

FEATURES

TBA120T

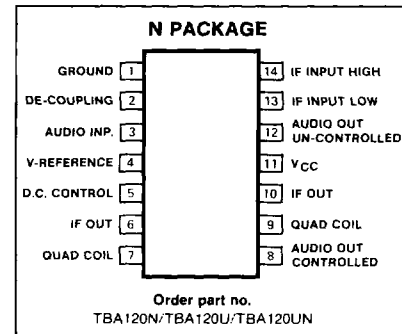
- Input and demodulator are designed for use with ceramic resonators
- Additional output before volume control (constant audio signal) for the connection of headphones and video recorders
- Additional audio input for connection of video recorders (playback)
- Constant audio output voltage between 10 to 18V supply voltage of the same level as TBA120S operating at 15V supply voltage
- Insensitive against hum from the supply voltage therefore very little need for

- smoothing capacitors
- As there is very little residual IF voltage on the audio output, there is no interference of the video-IF due to harmonics of the sound-IF
- No selection for volume control characteristics is necessary

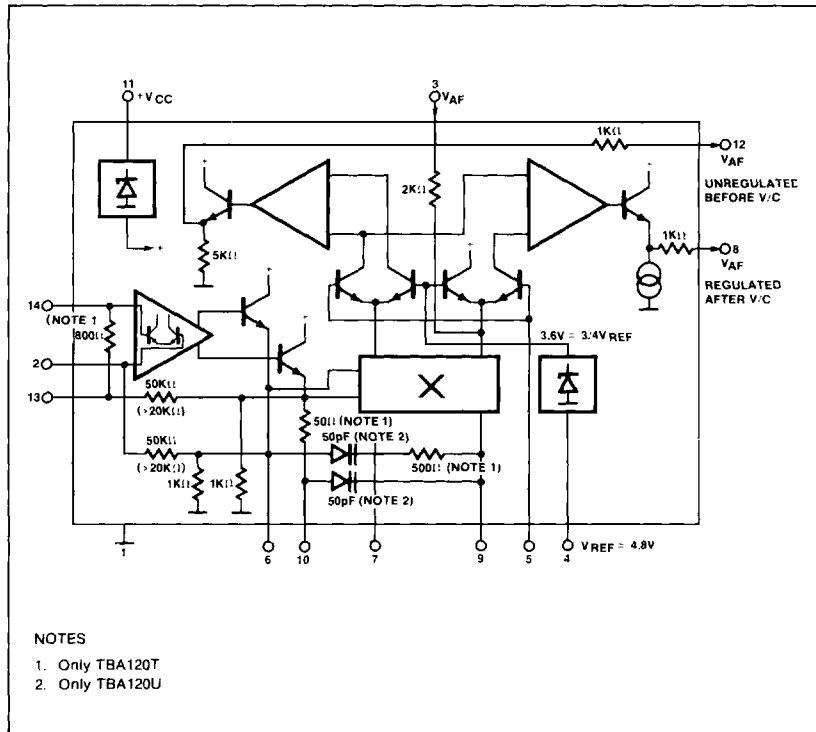
TBA120U

- This circuit incorporates all the advantages of TBA120T but input and demodulator are designed for use in connection with standard LC-circuits

PIN CONFIGURATION



BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

PARAMETER	RATING	UNIT	
V _{CC}	Supply voltage	18	V
T _A	Ambient temperature in operation	-15 to +70	°C
T _S	Storage temperature	-40 to +125	°C
P _{TOT}	Total power dissipation	400	mW
V _S	Voltage	6	V
I _A	Current	5	mA
R _{T3-14}	Ohmic resistance (TBA120U)	≤1	kΩ
R _{THSA}	Thermal resistance (system-air)	≤120	K/W
V _{CC}	Range of operation	10 to 18	V
f	Frequency range	0 to 12	MHz

DC ELECTRICAL CHARACTERISTICS $T_A = 25^\circ\text{C}$, $V_{CC} = 12\text{V}$ unless otherwise specified.

