

## 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 recommended for varactor tuned front ends
- Buffered oscillator output Pinning and function fully compatible with TDA 1062

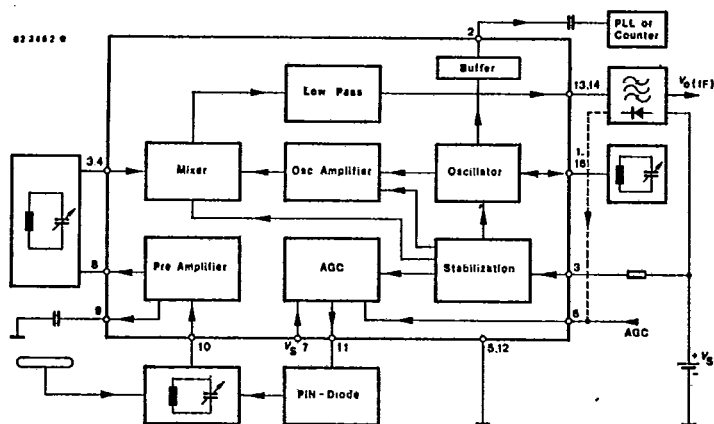


Fig. 1 Block diagram

**Absolute maximum ratings**

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

T1.2/242.0583 E

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

#### Electrical characteristics

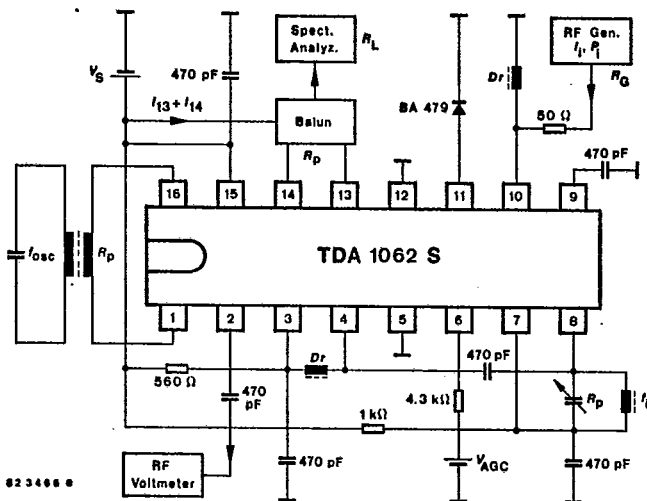
$V_S = 10$  V, reference point Pin 5, 12,  $f_i = 50.3$  MHz,  $f_{osc} = 100$  MHz,  $P_i = -40$  dBm,  
 $V_{AGC} = 0$ ,  $R_G = R_L = 50$   $\Omega$ ,  $T_{amb} = 25$   $^{\circ}$ C, see test circuit Fig. 3, unless otherwise specified

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							
$f_H = f_{osc} - f_i$	Fig. 4	Pin 13/14	$G_p$	13	17	20.5	dB
RF rejection	Fig. 4	Pin 13/14	$d_{RF}$	17	30		dB
3 <sup>rd</sup> order distortion	Fig. 4	Pin 13/14	$d_{3rd}$		48		dB
Oscillator output							
$R_L = 50\ \Omega$	Pin 2	$V_{oosc}$	25	40			mV

#### Electrical characteristics

$V_S = 10$  V,  $T_{amb} = 25$   $^{\circ}$ C, reference point Pin 5, 12,  $f_i = 95$  MHz,  $R_G = R_L = 50$   $\Omega$ , Fig. 5

