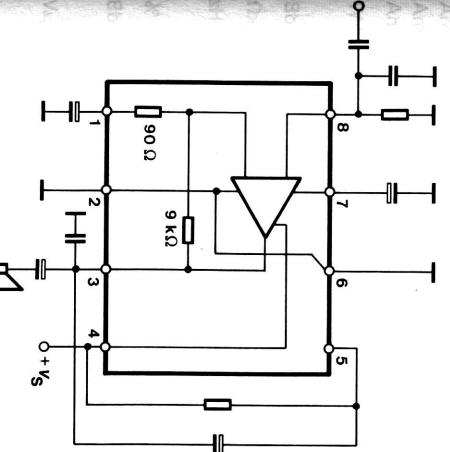


Monolithic Integrated Circuit

Application: Audio-Amplifier for portable radios, cassette recorders and general purposes.

Features:

- Large supply voltage range
 $V_S = 3\ldots 16\text{ V}$
- Low cross-over distortion
- Low harmonic distortion
- Audio output power $P_o = 1.6\text{ W}$
- High supply voltage rejection ratio
- Bootstrap circuit



85 4921 e

Fig. 1 Block diagramm and pin connections

Absolute maximum ratings

Reference point Pin 2, Pin 6	Pin 4	V_S	16	v
Supply voltage	Pin 3	I_{OM}	850	mA
Peak output current				
Power dissipation	P_{tot}		1	W
$T_{amb} = 50^\circ\text{C}$	T_J		150	$^\circ\text{C}$
Junction temperature	T_{sg}		-25...+150	$^\circ\text{C}$
Storage temperature range				

T2.048.1282 E

Thermal resistance
Junction ambient
 $R_{\text{thJA}} = 1 \text{ K/W}$
Electrical characteristics
 $V_S = 9 \text{ V}$, reference point: Pin 2, Pin 6, $G_V = 40 \text{ dB}$, $f = 1 \text{ kHz}$,
 $R_L = 8 \Omega$, $d = 10\%$, $T_{\text{amb}} = 25^\circ\text{C}$, unless otherwise specified

Supply voltage range
Oufluent drain current
 $V_S = 3 \text{ V}$
 $V_S = 9 \text{ V}$
 $V_S = 16 \text{ V}$

	Min.	Typ.	Max.
R_{thJA}	100	100	K/W
I_{SB}	8	8	mA
$T_{\text{amb}} = 25^\circ\text{C}$			
I_{SB}	1000	1000	mW
$T_{\text{amb}} = 50^\circ\text{C}$			
P_o	10	10	mW
P_o	100	100	mW
P_o	1000	1000	mW

Output power
Supply voltage rejection ratio
 $V_{\text{hum}} = 0.35 \text{ V}$, $C_1 = 100 \mu\text{F}$, $f_{\text{hum}} = 100 \text{ Hz}$

