# OCXO (Oven Controlled Crystal Oscillators) +5.0V; +12V
# OC22T Series HCMOS Square Wave

**MERCURY** Since 1973

Mercury OC22T is 50.8X50.8 mm 7 pin solder sealed metal pacakge with 38.1X38.1 mm pin-to-pin spacing high stability low aging OCXO. SC cut crystal is standard for OC22 . ±0.4 ppb stability and ±150 ppb total aging over 10 years make the OC22 ideal for base stations, digital switching , instrumentation and frequency synthesizers. 50 ohm load sine output is available as OC22E series.

**General Specifications** ( 10 MHz at+25°C, at specified Vcc and +2.5 V Vcon)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Output Wave Form** | | | HCMOS square wave. Wave form code is "**T**" | | | | |
| **Frequency Range** | | | 5.0 MHz ~20.0 MHz | | | | |
| **Type of Crystal Cut Used** | | | **AT**-cut. Use "**A**" for crystal code or **SC-**cut: use "**S**" for crystal code. SC has better performance but higher cost. See technical note TN-031. | | | | |
| **Supply Voltage (Vcc)** | | | +5.0 $V_{D.C}$ ±5% (voltage code is "**5**"); +12.0 $V_{D.C}$ ±5% (voltage code is "**12**") | | | | |
| **Initial Calibration Tolerance** | | | ±0.1 ppm max. at time of shipment; Vcon=+2.5V, at +25°C | | | | |
| **Frequency Stability vs** | **Operating Temperature Range (custom spec. on request)** | | Best Stability | 0°C to +60°C | -20°C to +70°C | -40°C to +85°C | |
| | | | For **AT** crystal | ±50 ppb | ±0.1 ppm | ±0.2 ppm | |
| | | | For **SC** crystal | ±0.4 ppb | ±5 ppb | ±15 ppb | |
| | **Aging** (after 72 hours of continuous operation) | | **AT**:±3 ppb max./day; ±0.5 ppm max./first year;±3 ppm max. over 10 years.<br>**SC**: ±0.5 ppb max./day; ±50 ppb max./first year;±150 ppb max. over 10 years. | | | | |
| | **Supply Voltage ±5% Variation** | | ±1 ppb max. | | | | |
| | **Load ±5% variation:** | | ±1 ppb max. | | | | |
| | **Warm-up time (at +25°C)** | | **AT**: 1 minute max. Within ±0.2 ppm of its reference frequency.<br>**SC**: 5 minute max. Within ±10 ppb of its reference frequency. | | | | |
| **Voltage Control on pin 1 (EFC) (Electronics Frequency Tuning)** | **Freq. Deviation Range** | | **AT**: ±5 ppm min. ±20 ppm max.;<br>**SC**: ±0.5 ppm min, ±1 ppm max. | Referenced to fo at +25°C and over operating temperature range. | | | |
| | **Control Voltage Range** | | 2.5 V ± 2.0 V | | | | |
| | **Transfer Function** | | Positive: Increasing control voltage increases output frequency. | | | | |
| | **Input Impedance** | | 100 K ohms min. | **EFC Linearity** | ±20% max. | | |
| **Power** | **Power Dissipation (at +25°C)** | | 1.0 Watts max. at steady-state; 4.5 Watts max. at turn-on. | | | | |
| **Output** | **Load (Fan out)** | | 15 pF HCMOS max. | | | | |
| | **Duty Cycle** | | 50% ± 5%. (measured at 50%Vcc) | | | | |
| | **Output Voltage Logic High ($V_{OH}$)** | | +4.5 V min. | | | | |
| | **Output Voltage Logic Low ($V_{OL}$)** | | +0.5 max. | | | | |
| | **Rise and Fall Time** | | 5 nS max. (measured at 20% ⇄ 80% of waveform) | | | | |
| | **Reference Voltage Output** | | +4.0 $V_{D.C}$±0.3 $V_{D.C}$. or custom. | | | | |
| | **Phase Noise** | **Offset** | 1 Hz | 10 Hz | 100 Hz | 1 KHz | 10 KHz |
| | | **10 MHz AT-cut XTAL** | -75 dBc | -100 dBc | -130 dBc | -140 dBc | -150 dBc |
| | | **10 MHz SC-cut XTAL** | -90 dBc | -120 dBc | -140 dBc | -150 dBc | -150 dBc |
| **Storage Temperature** | | | -55°C to +125°C | | | | |
| **Shock** | | | 2000 G's, 0.3 ms ½ sine | | | | |
| **Vibration** | | | 10 to 2000 Hz / 10 G's | | | | |


