TELEFUNKEN electronic
Creative Technologies

TDA 1062 S

F-77-05-05

Monolithic Integrated Circuit

Applications: FM-front end for Hi-Fi and car-radios, mixer modulator and phase-sensitive detectors up to 250 MHz.

Features:

- Excellent large signal behavior
- High oscillator frequency stability, even by large input signals
- Low external power level of the oscillator
- Low radiation
- Low noise figure
- Build-in AGC amplifier for external PIN-diode
- High overall amplification
- Specially recommende for varactor tuned front ends
- Buffered oscillator output Pinning and function fully compatible with TDA 1062

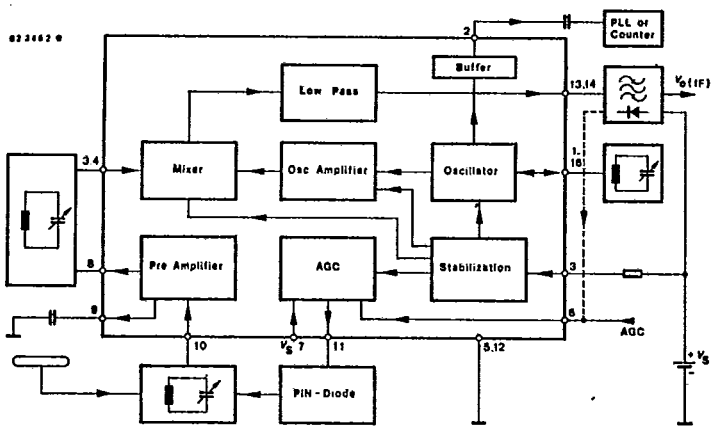

Fig. 1 Block diagram

Absolute maximum ratings

Supply voltage	Pin 6	V_S	16	V
Power dissipation $T_{amb} = 85°C$		P_{tot}	400	mW
Junction temperature		T_j	125	°C
Ambient temperature range		T_{amb}	-25...+85	°C
Storage temperature range		T_{stg}	-55...+125	°C

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TDA 1062 S

T-77-05-05

				Min.	Typ.	Max.	
Thermal resistance							
Junction ambient			R_{thJA}			100	K/W
Electrical characteristics							
V_S = 10 V, reference point Pin 5, 12, f_i = 50.3 MHz, f_{osc} = 100 MHz, P_i = −40 dBm, V_{AGC} = 0, R_G = R_L = 50 Ω, T_{amb} = 25 °C, see test circuit Fig. 3, unless otherwise specified							
Supply voltage range		Pin 6	V_S		8	16	V
Total supply current			I_S		28		mA
Mixer current		Pin 13/14			10	16.5	mA
Stabilized base voltage		Pin 3		3.8	4.2	4.8	V
RF stage collector voltage		Pin 8	V_{CE}	4.4	5	6.6	V
V_{AGC} = 5 V		Pin 8	V_{CE}		1.2	1.8	V
RF stage base voltage		Pin 9	V_{BE}		0.7		V
Oscillator stage collector voltage		Pin 1/16	V_{CE}	1.7	2.3	2.6	V
Power gain $f_{if} = f_{osc} - f_i$	Fig. 4	Pin 13/14	G_p	13	17	20.5	dB
RF rejection	Fig. 4	Pin 13/14	d_{RF}	17	30		dB
3rd order distortion	Fig. 4	Pin 13/14	d_3rd		48		dB
Oscillator output R_L = 50 Ω		Pin 2	v_{oosc}	25	40		mV
Electrical characteristics							
V_S = 10 V, T_{amb} = 25°C, reference point Pin 5, 12, f_i = 95 MHz, R_G = R_L = 50 Ω, Fig. 5							
Total supply current			I_S		30		mA
Tuning range			Δf	88		108	MHz
IF-frequency			f_{IF}		10.7		MHz
Tuning voltage range			V_{tun}	2		7.5	V
Power gain			G_p		30		dB
Noise figure			F		5.5		dB
IF bandwith			B_{IF}		0.5		MHz
RF-bandwith			B_{RF}		1.7		MHz
Image rejection			S_{IR}		80		dB
IF-rejection			IFR	100			dB
Ultimate quieting −40 dBm, Δf = ±75 kHz, f = 1 kHz B_{AF} = 30 Hz...15 kHz			α_{for}		70		dB
Oscillator pulling P_i = 0 dBm			Δf_{osc}		10		kHz
with AGC			Δf_{osc}		2		kHz
AGC threshold			P_{IAGC}		−30		dBm
Radiation at antenna input			P_{ni}		−60		dBm
Gain difference f = 88...108 MHz			ΔG_p		1.5		dB
Oscillator output R_L = 50 Ω		Pin 2	v_{oosc}		40		mV

