

Monolithic Integrated Circuit

Description

The integrated circuit TDA 1083 includes, with exception of the FM front end, a complete AM-FM-radio-circuit with audio power amplifier. An internal Z-diode stabilizes

the supply voltage at $V_S \approx 13V$, which allows with the aid of a resistor and a rectifier, the circuit to be driven by a higher external supply voltage.

Applications: AM-FM- and Audio-Amplifier

Features

- Large supply voltage range $V_S=3 \dots 12V$
- High AM-Sensitivity
- Limiting threshold voltage $V_i=50 \mu V$
- Audio output power $P_0=0.7 W$
- AFC-connection for VHF-Tuner
- AM-FM switching without high frequency voltages

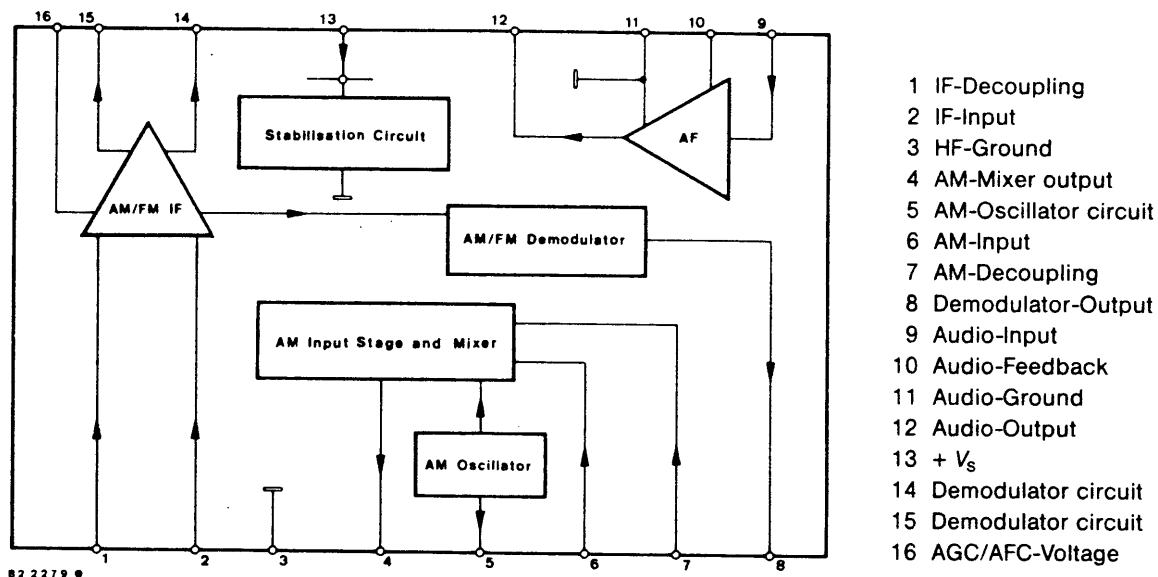


Figure 1 Block diagram and pin connections

Absolute Maximum Ratings

Reference points Pin 3 and 11, unless otherwise specified

Parameters	Symbol	Value	Unit
Supply voltage range Pin 13	V_S	3 ... 12	V
Supply current when using the integrated stabilisation circuit, $V_S=12.5$ to $14.3V$ Pin 13	I_S	50	mA
Power dissipation $T_{amb}=65^\circ C$	P_{tot}	600	mW
Junction temperature	T_j	125	$^\circ C$
Storage temperature range	T_{stg}	-25 ... +125	$^\circ C$

Thermal Resistance

Parameters	Symbol	Maximum	Unit
Junction ambient	R_{thJA}	100	K/W

Electrical Characteristics

$V_S=9$ V, reference points Pin 3 and 11, $T_{amb}=25^\circ\text{C}$, unless otherwise specified

