

# 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 package with 38.1X38.1 mm pin-to-pin spacing high stability low aging OCXO. SC cut crystal is standard for OC22.  $\pm 0.4$  ppb stability and  $\pm 150$  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)

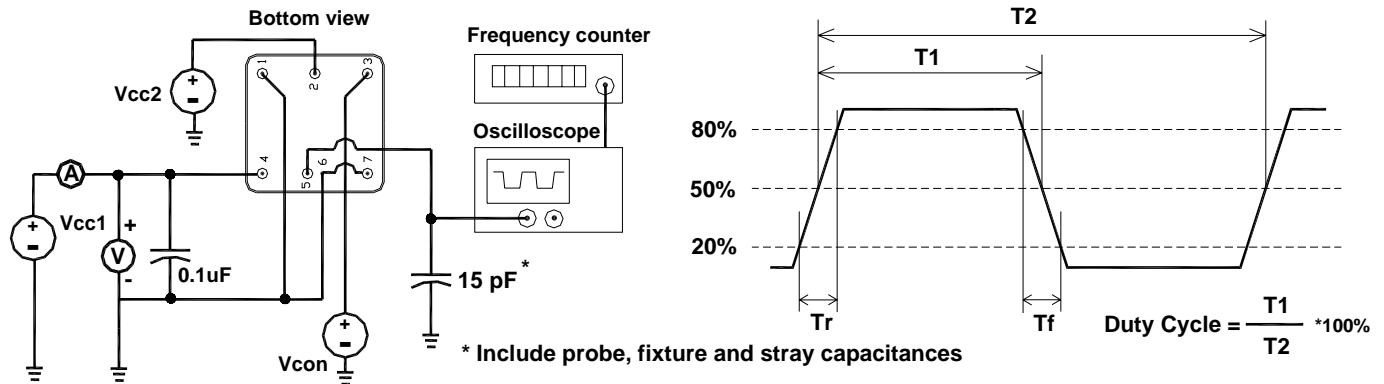
<b>Output Wave Form</b>		HCMOS square wave. Wave form code is "T"				
<b>Frequency Range</b>		5.0 MHz ~20.0 MHz				
<b>Type of Crystal Cut Used</b>		AT-cut. Use "A" for crystal code or SC-cut: use "S" for crystal code. SC has better performance but higher cost. See technical note TN-031.				
<b>Supply Voltage (Vcc)</b>		+5.0 V <sub>D.C</sub> $\pm 5\%$ (voltage code is "5"); +12.0 V <sub>D.C</sub> $\pm 5\%$ (voltage code is "12")				
<b>Initial Calibration Tolerance</b>		$\pm 0.1$ ppm max. at time of shipment; Vcon = +2.5V, at +25°C				
<b>Frequency Stability vs</b>	<b>Operating Temperature Range (custom spec. on request)</b>	Best Stability	0°C to +60°C	-20°C to +70°C	-40°C to +85°C	
		For AT crystal	$\pm 50$ ppb	$\pm 0.1$ ppm	$\pm 0.2$ ppm	
		For SC crystal	$\pm 0.4$ ppb	$\pm 5$ ppb	$\pm 15$ ppb	
	<b>Aging (after 72 hours of continuous operation)</b>	AT: $\pm 3$ ppb max./day; $\pm 0.5$ ppm max./first year; $\pm 3$ ppm max. over 10 years. SC: $\pm 0.5$ ppb max./day; $\pm 50$ ppb max./first year; $\pm 150$ ppb max. over 10 years.				
	<b>Supply Voltage <math>\pm 5\%</math> Variation</b>	$\pm 1$ ppb max.				
	<b>Load <math>\pm 5\%</math> variation:</b>	$\pm 1$ ppb max.				
<b>Warm-up time (at +25°C)</b>		AT: 1 minute max. Within $\pm 0.2$ ppm of its reference frequency. SC: 5 minute max. Within $\pm 10$ ppb of its reference frequency.				
<b>Voltage Control on pin 1 (EFC) (Electronics Frequency Tuning)</b>	<b>Freq. Deviation Range</b>	AT: $\pm 5$ ppm min. $\pm 20$ ppm max.; SC: $\pm 0.5$ ppm min. $\pm 1$ ppm max.		Referenced to fo at +25°C and over operating temperature range.		
	<b>Control Voltage Range</b>	2.5 V $\pm 2.0$ V				
	<b>Transfer Function</b>	Positive: Increasing control voltage increases output frequency.				
	<b>Input Impedance</b>	100 K ohms min.	<b>EFC Linearity</b>	$\pm 20\%$ max.		
<b>Power</b>	<b>Power Dissipation (at +25°C)</b>	1.0 Watts max. at steady-state; 4.5 Watts max. at turn-on.				
<b>Output</b>	<b>Load (Fan out)</b>	15 pF HCMOS max.				
	<b>Duty Cycle</b>	50% $\pm 5\%$ . (measured at 50%Vcc)				
	<b>Output Voltage Logic High (V<sub>OH</sub>)</b>	+4.5 V min.				
	<b>Output Voltage Logic Low (V<sub>OL</sub>)</b>	+0.5 max.				
	<b>Rise and Fall Time</b>	5 nS max. (measured at 20% $\rightleftharpoons$ 80% of waveform)				
	<b>Reference Voltage Output</b>	+4.0 V <sub>D.C</sub> $\pm 0.3$ V <sub>D.C</sub> . or custom.				
	<b>Phase Noise</b>	<b>Offset</b>	1 Hz	10 Hz	100 Hz	1 KHz
<b>10 MHz AT-cut XTAL</b>		-75 dBc	-100 dBc	-130 dBc	-140 dBc	-150 dBc
<b>10 MHz SC-cut XTAL</b>		-90 dBc	-120 dBc	-140 dBc	-150 dBc	-150 dBc
<b>Storage Temperature</b>		-55°C to +125°C				
<b>Shock</b>		2000 G's, 0.3 ms $\frac{1}{2}$ sine				
<b>Vibration</b>		10 to 2000 Hz / 10 G's				

