

Model 197

High Stability OCXO

Features

- 1 μ sec typical for 8 hour holdover
- -40°C to 85°C Operating Temperature Range
- Sinewave or HCMOS Output
- Industry Standard 36 x 27 mm package



36.4 x 27.4 x 13.0 mm

Description

CTS Model 197 is a high stability double oven OCXO developed to meet stringent Long-Term Evolution (LTE) performance requirements, offering 1.0 ppb (p-p) temperature stability over the industrial temperature range. It provides excellent 1 μ sec typical holdover performance with $\pm 10^\circ\text{C}$ temperature variation. Other applications ideally suited for this OCXO include high performance instrumentation, communications systems, and rubidium replacement.

Table 1: Ordering Information

Model	Stability	Temp Range	Supply Voltage	EFC	Output	Frequency
<u>197</u>	<u>J</u>	<u>G</u>		<u>N</u>	<u>S</u>	<u>10M000</u>
						Other frequencies available (Consult factory)
Code	Stability (p-p)		Code	Spec.	Code	Spec.
J	1 ppb		blank	5V (std)	H	HCMOS
K	0.8 ppb		B	12V	S	Sine
L	0.5 ppb					
M	0.2 ppb					
		Code	Temp. Range	Code	Spec.	
		A	0 to 50°C	V	EFC	
		B	0 to 70°C	N	None	
		C	-10 to 60°C			
		D	-20 to 70°C			
		V	-40 to 70°C			
		G	-40 to 85°C			

Note: Not all stabilities are available for all input voltages. Please consult factory.

Part Number Example: 197-JGNS-10M000



Electrical Specifications

Parameter	Conditions & Remarks	Min	Typical	Max	Unit	
Operating Conditions						
Supply Voltage (See Table 1 options)	V_{CC}	4.75 11.4	5 12	5.25 12.6	Vdc	
Turn-On Power	Nom V_{CC}	-	-	6.0	W	
Steady State Power	Nom V_{CC} , $T_a = 25^\circ\text{C}$	-	1.5	2.0	W	
Operating Temperature Range (See Table 1 options)	T_a	-40	-	+85	$^\circ\text{C}$	
Frequency Stability						
Frequency	F_{NOM} , Other frequencies available (consult factory)		10.000		MHz	
Calibration	$\Delta F/F_{NOM}$;	-	-	± 100	ppb	
Temperature Stability (See Table 1 options)	$\Delta F/F_{NOM}$ over -40 to $+85^\circ\text{C}$ Hysteresis	-	0.5	1.0 0.2	ppb p-p ppb	
Frequency vs. Voltage	$V_{CC} \pm 5\%$	-	-	± 0.3	ppb	
Aging (10MHz)	Per day	-	-	± 0.2	ppb	
	Per year	-	-	± 20	ppb	
	10 years	-	-	± 180	ppb	
8 Hour Holdover	With $\pm 10^\circ\text{C}$ temperature variation – see Figure 1	-	<1	1.5	μsec	
Warm up time	Within 20 ppb, ref to 1 hour	-	-	5	minutes	
Electronic Frequency Control (EFC) (See Table 1 options)						
Voltage Range	V_C , Control voltage range	0	-	4	V	
Pulling Range	Positive, monotonic	± 0.3	-	-	ppm	
Linearity		-	-	10	%	
Output Parameters						
Sinewave (See Table 1 options)	50 Ω load	+5	+7	+9	dBm	
Load		45	50	55	Ω	
Harmonics				-30	dBc	
CMOS (See Table 1 options)	Load		15 pf			
	V_{OH}	5V option	2.7	-	-	Vdc
		12V option	3.5	-	-	
V_{OL}		-	-	0.4		
Rise / Fall times	T_R / T_F	-	-	5	ns	
Duty Cycle		45	50	55	%	
Spurious				-70	dBc	
Phase Noise (10MHz)	Offset = 1Hz	-	-	-90	dBc/Hz	
	10Hz	-	-	-120		
	100Hz	-	-	-140		
	1KHz	-	-	-150		
	10KHz	-	-	-155		
	100KHz	-	-	-155		

