Not for new development

Combined AM/FM IF amplifier with AF pre-amplifier. A high level of integration as well as excellent characteristics of both amplifiers permit a universal application in battery and AC-operated receivers.

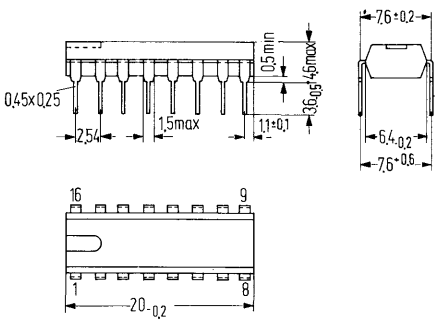
IF unit
- good control characteristics for AM operation
- good limiting characteristics for FM operation

AF unit
- good frequency characteristics 30 Hz . . . 70 kHz
- high driver current 130 mA, P_{max} (with AD 161; AD 162) = 10 W
- small harmonic distortion: up to 8 W, k <1%

Type	Ordering codes
TBA 460	Q67000-A284
TBA 460Q	Q67000-A579

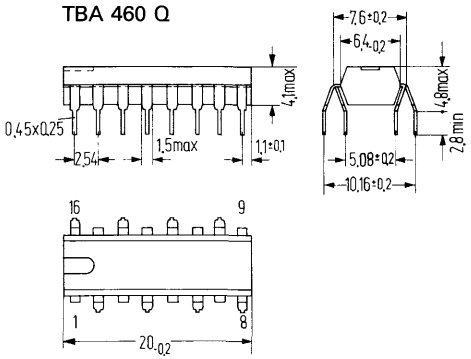
Package outlines

TBA 460



Plastic plug-in package
20 A 16 DIN 41866
16 pins, dual-in-line
Weight approx. 1.2 g

TBA 460 Q



Plastic plug-in package
20 A 16 DIN 41866 (similar)
16 pins, quad-in-line
Weight approx. 1.2 g

Dimensions in mm

Absolute maximum ratings

Supply voltage IF unit	V_{ccIF}	12	V
AF unit	V_{ccAF}	18	V
Storage temperature	T_s	–40 to +125	°C
Junction temperature	T_j	150	°C
Thermal resistance (system-air)	R_{thsa}	120	K/W

Range of operation

Supply voltage IF unit	V_{ccIF}	5 to 12	V
AF unit	V_{ccAF}	5 to 18	V
Ambient temperature in operation	T_{amb}	0 to +70	°C

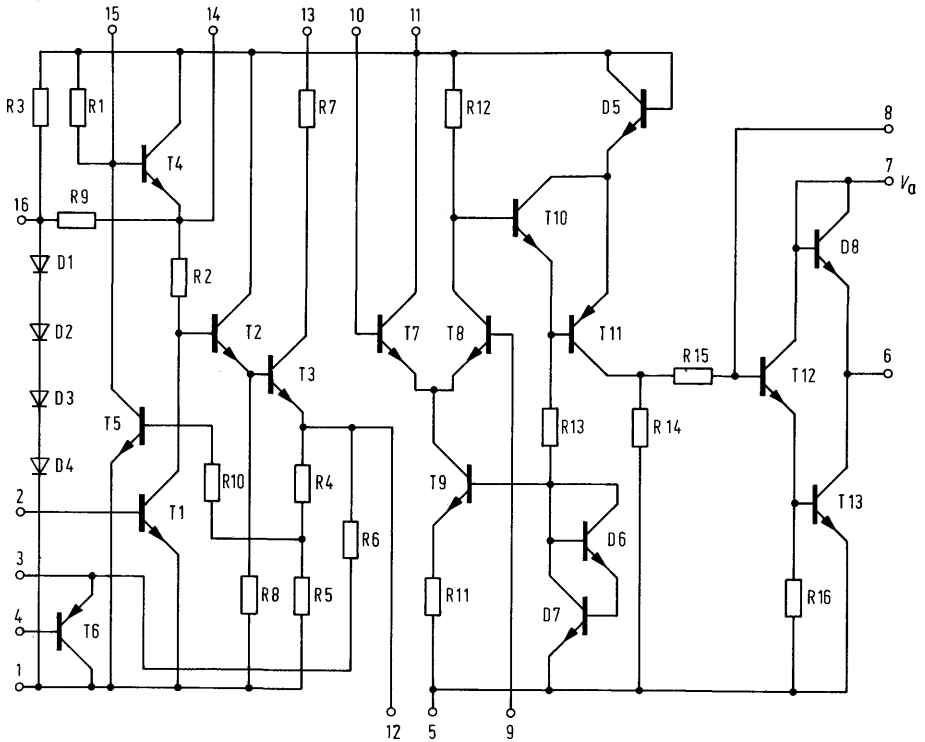
Electrical characteristics (V_{cc} = 9 V, T_{amb} = 25 °C)

