

Model 122

OCXO – Ultra High Stability

HCMOS / SINE WAVE

Features

- 8MHz to 100MHz frequency range
- High stability – to ± 0.2 ppb over -10°C to $+60^{\circ}\text{C}$
- Low aging rate – to ± 0.2 ppb/day, ± 0.03 ppm/year
- Low Allan variance – up to 3E^{-12} at 1s
- Sine wave or HCMOS output

RoHS Status

RoHS
6/6



Applications

- Rubidium Standard Replacement
- GPS Disciplined Frequency Standards
- Instrumentation
- Communication Systems

Description

The **Model 122** series combines the advantage of the double-oven and internal heated resonator (IHR) technologies providing less than 1W power consumption at as high as 0.2ppb temperature stability and 0.2ppb/day aging (for 10MHz frequency) in a 20 x 20 mm package. The **Model 122** oscillators are excellent to use in high-end clock systems, instrumentation, and other applications where ultra high stability and miniature size are required.

Electrical Specifications

Parameter	Symbol	Condition	Min	Typ	Max	Unit	Note
Frequency Range	F		8		100	MHz	
Initial Frequency Tolerance	$\Delta F/F$			± 0.1		ppm	
Frequency Stability	$\Delta F/F$	Vs. Operating temperature C: -10°C to $+60^{\circ}\text{C}$			± 0.2	ppb	See "How to Order"
		Vs. Supply voltage			± 0.2	ppb	$V_{CC} \pm 5\%$
		Vs. Aging / Day Vs. Aging / Year			± 0.2 ± 30	ppb	after 30 days
Operating Temp Range	T		-30		+70	$^{\circ}\text{C}$	See "How to Order"
Allan Variance		1s	3E^{-12}				
SSB Phase Noise (typical)		Offset	10 MHz		100 Mhz	dBc/Hz	For additional phase noise options, consult factory
		1Hz	-90		-		
		10Hz	-120		-90		
		100Hz	-140		-120		
		1kHz	-160		-140		
		10kHz	-165		-160		
		100kHz	-165		-165		
Retrace		After 30 min following 24 hours off			± 20	ppb	
Supply Voltage	V_{CC}		4.75 3.14	5.0 3.3	5.25 3.47	V	
Power Consumption	P	warm-up state steady state, 25°C		1.0	4.5 1.2	W	

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Electrical Specifications

Parameter	Symbol	Condition	Min	Typ	Max	Unit	Note
HCMOS / TTL Output Levels		HCMOS/TTL	10kOhms / 15pF				10MHz output frequency <i>Order Code H</i>
	V _H		3.8			V	
	V _L				0.4	V	
Rise / Fall time					10	ns	10MHz output frequency
Duty Cycle			45		55	%	
Sine Wave Output Levels	L			+8	+10	dBm	10MHz output frequency <i>Order Code S</i>
	RL			50		Ω	
Harmonics					-30	dBc	
Sub-Harmonics		Operational frequency ≤ 25MHz Operational frequency > 25MHz		none	-40	dBc	<i>Frequency multiplier used</i>
Control Voltage	V _C	V _{CC} = 5.0V V _{CC} = 3.3V	0 0		4.2 2.8	V	Tuning slope - positive
Pull Range		from F _{NOM}		±0.5		ppm	
Reference Output	V _{REF}	V _{CC} = 5.0V V _{CC} = 3.3V	4.0 2.7	4.2 2.8	4.5 2.9	V	
Warm Up Time	τ	to ΔF/F = 1E ⁻⁸ , +25°C			5	min	Ref. to frequency after 30 min

