

Description

The integrated circuit TDA1083 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 $V_s=13V$, 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 $V_s=3$ to 12V
- High AM-Sensitivity
- Limiting threshold voltage $V_i=50\mu V$
- Audio output power $P_0=0.7W$
- AFC-connection for VHF-tuner
- AM-FM switching without high frequency voltages

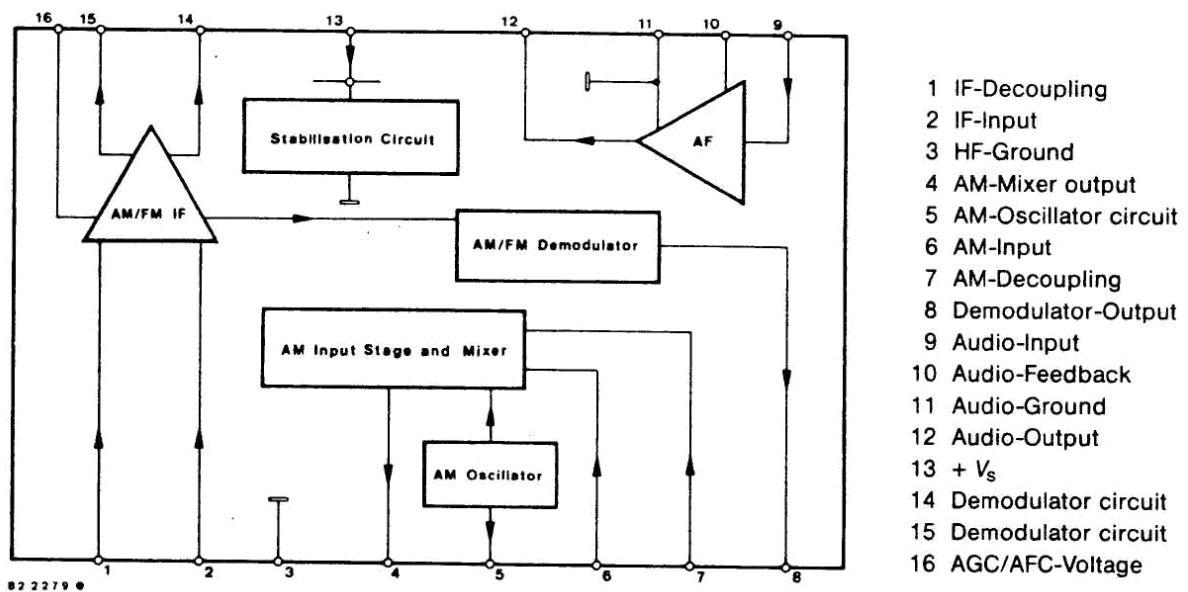


Figure 1. Block diagram and pin connections

Absolute Maximum Ratings

Reference points Pin 3 and 11, unless otherwise specified

Parameters	Symbol	Value	Unit
Supply voltage range	Pin 13 V_s	3 to 12	
Supply current when using the integrated stabilization circuit, $V_s = 12.5$ to 14.3V	Pin 13 I_s	50	mA
Power dissipation	$T_{amb}=65$ P_{tot}	600	mW
Junction temperature	T_j	125	
Storage temperature range	T_{stg}	-25 to 125	

