

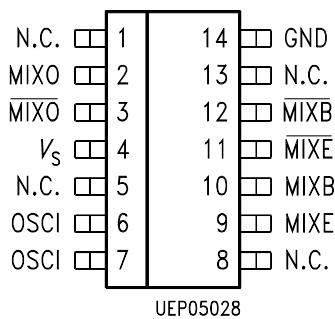
SIEMENS**2-GHz Mixer****Preliminary Data****Features**

- A wide range of supply voltage
- Few external components
- High conversion transconductance
- Wide range of input signal.

TDA 6130-5X4**Bipolar IC****P-DSO-14-1**

Type	Ordering Code	Package
TDA 6130-5X4	Q67000-A5176	P-DSO-14-1

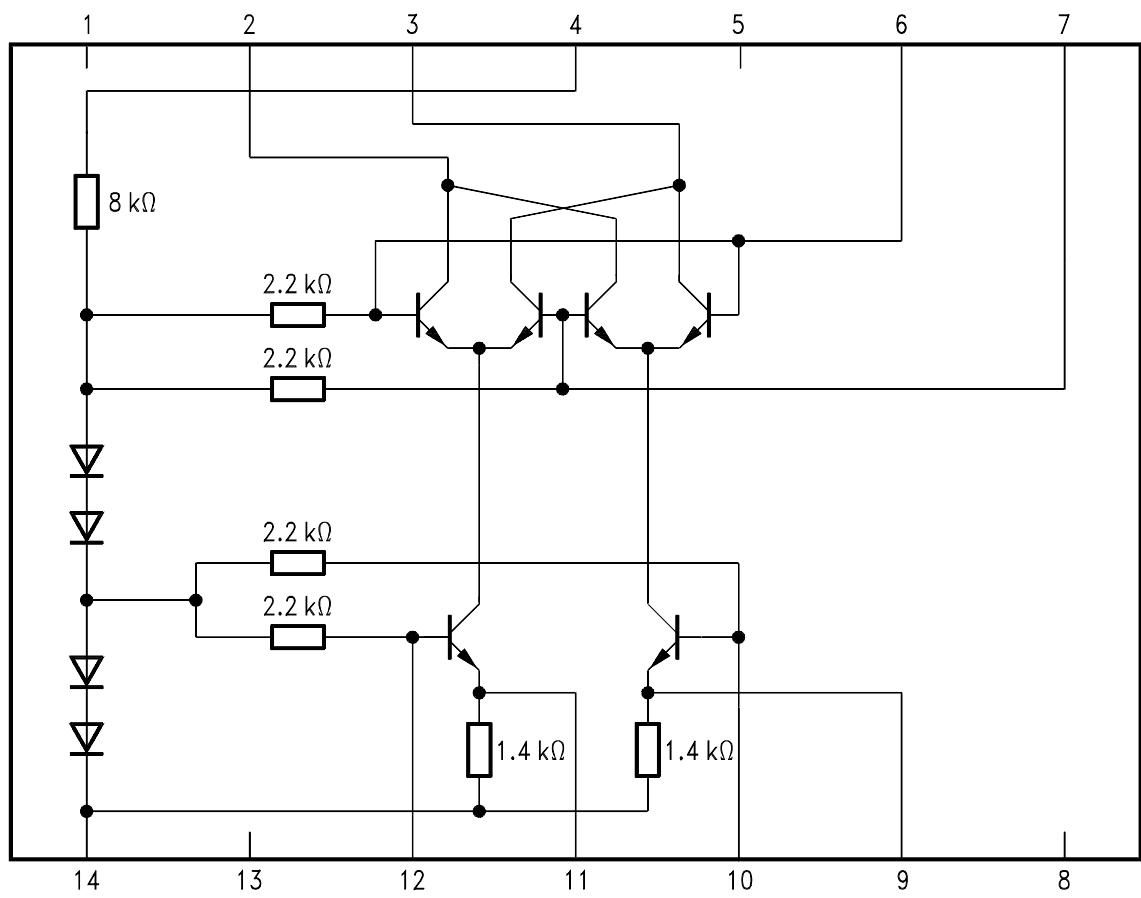
The TDA 6130-5X4 is a symmetrical mixer like the components **S 042 P*** and **TBB 042 G*** but for frequencies up to 2 GHz. It can be driven by an external source or by the build-in oscillator.

**Pin Configuration
(top view)****P-DSO-14**

UEP05028

Pin Definitions and Functions

Pin No.	Symbol	Function
1	N.C.	N.C.
2	MIXO	Mixer output
3	<u>MIXO</u>	Mixer output
4	V_S	Supply voltage
5	N.C.	N.C.
6	OSCI	Oscillator input
7	OSCI	Oscillator input
8	N.C.	N.C.
9	MIXE	Mixer input emitter
10	MIXB	Mixer input base
11	<u>MIXE</u>	Mixer input emitter
12	<u>MIXB</u>	Mixer input base
13	N.C.	N.C.
14	GND	Ground



UEB05029

Circuit Description

The pins 1, 5, 8, 13 should be connected to pin 14 (ground) to reach optimal HF features. A galvanic connection between pins 6 and 7 and 10 and 12 through coupling windings is recommended.

A resistor of at least $220\ \Omega$ may be connected between pins 9 and 14 (ground) and between 11 and 14 to increase the currents and thus the conversion transconductance.

Pins 9 and 11 may be connected through any impedance. In case of a direct connection between pin 9 and 11, the resistance from this pin to 14 may be at least $100\ \Omega$. Depending on the layout, a capacitor may be required between pins 6 and 7 to prevent oscillations in the UHF band.

