

A complete FM radio on a chip

AN192

Narrow-Band FM Receiver

The TDA7000 can also be used for reception of narrowband FM signals. In this case, the local oscillator is crystal-controlled (as shown in Figure 16) and there is therefore hardly any compression of the IF swing by the FLL. The deviation of the transmitted carrier frequency due to modulation must therefore be limited to prevent severe distortion of the demodulated audio signal.

The component values in Figure 17 result in an IF of 4.5kHz and an IF bandwidth of 5kHz (Figure 17). If the IF is multiplied by N, the

values of capacitors C₁₇ and C₁₈ in the all-pass filters and the values of filter capacitors C₇, C₈, C₁₀, C₁₁, and C₁₂ must be multiplied by 1/N. For improved IF selectivity to achieve greater adjacent channel attenuation, second-order networks can be used in place of C₁₀ and C₁₁.

In this circuit the detuning noise generator is not used. Since the circuit is mainly for reception of audio signals, the audio output must be passed through a low-pass Chebyshev filter to suppress IF harmonics.

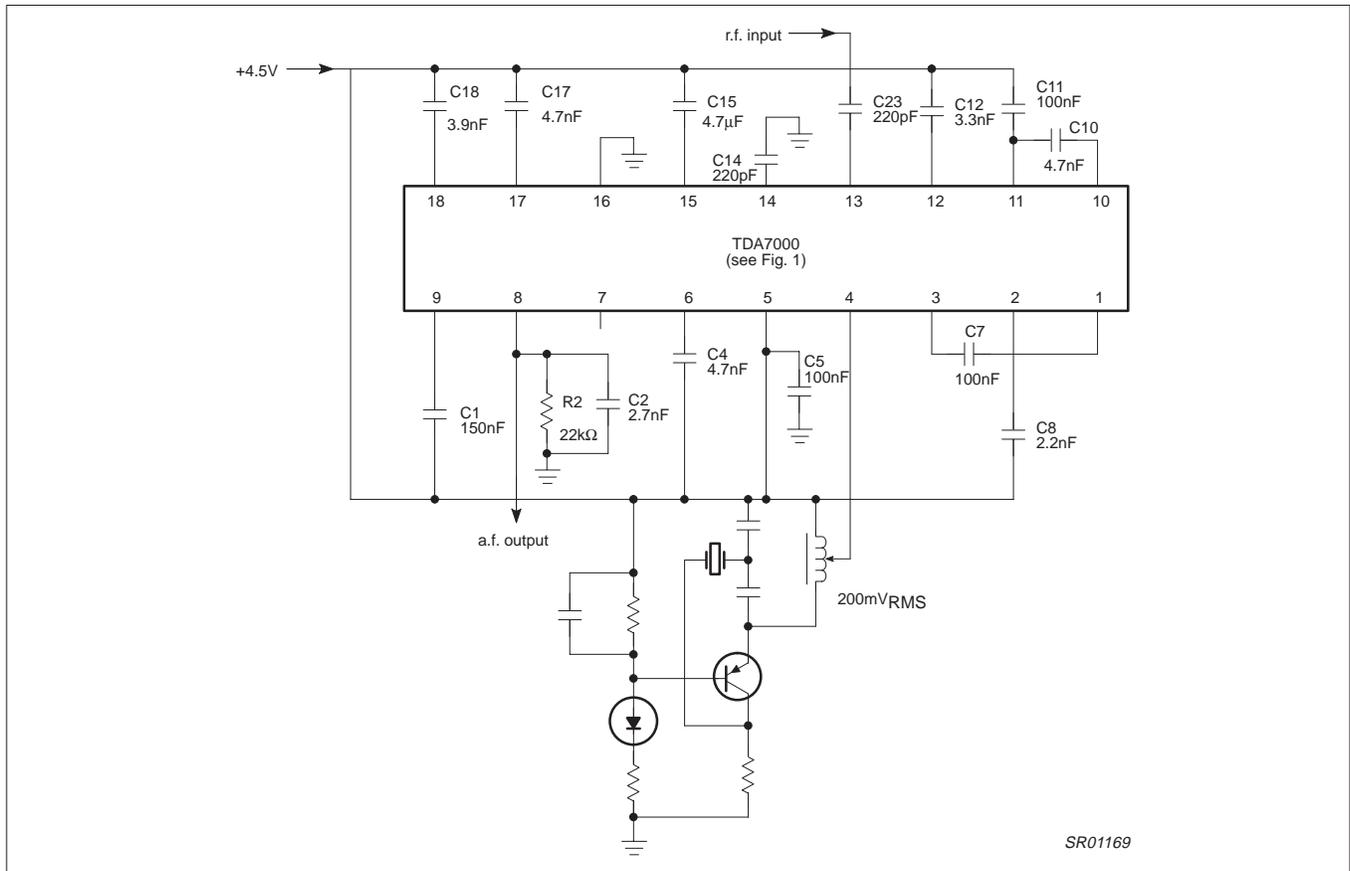


Figure 16. A Narrowband FM Receiver With a Crystal-Controlled Local Oscillator

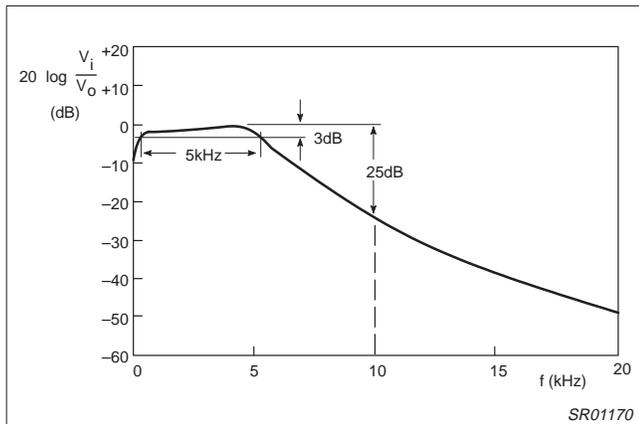


Figure 17. IF Selectivity for the Narrowband FM Receiver