**MERCURY** [www.mercury-crystal.com](http://www.mercury-crystal.com)

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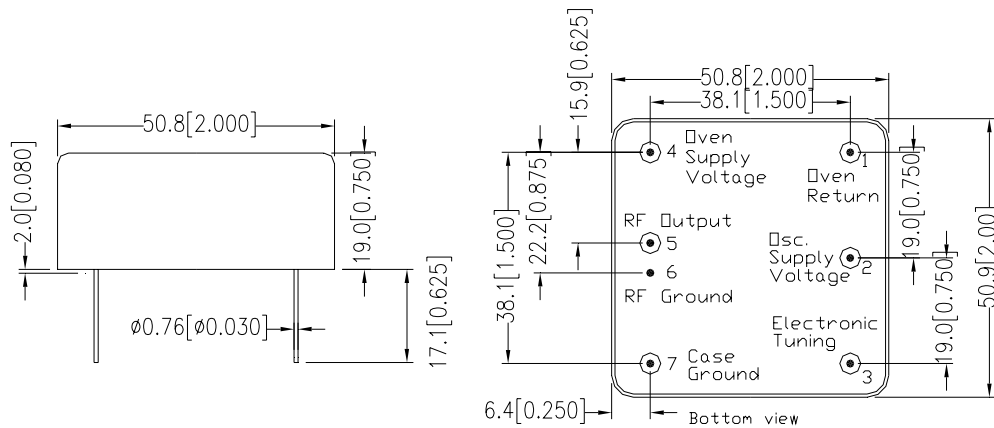
U.S.A.: TEL (1)-909-466-0427, FAX (1)-909-466-0762, e-mail: sales-us@mercury-crystal.com

**OC22T Test Circuit**



**OC22T Series Package Dimensions and Pin Connections:**

unit mm



**Part Number Format and Example:**

<b>Example: OC22T5S-10.000-0.01/-20+70</b>										
OC	22	T	5	S	—	10.000	—	0.01	/	-20+70
①	②	③	④	⑤	dash	⑥	dash	⑦	slash	⑧
<p>①: "OC" Product Prefix for OCXO      ②: Package type. "22" for OC22 package</p> <p>③: Output wave form code. "T" for HCMOS square wave output..</p> <p>④: Supply voltage code. "5" for +5.0V; "12" for +12.0V</p> <p>⑤: Crystal type. Use "A" for AT-cut crystal; Use "S" for SC-cut crystal.</p> <p>⑥: Frequency in MHz;      ⑦: Frequency stability in ppm;</p> <p>⑧: Operating temperature range: -20°C to +70°C in this case.</p>										