Parameters	Test Conditions / Pin	Symbol	Min	Typ	Max	Unit
AF Amplifier						
AF voltage amplification	$f=1$ kHz	G_v		40		dB
Input impedance		R_i		150		k Ω
Output power	Figure 4, 5 $V_S=5.5$ V, $R_L=8\Omega=10\%$	P_o	300			mW
AM-IF Amplifier, $f_i=1$ MHz, $f_{IF}=455$ kHz, $f_{mod}=1$ kHz, $m=0.3$						
DC voltages at AM mode without signal at: $V_S=3$ V $I_S=42$ mA ($V_S=12.5\dots14.3$ V)	Pin 10	V_{10B}		1.2		V
	Pin 12	V_{12B}	1.0		1.4	V
	Pin 13	V_{13B}	3.0	3.0	3.0	V
	Pin 16	V_{16B}	1.25		2.0	V
	Pin 10	V_{10B}		1.2		V
	Pin 12	V_{12B}	5.9		7.2	V
	Pin 13	V_{13B}	12.5	13.3	14.3	V
	Pin 16	V_{16B}	1.5		2.0	V
Regulation range for: $V_{oAF}/V_{oAF} = -10$ 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						
DC voltages at FM mode without signal at: $V_S=3$ V $I_S=42$ mA ($V_S=12.5\dots14.3$ V)	Pin 10	V_{10B}		1.2		V
	Pin 12	V_{12B}	1.0		1.4	V
	Pin 13	V_{13B}	3.0	3.0	3.0	V
	Pin 16	V_{16B}	1.8		2.8	V
	Pin 10	V_{10B}		1.2		V
	Pin 12	V_{12B}	5.9		7.2	V
	Pin 13	V_{13B}	12.5	13.3	14.3	V
	Pin 16	V_{16B}	2.0		3.1	V
Limiting threshold (-3 dB)	Pin 2	V_i		50		μ V
AF voltage at demodulator output	Pin 8	V_{oAF}		100		mV

Components in Figure 9

L ₁	=	4	Wdg Ø 0.45 CuL, Threaded core 7.5x3 material: Fi 01 U8 (Vogt GmbH)
L ₂	=	5	Wdg Ø 0.45 CuL
L ₃	=	5	Wdg Ø 0.45 CuL, air core Ø 3.5 mm
L ₄	=	3+3	Wdg Ø 0.45 CuL, air core Ø 2.7 mm
L ₅	=	12	Wdg Ø 0.25 CuL, Pin 3-1, Filter kit 154 AN(C) or 154ANS-7 A6363A0 (TOKO, Componex)
L ₆	=	2	Wdg Ø 0.25 CuL, Pin 4-6
L ₇	=	7	Wdg Ø 0.25 CuL, Pin 6-3, Filter kit 154AN(C) or 154EES-7 A6392FA (TOKO, Componex)
L ₈	=	7	Wdg Ø 0.16 CuL, Pin 1-4, Filter kit 154AN(C) or 154EES-7 A6391ABM (TOKO, Componex)
L ₉	=	5	Wdg Ø 0.16 CuL, Pin 2-6
L ₁₀	=	96	Wdg Ø 0.25 CuLs, Ferrite aerial Ø 8x130 mm, Type 031039-2103-606, (Draloric)
L ₁₁	=	6	Wdg Ø 0.25 CuLs
L ₁₂	=	78	Wdg Ø 0.09 CuL, Pin 3-4, Filter kit RBR or RWOS-6A7609AAU (TOKO, Componex)
L ₁₃	=	7	Wdg Ø 0.09 CuL, Pin 2-1
L ₁₄	=	18	Wdg Ø 0.09 CuL, Pin 3-4, Filter kit RHN(C) or RHCS-1A7607AQH (TOKO, Componex)
L ₁₅	=	46+100	Wdg Ø 0.09 CuL, Pin 6-2-1
L ₁₆	=	72+72	Wdg Ø 0.09 CuL Pin 3-4/6-1, Filter kit RHN(C) or RHNS-1A7608AZP (TOKO, Componex)
455 kHz	=		Ceramic filter LBF 6 (Componex) or CFU 445 H (Stettner)
10.7 MHz	=		Ceramic filter 10.7 MF-18 (Componex) or SFE 10.7 MA (Stettner)
D _{r1} , D _{r3}	=		Ferrit bead on the transistor terminal
D _{r2}	=	16	Wdg Ø 0.25 CuL, Ø 2 air core
D _{r4}	=	6	Wdg Ø 0.15 CuL, Ø 2.1x3 mm Ferrit bead
C ₆ =C ₁₄	=		4.5 ... 20 pF, Variable capacitor Type CY2-22124-RT02 (TOKO, Componex)
C ₁₉	=		5 ... 80 pF
C ₂₁	=		5 ... 140 pF
R ₈	=		according to gain groups ∞, 47 kΩ or 33 kΩ