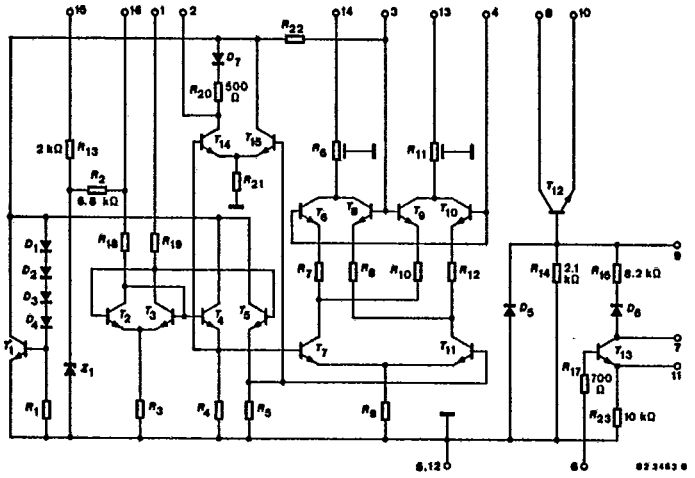
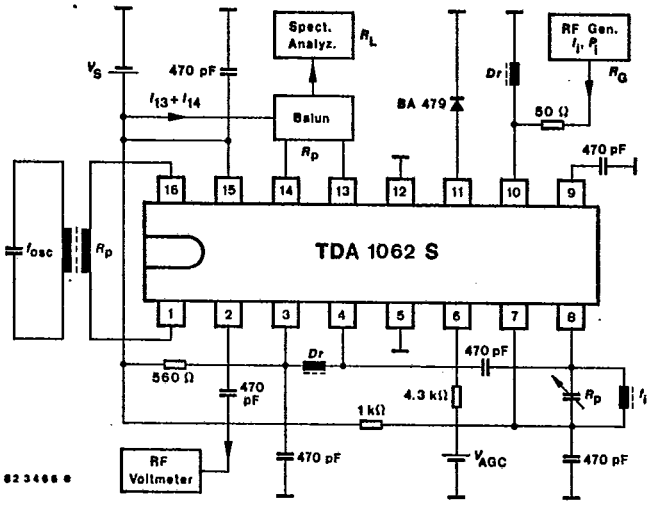


Fig. 2 Diagram and pin connections



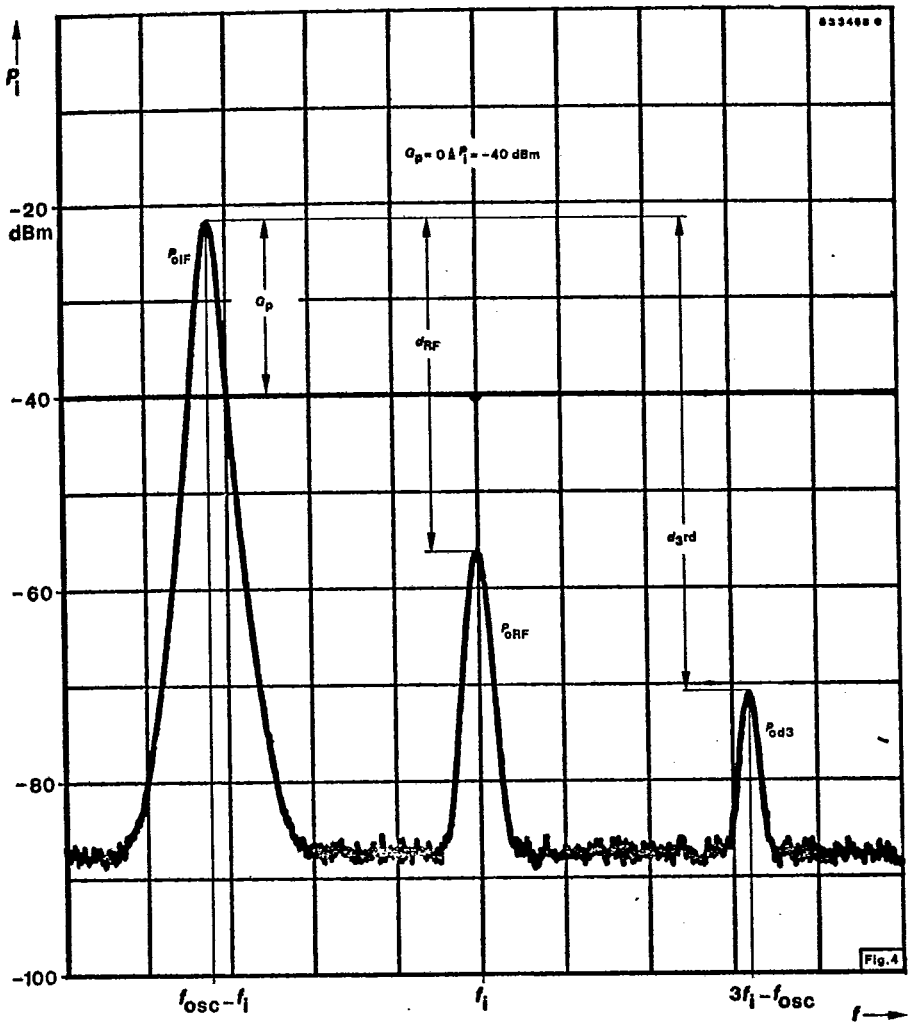
Electrical characteristics of the test circuit without IC in the socket