Thermal Resistance

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

Electrical Characteristics

Vs=9V, reference points Pin 3 and 11, Tamb = 25 , unless otherwise specified

Parameters	Test Conditions / Pin	Symbol	Min	Typ	Max	Unit	
AF amplifier							
AF voltage amplification	F=1 kHz	Gv		40		dB	
Input impedance		Ri		150		kΩ	
Output power	Figures 4 and 5 Vs=5.5V RL=8Ω, K=10%	Po	300			mW	
AM-IF amplifier, f _i =1 MHz, f _{IF} =455kHz, f _{mod} =1 kHz, m=0.3							
DC voltages at AM mode Without signal	Vs=3V	Pin 10	V10		1.2		V
		Pin 12	V12	1.0		1.4	V
		Pin 13	V13	3.0	3.0	3.0	V
		Pin 16	V16	1.25		2.0	V
	Is=42mA (Vs=12.5 to 14.3V)	Pin 10	V10		1.2		V
		Pin 12	V12	5.9		7.2	V
		Pin 13	V13	12.5	13.3	14.3	V
		Pin 16	V16	1.5		2.0	V
Regulation range	V _{OAF} /V _{OAF} = -10dB						
	Pin 6	Vi		70		dB	
AF voltage at demodulator output	Pin 8	V _{OAF}		100		mV	
FM-IF amplifier, f _{iF} =10.7 MHz, f=±22.5 kHz, f _{mod} =1 kHz							
DC voltages at FM mode without signal	Vs=3V	Pin 10	V10		1.2		V
		Pin 12	V12	1.0		1.4	V
		Pin 13	V13	3.0	3.0	3.0	V
		Pin 16	V16	1.8		2.8	V
	Is=42mA (Vs=12.5 to 14.3V)	Pin 10	V10		1.2		V
		Pin 12	V12	5.9		7.2	V
		Pin 13	V13	12.5	13.3	14.3	V
		Pin 16	V16	2.0		3.1	V
Limiting threshold (-3dB)	Pin 2	VI		50		μV	
AF voltage at demodulator output	Pin 8	V _{OAF}		100		mV	

Different dc voltages are developed at Pin 16 due to gain spread of AM-IF-amplifier. To determine the value of parallel resistance R8, at the output of the demodulator Pin 8 for Vs =9V, AM mode without signal, dc voltage should be selected at Pin 16.

Table 1. Available in following voltage groups

V16	1.4 to 1.7V	1.7V to 1.9V	1.9 to 2.1V
R8	∞	47kΩ	33kΩ
Group	1	2	3

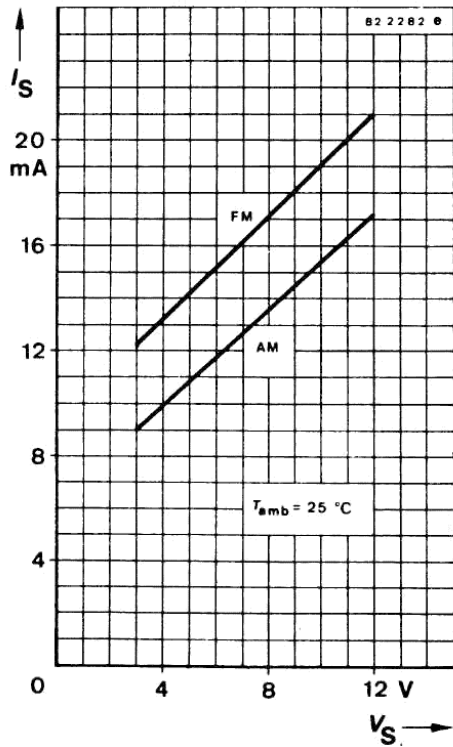


Figure 2.

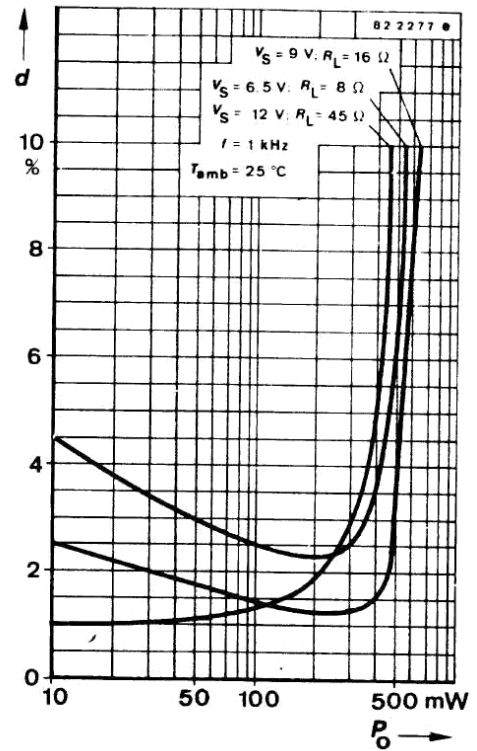


Figure 4.