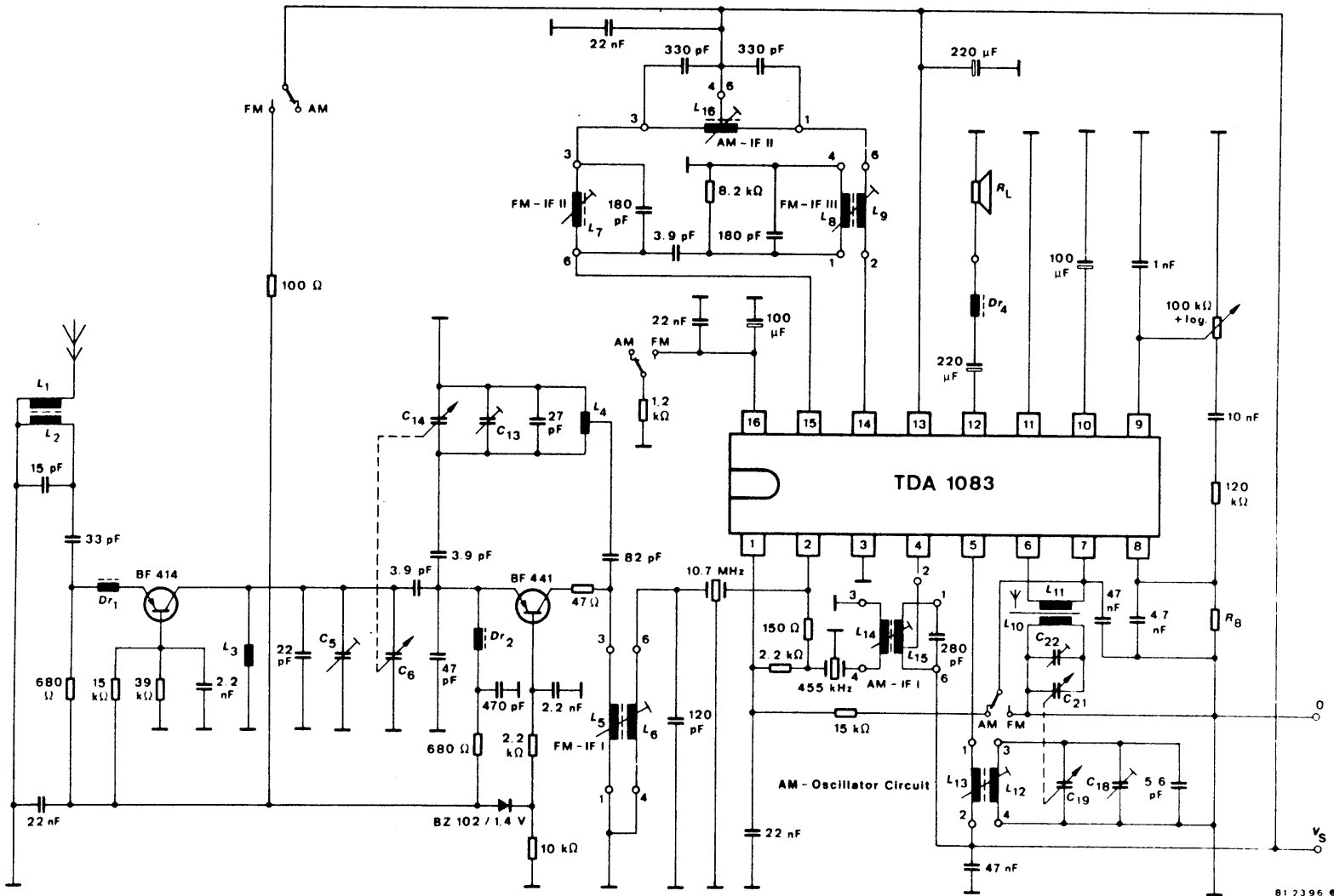


Figure 9 FM-/AM-receiver circuit

