DC-TCXO Offers High Accuracy Over a Wide Temperature Range

Maxim Integrated Products introduced the DS4026, a digitally controlled Temperature Compensated Crystal Oscillator (DC-TCXO). The DC-TCXO provides frequency accuracy and stability better than ±1.0 ppm over a wide operating temperature range of -40°C to +85°C. Over a 10-year operational life, the device is accurate to better than ±4.6 ppm and features phase noise performance characteristics of -140 dBc/Hz at a 1 kHz offset. This digitally tunable TCXO employs proprietary design and calibration techniques that negate the effects of electromechanical stress, thermal variations, and frequency perturbations (also known as "activity dips"), which can be excited in all crystal elements as they operate over temperature. To meet the expected accuracy performance specifications, the system also uses DSP-designed components, which are individually programmed to the specific crystal's element over temperature, voltage, and specific signal quality. The resulting digital design is highly robust and provides ±1.0 ppm over the entire temperature range. The DS4026 digital TCXO also integrates a ±3° accurate and readable temperature sensor and a 16-bit DSP-controlled DAC for frequency stability, trimming, and calibration. Frequency trimming and temperature reading are accomplished through an I^2C control interface. The DS4026's frequency can be tuned with a resolution better than 1 ppb and tuning ranges greater than ±10 ppm. The device operates from a 3.3V ±5 percent supply voltage and is packaged in a standard 300-mil 16-pin SO. The device is fully RoHS compliant, and is available in commercial and industrial temperature versions. This TCXO supports applications that require an extremely accurate and stable time base like wireless infrastructure applications, SONET/SDH systems, instrumentation and test systems, and GPS and navigation equipment. The DS4026 is priced at $20.00 (10k-up).

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