

Model 1499 14 x 9 mm SMD OCXO

Features

- Small 14x9 SMD package size
- Output frequency range up to 54MHz
- 3.3V operation
- Low Jitter/Phase Noise
- Tape and Reel Packaging

Description

The CTS Model 1499 is a low cost, small size, high performance OCXO. The high quality SC cut Quartz Crystal used in this OCXO offers high stability and low jitter/phase noise, making it the ideal choice for any telecommunications system. Other applications include: Telecom Switching, Wireless Communication and Timing over Packet.

Table 1. Ordering Information



Table 2. Stability Options

		Stability (ppb)			
	Temperature	Т	U	V	W
Code	Range	±50	±20	±10	±10 p-p
В	0 to 70°C	*	*	*	*
D	-20 to 70°C	*	*	*	*
G	-40 to 85°C	*	*	*	*
Х	-40 to 95°C	*	*		
Y	-40 to 105°C	*			

Part Number Example: 1499-VBECN-20M000

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odel 1499

RoHS



Electrical Specifications

Parameter	Conditions & Remarks	Min	Typical	Max	Unit
Operating Conditions					
Operating Temperature Range	See Table 1 options.	-40	-	+85	°C
Supply Voltage	Vcc	+3.135	+3.3	+3.465	Vdc
	During warm up	-	-	750	mA
Current Consumption	Steady state @ 25°C	-	-	200	mA
Load	Output to Ground	-	15	-	pf
Frequency Stability					
Frequency	FNOM	10	-	54	MHz
Calibration	Δ F/F _{NOM} ; T _A = 25°C; at time of shipment at V _C = 1.65V	-	-	±500	ppb
Temperature Stability (See Table 1 options)	(Fmax+Fmin) /2	-	-	±50	ppb
Voltage Stability	V _{CC} ±2%, ref to V _{CC} = +3.3V	-	±5	-	ppb
Load Stability	±5%, ref. to CL = 15 pf	-	±5	-	ppb
Aging	Per day	-	-	±1	ppb
(After 30 days operation.	Per year	-	-	±0.3	ppm
See Table 1 options)	10 years	-	-	±2	ppm
Total Free-Run Accuracy	Under all operating conditions for 10 years	-	-	±2.5	ppm
Short Term Stability ADEV	In still air; 1.0 sec after 1 hr operation	-	0.02	0.07	ppb
Warmup-Up Time	T _A =25°C; to within 100ppb of freq. @ 30 min	-	-	3	minutes
Electronic Frequency Control – EFC (option)					
Voltage Range	V _c , Control voltage range	0	1.65	3.3	V
Pulling Range	Sufficient for 10 years life	±2.6	-	±4	ppm
Slope	Positive, monotonic				
Linearity		-	-	5	%



Electrical Specifications (continued)

Parameter	Conditions & Remarks		Typical	Max	Unit	
Output Parameters – Square Wave, LVCMOS						
Waveform			LVCMOS			
Amplitudo	Vol	-	-	0.3) (-l -	
	Voh	2.7	-	-	VdC	
Rise / Fall Times	10% to 90% @ 15pf load	-	-	4	ns	
Duty Cycle	@ 50% of output signal	45	50	55	%	
	Offset = 1 Hz	-	-80	-75		
	10Hz	-	-110	-105		
Phase Noise	100Hz	-	-135	-130		
	1KHz	-	-150	-145	dBc/Hz	
	10KHz	-	-158	-155		
	100KHz	-	-159	-156		
	1MHz	-	-160	-157		

Mechanical and Environmental

Parameter	Condition
Soldering	Maximum reflow temperature, 245°C for 10seconds, 240°C for 20seconds, per IPC/JEDEC J-STD-020D Note: Not intended for inverted reflow
MSL	Level 2
RoHS	Fully compliant to RoHS Directive EU 2015/863
Shock	1500G, 0.5msec, 6-axis 3 times per MIL-STD-883 Method 2002
Sinusoidal Vibration	20G, 10~2000Hz, 1.52mm, sweep 20minutes, 4 hours per axis per MIL-STD-883 Method 2007
Packaging	Tape and Reel
Storage Temperature Range	-55°C to +105°C



Mechanical Specifications



U		
	1 2 3	
I	6 5 4	
	E	

Recommended Solder Pad Geometry



Marking				
**	=	Mfg Site Code		
YYWW	=	Date Code		
XXXXX	=	Serial Number		

Pin Assignments			
Pin/Pad	Function		
1	V _C – Voltage control		
2	DNC		
3	Ground		
4	RF Output		
5	DNC		
6	V _{CC} – Supply voltage		

Dimension (mm)				
Symbol	Min	Max		
А	-	14.6		
В	-	9.6		
С	-	6.7		
D	1.6 (x6)			
E	1.0 (x6)			
F	2.54			

Exclusion area - To reduce thermal losses, a minimum 2 mm perimeter beyond the oscillator dimensions, free of surface or sub-surface ground or power planes, is recommended.

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Packing: Tape and Reel



Unit: mm	
Symbol	Spec.
Po	4.0±0.10
P1	16.0±0.10
P2	2.0±0.10
Do	1.50 ^{+0.1}
D1	1.50(Min)
E	1.75±0.10
F	11.50±0.10
10Po	40.0±0.20
W	24.0 ^{+0.3} -0.1
Т	0.40±0.05



Standard reel quantity is 450pcs

Notes:

- 1. 10 Sprocket hole pitch cumulative tolerance is ±0.1mm.
- 2. Pocket position relative to sprocket hole measured as true position of pocket not pocket hole.
- 3. Ao & Bo measured at 0.3mm above the bottom of the pocket.
- 4. Ko measured from a plane on the inside bottom of the pocket to the top surface of the carrier.
- 5. Carrier camber shall not be greater than 1mm per 100mm through length of 250mm.

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Reflow profile per IPC/JEDEC J-STD-020D



Note: The temperatures shown below represent the device body temperature

T_s max to T_L (Ramp-Up Rate)	3°C/second max
Preheat:	
Temperature Min (T _s Min)	150°C
Temperature Typical (TsTyp)	175°C
Temperature Typical (Ts Max)	200°C
Time (ts)	60-120 seconds
Ramp-Up Rate (T∟to T _P)	3°C/second max
Time Maintained Above:	
Temperature (T∟)	217°C
Time (T∟)	60-150seconds
Peak Temperature (T _P)	245°C max for 10 seconds
Time within 5°C of actual peak (T _P)	30 seconds
Ramp-Down Rate	6°C/second max
Time 25°C to Peak Temperature(T)	8 minutes max

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.

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