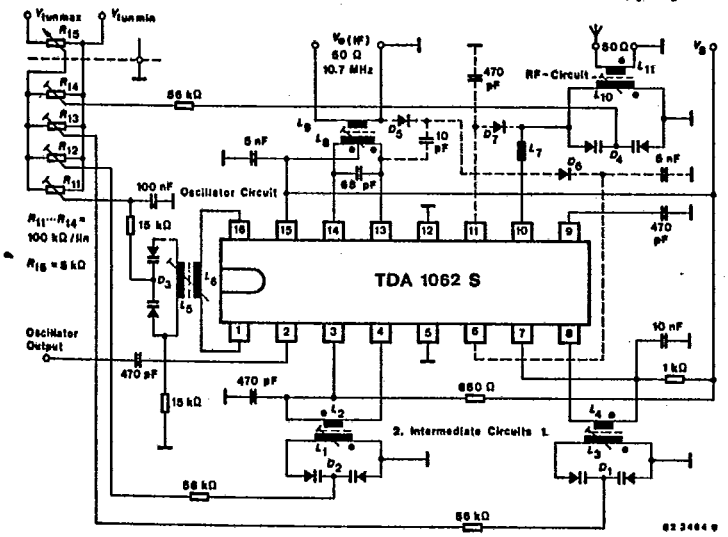
RF-input Pin 10 with $R_G = 50\ \Omega$ terminated
RF-circuit Pin 8/5 at $f = 50.3$ MHz: $B = 5.6$ MHz, $C_p = 5.5$ pF, $R_p = 1\ \Omega$
IF-circuit Pin 13/14 with $R_L = 50\ \Omega$ terminated: at $f = 50$ MHz, $R_p = 200\ \Omega$
Oscillator circuit Pin 1/16 at $f = 100$ MHz: $B = 2.3$ MHz, $C_p = 3$ pF, $R_p = 800\ \Omega$

Fig. 3 Test circuit

TDA 1062 S

T-77-05-05





D_1, D_2, D_3, D_4 = BB 304 blue (BB 204 blue)

D_5, D_6 = 1 N 4151 all resistors ±10%

D_7 = PIN Diode BA 479

L_1, L_3, L_5, L_{10} = on 4 mm bobbin Fa. Kaschke, Göttingen, core 3/7.5x0.5 Mat. K 3/12/100

L_8, L_9 = Vogt Filter D 4, core 3/7.5x0.5 Mat. FI 05 F7

L_1 = 5	3/4	WdG	ø 0.8 mm	CuAg at the cold end of L_1
L_2 = 2	3/4	WdG	ø 0.4 mm	CuLs
L_3 = 5	3/4	WdG	ø 0.8 mm	CuAg at the cold end of L_3
L_4 = 4	3/4	WdG	ø 0.4 mm	CuLs
L_5 = 6	3/4	WdG	ø 0.8 mm	CuAg wound in L_5
L_6 = 3	3/4	WdG	ø 0.4 mm	CuLs
L_7 = 19		WdG	ø 0.15 mm	CuLs ø 3.5 mm air-core coil
L_8 = 2x15		WdG	ø 0.15 mm	CuLs double wound
L_9 = 2		WdG	ø 0.2 mm	CuLs wound on L_8
L_{10} = 6		WdG	ø 0.8 mm	CuAG at the cold end of L_{10}
L_{11} = 1		WdG	ø 0.4 mm	CuLs

CuLs ≙ single-nylon enamalled wire

Alignment: 88 MHz (V_{tunmin}) Inductors, 108 MHz (V_{tunmax}) R_{11}...R_{14}

No iteration of the alignment is necessary. The dotted line shows the external circuit for the AGC.

Fig. 5 Test circuit and application note

Supply voltage must be disconnected before inserting the integrated circuit in the socket.