PARAMETER	TEST CONDITIONS	TBA120T/120U			UNIT
		Min	Typ	Max	
I_{CC}	Total current consumption	9.5	13.5	17.5	mA
V_8	DC level of output signal	$V_i = 0$	4		V
V_{12}			4.9		V
V_4			4.8	5.3	V

AC ELECTRICAL CHARACTERISTICS $T_A = 25^\circ\text{C}$, $V_{CC} = 12\text{V}$ unless otherwise specified.*

PARAMETER	TEST CONDITIONS	TBA120/120U			UNIT	
		Min	Typ	Max		
G_V	IF voltage gain	V_6/V_{14} ($f_{IF} = 5.5\text{MHz}$)			dB	
V_{app}	Output voltage with limiting at each output		68 250		mV	
R_{q8}	Output impedance	Pin 8	1.1		$k\Omega$	
R_{q12}	Input impedance	Pin 12	1.1		$k\Omega$	
R_{13}			2		$k\Omega$	
R_{14}	Internal impedance		12		Ω	
V_8	Residual IF voltage without deemphasis		20		mV	
V_{12}			30		mV	
V_8/V_3	AF gain	AF not regulated	7.5		dB	
$V_{AF/8}$	Regulation at certain ratio of divider	$R_{4-5} = 5k\Omega$, $R_{5-1} = 13k\Omega$	20	28	36	dB
$\frac{V_{AFMAX}}{V_{AFMIN}}$	Range of volume control	Referred to pin 8	70	85		dB
R_{4-5}^*	Resistance	$f_{IF} = 5.5\text{MHz}$, $f = \pm 50\text{kHz}$, $f_{MOD} = 1\text{kHz}$	1		10	$k\Omega$
V_{lim}	Input voltage for limitation		30		60	μV
V_8/V_{11}	Hum suppression		35		dB	
V_{12}/V_{11}			30		dB	

*NOTE

If dc volume control is not used, pin 4 has to be connected directly to pin 5.

AC ELECTRICAL CHARACTERISTICS TBA120T $T_A = 25^\circ\text{C}$, $V_{CC} = 12\text{V}$ unless otherwise specified.

PARAMETER	TEST CONDITIONS	TBA120T ONLY			UNIT
		Min	Typ	Max	
Z_{IN}	Input impedance		800/5		Ω/pF
a_{AM}	AM suppression		50	60	dB
V_8	AF output voltage	$f_{IF} = 5.5\text{MHz}$, $f = +50\text{kHz}$, $f_{MOD} = 1\text{kHz}$	650	900	mV
V_{12}			400	650	mV

