TDA5230

VHF, Hyperband, and UHF Mixer/Oscillator With IF Amp

Preliminary Specification

Linear Products

DESCRIPTION

The TDA5230 consists of three (VHF, Hyperband, UHF) mixer/oscillators, and an IF Amplifier Circuit for TV tuner or communication front end designs. The integration of these functions within one IC facilitates the construction of a complex tuner design with higher performance and fewer components than circuitry using discrete transistors.

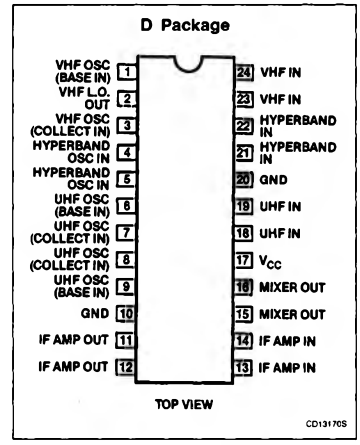
FEATURES

- **Balanced mixer for VHF having a common emitter input**
- **Amplitude-controlled oscillator for VHF**
- **Balanced mixer for hyperband & UHF with common base input**
- **Balanced hyperband & UHF oscillator**
- **Balanced mixer for UHF with common base input**
- **SAW filter preamplifier with a 75Ω output impedance**
- **Buffer stage for drive of a prescaler with the oscillator signal (VHF only)**
- **Voltage stabilizer for oscillator stability**
- **Band switch circuit**

APPLICATIONS

- **CATV**
- **Communication receiver**
- **TV tuners**
- **Data communication**

PIN CONFIGURATION



ORDERING INFORMATION

DESCRIPTION	TEMPERATURE RANGE	ORDER CODE
24-Pin Plastic DIP (SOT-137)	−25°C to +80°C	TDA5230D

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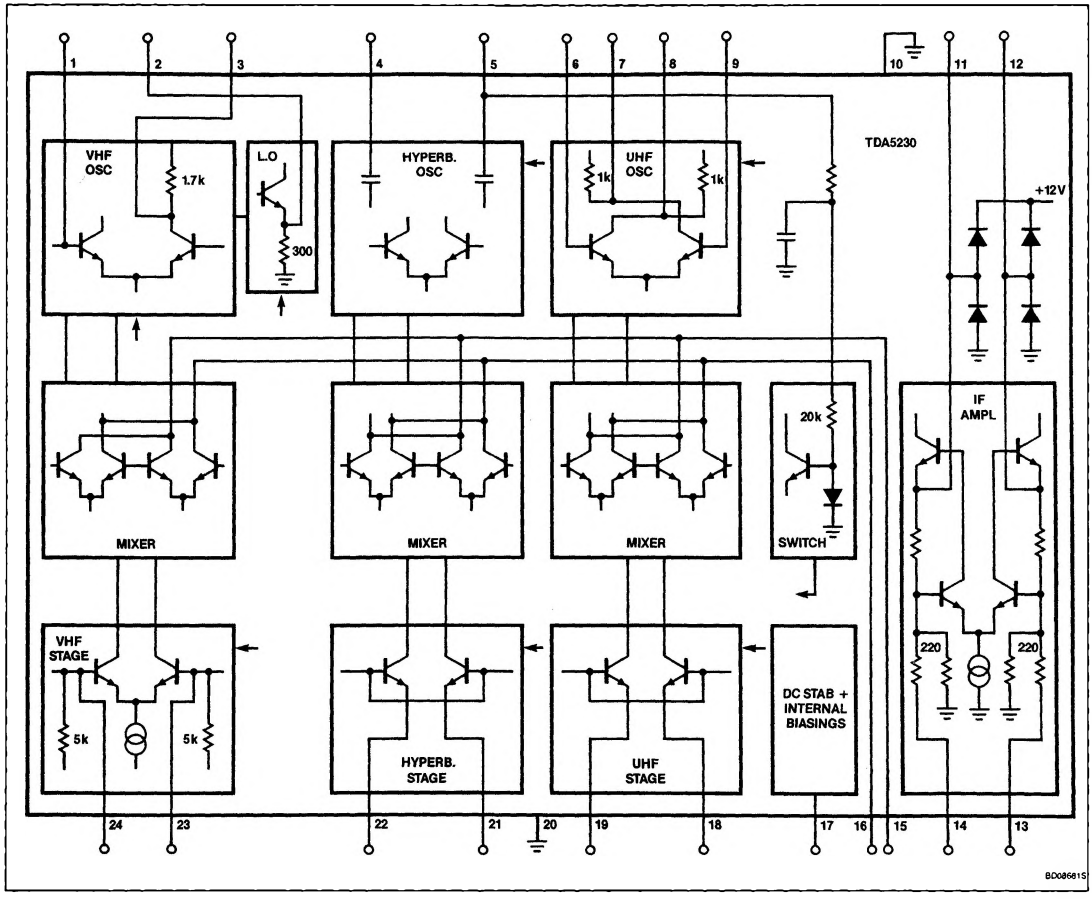
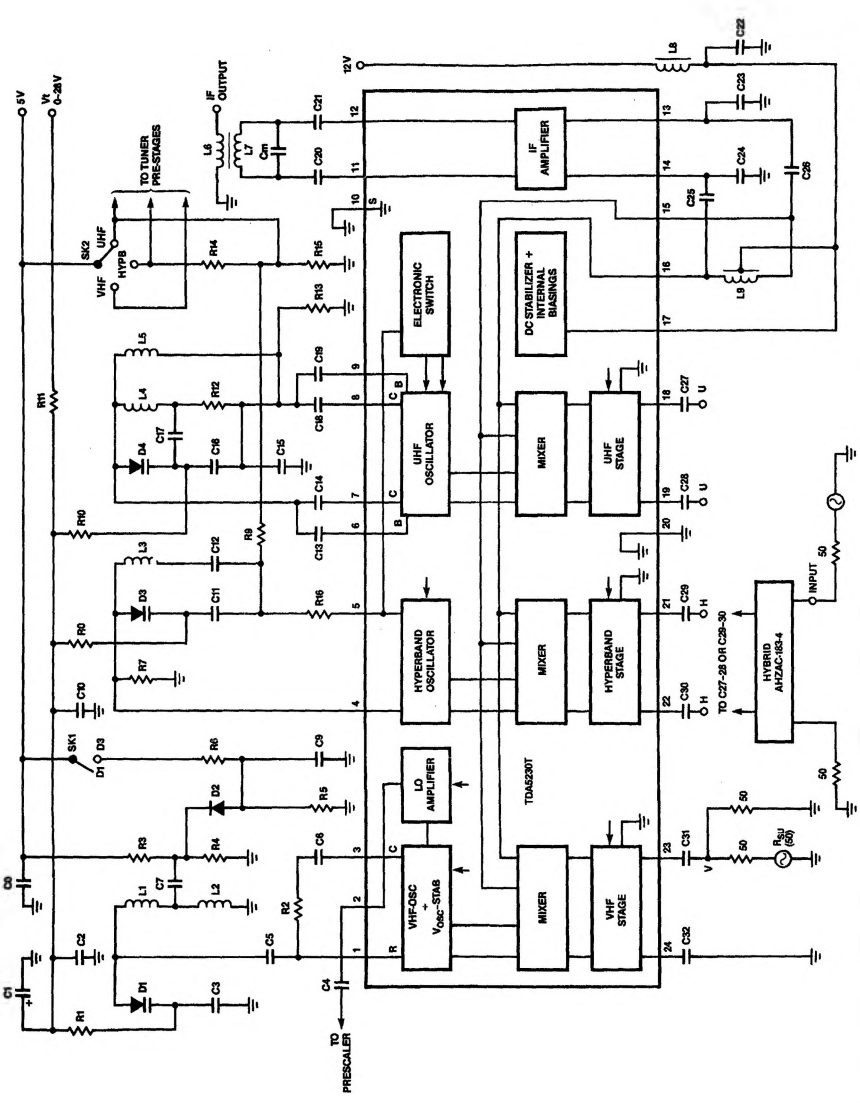
BLOCK DIAGRAM





