



**Figure 13** This quartz-stabilized sine-wave-output-ac reference has 0.1% long-term amplitude stability. The frequency accuracy is 0.01% with less-than-30-ppm distortion. The positive feedback around IC<sub>1</sub> causes oscillation at the crystal's resonant frequency. Amplifier IC<sub>5</sub> acts on the rms-amplitude output of IC<sub>4</sub> to supply a negative feedback to IC<sub>1</sub> through the bridge network that stabilizes the rms-output amplitude. The optocoupler minimizes feedback-induced distortion. Switch Q<sub>1</sub> closes during start-up, which ensures the rapid build up of oscillations.