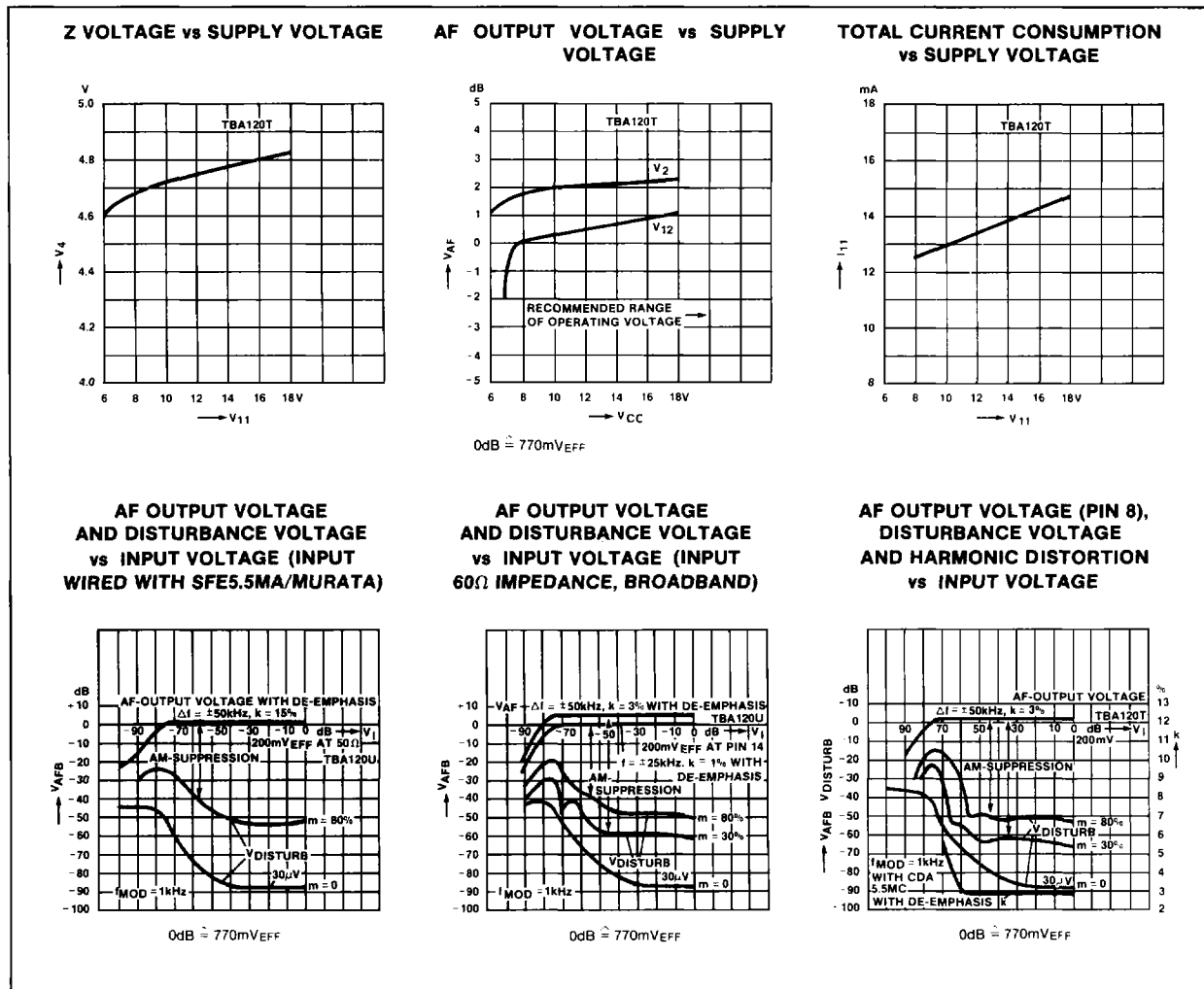
*NOTE

If dc volume control is not used, pin 4 has to be connected directly to pin 5

AC ELECTRICAL CHARACTERISTICS TBA120V $T_A = 25^\circ\text{C}$, $V_{CC} = 12\text{V}$ unless otherwise specified.

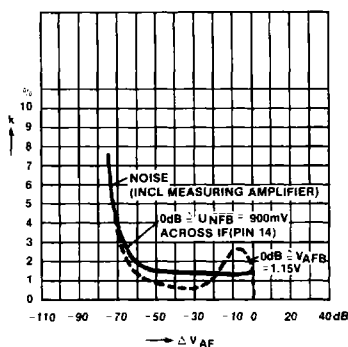
PARAMETER	TEST CONDITIONS	TBA120U ONLY			UNIT
		Min	Typ	Max	
Z_I	Input impedance	$f_{IF} = 5.5\text{MHz}$			$\text{k}\Omega/\mu\text{F}$
a_{AM}	AM suppression	$f_{IF} = 5.5\text{MHz}$, $f = \pm 50\text{kHz}$, $V_I = 500\mu\text{V}$, $f_{MOD} = 1\text{kHz}$, $m = 30\%$			dB
$V_{8\text{eff}}$	AF output voltage	$f_{IF} = 5.5\text{MHz}$, $f = \pm 50\text{kHz}$, $V_I = 500\mu\text{V}$, $f_{MOD} = 1\text{kHz}$, $Q_8 \approx 45$, $k = 4\%$			mV
$V_{12\text{eff}}$					mV
k	Harmonic distortion	$f_{IF} = 5.5\text{MHz}$, $f = \pm 50\text{kHz}$, $V_I = 10\text{mV}$, $f_{MOD} = 1\text{kHz}$, $Q_8 \approx 20$			%

TYPICAL PERFORMANCE CHARACTERISTICS

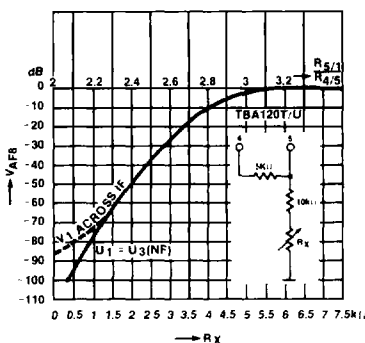


TYPICAL PERFORMANCE CHARACTERISTICS (Cont'd)

