

TBA 120T

- 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 and 18 V supply voltage of the same level as TBA 120S operating at 15 V 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 characteristic is necessary.

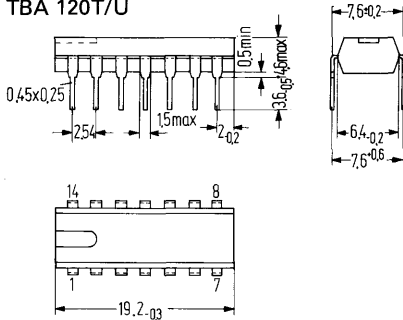
TBA 120U

- This circuit incorporates all the advantages of TBA 120T but input and demodulator are designed for use in connection with standard LC-circuits.

Type	Ordering codes
TBA 120T	Q67000-A919
TBA 120U	Q67000-A920

Package outlines

TBA 120T/U



Plastic plug-in package
20 A 14 DIN 41866
14 pins, dual-in-line
Weight approx. 1.1 g
Dimensions in mm

Absolute maximum ratings

Supply voltage	V_{cc}	18	V
Junction temperature	T_j	150	°C
Storage temperature	T_s	-40 to +125	°C
Voltage	V_s	6	V
Current	I_4	5	mA
Thermal resistance (system-air)	R_{thsa}	≤120	K/W

Range of operation

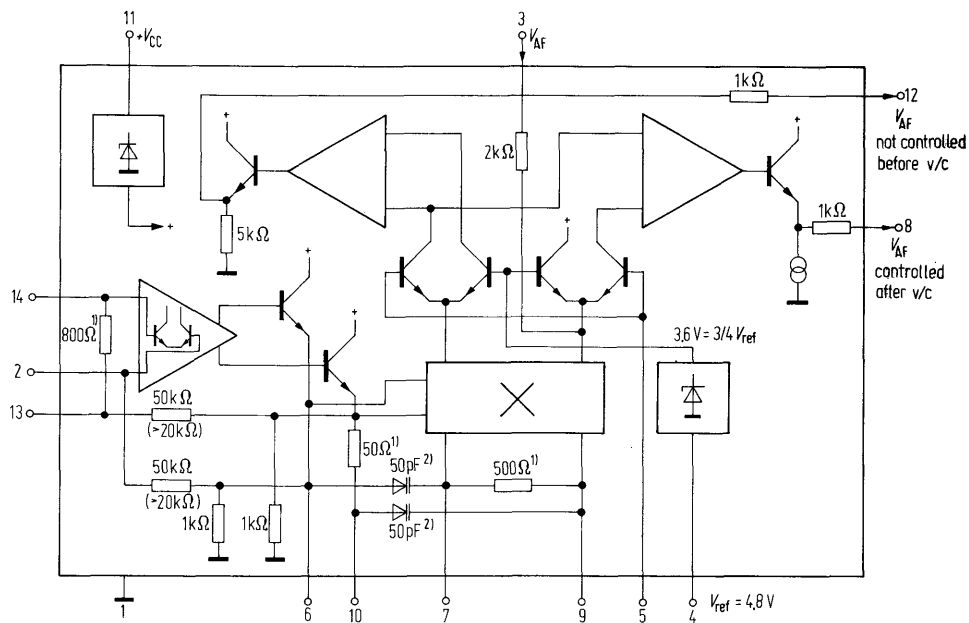
Supply voltage	V_{cc}	10 to 18	V
Ambient temperature in operation	T_{amb}	-15 to +70	°C
Frequency range	f	0 to 12	MHz