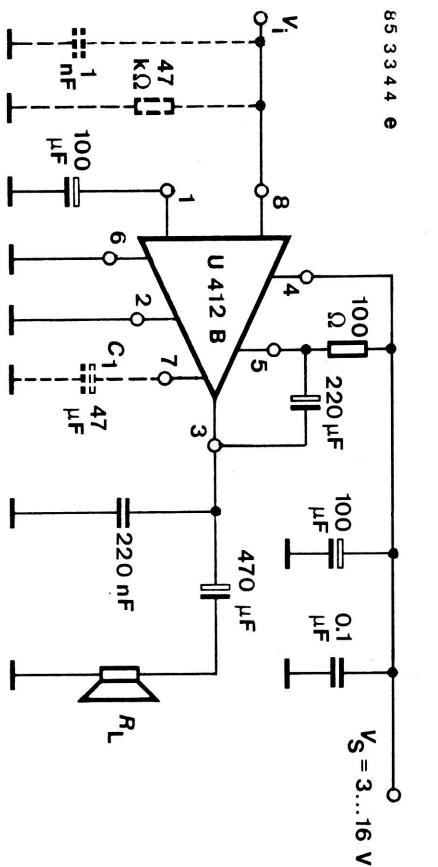
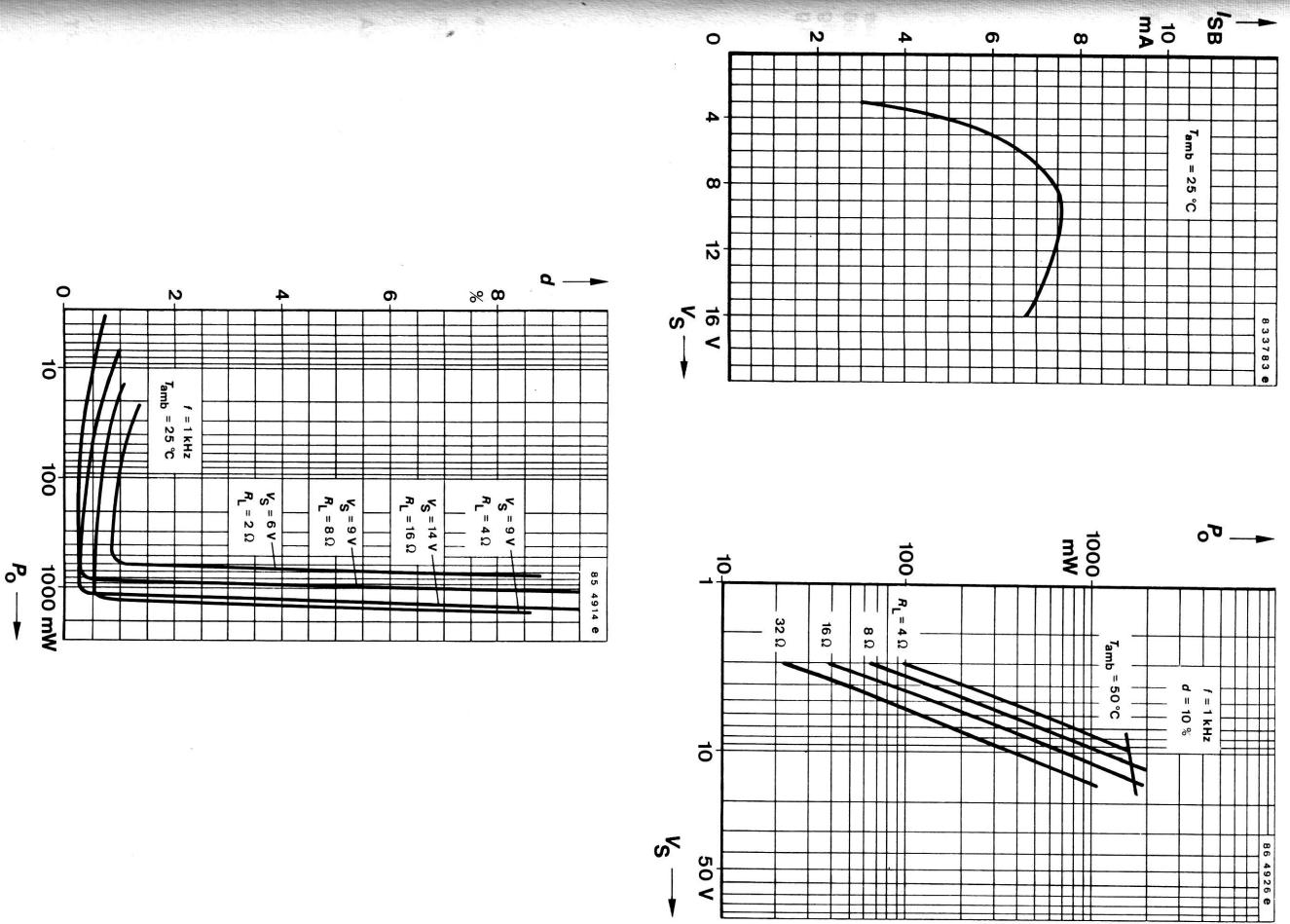
	Pin 8	SVR
B	40	50

