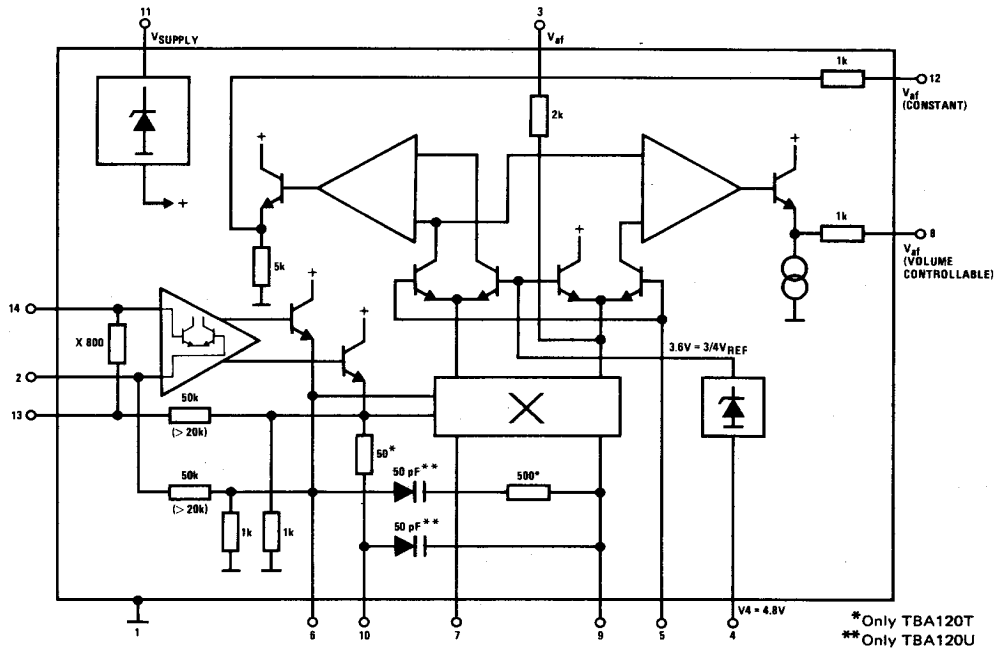


TBA120U, TBA120T IF Amplifier and Detector
General Description

The TBA120U, TBA120T is a monolithic integrated circuit specifically designed for audio detection in TV and FM radio receivers. It incorporates an 8 stage limiting IF amplifier and balanced detector plus a DC operated volume control. The circuit also provides connection facilities for a video tape recorder. The TBA120T is designed primarily for use with ceramic filters while the TBA120U is optimized for inductive tuning.

Features

- Electronic attenuator: replaces conventional AC volume control
- Volume reduction range: 85 dB typ
- Sensitivity: 3 dB limiting voltage 30 μ V typ
- Excellent AM rejection 68 dB typ 500 μ V
- Wide supply voltage range (6 to 18V)
- Easy video recorder connection
- Very low external component requirement
- Simple detector alignment: one coil

Block and Connection Diagrams


Order Number TBA120U or TBA120T
See NS Package N14A

Order Number TBA120TQ or TBA120UQ
See NS Package N14C

Absolute Maximum Ratings

Supply Voltage, V ₁₁	18V	Current Pin 4, I ₄	5 mA
Operating Temperature Range, T _U	-15°C to +70°C	Operating Frequency Range, f	0 to 12 MHz
Storage Temperature Range, T _S	-40°C to +125°C	Power Dissipation, P _{tot}	400 mW
Voltage Pin 5, V ₅	6V	Resistor Parallel to Pins 13 and 14	1 kΩ

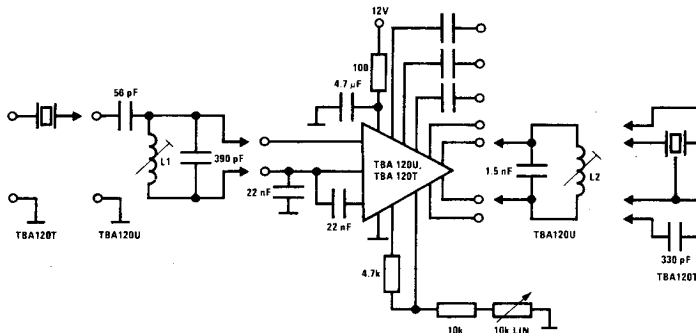
Electrical Characteristics (V_{CC} = 12V, T_A = 25°C)

