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





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 . \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	$(10 \text{ MHz at}+25^{\circ}\text{C}, \text{ at specified Vcc and } +2.5 \text{ V Vcon})$
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Frequency Range 5.0 MHz - 20.0 MHz 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 _{Dc} ± 5% (voltage code is "S"); +12.0 V _{Dc} ± 5% (voltage code is "12") Initial Calibration Tolerance ±0.1 ppm max. at time of shipment; Vcon= +2.5V, at +25°C Provide (ustom spec. on request) Aging (after 72 hours of continuous operation) AT: ±3 ppt max./day; ±0.5 ppt ±0.1 ppm ±0.2 ppm Supply Voltage ±5% Variation ±1 ppt max. Load ±5% variation: ±1 ppt max. Warm-up time (at +25°C) AT: ±3 ppt max./day; ±0.5 ppt max./first year; ±150 ppt max. over 10 years. Supply Voltage ±5% Variation ±1 ppt max. Warm-up time (at +25°C) AT: 1 minute max. Within ±0.2 ppm of its reference frequency. SC: ±0.5 ppt max./Lay; ±50 ppt max./lay; ±50 ppt of its reference frequency. GG: Signe Si	Output W			HCMOS square wave. Wave form code is " T "							
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 p.c. ±5% (voltage code is "5"); +12.0 V p.c. ±5% (voltage code is "12") Initial Calibration Tolerance ±0.1 ppm max. at time of shipment; Vcon=+2.SV, at +25°C Best Stability 0°C to +60°C -20°C to +70°C -40°C to +85°C For AT crystal ±5.0 ppb ±0.1 ppm ±0.2 ppm Aging (after 72 hours of continuous operation) AT:=3 ppb max./day; ±50 ppb ±0.1 ppm ±0.2 ppm Supply Voltage ±5% variation ±1 ppb max./day; ±50 ppb ±0.1 ppm or its reference frequency. SC: ±0.5 ppb max./day; ±50 ppb or dits reference frequency. SC: 5 minute max. Within ±0.2 ppm of its reference frequency. SC: 5 minute max. Within ±10 ppb of its reference frequency. SC: 5 minute max. Within ±10 ppb of its reference frequency. SC: 5 minute max. Within ±10 ppb of its reference frequency. SC: 5 minute max. Within ±10 ppb of its reference frequency. SC: 5 ppm min. ±20 ppm max.] Power Power Dissipation (at +25°C) 1.0 Watts max. at steady-state; 4.5 Watts max. at turn-on. Load (Fan out) 15 pF HCMOS max. EFC Linearity ±20% max. Power Power Olissipation (at +25°C) 1.0 Watts max. at steady-state; 4.5 Watts max. at turn-on. Load (Fan out) 15 pF HCMOS max. 50% ± 5%. (measured at 50% Vcc) Uput Voltage Logic Low (Vol) +0.5 max. Notage Logic Low (Vol) +0.5 max.<											
Initial Calibration Tolerance ±0.1 ppm max. at time of shipment; Vcon=+2.5V, at +25°C Image: Section Sectin Section Section Section Section Section S					AT-cut. Use "A" for crystal code or SC-cut: use "S" for crystal code.						
Second State Operating Temperature Range (ustom spec. on request) Best Stability 0°C to +60°C -20°C to +70°C -40°C to +85°C Aging (after 72 hours of continuous operation) Aging (after 72 hours of continuous operation) AT: ±3 ppb max./day; ±0.5 ppm max./first year; ±3 ppm max. over 10 years. Sc ± 0.5 ppm max./dirst year; ±150 ppb max. over 10 years. Supply Voltage ±5% Variation: ±1 ppb max. AT: ±3 ppb max./day; ±50 ppb max./first year; ±150 ppb max. over 10 years. Warm-up time (at +25°C) Freq. Deviation Range AT: 1 minute max. Within ±0.2 ppm of its reference frequency. AT: 1 minute max. Within ±10 ppb of its reference frequency. AT: ±5 ppm min. ±20 ppm max.; Referenced to for 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. Transfer Function Positive: Increasing control voltage increases output frequency. 1.0 Watts max. at steady-state; 4.5 Watts max. at turn-on. Load (Fan out) 15 pF HCMOS max. 100 K ohms min. EFC Linearity ±20% max. Output Voltage Logic High (V _{OH}) +4.5 V min. 4.5 V min. 4.5 V min. 4.5 V min. Output Voltage Logic Low (V _{OL}) 5 nS max. (measured at 20% ≠ 80% of waveform)<					$+5.0 V_{D.C} \pm 5\%$ (voltage code i	s " 5 "); ⊣	-12.0 V _D	_{.c} ±5% (vo	ltage code is " 12 ")	
Image: Program Provided Control Voltage Logic Low (Voltage	Initial Cal	ibration 1	Tolerance		± 0.1 ppm max. a	at time of shipr	nent; Vc	on=+2.	5V, at +25°	°C	
Image: Product of the system of the syste		(custom spec. on request)			Best Stability	0°C to +	60°C	-20°C to) +70°C	-40°C to +85°C	
Por 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. Sc: ±0.5 ppb max./day; ±50 ppb max./first year;±10 ppb max. over 10 years. Supply Voltage ±5% Variation: ±1 ppb max. ±1 ppb max. ±1 ppb max. Varm-up time (at +25°C) AT: 1 minute max. Within ±0.2 ppm of its reference frequency. Sc: 5 minute max. Within ±10 ppb of its reference frequency. Sc: 5 minute max. Within ±10 ppb of its reference frequency. Sign of fight Freq. Deviation Range 2.5 V ± 2.0 V 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. Load (Fan out) Duty Cycle 50% ± 5%. (measured at 50%Vcc) Output Voltage Logic Low (V _{0L}) +0.5 max. Rise and Fall Time 5 ns max. (measured at 20% ≈ 80% of waveform) 10 KHz Referencet Voltage Output +4.0 V _{0.c} ±0.3 V _{0.c} . or custom. 140 dBc -150 dBc Power Forset 1 Hz 10 Hz 100 Hz 1 KHz	₹										
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Warm-up time (at +25°C) Al: 1 minute max. Within ±0.2 ppm of its reference frequency. SC: 5 minute max. Within ±10 ppb of its reference frequency. S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S S											
Warm-up time (at + 25°C) SC: 5 minute max. Within ± 10 ppb of its reference frequency. SC : ± 0.5 ppm min. ± 20 ppm max.; SC : ± 0.5 ppm min. ± 1 ppm max. Referenced to fo at + 25°C and over operating temperature range. SC : ± 0.5 ppm min. ± 1 ppm max. Referenced to fo at + 25°C and over operating temperature range. Control Voltage Range SC : ± 0.5 ppm min. ± 1 ppm max. Referenced to fo at + 25°C and over operating temperature range. Control Voltage Range Transfer Function 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. Load (Fan out) 15 pF HCMOS max. Duty Cycle 50% ± 5%. (measured at 50% Vcc) Output Voltage Logic High (V_{0H}) + 4.5 V min. Output Voltage Logic Low (V_{0L}) 4.0.5 max. Rise and Fall Time 5 nS max. (measured at 20% ≠ 80% of waveform) Reference Voltage Output 4.4.0 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 190 dBc 120 dBc 140 dBc 150 dBc 150 dBc 150 dBc 150 dBc 150 dBc 150 dBc 150 dBc 150 dBc						ax Within +0	2 nnm o	f its refer	ence freque	ncv	
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I I I I I I I I I I I I I I I I I I I		Duty Cycle			50% ± 5%. (me	easured at 50%	%Vcc)				
Output 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 -2000 G's, 0.3 ms ½ sine -2000 G's, 0.3 ms ½ sine -2000 G's, 0.3 ms ½ sine		Output Voltage Logic High (V _{OH})			+4.5 V min.	+4.5 V min.					
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 -2000 G's, 0.3 ms ½ sine -2000 G's, 0.3 ms ½ sine -2000 G's, 0.3 ms ½ sine		Output Voltage Logic Low (V _{OL})			+0.5 max.						
Offset 1 Hz 10 Hz 100 Hz 1 KHz 10 KHz 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 -55°C to +125°C -55°C to +125°C -55°C to +125°C	Output	Rise and Fall Time			5 nS max. (measured at 20% \Rightarrow 80% of waveform)						
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Shock 2000 G's, 0.3 ms ½ sine			10 MHz SC-cut XTAL		-90 dBc	-120 dBc	-140 d	Bc	-150 dBc	-150 dBc	
	Storage Temperature			-55°C to +125°C							
Vibration 10 to 2000 Hz / 10 G's	Shock			2000 G's, 0.3 ms 1/2 sine							
	Vibration	Vibration			10 to 2000 Hz / 10 G's						

