

2-GHz Mixer

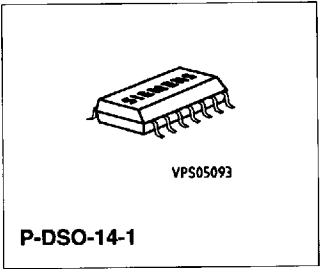
TDA 6130-5X4

Preliminary Data

Bipolar IC

Features

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

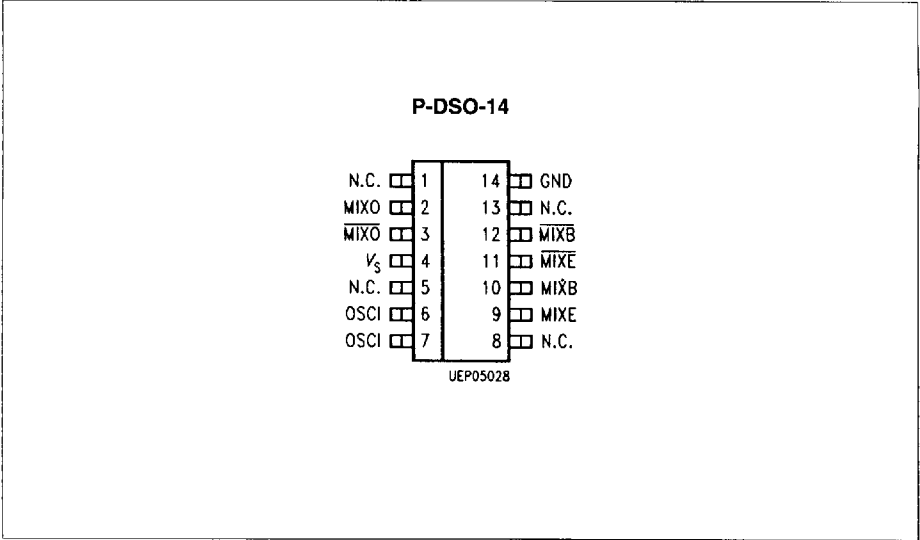


Type	Ordering Code	Package
TDA 6130-5X4	Q67000-A5176	P-DSO-14-1

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.

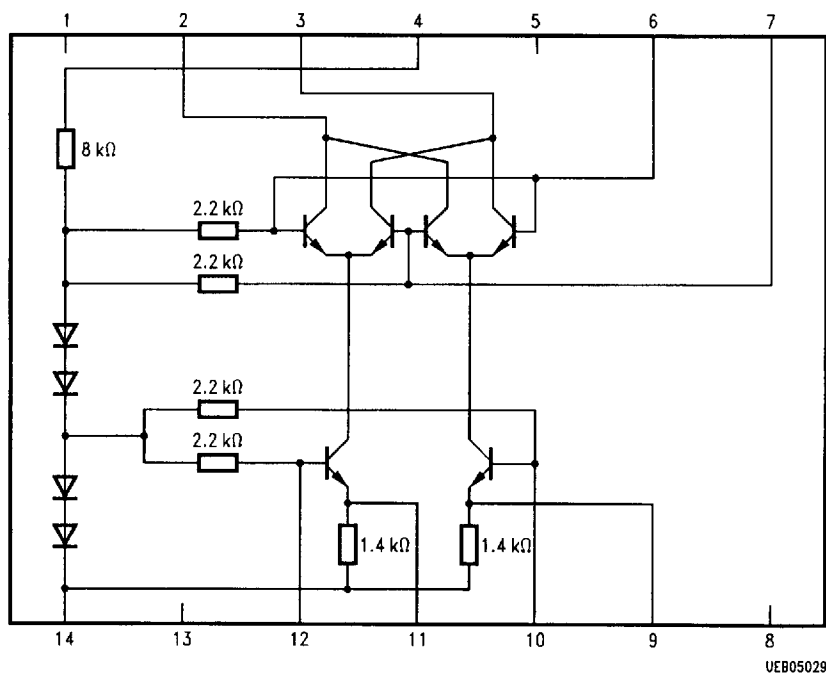
* already cancelled

Pin Configuration
(top view)



Pin Definitions and Functions

Pin No.	Symbol	Function
1	N.C.	N.C.
2	MIXO	Mixer output
3	MIXO	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	MIXE	Mixer input emitter
12	MIXB	Mixer input base
13	N.C.	N.C.
14	GND	Ground

