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U 417 B

T-77-05-07

Monolithic Integrated Circuit

Applications: AM-/FM-/ZF- and Audio-Amplifier

Features:

- Large supply voltage range $V_S = 3 \dots 15 \text{ V}$
- High AM-Sensitivity
- Limiting threshold voltage $V_I = 50 \mu\text{V}$
- Audio output power $P_o = 0.7 \text{ W}$
- AM-Oscillator for LW, MW and SW
- AM-FM switching without high frequency voltages

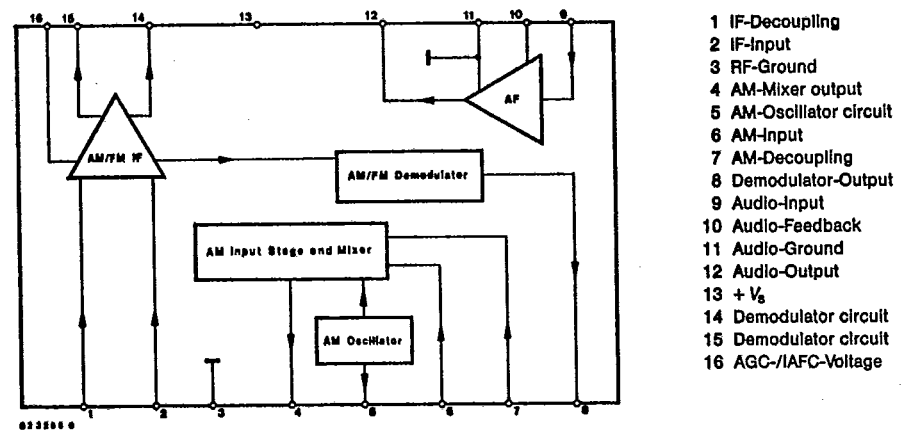


Fig. 1 Block diagram and pin connections

Description

The integrated circuit U 417 B includes, with exception of the FM front end, a complete AM-/FM-radio-circuit with audio power amplifier.

Absolute maximum ratings

Reference points Pin 3, 11, unless otherwise specified

Supply voltage range	Pin 13	V_S	3...15	V
Power dissipation $T_{amb} = 65^\circ\text{C}$		P_{tot}	600	mW
Junction temperature		T_j	150	$^\circ\text{C}$
Storage temperature range		T_{stg}	-25...+150	$^\circ\text{C}$

Thermal resistance

	Min.	Typ.	Max.	
Junction ambient		R_{thJA}	100	K/W

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Electrical characteristics

Min. Typ. Max.

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

AF Amplifier

 $R_i = 16\ \Omega$, $d = 10\%$, Fig. 3, 5

Output power	Pin 12	P_o	0.7			W
Input resistance	Pin 9	R_i	800			k Ω
Band width (-3 dB)		B	100...80 000			Hz
Distortion $P_o = \text{mW}$		d	1			%
Voltage gain, closed loop	Pin 12	G_u	37	40	43	dB
Output noise voltage $R_G = 0, B = 22...22\,000$	Pin 12	V_{no}	600			μV

AM-Amplifier

 $f_i = 1\text{ MHz}$, $f_{IF} = 455\text{ kHz}$, $f_{mod} = 1\text{ kHz}$, $m = 0.3$

Supply quiescent current	Pin 13	I_{SB}	8	19		mA
Output quiescent voltage	Pin 12	V_{OB}	3.9	4.7		V
AGC-Quiescent voltage	Pin 16	V_{AGCB}	1.4	2.1		V
Regulation range $\Delta V_{OAF}/V_{OAF} = -10\text{ dB}$	Pin 6	ΔV_i		70		dB
AF voltage at demodulator output	Pin 8	V_{OAF}	100			mV

FM-IF Amplifier

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

Supply quiescent current	Pin 13	I_{SB}	10	20		mA
Output quiescent voltage	Pin 12	V_{OB}	3.9	4.7		V
AFC-Quiescent voltage	Pin 16	V_{AFCB}	1.8	2.8		V
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 16 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 $V_S = 9\text{ V}$, AM mode without signal, dc voltage should be selected at Pin 16.

Voltage groups designation:

Group	1	2	3
V_{16}	1.4...1.7 V	1.7...1.9 V	1.9...2.1 V
R_8	∞	47 k Ω	33 k Ω

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Example:

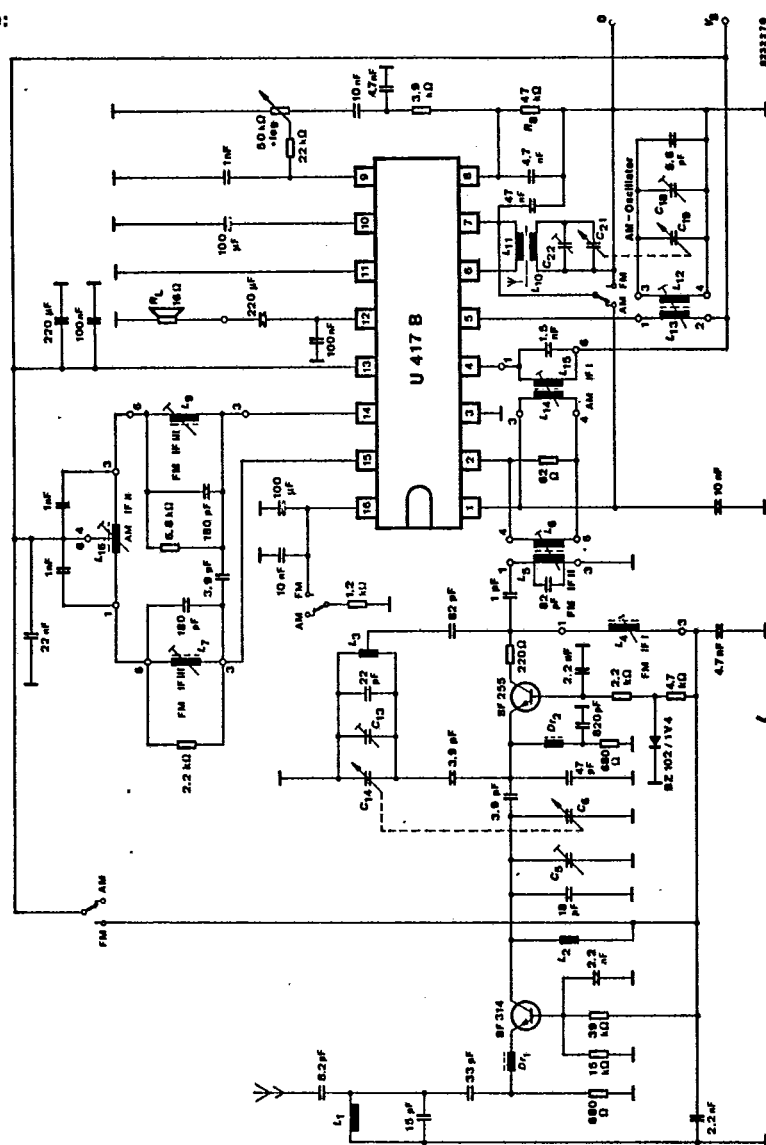
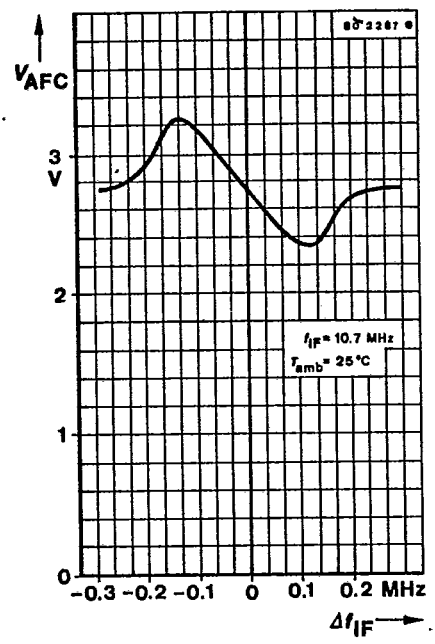
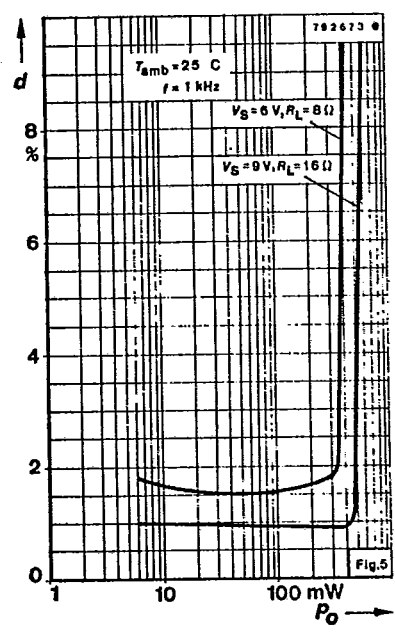
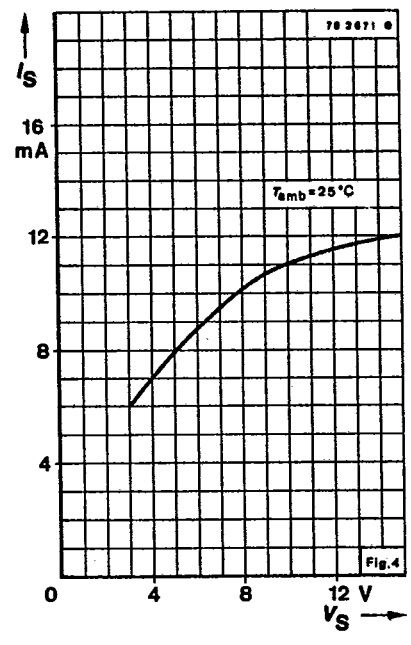
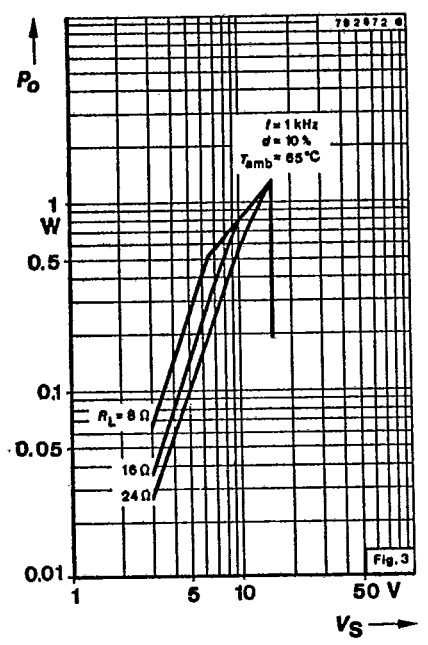