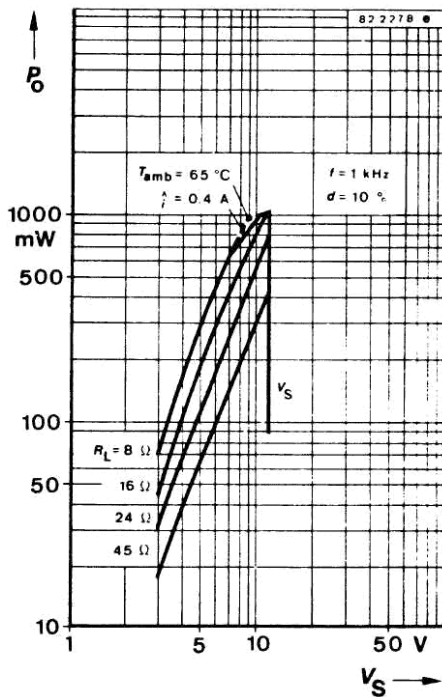


Figure 3.

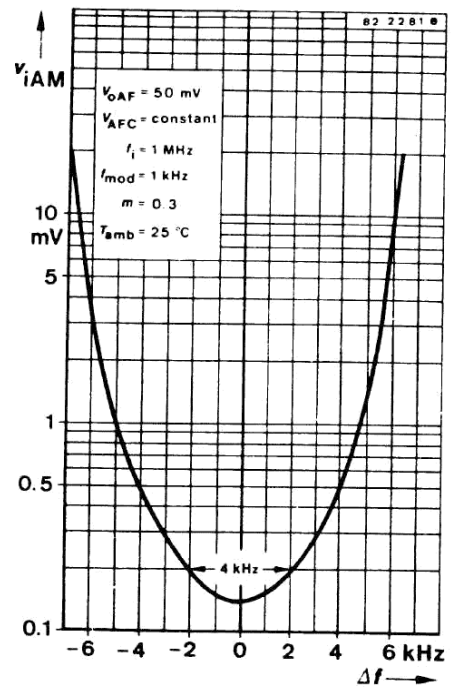


Figure 5.

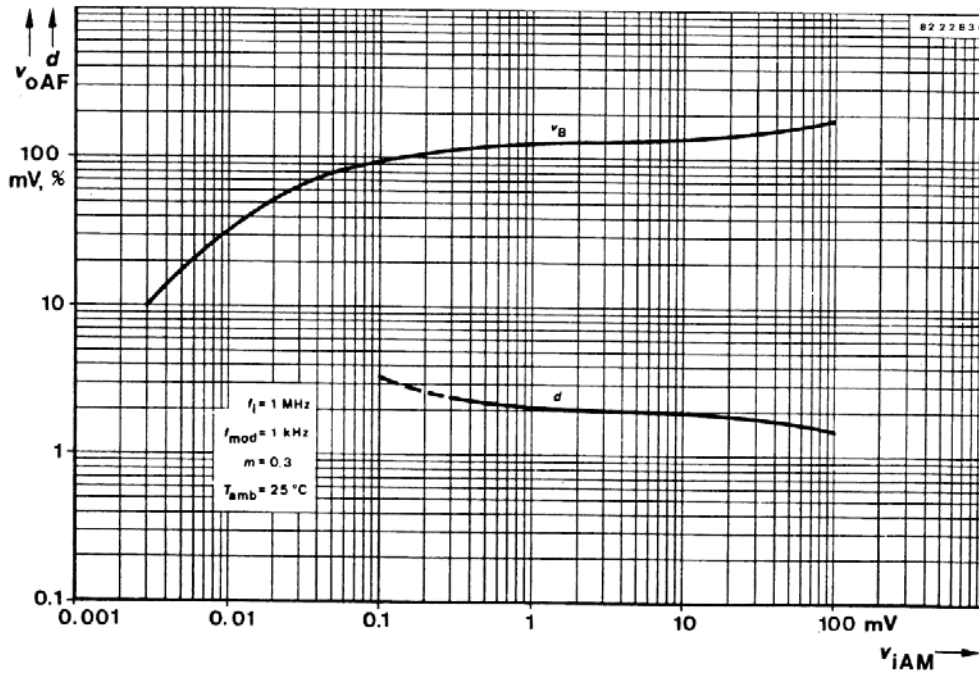


Figure 6.