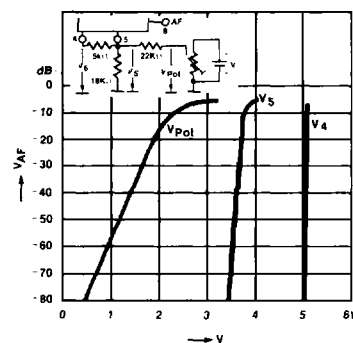
HARMONIC DISTORTION vs VOLUME CONTROL



AF OUTPUT VOLTAGE (PIN 8) vs POTENTIOMETER RESISTANCE AND vs RATIO OF RESISTANCES



AF OUTPUT VOLTAGE (PIN 8) vs VOLTAGE FEEDING INTO PIN 5

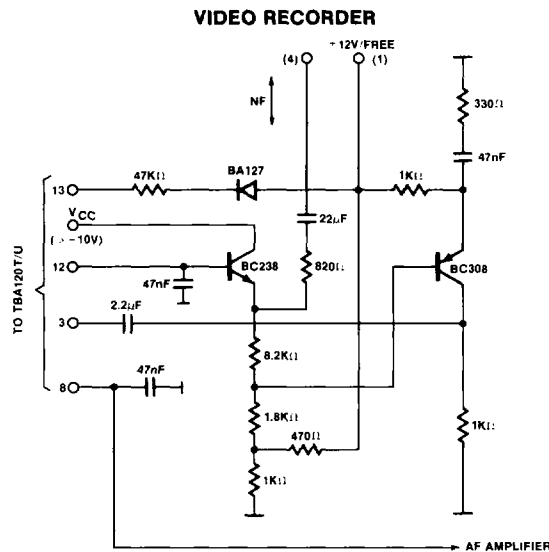


With electrolytic capacitor 47μF from pin 11 to ground.

V_{IF} = 60mV_{EFF}, f_{IF} = 5.5MHz, .1f = ±50kHz, f_{MOD} = 1kHz, V_{CC} = 18V

TEST CIRCUITS

CIRCUIT FOR DIRECT CONNECTION TO VIDEO RECORDERS



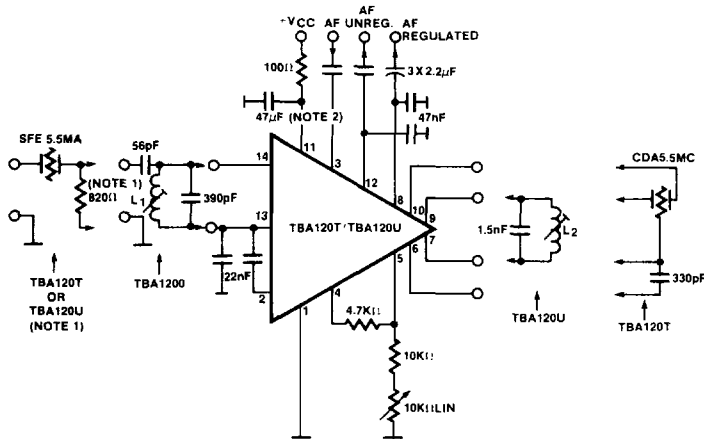
SOCKET (1): Switching voltage: at playback +12V at input free
 SOCKET (4): Simultaneous in and output for AF

FUNCTION:

When switching voltage applied the emitter follower, BC238, on the output is blocked and the buffer stage, BC308, is switched on. It includes a pre-emphasis to balance the de-emphasis at the AF output. The IF amplifier is put out of the operation by the diode, BA127, and the 47kohm resistor. The remote controllable volume regulator in the TBA120 T/U is used for recording and playback.

TEST CIRCUITS (Con't)

RECOMMENDED APPLICATION CIRCUIT (5.5MHz)



L₁: 20 windings 15 x 0.05 CuLS; Q₀ ≈ 73
 L₂: 9 windings 0.25 CuLS; Q₀ ≈ 40
 Coil Assembly Vogt D41 — 2165 (2438) without gaussian core

NOTES

1. 820 Ohm is no longer necessary for TBA120T, as resistance is integrated.
2. Omitting the electrolytic capacitor 47μF on pin 11 changes volume-control range.