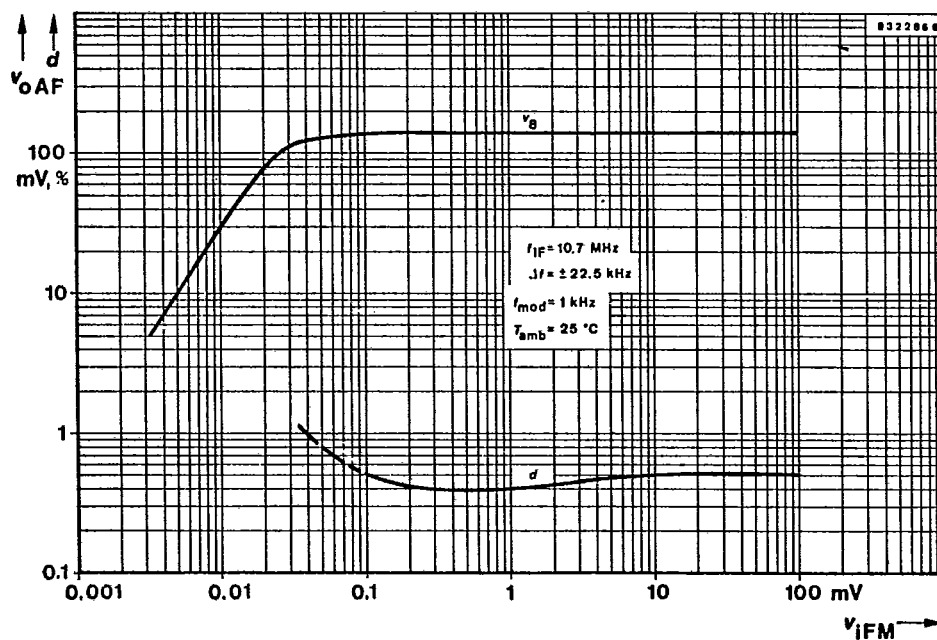
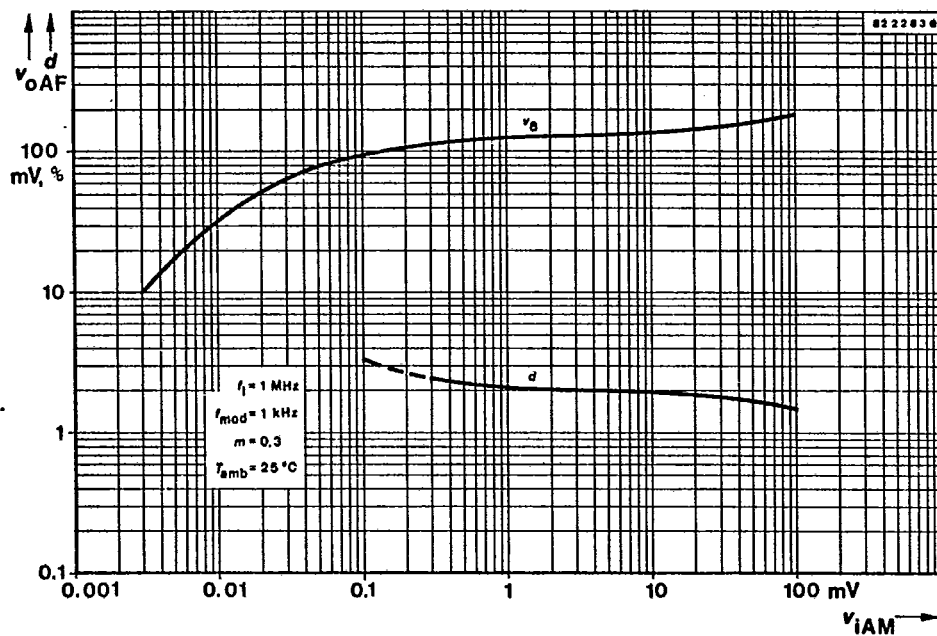


Fig. 2 FM-/AM-receiver circuit



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Dimensions in mm