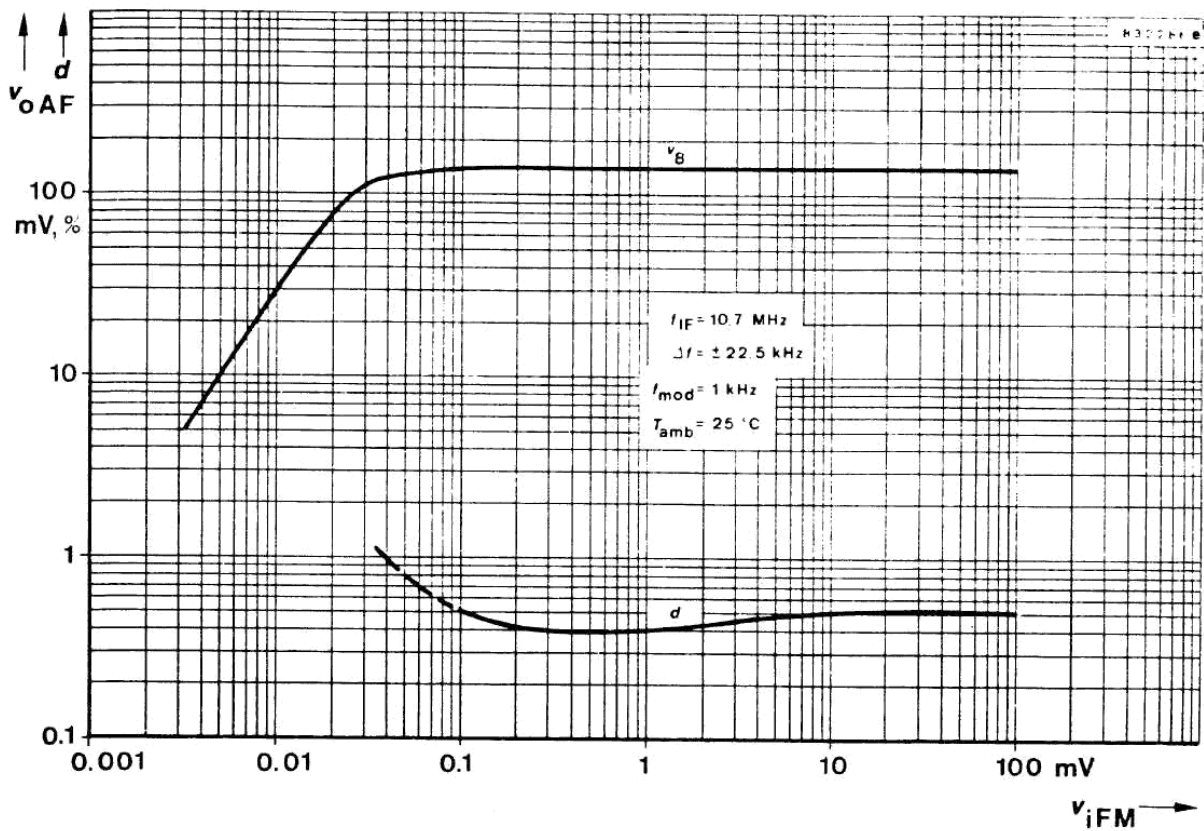


Figure 7.

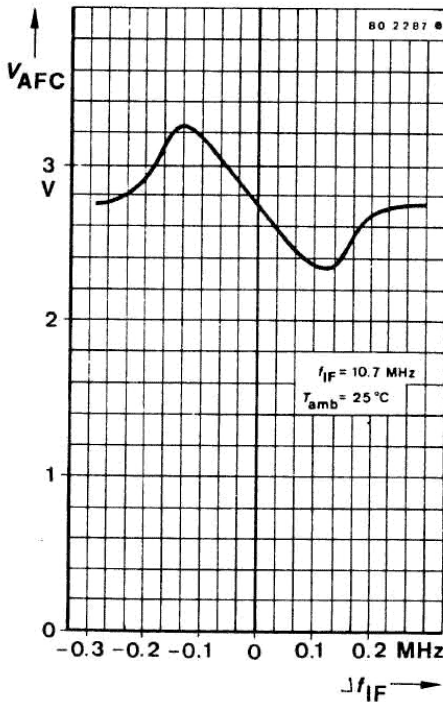


Figure 8.