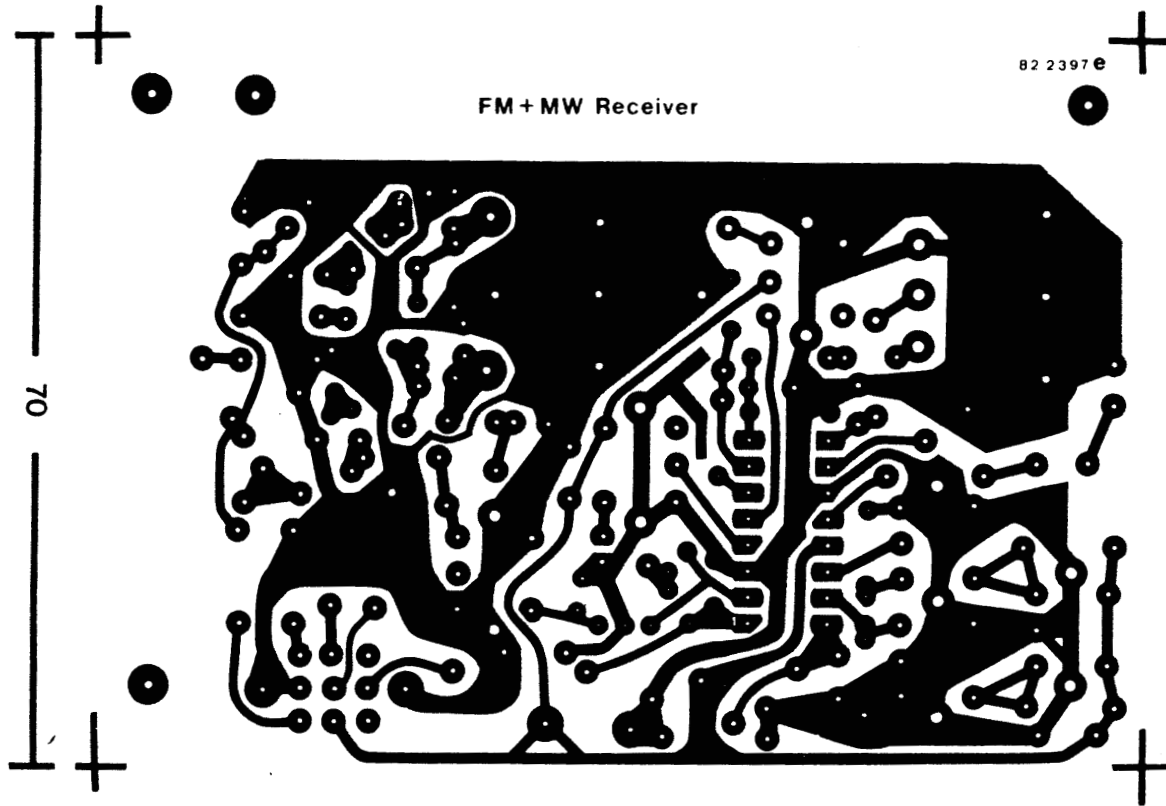


Figure 10 Layout of circuit board (soldered side) of the FM-/AM-receiver