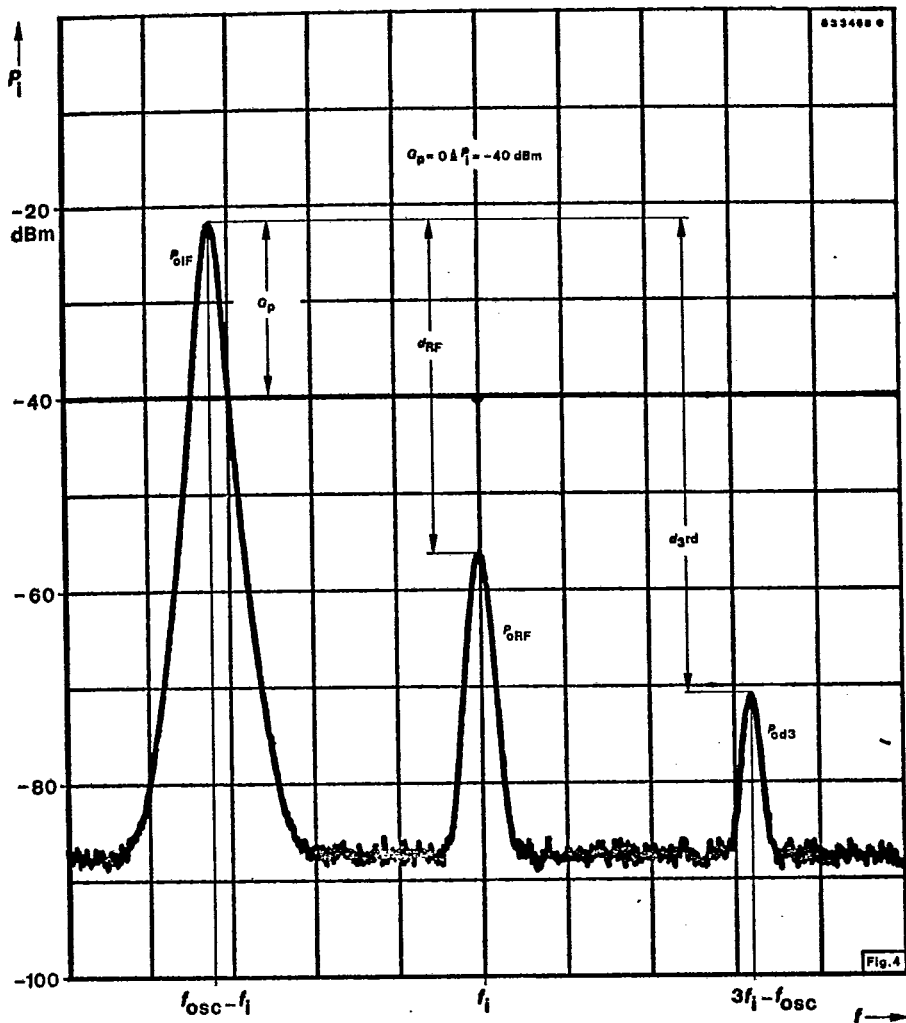
Total supply current		$I_S$	30		mA
Tuning range		$\Delta f$	88	108	MHz
IF-frequency		$f_{IF}$	10.7		MHz
Tuning voltage range		$V_{tun}$	2	7.5	V
Power gain		$G_p$	30		dB
Noise figure		$F$	5.5		dB
IF bandwidth		$B_{IF}$	0.5		MHz
RF-bandwidth		$B_{RF}$	1.7		MHz
Image rejection		$S_{IR}$	80		dB
IF-rejection		IFR	100		dB
Ultimate quieting					
-40 dBm, $\Delta f = \pm 75$ kHz, $f = 1$ kHz					
$B_{AF} = 30$ Hz...15 kHz		$\alpha_{for}$	70		dB
Oscillator pulling					
$P_i = 0$ dBm		$\Delta f_{osc}$	10		kHz
with AGC		$\Delta f_{osc}$	2		kHz
AGC threshold		$P_{IAGC}$	-30		dBm
Radiation at antenna input		$P_{hi}$	-60		dBm
Gain difference					
$f = 88$ ...108 MHz		$\Delta G_p$	1.5		dB
Oscillator output					
$R_L = 50$ $\Omega$	Pin 2	$V_{oosc}$	40		mV

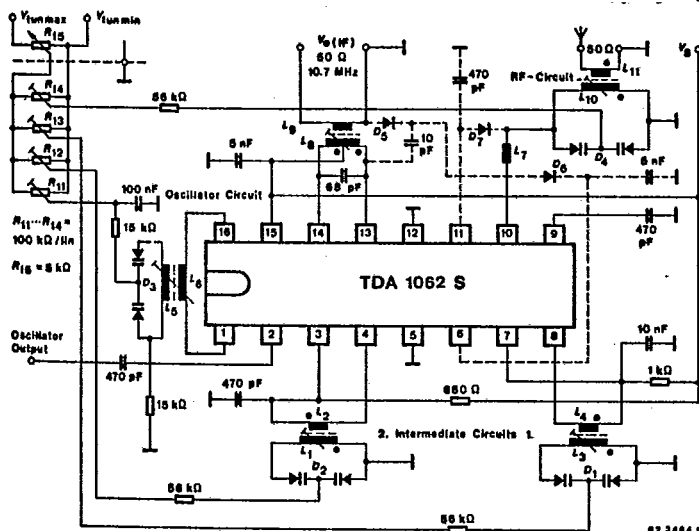


**Oscillator circuit Pin 1/16 at  $f = 100$  MHz:  $B = 2.3$  MHz,  $C_p = 3$  pF,  $R_n = 800 \Omega$**

**Fig. 3 Test circuit**

T-77-05-05





$D_{11}, D_{12}, D_{13}, D_{14}$  = BB 304 blue (BB 204 blue)

$D_{15}, D_{16}$  = 1 N 4151 all resistors  $\pm 10\%$

$D_{17}$  = PIN Diode BA 479

$L_{11}, L_{12}, L_{13}, L_{14}$  = on 4 mm bobbin Fa. Kaschke, Göttingen, core 3/7.5x0.5 Mat. K 3/12/100

$L_{15}, L_{16}$  = Vogt Filter D 4, core 3/7.5x0.5 Mat. FI 05 F7

$L_{17} = 5 \quad 3/4 \quad \text{WdG} \quad \varnothing 0.8 \text{ mm} \quad \text{CuAg at the cold end of } L_{17}$

$L_{18} = 2 \quad 3/4 \quad \text{WdG} \quad \varnothing 0.4 \text{ mm} \quad \text{CuLs}$

$L_{19} = 5 \quad 3/4 \quad \text{WdG} \quad \varnothing 0.8 \text{ mm} \quad \text{CuAg at the cold end of } L_{19}$