Components in Figure 9

L1	=	4	Wdg Ø 0.45CuL, threaded core 7.5 x 3 material: Fi 01 U8 (Vogt GmbH)
L2	=	5	Wdg Ø 0.45 CuL
L3	=	5	Wdg Ø 0.45 CuL, air core Ø 3.5mm
L4	=	3+3	Wdg Ø 0.45 CuL, air core Ø 2.7mm
L5	=	12	Wdg Ø 0.45CuL, Pin 3-1, filter kit 154AN (C) or 154 ANs-7 A6363A0(TOKO,Componex)
L6	=	2	Wdg Ø 0.25 CuL, Pin 4-6
L7	=	7	Wdg Ø 0.25 CuL, Pin 6-3, filter kit 154AN(C) or 154EES-7 A6392FA(TOKO,Componex)
L8	=	7	Wdg Ø 0.16 CuL, Pin 1-4, filter kit 154AN(C) or 154EES-7 A6391ABM(TOKO,Componex)
L9	=	5	Wdg Ø 0.16 CuL, Pin 2-6
L10	=	96	Wdg Ø 0.25 CuLs, ferrite aerial Ø 8x130mm, type 031039-2103-606,(Draloric)
L11	=	6	Wdg Ø 0.25 CuLs
L12	=	78	Wdg Ø 0.09 CuL,Pin 3-4, filter kit RHN(C) or RWOS-6A7609AAU (TOKO, Componex)
L13	=	7	Wdg Ø 0.09CuL, Pin 2-1
L14	=	18	Wdg Ø 0.09 CuL,Pin 3-4, filter kit RHN(C) or RHCS-1A7607AQH (TOKO, Componex)
L15	=	46+100	Wdg Ø 0.09CuL, Pin 6-2-1
L16	=	72+72	Wdg Ø 0.09 CuL Pin 3-4/6-1, filter kit RHN(C) or RHNS-1 A7608AZP (TOKO, Componex)
455kHz	=		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)
Dr1, Dr3	=		Ferrit bead on the transistor terminal
Dr2	=	16	Wdg 0.25 CuL, Ø 2 air core
Dr4	=	6	Wdg 0.15 CuL, Ø 2.1 x 3 mm ferrit bead
C6=C14	=		4.5 to 20 pF, variable capacitor type CY2-22124-RT02 (TOKO, Componex)
C19	=		5 to 80pF
C21	=		5 to 140pF
R8	=		According to gain groups co, 47 kΩ or 33 kΩ