NOTES:
1. L6 – L7 is a matching transformer (n = L7/L6 = 6). Terminated with 50Ω, it simulates the impedance of a saw-filter on Pins 11 – 12.
2. Cm is the simulated maximum allowable input capacitance of the saw-filter, which is 18pF if the capacitance between the leads to Pins 11 – 12 is < 4pF.
3. In the application Cm, L6 and L7 must be replaced by a saw-filter and an inductance across its input which tunes out the total capacitance between the pins if no IC has been connected.
4. This circuit is mounted on the V-H-U p.b.c. number: 3373.

Figure 1. Test Circuit for All Band VHF-UHF Mixer Oscillation IC TDA5230

Component Values of Circuit in Figure 1

Resistors

R1 = 47kΩ	R6 = 100Ω R11 = 1kΩ		
R2 = 18Ω	R7 = 22kΩ R12 = 2.2kΩ		
R3 = 4.7kΩ	R8 = 22kΩ R13 = 22kΩ		
R4 = 1.2kΩ	R9 = 2.2kΩR14 = 2.2kΩ		
R5 = 47kΩ	R10 = 22kΩR15 = 2.2kΩ		
		R16 = 10Ω (SMD)	

Capacitors

C1 = 1μF – 40V	C11 = 12pF (N750)	C21 = 1nF	C31 = 1nF
C2 = 1nF	C12 = 1nF	C22 = 1nF	C32 = 1nF
C3 = 82pF (N750)	C13 = 1.5pF (SMD)	C23 = 15pF (N750)	C_M = 18pF (N750)
C4 = 1nF	C14 = 1.5pF (SMD)	C24 = 15pF (N750)	
C5 = 1.8pF (N750)	C15 = 1nF	C25 = 1nF	
C6 = 1.8pF (N750)	C16 = 5.6pF (SMD)	C26 = 1nF	
C7 = 1nF	C17 = 100pF (SMD)	C27 = 1nF	
C8 = 1nF	C18 = 1.5pF (SMD)	C28 = 1nF	
C9 = 1nF	C19 = 1.5pF (SMD)	C29 = 1nF	
C10 = 1nF	C20 = 1nF	C30 = 1nF	

Diodes and IC

D1 = BB909B D2 = BA482 D3 = BB909B D4 = BB405B IC = TDA5230

Coils

L1 = 2.5t ϕ3	L6 = 2t	T0K0 7kN
L2 = 6.5t ϕ4	L7 = 10t	Mat : 113kN
L3 = 2.5t ϕ2.5	L8 ≈ 5μH	
L4 = 1.5t ϕ2.5	L9 = 2 × 6 t	T0K0 7kN
L5 = 1.5t ϕ3		Mat : 113kN

wire used: 0.4 for $L_1 - L_5$ and 0.1 for L_6, L_7, and L_9