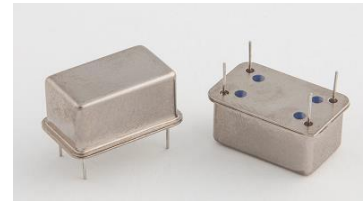


OCXO SERIES 2000

FEATURES

Miniature OCXO in standard 14-pin DIP package
Fast warm up
Frequencies up to 100 MHz



ELECTRICAL SPECIFICATIONS

PARAMETER	SYMBOL	CONDITION	VALUE			UNIT
			Min.	Typ.	Max.	
Frequency Range*	f_o		5.000		100.000	MHz
Supply Voltage	V_s	$V_s \pm 5\%$	3.135	3.3	3.465	V
			4.75	5.0	5.25	
			11.40	12.0	12.60	
Power Consumption	P_s	Steady state, @ 25°C			0.7	W
	$P_{s,w}$	During warm-up, @ 25°C			2.8	
Warm-up Time	t_w	V_s , $T_a = +25^\circ\text{C}$, within $\pm 100\text{ppb}$ of final frequency with reference after 1 hour on			5	min
Frequency Calibration	$\Delta f/f_o$	$T_a = +25^\circ\text{C}$, after 15mins power on ref. to nominal frequency	-200		+200	ppb
Frequency Stability vs. Temperature*	$\Delta f/f_o (T_a)$	Measurement referenced to $(f_{\text{max}} + f_{\text{min}})/2$. See Table	-5		+5	ppb
Frequency Stability vs. Supply Voltage	$\Delta f/f_o (\Delta V_{CC})$	$T_a = 25^\circ\text{C}$, $V_s \pm 5\%$, load = 15pF	-5		+5	ppb
Frequency Stability vs. Load Variation	$\Delta f/f_o (\Delta I)$	$T_a = 25^\circ\text{C}$, V_s , load = 15pF $\pm 5\%$	-5		+5	ppb
Aging, after 30 days of operation	$\Delta f/\Delta t_d$	Per day	-1		+1	ppb
	$\Delta f/\Delta t_y$	First year	-150		+150	ppb
	$\Delta f/\Delta t_y$	10 years	-1.2		+1.2	ppm
Operating Temperature Range*		See Table 1	-40		+85	°C
Storage Temperature	$T_{(\text{stg})}$		-40		+105	°C
Short Term Stability		$\tau = 1\text{s}$			0.05	ppb
Control Voltage Range	V_C		0	1.65	3.0	V
Frequency Tuning Range		$V_C = 0\text{V}$	-4		-2	ppm
		$V_C = 1.65\text{V}$	-200		+200	ppb
		$V_C = 3.3\text{V}$	+2		+4	ppm
Linearity			-10		+10	%

*Not any Combination Frequency-Operating Temperature Range- Stability is available. Please consult factory
**The above Specification is an example for 20.000MHz, 3.3V

OCXO SERIES 2000

PHASE NOISE

PARAMETER	SYMBOL	CONDITION	VALUE			UNIT
			Min.	Typ.	Max.	
@ 1 Hz Offset	$\mathcal{E} (\Delta f)$				-85	dBc/Hz
@ 10 Hz Offset	$\mathcal{E} (\Delta f)$				-115	dBc/Hz
@ 100 Hz Offset	$\mathcal{E} (\Delta f)$				-135	dBc/Hz
@ 1 kHz Offset	$\mathcal{E} (\Delta f)$				-148	dBc/Hz
@ 10 kHz Offset	$\mathcal{E} (\Delta f)$				-152	dBc/Hz
@ 100 kHz Offset	$\mathcal{E} (\Delta f)$				-155	dBc/Hz

CMOS OUTPUT CHARACTERISTICS

PARAMETER	SYMBOL	CONDITION	VALUE			UNIT
			Min.	Typ.	Max.	
Output Levels	VOH/VOL	V _{CC} = 3.3V, load = 15pF		2.4/0.4		V
Duty Cycle	DC	load = 15pF		45/55		%
Rise/Fall Time	t _r /t _f	10% ~ 90% V _{out}			5	ns
Load				15		pF

SINE-WAVE OUTPUT CHARACTERISTICS

PARAMETER	SYMBOL	CONDITION	VALUE			UNIT
			Min.	Typ.	Max.	
Output Levels			5	7	9	dBm
Harmonics					-40	dBc
Spurious					-70	dBc
Load				50		Ω

Table 1

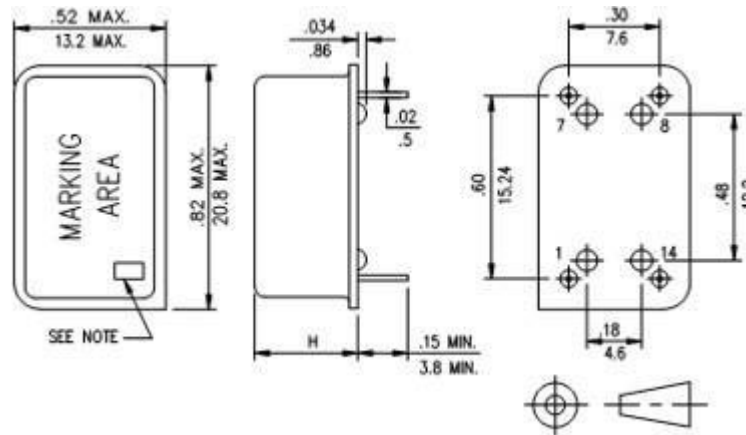
TEMPERATURE RANGE °C	FREQUENCY STABILITY (ppb)						
	5	10	20	30	50	100	200
0 ~ +60	Y	Y	Y	Y	Y	Y	Y
-10 ~ +60	Y	Y	Y	Y	Y	Y	Y
-20 ~ +70	Y	Y	Y	Y	Y	Y	Y
-30 ~ +70	Y	Y	Y	Y	Y	Y	Y
-40 ~ +75	Y	Y	Y	Y	Y	Y	Y
-40 ~ +85	Y	Y	Y	Y	Y	Y	Y
-55 ~ +85	-	-	Y	Y	Y	Y	Y