**Block Diagram**

■ 8235605 0063581 338 ■

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	$R_{th SA}$		125	K/W	

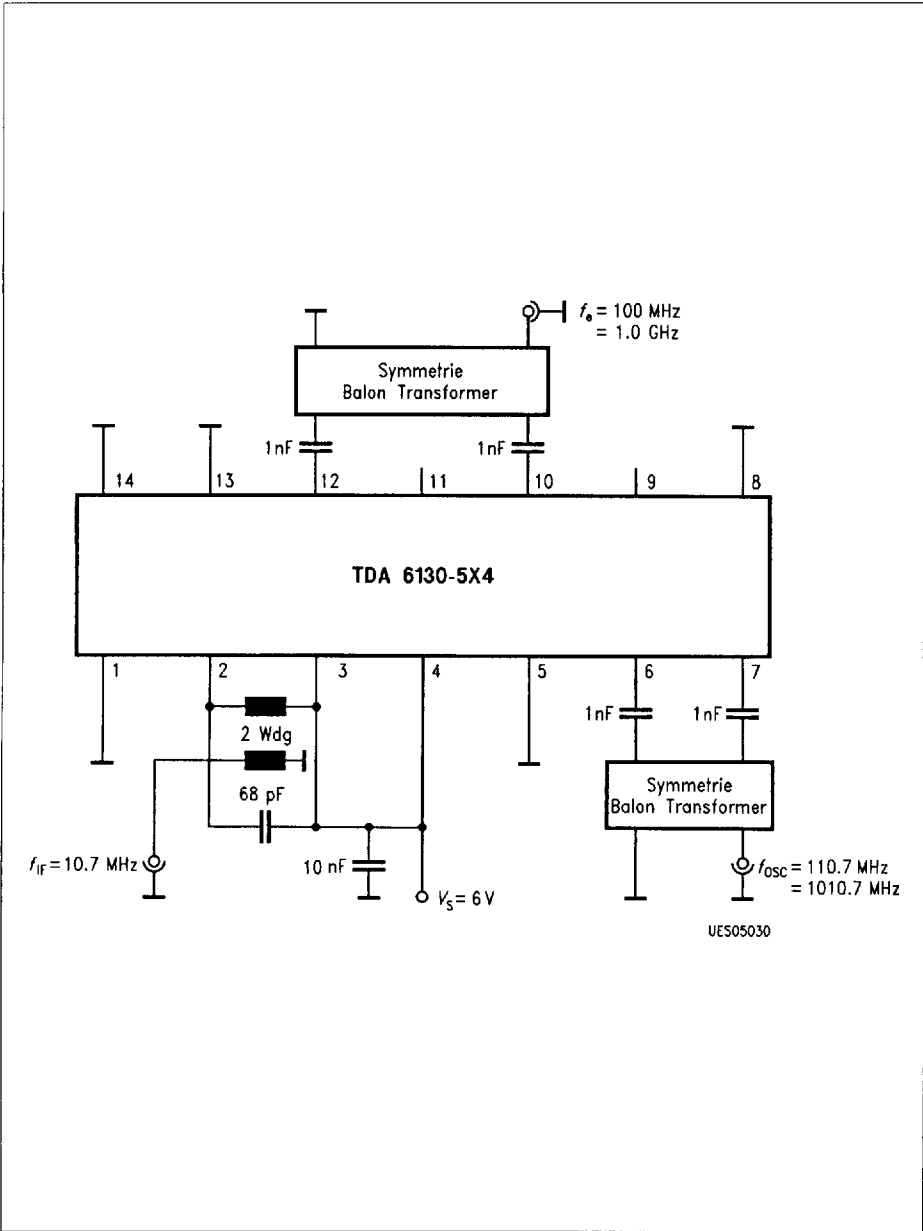
Operating Range

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

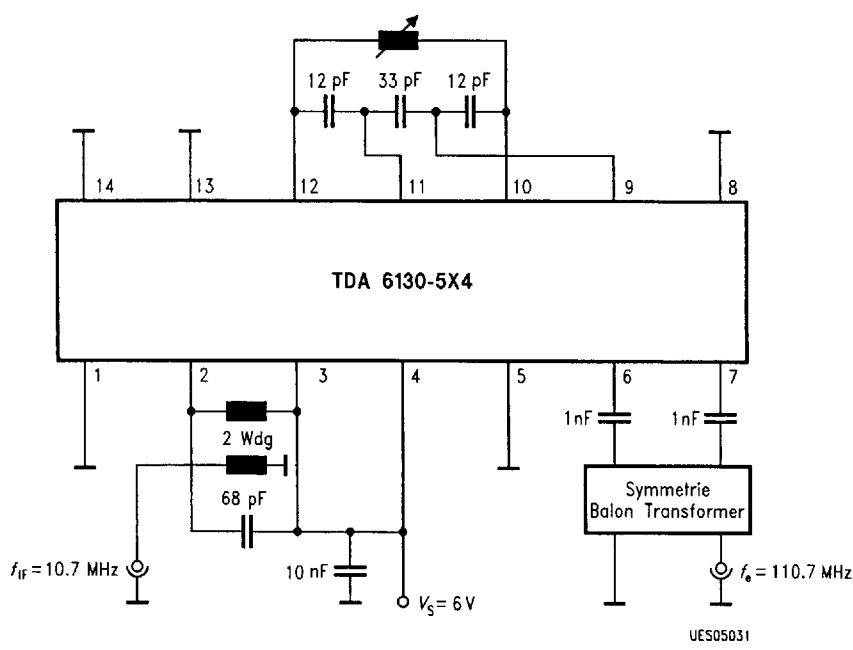
$T_A = 25\text{ }^{\circ}\text{C}$; $V_S = 6\text{ V} \pm 10\text{ }\%$ (test circuit 1)

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	V_P					
$f_e = 100\text{ MHz}$, $f_{\text{OSC}} = 110,7\text{ MHz}$		13	16	19	dB	
$f_e = 1\text{ GHz}$, $f_{\text{OSC}} = 1,1\text{ GHz}$		13	16	19	dB	
Break down voltage	$V_{2,3}$		18		V	
$I_{2,3} = 10\text{ mA}$; $V_{6,7} = 0$						
Noise figure	NF	6	7	10	dB	DSB
Mixer output impedance	R C		7.0 0.6 1.5		k Ω k Ω pF	$f_{\text{MO}} = 100\text{ MHz}$ $f_{\text{MO}} = 1\text{ GHz}$



Test Circuit 1

8235605 0063585 T83



Application Circuit

8235605 0063586 91T