This crystal oscillator is designed to operate with fundamental crystals with less than 1 mW dissipated in the crystal. The signal current is filtered by the crystal and develops a voltage across a capacitor with about 500 ohm of reactance. The resulting sinewave has low distortion and phase noise. A JFET buffer is included to drive lower impedance loads. Further buffering with an emitter follower and a voltage step-down transformer or matching network is recommended for driving 50 ohm loads. C3 may be reduced for larger output voltage or to allow lower drive level or it may be increased when lower output levels are desired. The 1k emitter resistor may be replaced with a choke when using overtone crystals. Select the choke to resonate with C2 at a frequency slightly above the fundamental frequency for third overtone crystals. High-Q overtone crystals should be driven at much lower levels than fundamental crystals so select a smaller value for C3 and set the output level as low as possible. Measure the drive level when the crystal's rated current or power is known. The drive level may be determined by temporarily connecting a 100 ohm across C3 and measuring the signal level on the source of the FET. The crystal current is simply V/100.