Input resistance
Distortion
 $P_o = 50 \text{ mW}$

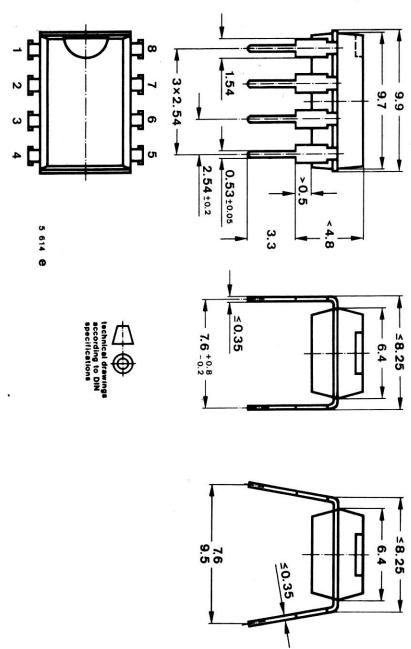
	Pin 8	R_i	B	100...28000
d	800	800	40	50
G_V	37	40	1	%
V_o	250	400	43	dB

Voltage gain
Output noise voltage
 $R_G = 0$, $B = 22\ldots 22000 \text{ Hz}$

	Pin 3	V_{no}	μV
		250	600

Fig. 2 Test circuit for: P_o , P_{tot} , d , V_{no} , B , G_V and application note

Dimensions in mm

**Monolithic Integrated Circuit**

Application: Audio-Amplifier for portable radios, cassette recorders and general purposes.

Features:

- Large supply voltage range $V_S = 3...16$ V
- Low cross-over distortion
- Low harmonic distortion
- Adjustable voltage gain $G_V = 34...54$ dB
- Audio output power $P_o = 1.5$ W
- Connection possibility for an external capacitor to suppress hum voltage
- Bootstrap circuit