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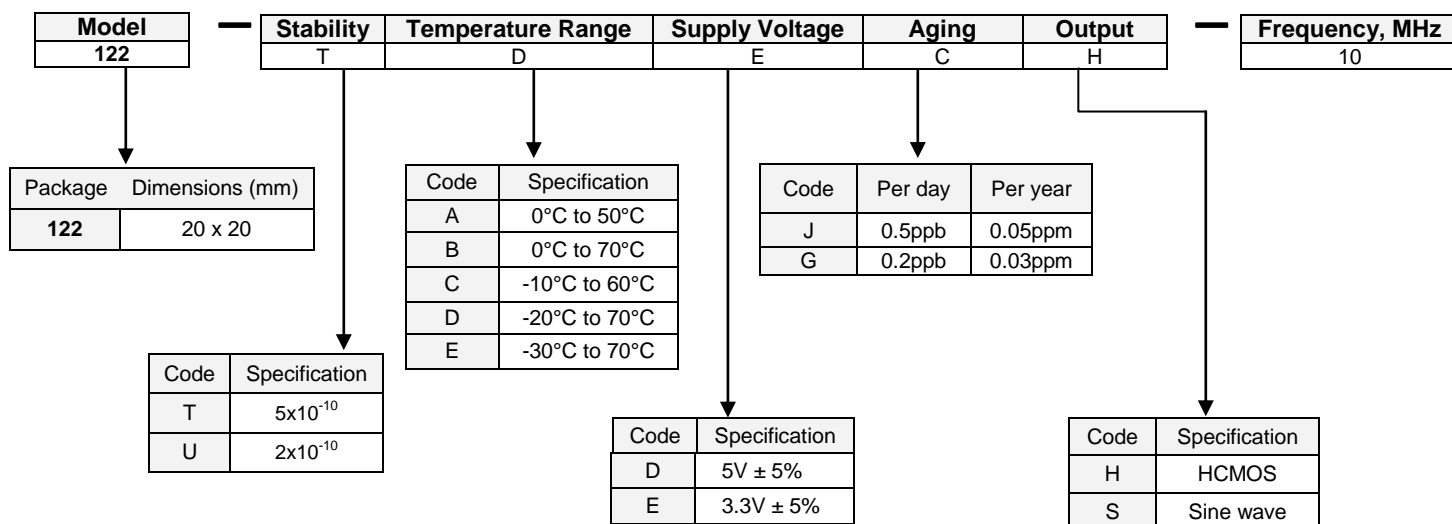
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Environmental and Mechanical Conditions

Parameter	Condition
Storage Temperature	-60°C to +90°C
Humidity	Hermetically sealed
Mechanical Shock	Per MIL-STD-202, 30G, half sine pulse, 11ms
Vibration	Per MIL-STD-202, 5G swept sine to 500Hz
Soldering Conditions	Hand solder only – not reflow compatible. 260°C, 10 seconds.
Markings	Epoxy ink or laser engraved

How to Order

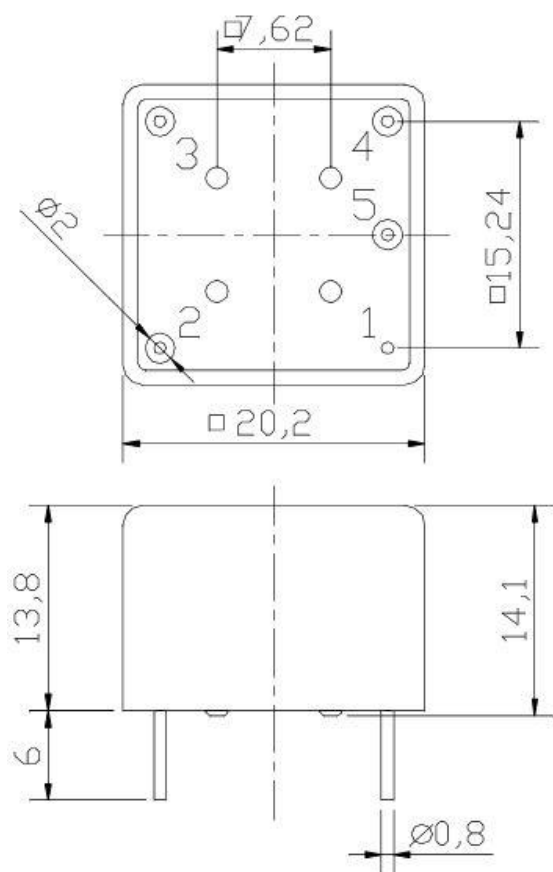


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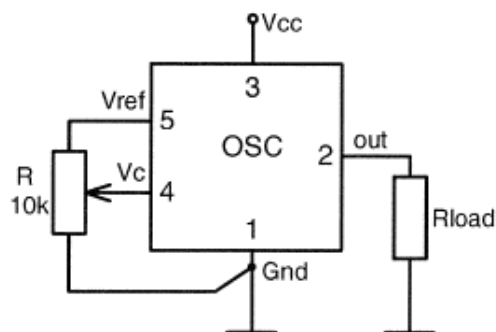
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Package



Dimensions: mm

Pin #	Connection
1	GND
2	Output
3	V _{CC}
4	Electrical Tuning
5	V _{REF}



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