Absolute Maximum Ratings $T_A = 0 \text{ to } 70 \text{ }^\circ\text{C}$

Parameter	Symbol	Limit Values		Unit	Test Condition
		min.	max.		
Supply voltage	V_4	0	8	V	
Mixer output	$V_{2,3}$	1	8	V	Open collector
Oscillator input	$V_{6,7}$	0	2.5	V	
Mixer input emitter	$V_{9,11}$	0.8	3.5		
Mixer input base	$V_{10,12}$	0	$V_4 - 1.5$	V	
Junction temperature	T_j		125	$^\circ\text{C}$	
Storage temperature	T_{stg}	- 40	150	$^\circ\text{C}$	
Thermal resistance	$R_{\text{th SA}}$		125	K/W	

Operating Range

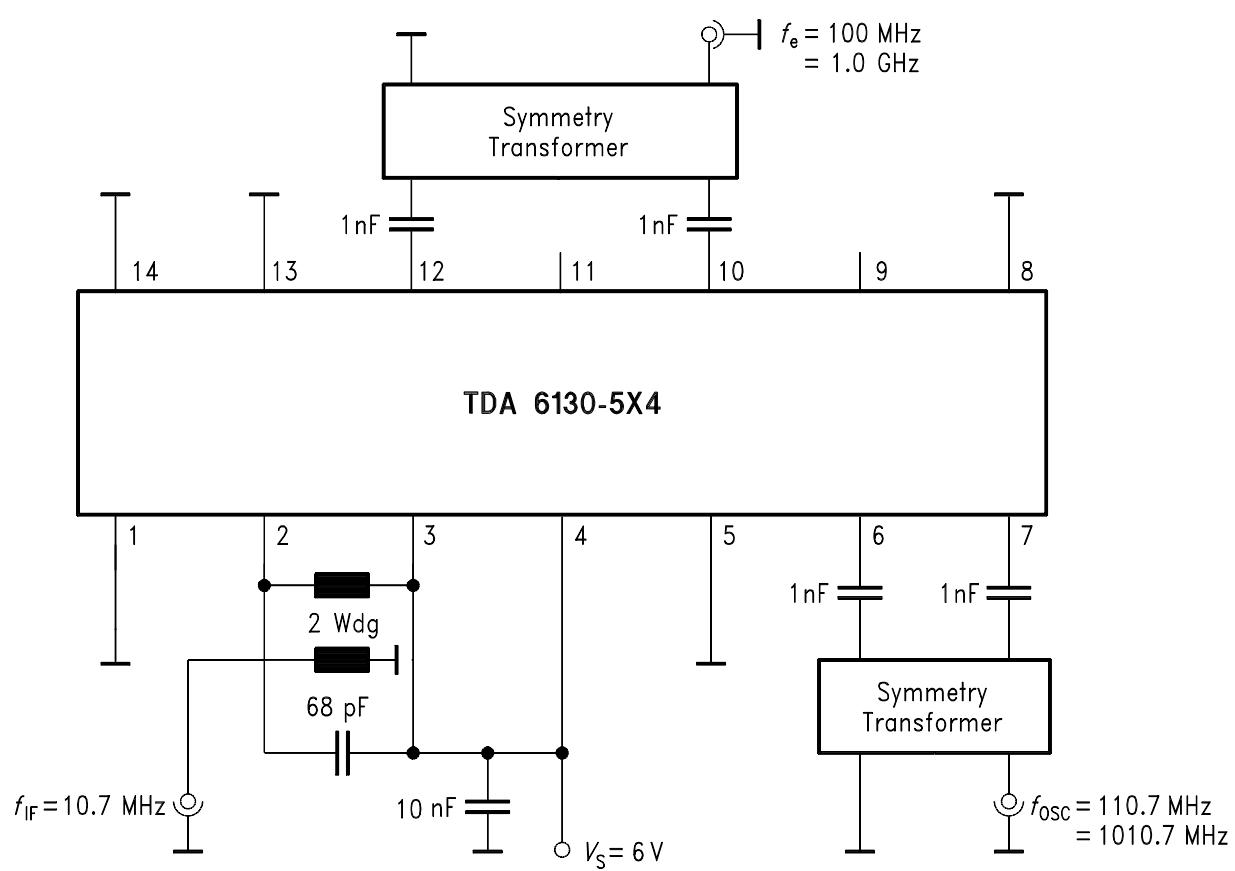
Supply voltage	V_S	4	7	V
Input frequency range	f_{15}		2000	MHz
Ambient temperature in operation	T_A	0	70	$^\circ\text{C}$

Characteristics $T_A = 25^\circ\text{C}$; $V_S = 6 \text{ V} \pm 10\%$ (**test circuit 1**)

Parameter	Symbol	Limit Values			Unit	Test Condition
		min.	typ.	max.		
Current consumption	$I_S = I_2 + I_3 + I_4$	1.1	1.6	2.1	mA	
Output-current	$I_2 = I_3$	0.35	0.54	0.75	mA	
Output-current difference	$I_2 - I_3$	3	10	60	μA	
Supply current	I_4	0.2	0.4	0.6	mA	
Power gain $f_e = 100 \text{ MHz}, f_{osc} = 110,7 \text{ MHz}$ $f_e = 1 \text{ GHz}, f_{osc} = 1,1 \text{ GHz}$	V_P	13 13	16 16	19 19	dB dB	
Break down voltage $I_{2,3} = 10 \text{ mA}; V_{6,7} = 0$	$V_{2,3}$		18		V	
Noise figure	NF	6	7	10	dB	DSB
Mixer output impedance	R C		7.0 0.6 1.5		$\text{k}\Omega$ $\text{k}\Omega$ pF	$f_{MO} = 100 \text{ MHz}$ $f_{MO} = 1 \text{ GHz}$

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TDA 6130-5X4



Test Circuit 1