20 A 8 DIN 41866
Case
DIP 8-polig
Weight max. 0.8 g

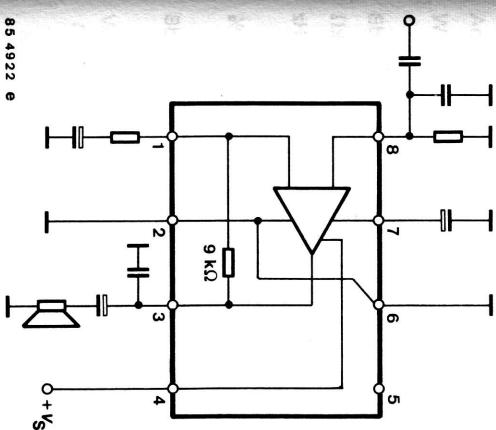


Fig. 1 Block diagramm and pin connections

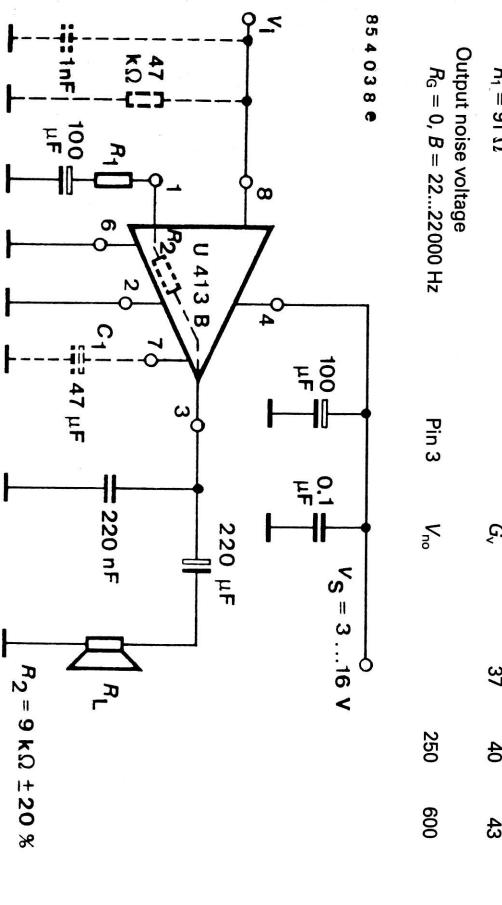
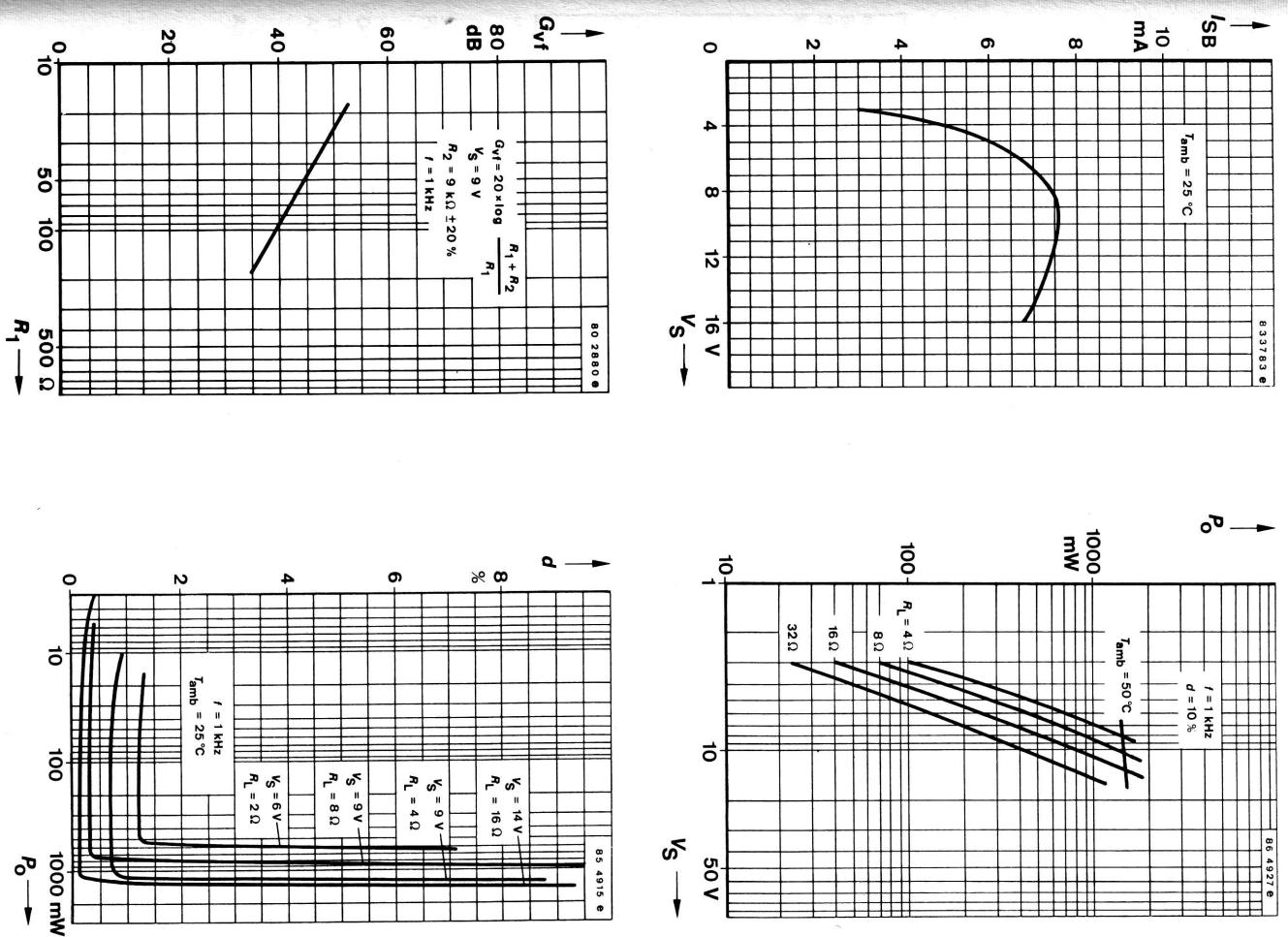
Absolute maximum ratings

Reference point Pin 2, Pin 6

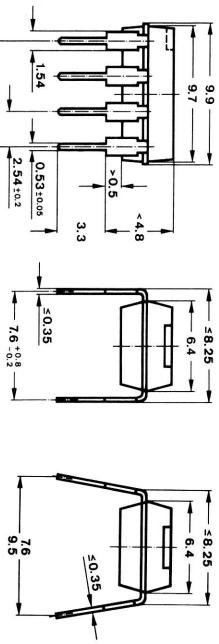
Supply voltage	Pin 4	V_S	16	V
Peak output current	Pin 3	I_{low}	850	mA
Power dissipation	P_{tot}	1	W	
$T_{\text{amb}} = 50^\circ\text{C}$	T_i	150	$^\circ\text{C}$	
Junction temperature	T_{sig}	-25...+150	$^\circ\text{C}$	
Storage temperature range				