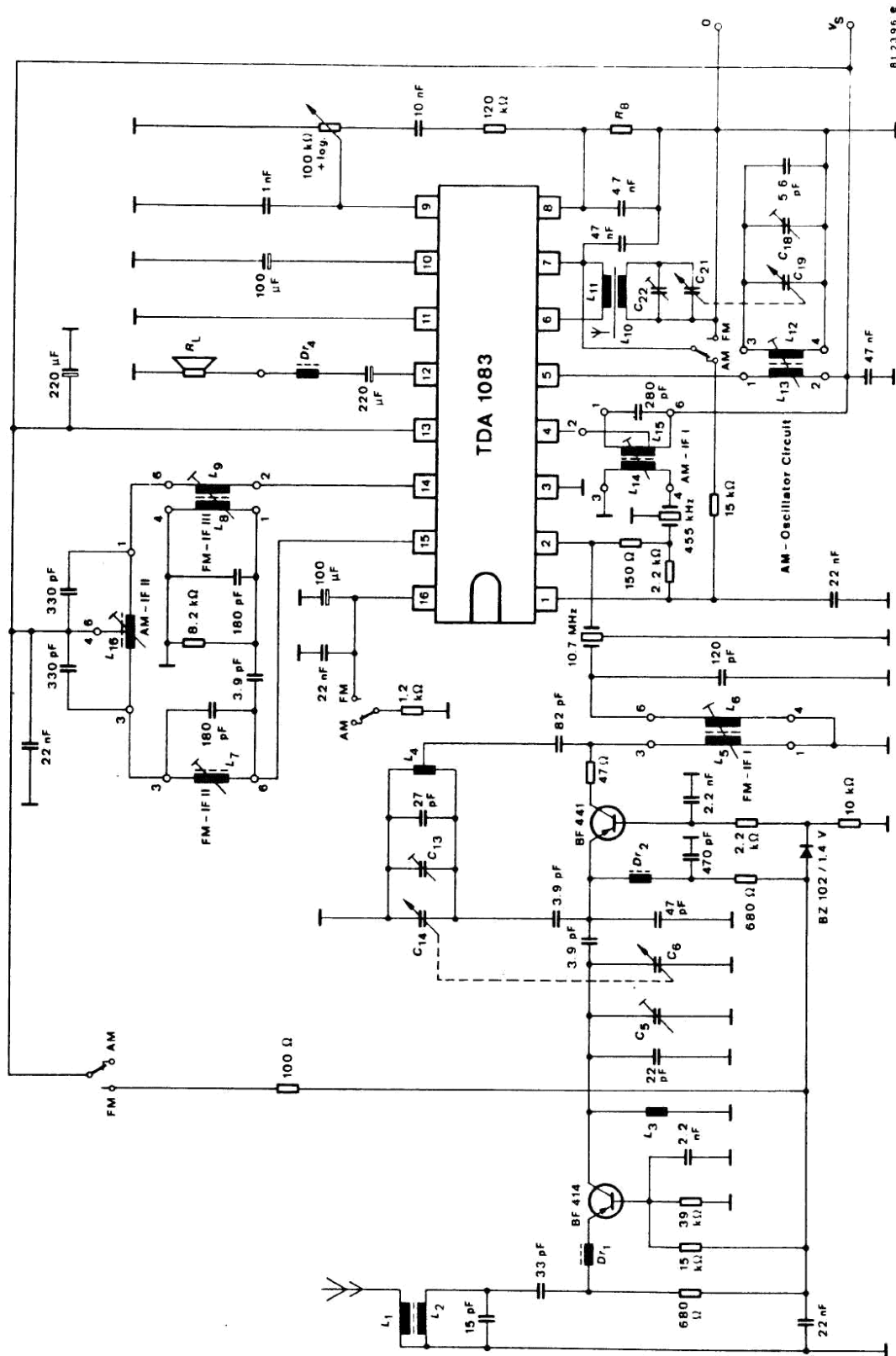


Figure 9. FM-/AM-receiver circuit

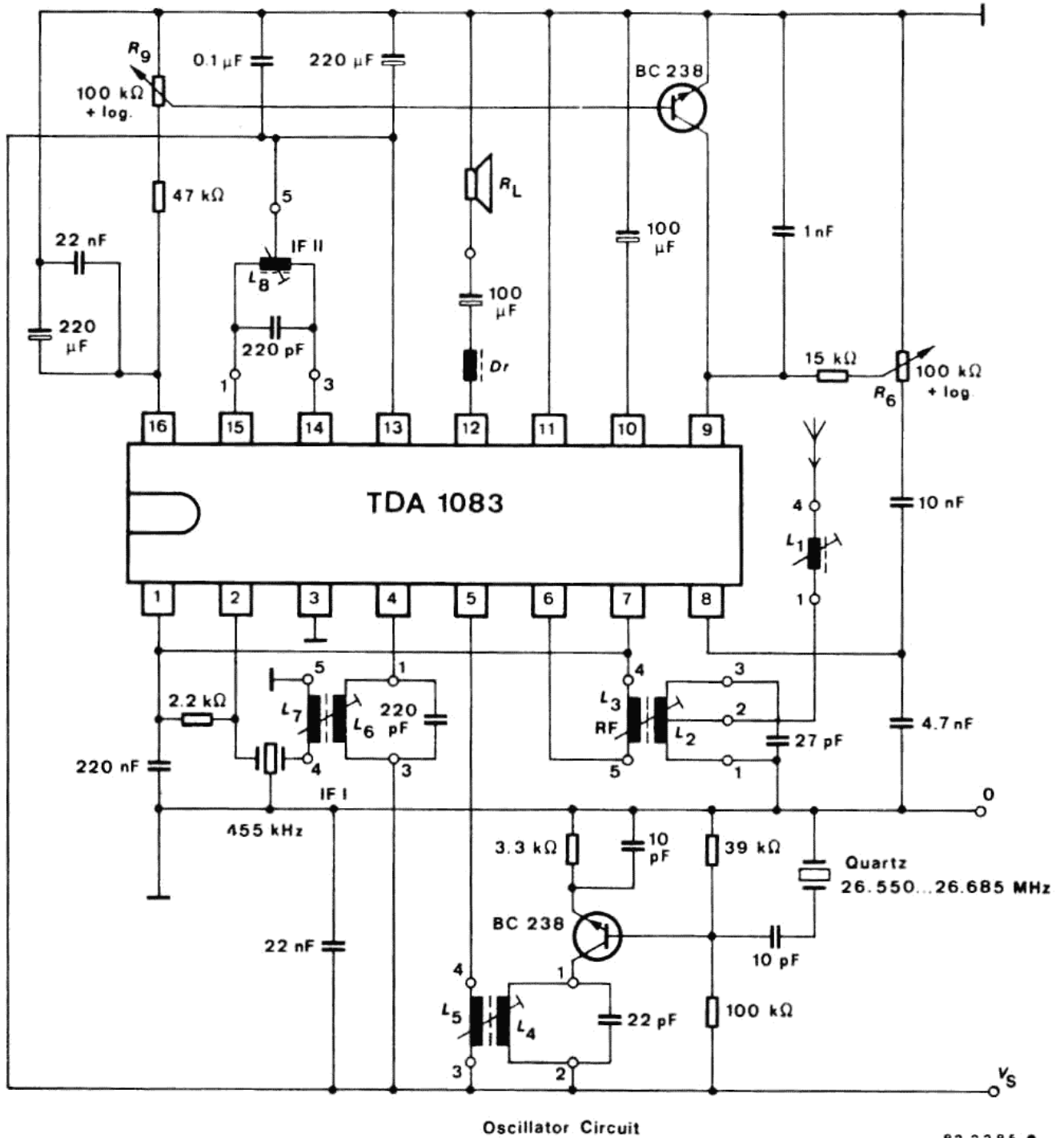
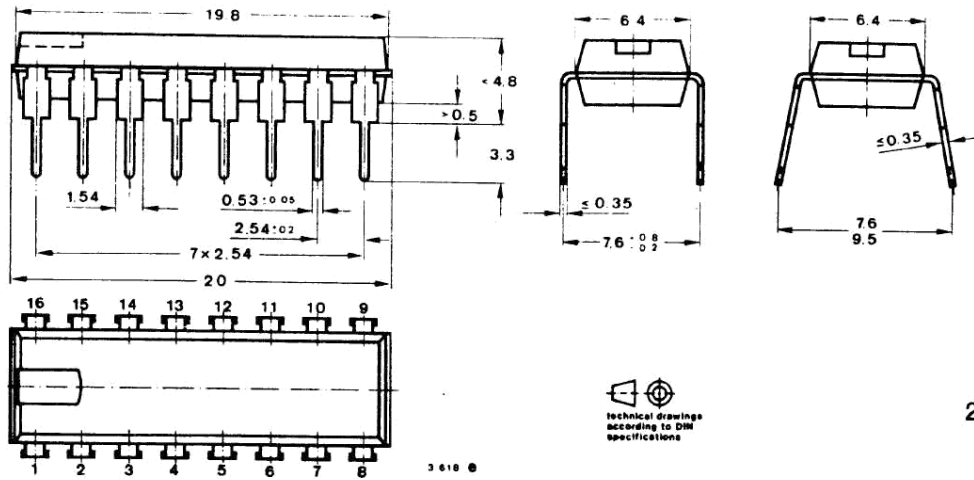


Figure 10.

Package Information



Technical drawings according to DIN specifications

Case
 20 A 16 DIN 41 866
 JEDEC MO 001