Electrical characteristics ($V_{cc} = 12\text{ V}$, $T_{amb} = 25\text{ °C}$)

	min	typ	max		
Total current consumption	I_{cc}	9.5	13.5	17.5	mA
IF voltage gain V_6/V_{14} ($f_{IF} = 5.5\text{ MHz}$)	G_V		68		dB
Output voltage with limiting at each output	V_{qpp}		250		mV
Output impedance Pin 8	R_{q8}		1.1		k Ω
Pin 12	R_{q12}		1.1		k Ω
Shunt resistance	R_{13-14}			1	k Ω
Input impedance	R_{13}		2		k Ω
Internal impedance	R_{14}		12		Ω
DC level of output signal ($V_i = 0$)	V_8		4		V
	V_{12}		4.9		V
Stabilized voltage	V_4	4.2	4.8	5.3	V
Residual IF voltage without deemphasis	V_8		20		mV
	V_{12}		30		mV
AF gain (AF not controlled)	V_8/V_3		7.5		
Down control	$V_{AF/8}$	24	30	34	dB
($R_{4-5} = 5\text{ k}\Omega$, $R_{8-1} = 13\text{ k}\Omega$)					
Range of volume control (referred to pin 8)	V_{AFmax}	70	85		dB
Resistance	V_{AFmin}				
Input voltage for limiting ($f_{IF} = 5.5\text{ MHz}$, $\Delta f = \pm 50\text{ kHz}$, $f_{mod} = 1\text{ kHz}$)	R_{4-5}^{-1}	1		10	k Ω
Hum suppression	$V_{i\text{lim}}$		30	60	μV
	V_8/V_{11}		35		dB
	V_{12}/V_{11}		30		dB
Signal-to-noise distance	$a_{S/N}$	80	85		dB
Noise voltage (according to DIN 45405)	V_n		50	150	μV
TBA 120 T only:					
Input impedance ($f_{IF} = 5.5\text{ MHz}$)	Z_i		800/5		Ω/pF
AM suppression ($f_{IF} = 5.5\text{ MHz}$, $\Delta f = \pm 50\text{ kHz}$, $V_i = 500\text{ }\mu\text{V}$, $f_{mod} = 1\text{ kHz}$, $m = 30\%$)	a_{AM}	50	60		dB
AF output voltage ($f_{IF} = 5.5\text{ MHz}$, $\Delta f = \pm 50\text{ kHz}$, $f_{mod} = 1\text{ kHz}$)	$V_{8\text{ eff}}$	650	900		mV
	$V_{12\text{ eff}}$	400	650		mV
TBA 120 U only:					
Input impedance ($f_{IF} = 5.5\text{ MHz}$)	Z_i	15/6	40/4.5		k Ω/pF
AM suppression ($f_{IF} = 5.5\text{ MHz}$, $\Delta f = \pm 50\text{ kHz}$, $V_i = 500\text{ }\mu\text{V}$, $f_{mod} = 1\text{ kHz}$, $m = 30\%$)	a_{AM}	50	60		dB
AF output voltage ($f_{IF} = 5.5\text{ MHz}$, $\Delta f = \pm 50\text{ kHz}$, $V_i = 10\text{ mV}$, $f_{mod} = 1\text{ kHz}$, $Q_B \approx 45$, $k = 4\%$)	$V_{8\text{ eff}}$	850	1200		mV
	$V_{12\text{ eff}}$	600	1000		mV
Harmonic distortion ($f_{IF} = 5.5\text{ MHz}$, $\Delta f = \pm 50\text{ kHz}$, $V_i = 10\text{ mV}$, $f_{mod} = 1\text{ kHz}$, $Q_B \approx 20$)	k		1		%

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

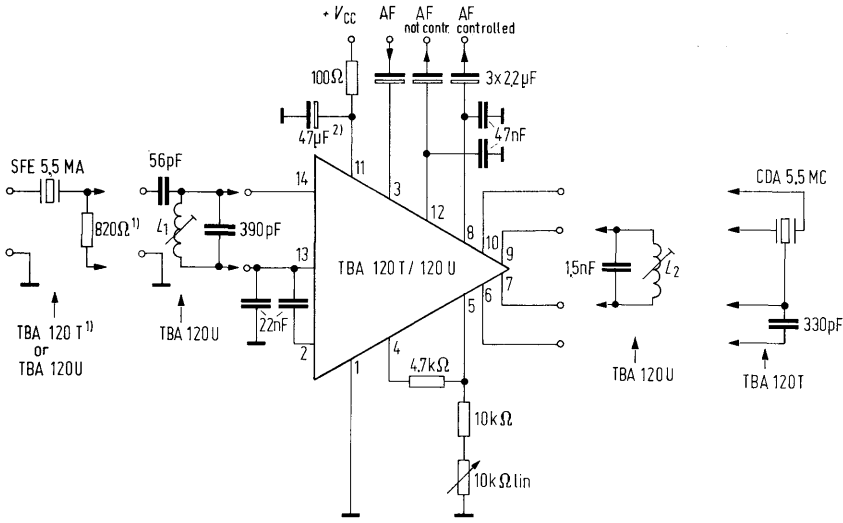
Block circuit diagram



¹⁾only TBA 120T

²⁾only TBA 120U

Recommended application circuit (5.5 MHz)