T1.2349.183 E

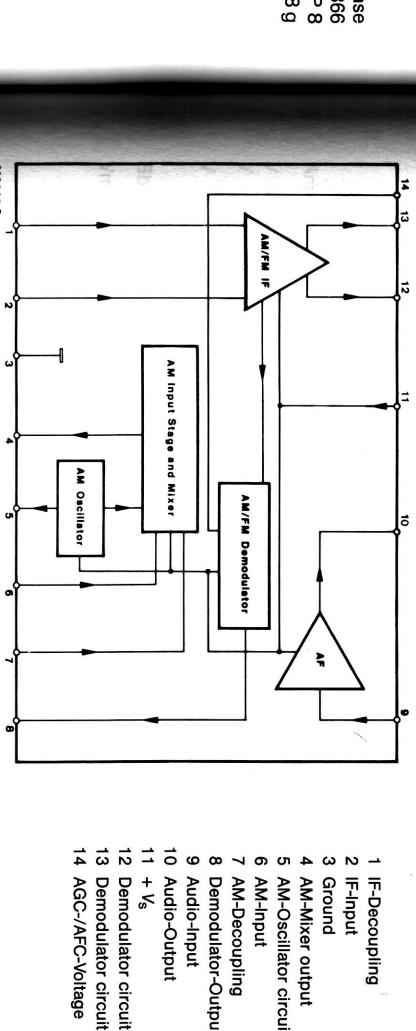
	Min.	Typ.	Max.	
	R_{thJA}	100	kW	
Junction ambient				
Electrical characteristics				
$V_S = 9\text{ V}$, reference point: Pin 2, Pin 6, $G_V = 40 \text{ dB}$, $f = 1 \text{ kHz}$,				
$R_L = 8\Omega$, $d = 10\%$, $T_{amb} = 25^\circ\text{C}$, unless otherwise specified				
Supply voltage range	Pin 4	V_S	3	16
Quiescent output voltage	Pin 3	V_{OB}	3.9	4.7
Quiescent drain current	Fig. 2	Pin 4	I_{SB}	2
$V_S = 3\text{ V}$	Fig. 2	Pin 4	I_{SB}	3
$V_S = 9\text{ V}$	Fig. 2	Pin 4	I_{SB}	7.5
$V_S = 16\text{ V}$	Fig. 2	Pin 4	I_{SB}	12
Output power				
Supply voltage rejection ratio	Pin 8	SVR	30	
Input resistance	Fig. 2	R_i	800	
Band width (-3 dB)	Fig. 2	B	100...28000	
Distortion	Fig. 2	d	0.4	1 %
$P_o = 50 \text{ mW}$				
Voltage gain, closed loop				
$R_1 = 91\Omega$				
Output noise voltage	Pin 3	V_{no}	250	600
$R_G = 0$, $B = 22\ldots 22000 \text{ Hz}$		G_V	37	40
			43	
		μV		

Fig. 2. Test circuit for: P_o , P_{ov} , d , V_{no} , B , G_V and application note

Dimensions in mm

**Monolithic Integrated Circuit****Applications:** AM-/FM-/IF-Amplifier for portable radios**Features:**

- Large supply voltage range $V_S = 3 \dots 15$ V
- High AM-Sensitivity
- Limiting threshold voltage $V_L = 50 \mu\text{V}$
- AM-Oscillator for LW, MW and SW
- AM-FM switching without high frequency voltages
- Additional audio preamplifier $G_V = 10 \text{ dB}$

**Description**

The integrated circuit U 416 B includes, with exception of the FM front end and audio amplifier, a complete AM-/FM-radio-circuit with additional audio preamplifier with $G_V = 10 \text{ dB}$.