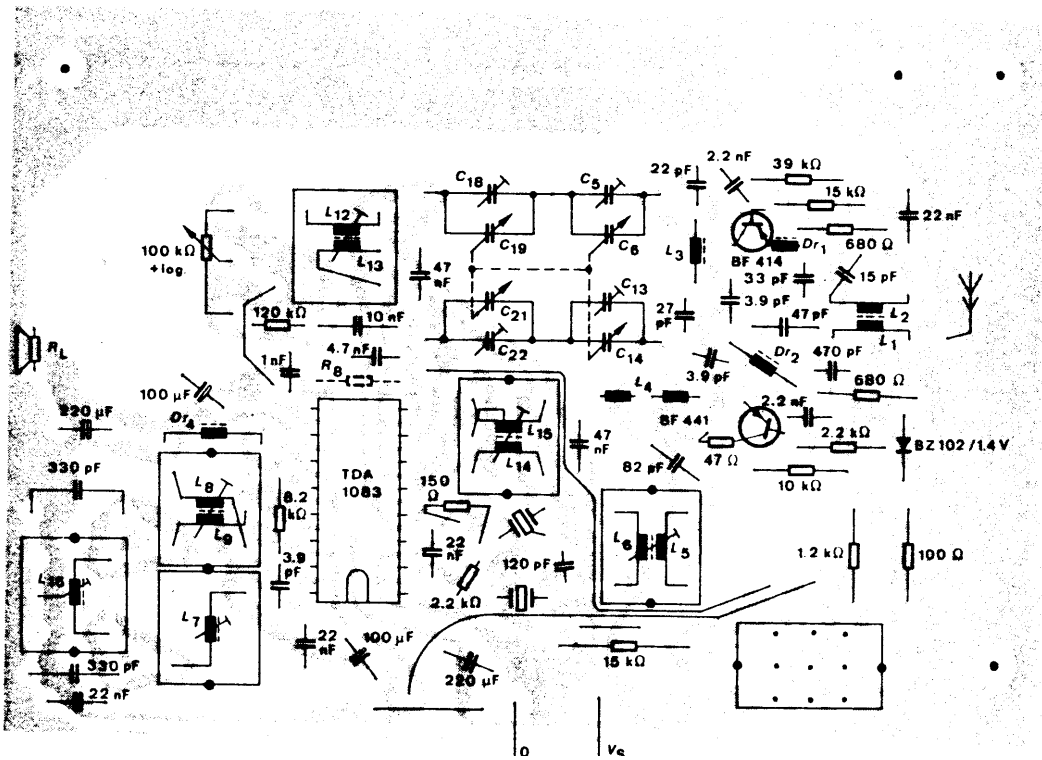
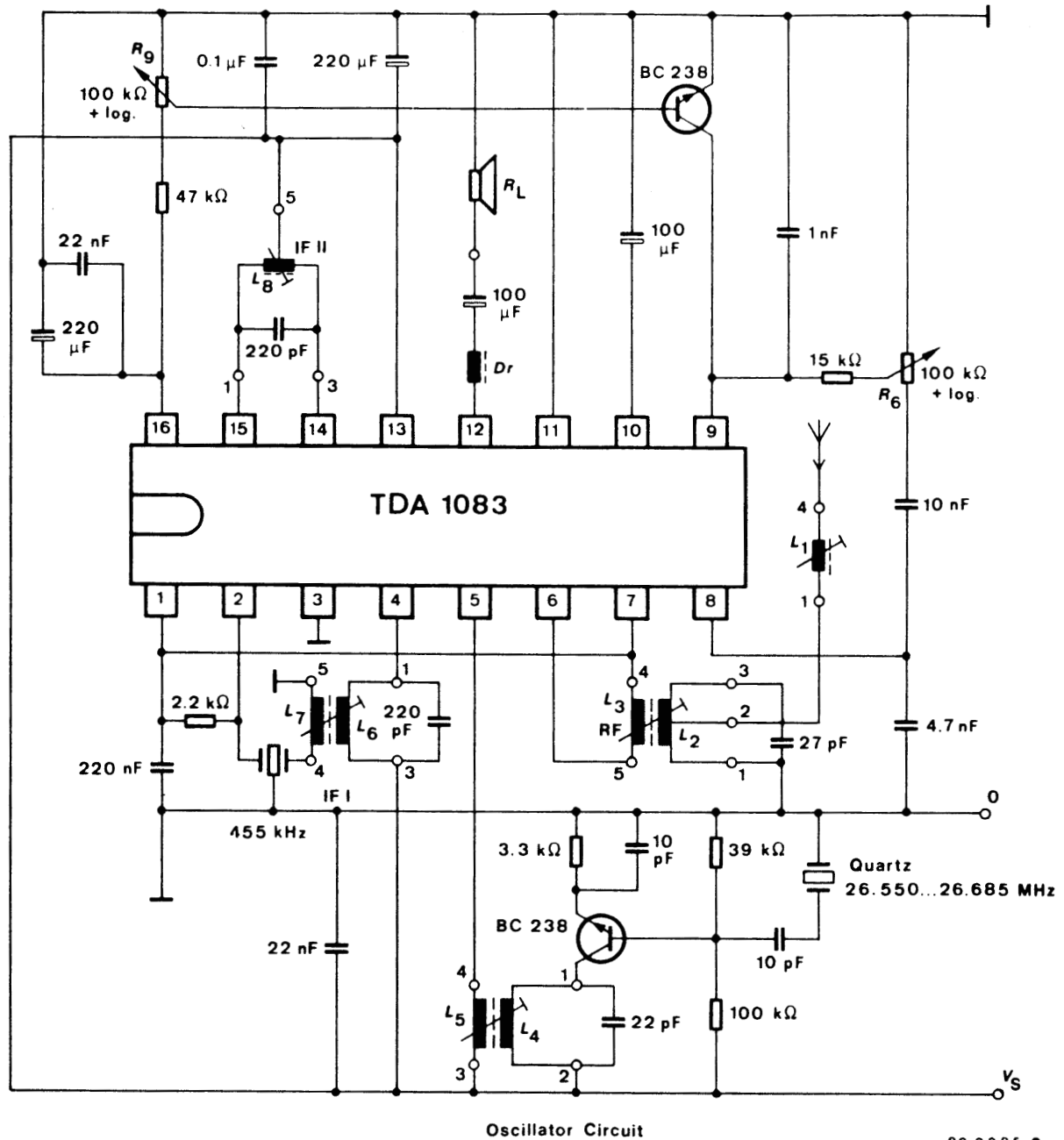