L_1 : 20 turns 15×0.05 CuLS; $Q_o \approx 73$

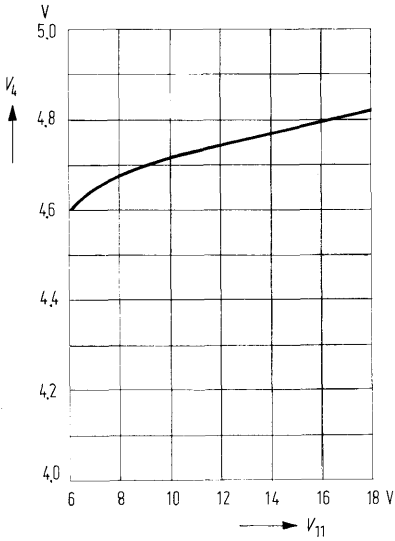
L_2 : 9 turns 0.25 CuLS; $Q_o \approx 40$

Coil Assembly Vogt D41 – 2165 (2438) without gaussion core

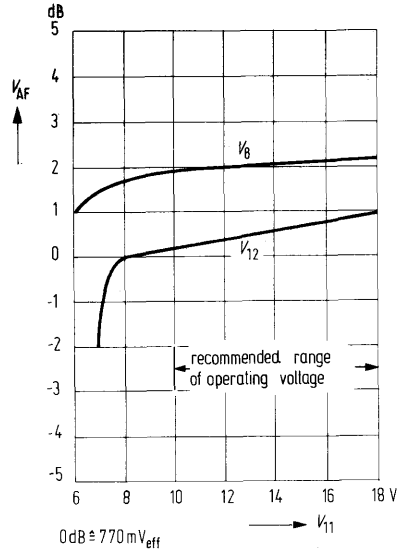
¹⁾ 820 Ohm is no longer necessary for TBA 120T, as resistance is integrated.

²⁾ Omitting the electrolytic capacitor 47 μ F on pin changes volume-control range.