$L_{20} = 4 \quad 3/4 \quad \text{WdG} \quad \varnothing 0.4 \text{ mm} \quad \text{CuLs}$

$L_{21} = 6 \quad 3/4 \quad \text{WdG} \quad \varnothing 0.8 \text{ mm} \quad \text{CuAg wound in } L_{21}$

$L_{22} = 3 \quad 3/4 \quad \text{WdG} \quad \varnothing 0.4 \text{ mm} \quad \text{CuLs}$

$L_{23} = 19 \quad \text{WdG} \quad \varnothing 0.15 \text{ mm} \quad \text{Culs } \varnothing 3.5 \text{ mm air-core coll}$

$L_{24} = 2 \times 15 \quad \text{WdG} \quad \varnothing 0.15 \text{ mm} \quad \text{CuLs double wound}$

$L_{25} = 2 \quad \text{WdG} \quad \varnothing 0.2 \text{ mm} \quad \text{Culs wound on } L_{25}$

$L_{26} = 6 \quad \text{WdG} \quad \varnothing 0.8 \text{ mm} \quad \text{CuAG at the cold end of } L_{26}$

$L_{27} = 1 \quad \text{WdG} \quad \varnothing 0.4 \text{ mm} \quad \text{CuLs}$

Culs  $\approx$  single-nylon enamelled wire

Alignment: 88 MHz ( $V_{\text{tunmin}}$ ) Inductors, 108 MHz ( $V_{\text{tunmax}}$ )  $R_{11} \dots R_{14}$

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.

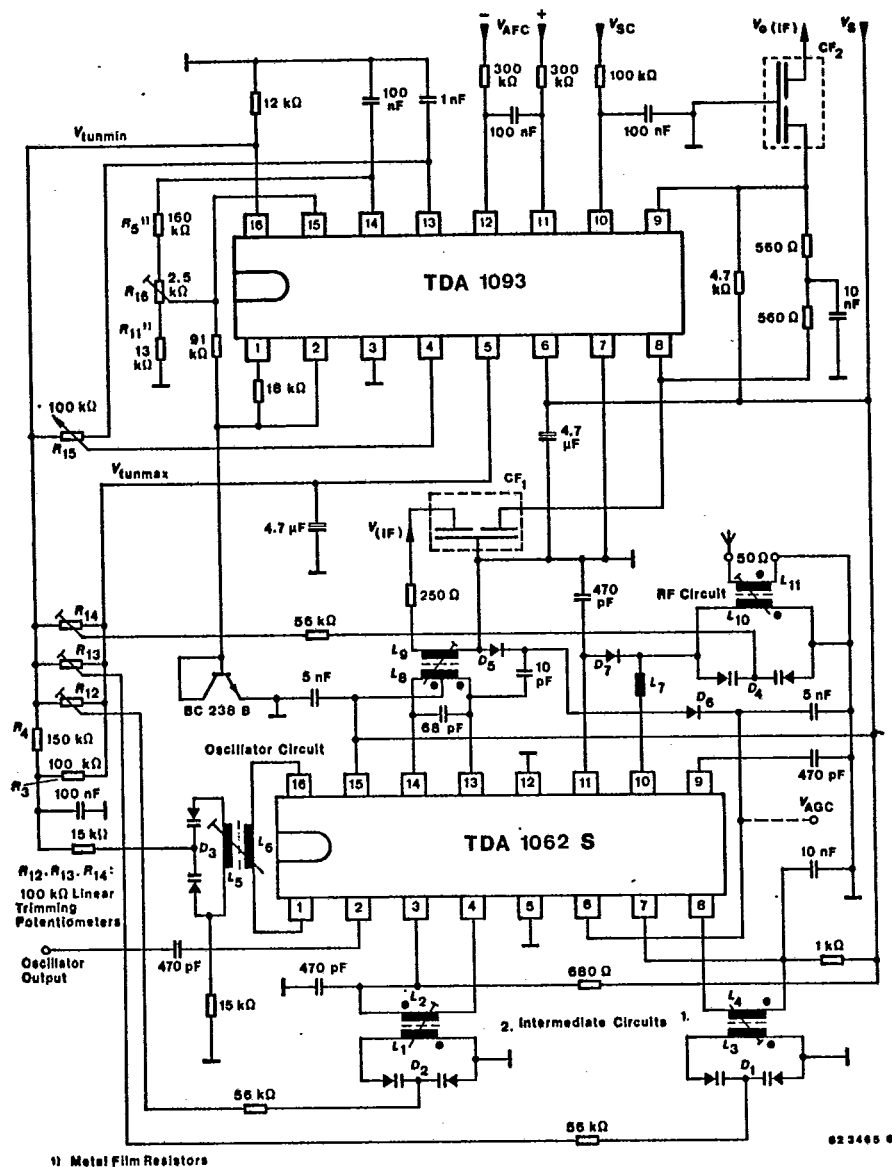


Fig. 6 FM-front end with tuning interface integrated circuit TDA 1093

TDA 1062 S

T-77-05-05

Dimensions in mm