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS	
I _{CC}	Supply Current	9.5	13.5	17.5	mA	
G _V	IF Voltage Gain	f = 5.5 MHz	68		dB	
V _O	IF Output Voltage (Each Output Limiting)		250		mVp-p	
R ₈	Output Impedance		1.1		kΩ	
R ₁₂			1.1		kΩ	
R ₃	Input Impedance		2		kΩ	
R ₄	Regulator Impedance		12		Ω	
V ₈	DC Output Level	V _i = 0	4		V	
V ₁₂		V _i = 0	5.6		V	
V ₄	Regulator Voltage	4.2	4.8	5.3	V	
$\frac{V_{af\ max}}{V_{af\ min}}$	Volume Control	70	85		dB	
$\frac{V_{af8}}{V_{af3}}$	Video Recorder Output Ratio		7.5			
V _{LIM}	Sensitivity	V _{af} - 3 dB, f = 5.5 MHz	30	60	μV	
$\frac{V_8}{V_{11}}$	Supply Rejection		35		dB	
$\frac{V_{12}}{V_{11}}$			30		dB	
R _{4-R5}	Impedance	1		10	kΩ	
$\frac{V_{af\ max}}{V_{af8}}$	Output Ratio	R _{4-R5} = 5 kΩ R _{5-R1} = 13 kΩ	20	28	36	dB
TBA120T Only						
Z _i	Input Impedance	f = 5.5 MHz		800/5	Ω/pF	
a _{AM}	AM Rejection	f = 5.5 MHz m = 30% Δf = ±50 kHz V _i = 500 μV f _{MOD} = 1 kHz	50	60	dB	
V _{af8}	A.F. Output Voltage	f = 5.5 MHz f _{MOD} = 1 kHz		900	mV	
V _{af12}		Δf = ±50 kHz		650	mV	
TBA120U Only						
Z _i	Input Impedance	f = 5.5 MHz	15/6	40/4.5	kΩ/pF	
a _{AM}	AM Rejection	f = 5.5 MHz V _i = 500 μV f _{MOD} = 1 kHz Δf = ±50 kHz m = 30%	50	60	dB	

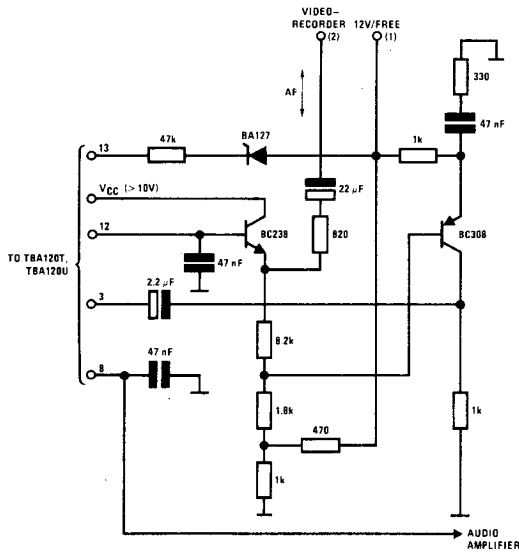
Electrical Characteristics (Continued) ($V_{CC} = 12V, T_A = 25^\circ C$)

PARAMETER		CONDITIONS	MIN	TYP	MAX	UNITS
TBA120U Only (Continued)						
Vaf8	A.F. Output Voltage	f = 5.5 MHz f _{MOD} = 1 kHz $\Delta f = \pm 50$ kHz V _i = 10 mV Q _B = 45		1.3		V
Vaf12 k	A.F. Output Voltage Distortion	f = 5.5 MHz $\Delta f = \pm 50$ kHz f _{MOD} = 1 kHz Q _B = 45 V _i = 10 mV		1.0 1		V %

Typical Application (5.5 MHz)



Circuit for Direct Connection to Video Recorders



Socket 1: Switching voltage: on playback 12V on record open circuit.
Socket 2: Video recorder input/output.

TBA120U, TBA120T

Schematic Diagram TBA120U