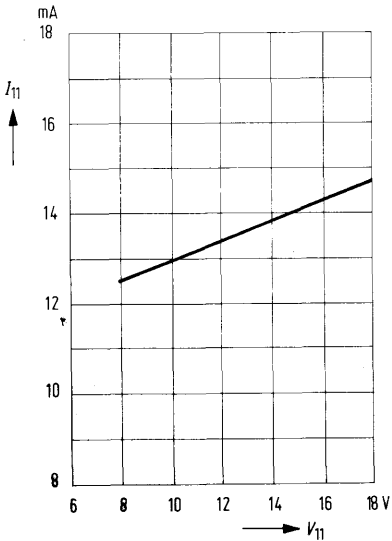
Z voltage versus supply voltage



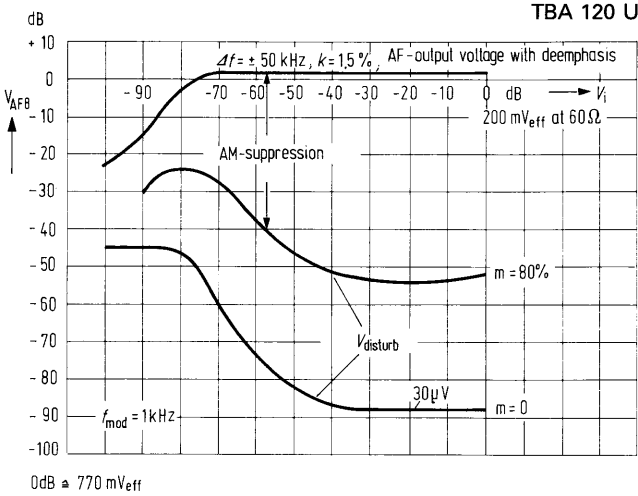
AF output voltage v. supply voltage



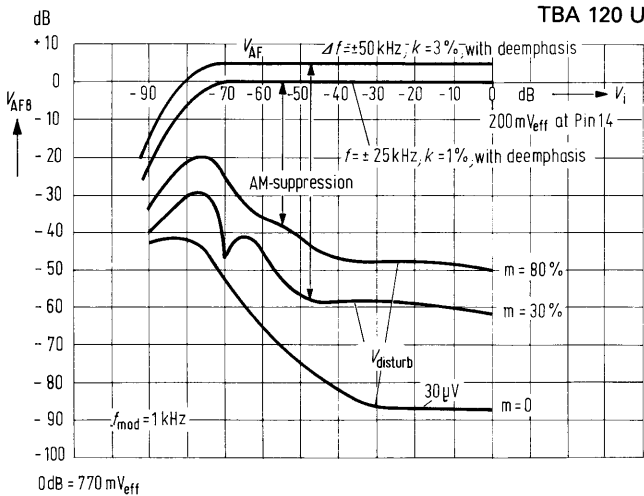
Total current consumption versus supply voltage



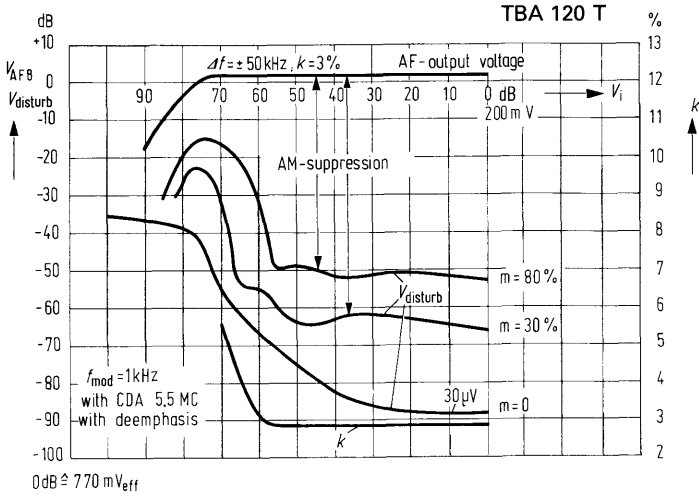
AF output voltage and disturbance voltage versus input voltage
(Input wired with SFE 5.5 MA/Murata)



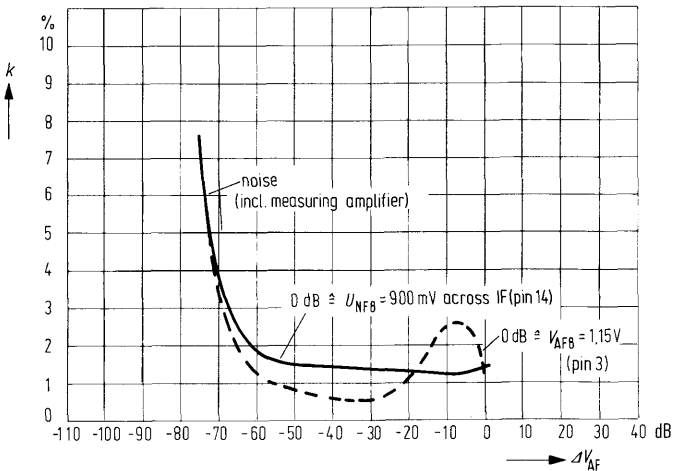
AF output voltage and disturbance voltage versus input voltage
(Input 60 Ω impedance, broadband)