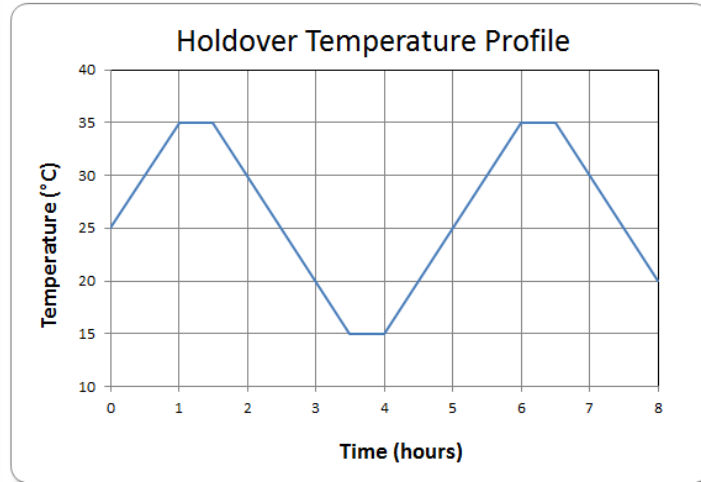


Figure 1. Holdover Temperature Profile

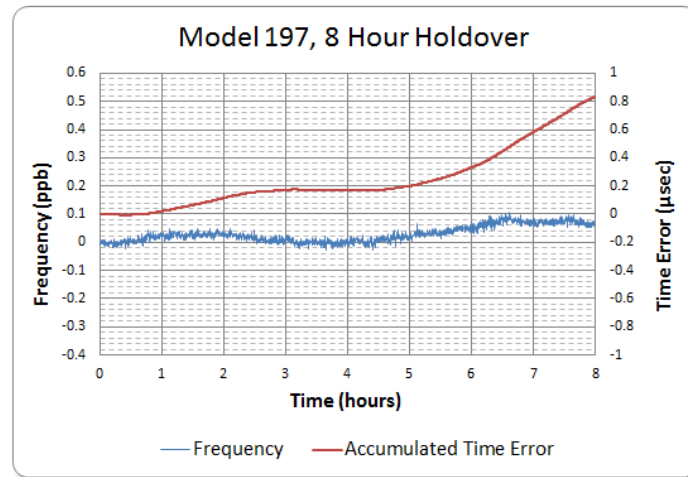
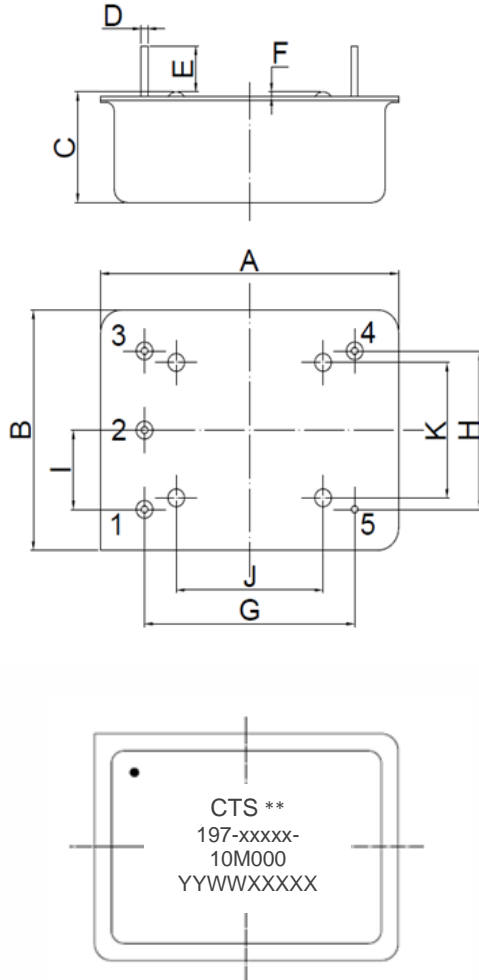


Figure 2. Typical holdover performance

Mechanical and Environmental

Storage Temperature	-55 to +105°C
Drop Test	The test shall be carried out as the provisions of the IEC60028-2-32 test Ed. 10 cm height, 3 times on hard board with thickness of 3 cm.
Bump Test	Device are bumped in three mutually perpendicular axes at peak acceleration of 400m/s ² , each 4000 ±10 times, 6ms pulse duration time.
Vibration	The test shall be carried out as the provisions of the IEC60068-2-06 test Fc. Frequency range: 10Hz-500Hz Acceleration: 10g Displacement: 0.75mm@10Hz Duration: 30 minutes per axis (3 axes)
Mechanical Shock	The test shall be carried out as the provisions of the IEC60068-2-27 Ed. 100g, 11mS duration, 1/2 sine wave, 3 shocks each direction along 3 mutually perpendicular planes.
Thermal Shock	0.5h@-40°C, 0.5h@+85°C. Note: the changing time < 30 seconds, cycling for 100 times

Mechanical Specifications



Pin Assignments

Pin	Function
1	V _c / NC*
2	DNC**
3	V _{cc}
4	RF Output
5	GND/Case

* NC when EFC option "N" is selected.

** DNC – Do not connect to this pin.

Dimensions (mm)

Symbol	Min	Max
A		36.4
B		27.4
C		13.0
D	0.7	0.9
E	4.5	5.9
F	0.4	0.7
G	25.2	25.6
H	17.6	18.0
I	8.8	9.0
J	17.75 nominal	
K	15.21 nominal	

Marking

**	Mfg Site Code
YYWWXXXXX	DC/Serial Number

This product is specified for use only in standard commercial applications. Supplier disclaims all express and implied warranties and liability in connection with any use of this product in any non-commercial applications or in any application that may expose the product to conditions that are outside of the tolerances provided in its specification.