		min	typ	max	
Total current (without signal)	I_{cc}		29		mA
Partial current (without signal)	I_{11}	8	11	14	mA
IF unit, AM operation (f_{IF} = 460 kHz, f_{AF} = 1 kHz, m = 80%)					
Stabilized voltage	V_{16}	2.8		2.95	V
Voltage gain	ΔG_v		90		dB
Range of control ($\Delta V_{AF} \leq$10 dB)	ΔG_v		60		dB
Voltage for starting control[1])	V_i		15		µV
Feedback voltage (V_i = 15 µV)	$-V_{fb}$		200		mV
AF output voltage (V_i = 15 µV)	V_{AF}		120		mV
Input voltage starting overdrive (k = 10%)	V_{OD}		25		mV
Input voltage starting pre-stage control	V_i		.9		V
Voltage for prestage control $V_i \leq$ 200 µV	V_{15}	2.8			V
$V_i \geq$ 3 mV	V_{15}			.5	V
IF unit, FM operation (f_{IF} = 10.7 MHz; f_{AF} = 1 kHz; Δf = ±75 kHz)					
Voltage gain	ΔG_V		86		dB
Input voltage for limiting[2])	V_i		500		µV
AF output voltage at limiting	$V_{AF\ eff}$		350		mV
AM suppression (FM: Δf = ±75 kHz; AM: m = 50%) at limiting	V_{FM}/V_{AM}		50		dB
AF unit					
Current consumption	$I_{7/6}$		22.5		mA
Diode voltage	$V_{7/6}$		.7		V
Quiescent voltage gain	G_{Vo}		72		dB
Output voltage (G_v = 45 dB; k = 10%)	V_{qeff}		3.2		V
Harmonic distortion (V_{qeff} = 2 V; G_v = 45 dB; R_G = 1 kΩ)	k		.3		%
Signal-to-noise ratio (V_q = 1 V)	$a_{S/N}$	60			dB
Voltage/frequency characteristic (±3 dB)	$\frac{V_q}{V_{q\,1000}}$		30 Hz to 70 kHz		
Maximum permissible collector current T13	I_{max}		130		mA
Noise voltage (referred to the input, R_G = 1 kΩ)	V_n		2.5		µV

[1]) Start of control is defined as that input voltage for which $\frac{\Delta V_i}{\Delta V_{AF}} = \frac{10}{3}$ dB.

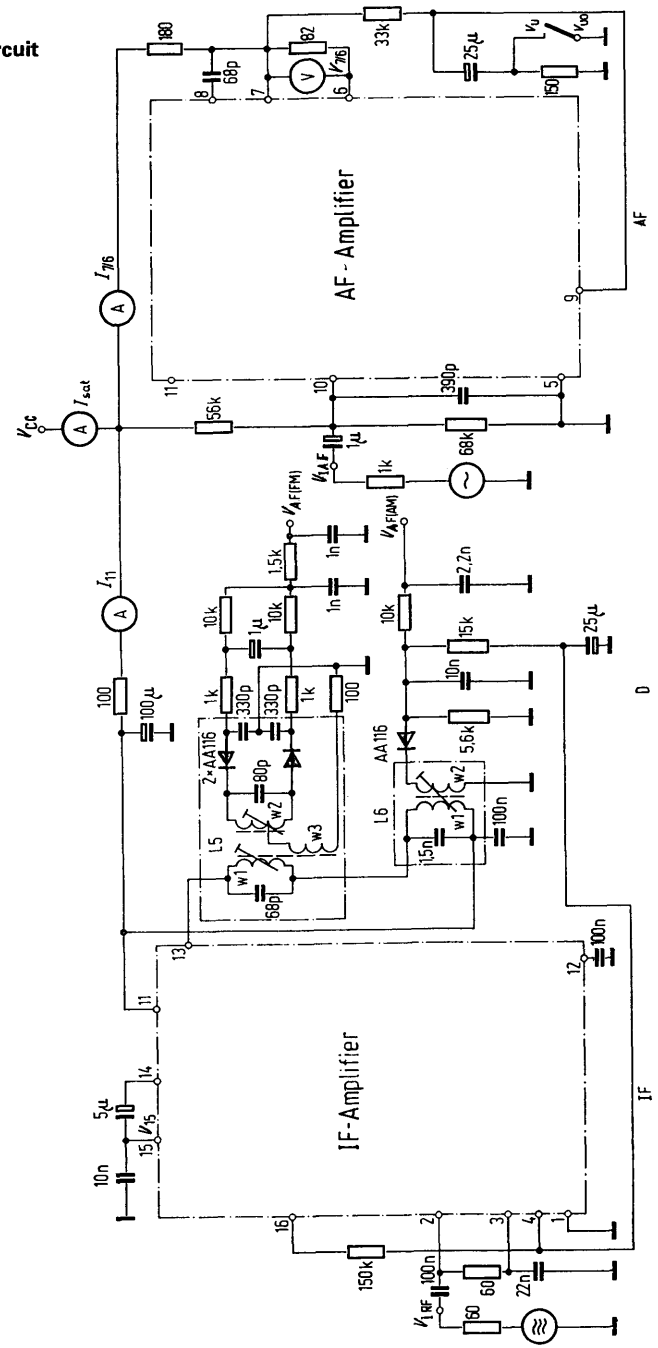
[2]) Start of limiting is defined as that input voltage for which the AF output voltage is down 3 dB. Reference potential is V_i = 100 mV.