Absolute maximum ratings

Reference point Pin 3, unless otherwise specified

Supply voltage range	Pin 11	V_S	3...15	V
Power dissipation	P_{tot}		300	mW
$T_{\text{amb}} = 65^\circ\text{C}$	T_j		125	°C
Junction temperature	T_{sig}		-25...+125	°C
Storage temperature range				

	R _{thJA}	Min.	Typ.	Max.
Junction ambient	200 K/W			

Electrical characteristics
 $V_S = 9$ V, reference points Pin 3, $T_{amb} = 25^\circ\text{C}$, unless otherwise specified

AF Amplifier

Voltage amplification $f = 1$ kHz	Pin 10	G_V	10	dB
Input resistance	Pin 9		800	kΩ
Load resistance	Pin 10	R_L	3.3	kΩ

AM-Amplifier

$f_1 = 1$ MHz, $f_{IF} = 455$ kHz, $f_{mod} = 1$ kHz, $m = 0.3$

Total supply quiescent current	Pin 10	I_{SB}	6	mA
Output quiescent voltage	Pin 8	V_{OB}	1.45	2.1
	Pin 10	V_{OB}	6	V
AGC-Quiescent voltage	Pin 14	V_{AGCQ}	1.4	2.1
Regulation range				V
$\Delta V_{oAF}/V_{AF} = 10$ dB	Pin 6	ΔV_I	70	dB
AF-Voltage at demodulator output	Pin 8	V_{oAF}	100	mV

FM-IF-Amplifier

$f_{IF} = 10.7$ MHz, $\Delta f = \pm 22.5$ kHz, $f_{mod} = 1$ kHz

Total supply quiescent current	Pin 8	I_{SB}	7	mA
AF-Output quiescent current	Pin 10	V_{OB}	1.5	V
	Pin 10	V_{OB}	6	V
AFC-Quiescent current	Pin 14	V_{AFQB}	1.8	2.8
Limiting threshold (-3 dB)	Pin 2	V_I	50	μV
AF-Voltage at demodulator output	Pin 8	V_{oAF}	100	mV

Different dc voltages are developed at Pin 14 due to gain spread of AM-IF-Amplifier. To determine the value of parallel resistance R_8 at the output of the demodulator Pin 8 for $V_S = 9$ V, AM mode without signal, dc voltage should be selected at Pin 14.

Voltage groups designation:

Group	1	2	3
V_{I4}	1.4...1.7 V	1.7...1.9 V	1.9...2.1 V
R_8	∞	47 kΩ	33 kΩ

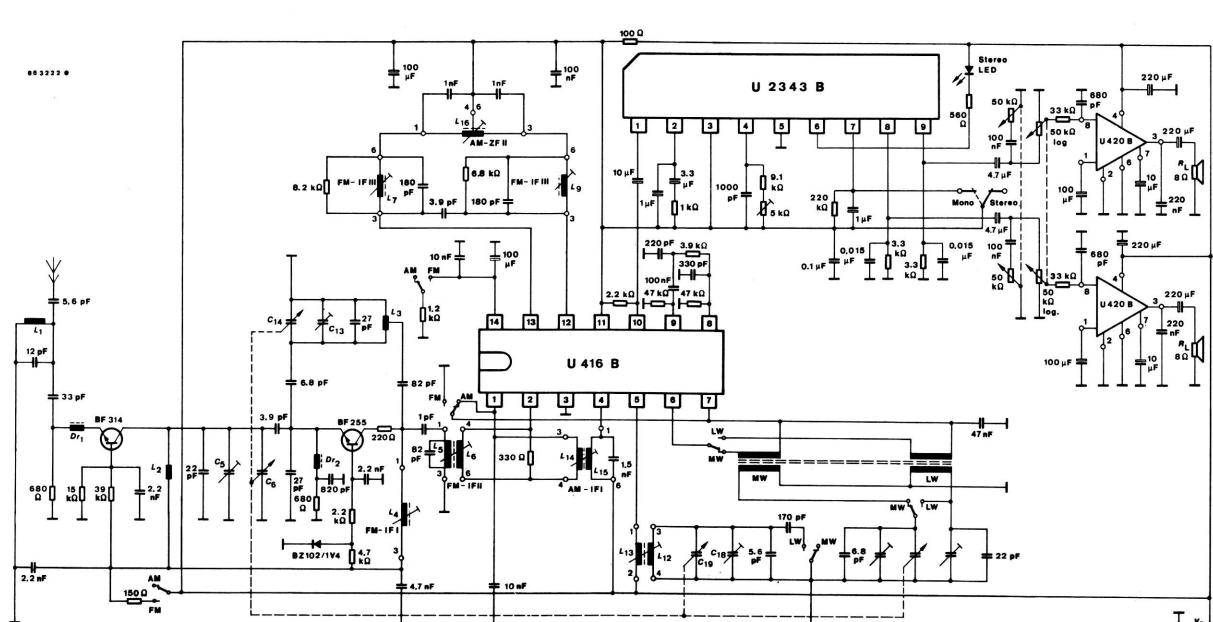
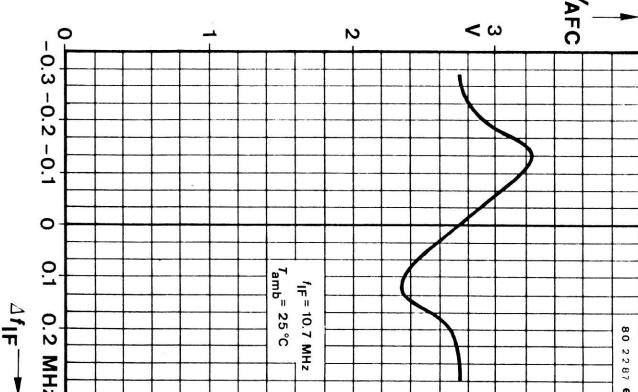
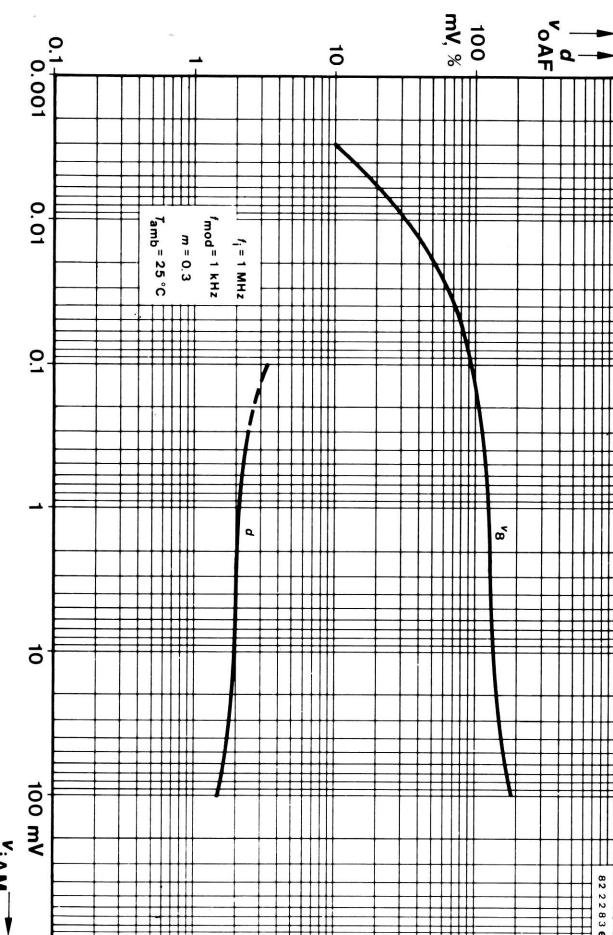
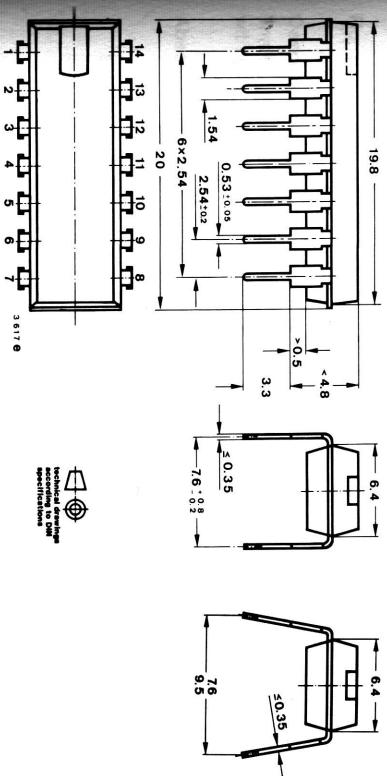


Fig. 2 FM-AM-Receiver circuit



Dimensions in mm



Case
20 A 14 DIN 41866
JEDEC MO 001 AA
Weight max. 1.5 g