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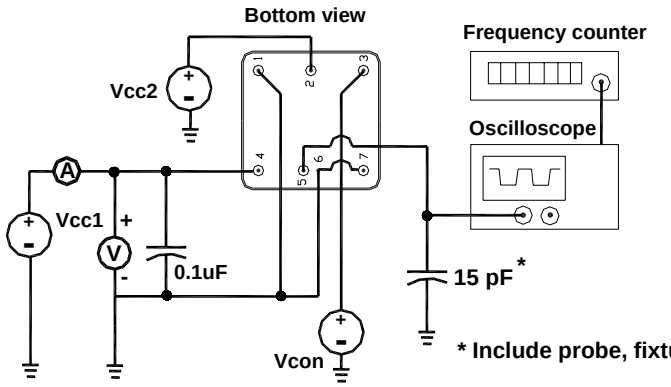
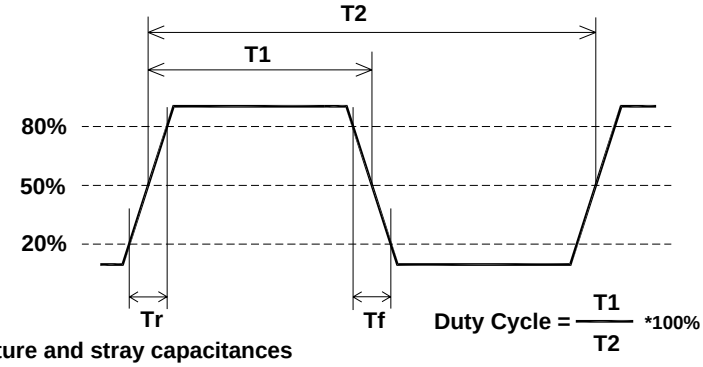
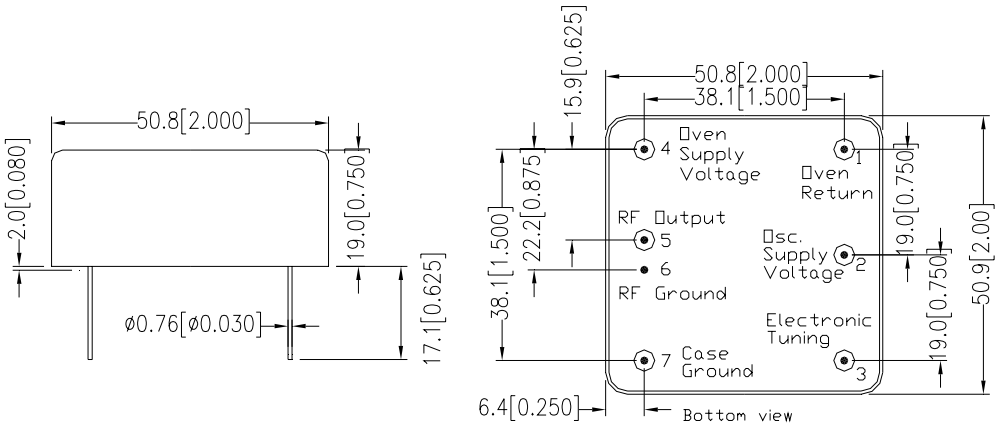
## OC22T Test Circuit




## OC22T Series Package Dimensions and Pin Connections: unit mm




## Part Number Format and Example:

| **Example**: OC22T5S-10.000-0.01/-20+70 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| OC | 22 | T | 5 | S | — | 10.000 | — | 0.01 | / | -20+70 |
| ❶ | ❷ | ❸ | ❹ | ❺ | dash | ❻ | dash | ❼ | slash | ❽ |

❶: "**OC**" Product Prefix for OCXO ❷: Package type. "**22**" for OC22 package

❸: Output wave form code. "**T**" for HCMOS square wave output..

❹: Supply voltage code. "**5**" for +5.0V; "**12**" for +12.0V

❺: Crystal type. Use "**A**" for AT-cut crystal; Use "**S**" for SC-cut crystal.

❻: Frequency in MHz; ❼: Frequency stability in ppm;

❽: Operating temperature range: -20°C to +70°C in this case.