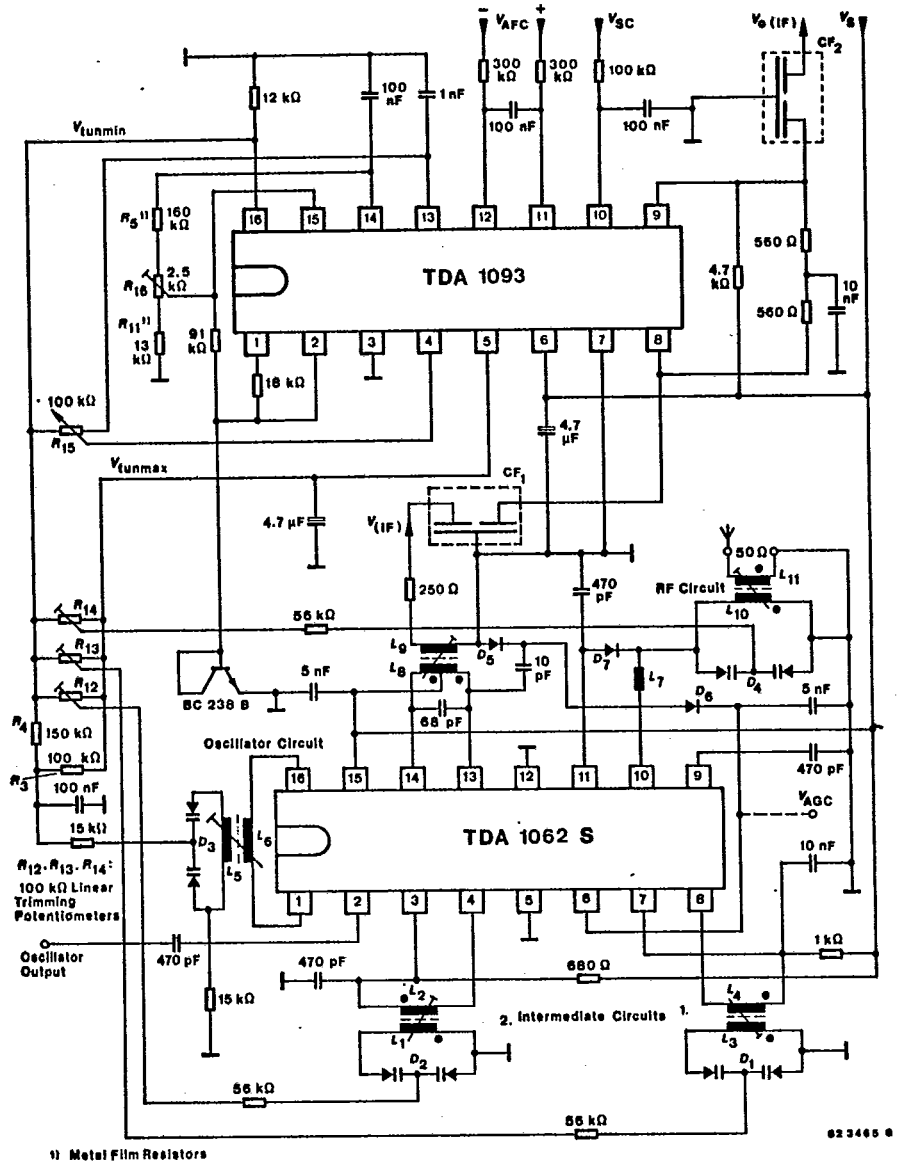


Fig. 6 FM-front end with tuning interface integrated circuit TDA 1093

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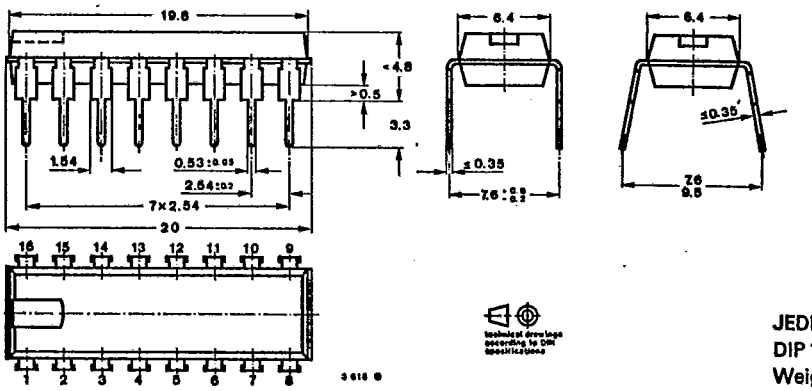
T-77-05-05

Dimensions in mm



technical drawings according to DIN specifications

JEDEC MO 001
DIP 16
Weight max. 1.5 g