Figure 11 Printed board with components for FM-/AM-receiver



82 2285 •

L ₁	=	3	Wdg Ø 0.25 CuL Pin 3-4 (Neosid 7F1)
L ₂	=	3+4	Wdg Ø 0.25 CuL Pin 1-2-3 (Neosid 7F1)
L ₃	=	3	Wdg Ø 0.25 CuL Pin 4-5
L ₄	=	8	Wdg Ø 0.45 CuL Pin 1-2 (Neosid 7F1)
L ₅	=	1	Wdg Ø 0.25 CuL Pin 3-4
L ₆	=	154	Wdg Ø 0.08 CuL Pin 1-3 (Neosid 7A1)

L ₇	=	30	Wdg Ø 0.08 CuL Pin 4-5
L ₈	=	76+76	Wdg Ø 0.08 CuL Pin 1-5-3 (Neosid 7A1)
D _r	=	4	Wdg Ø 0.25 CuL Ferrit bead
455 kHz	=		Ceramic filter LFB 6 (Componex) or CFU 455 H (Stettner)
R ₆	=		Volume control
R ₉	=		Squelch

Figure 12 27 MHz-receiver circuit

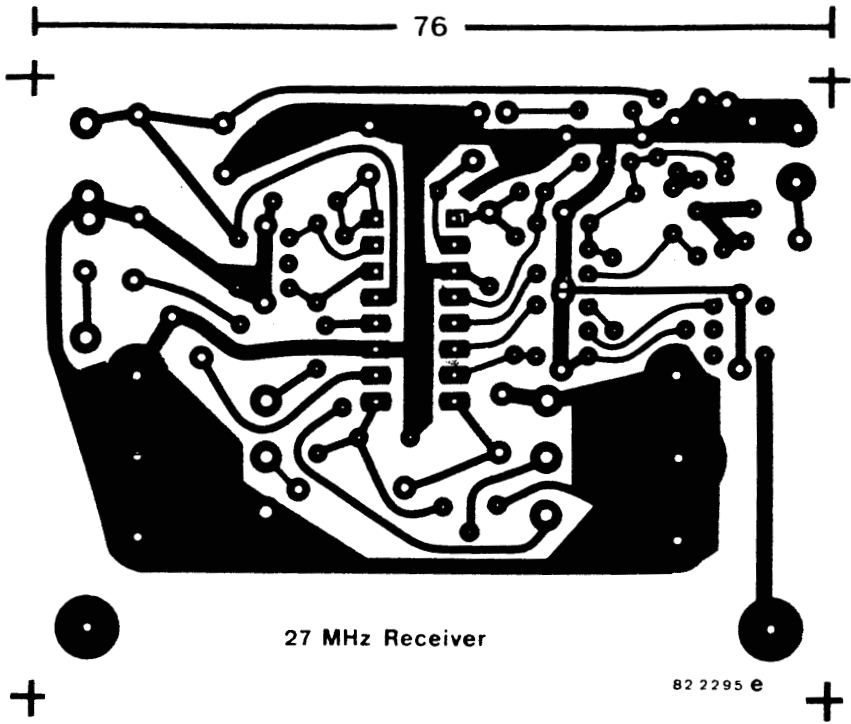


Figure 13 Layout of circuit board (soldered side) for 27 MHz-receiver

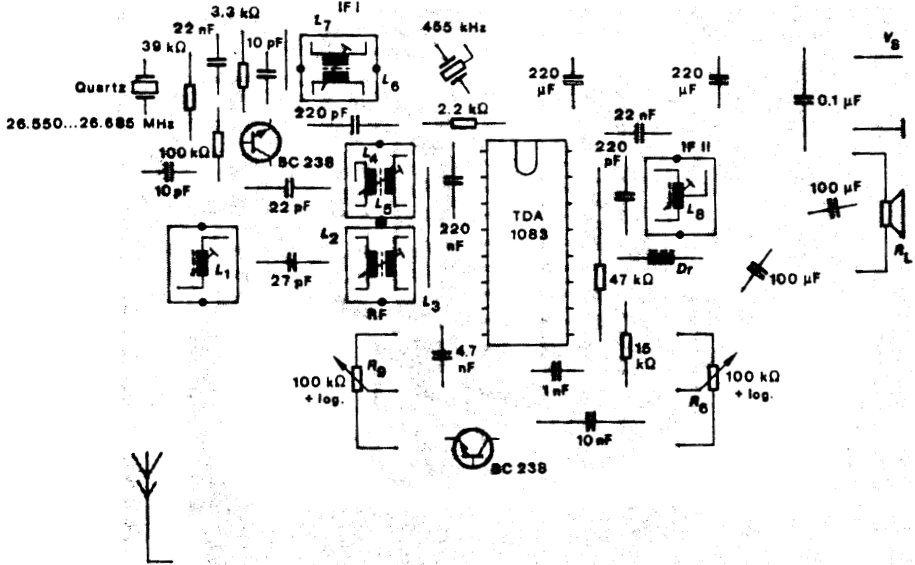
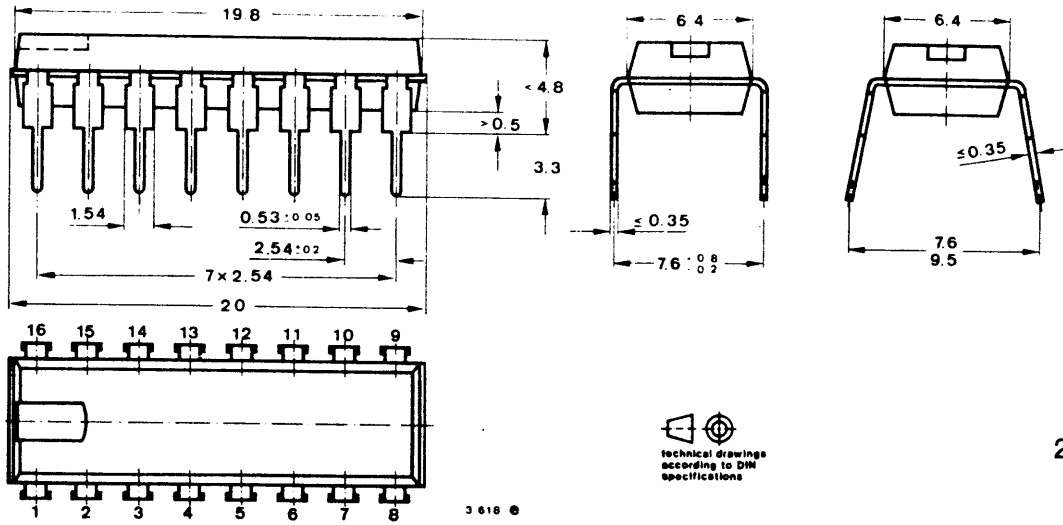


Figure 14 Printed board with components for 27 MHz-receiver

Dimensions in mm



Case
20 A 16 DIN 41866
JEDEC MO 001