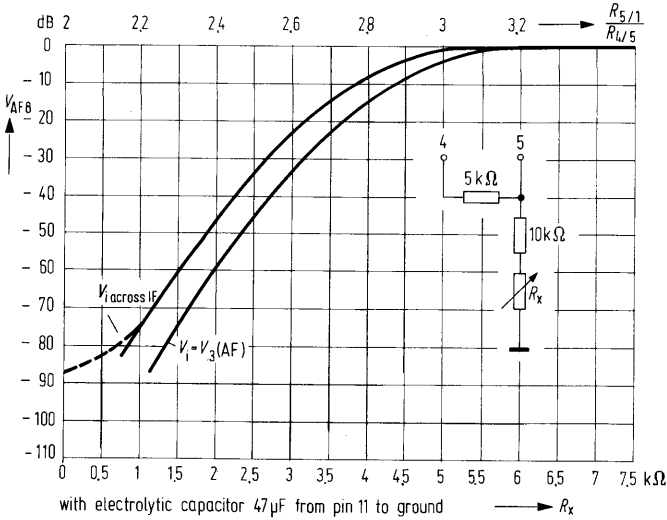
AF output voltage (pin 8), disturbance voltage and harmonic distortion versus input voltage



Harmonic distortion versus volume control

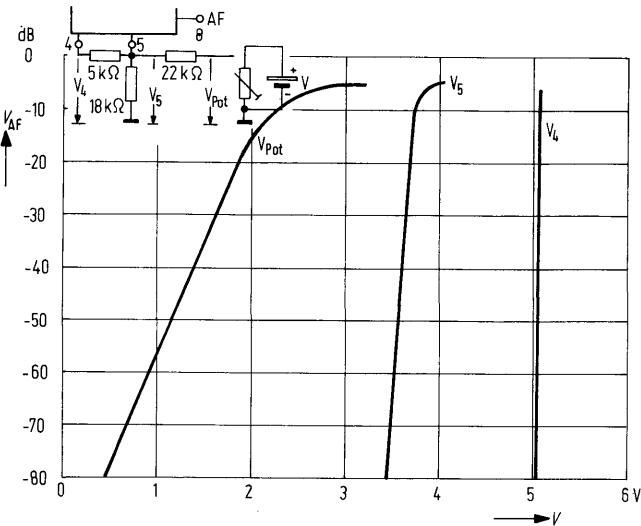


AF output voltage (pin 8) versus potentiometer resistance and versus ratio of resistance

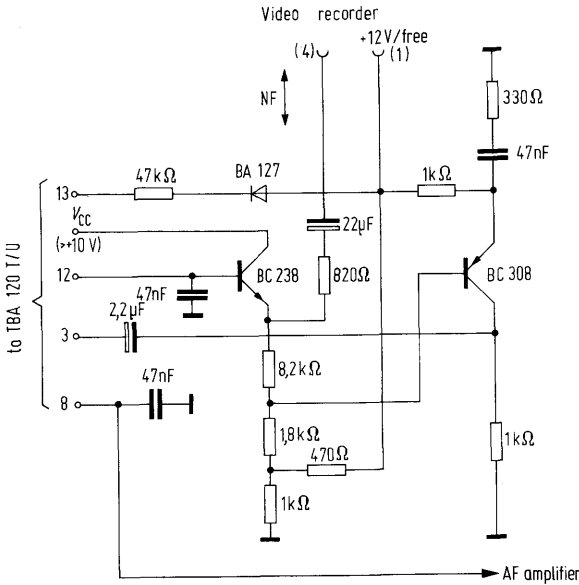


AF output voltage (pin 8) versus voltage feeding into pin 5

$V_{IRF} = 60 \text{ mV}_{\text{eff}}$, $f_{IRF} = 5.5 \text{ MHz}$, $\Delta f = \pm 50 \text{ kHz}$, $f_{\text{mod}} = 1 \text{ kHz}$, $V_{cc} = 18 \text{ V}$



Circuit for direct connection to video recorders



- Socket (1): Switching voltage: at playback: +12V
at recording: free
Socket (4): Simultaneous in and output for AF

Function:

When switching voltage applied the emitter follower, BC 238, on the output is blocked and the buffer stage, BC 308, is switched on. It includes a pre-emphasis to balance the de-emphasis at the AF-output. The IF-amplifier is put out of operation by the diode, BA 127, and the 47 k Ohm resistor. The remote controllable volume regulator in the TBA 120 T/U is used for recording and playback.