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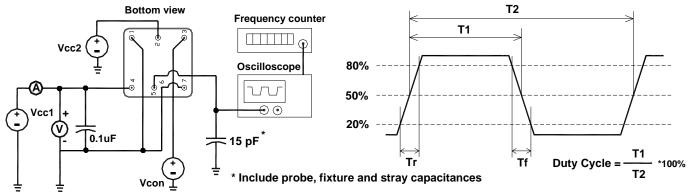
 Taiwan: TEL (886)-2-2406-2779, FAX (886)-2-2496-0769, e-mail: sales-tw@mercury-crystal.com

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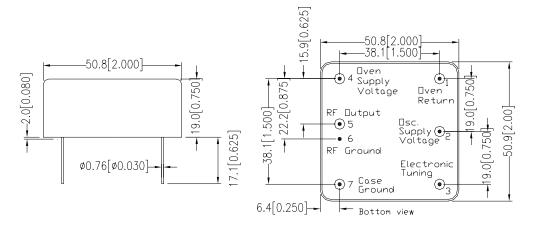
 Date: July 20, 2006
 Rev. 0





OC22T Series Package Dimensions and Pin Connections:

unit mm



Part Number Format and Example:

Example: 0C22T5S-10.000-0.01/-20+70										
00	22	Т	5	S	_	10.000	_	0.01	/	-20+70
0	0	₿	4	6	dash	6	dash	0	slash	8
① : " 0C " Product Prefix for OCXO ② : Package type. " 22 " for OC22 package										
8 : Output wave form code. " T " for HCMOS square wave output										
4 : Supply voltage code. " 5 " for $+5.0V$; " 12 " for $+12.0V$										
S: Crystal type. Use "A" for AT-cut crystal; Use "S" for SC-cut crystal.										
G: Frequency in MHz;✓: Frequency stability in ppm;										
8:	3 : Operating temperature range: -20° C to $+70^{\circ}$ C in this case.									

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