Circuit diagram

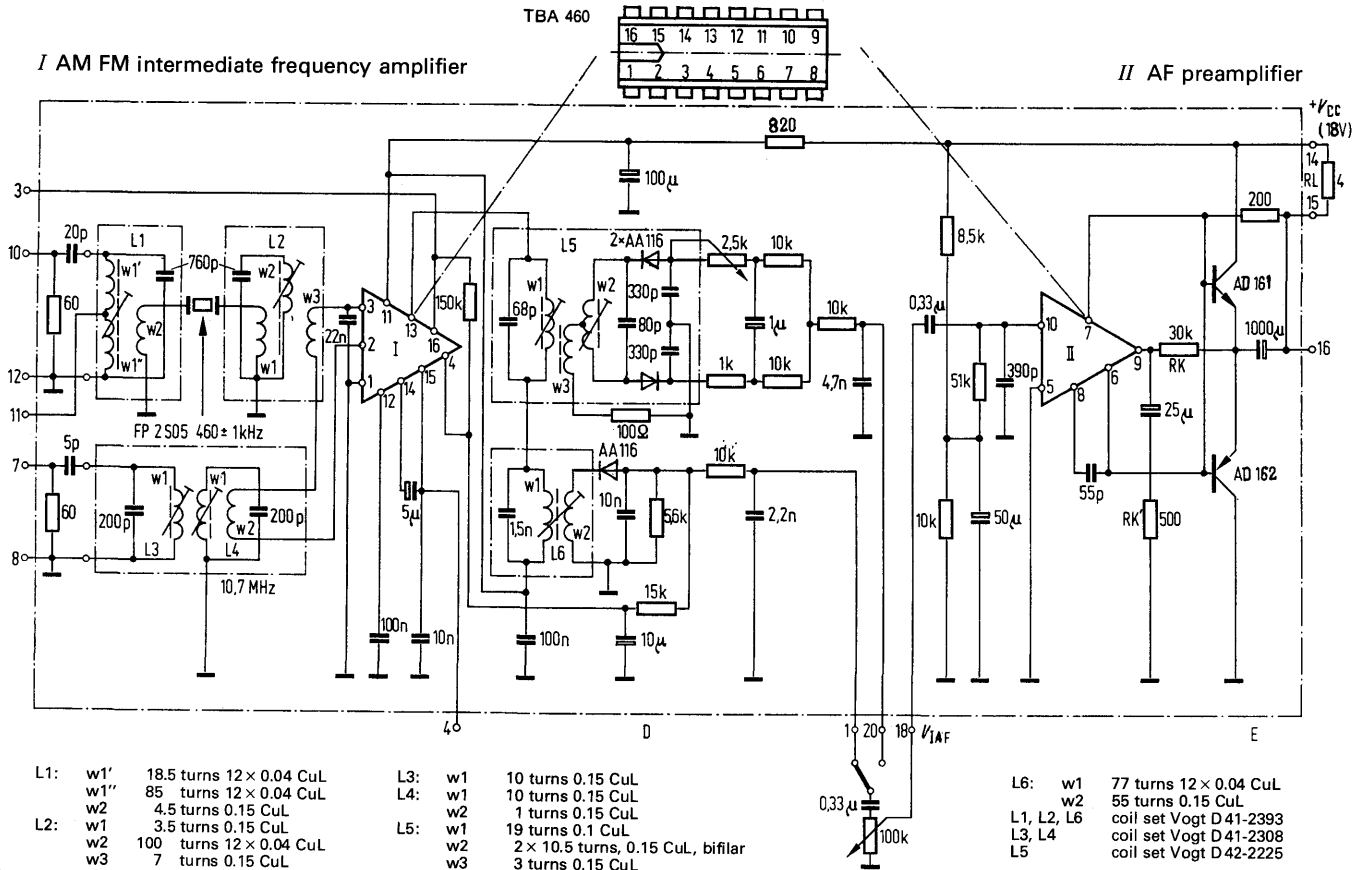


If the AF unit is operated separately, pin 5 should be connected to pin 1.

Test circuit



Application for 10 Watt AF output power



L1: w1' 18.5 turns 12 × 0.04 CuL
w1'' 85 turns 12 × 0.04 CuL
w2 4.5 turns 0.15 CuL
L2: w1 3.5 turns 0.15 CuL
w2 100 turns 12 × 0.04 CuL
w3 7 turns 0.15 CuL

L3: w1 10 turns 0.15 CuL
L4: w1 10 turns 0.15 CuL
w2 1 turns 0.15 CuL
L5: w1 19 turns 0.1 CuL
w2 2 × 10.5 turns, 0.15 CuL, bifilar
w3 3 turns 0.15 CuL

L6: w1 77 turns 12 × 0.04 CuL
w2 55 turns 0.15 CuL
L1, L2, L6 coil set Vogt D 41-2393
L3, L4 coil set Vogt D 41-2308
L5 coil set Vogt D 42-2225

ceramic resonator between L1 and L2:
Stemag FP 2S 05 (460 kHz ± 1 kHz)