OCXO SERIES 2000

ENVIRONMENTAL MECHANICAL CONDITIONS

Storage temperature range	-55°C to +105°C
Drop Test	The test shall be carried out as the provisions of the IEC60028-2-32 test Ed. 10cm height, 3 times on hard board with thickness of 3cm
Bumping Test	Device are bumped to three mutually perpendicular axes at peak acceleration of 400m/s ² , each 4000±10times, 6ms pulse duration time
Vibration Test	Frequency range: 1Hz-4Hz-100Hz-200Hz Acceleration: 0.0001g ² /Hz-0.01g ² /Hz-0.01g ² /Hz-0.001g ² /Hz Grms=1.15g Sweep time: 30 minutes (perpendicular axes each sweep time)
Mechanical Shock	100g, 6mS 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 DIMENSIONS AND PIN FUNCTIONING

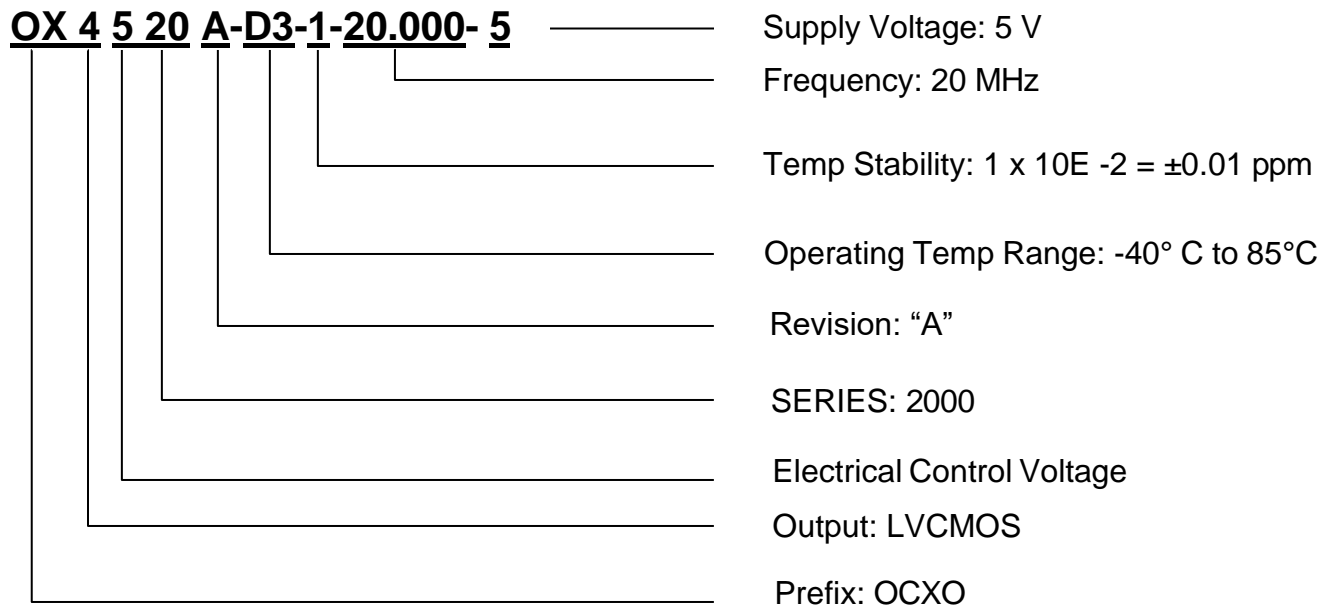


PIN	SYMBOL	FUNCTION
1	N/C or V _c	No connect or Control Voltage
7	GND	Ground
8	OUTPUT	RF Output
14	V _s	Supply Voltage

OCXO SERIES 2000

■ **PART NUMBERING SYSTEM**

Prefix	Output Type	Voltage Control	Series	Revision	Temperature Range	Stability	Frequency	Supply Voltage
OX	4: LVCMOS 6: SINE	1: No Control Voltage 5: Control Voltage	20:2000	A	First letter: Lowest Temperature, Second letter: Highest Temperature: From A=-55°C to Z=+70°C, Then: 1=+75°C, 2=+80°C, 3=+85°C... in 5°C Steps Example: HZ: -20°C to +70°C LZ: 0°C to +70°C D3: -40°C to +85°C	Value x 10E-2 in ppm Example: 0.5= 5 ppb 1= 0.01 ppm	In MHz	3: 3.3 V 5: 5.0 V 12: 12.0 V



March 2021
Raltron Electronics/RAMI Technology USA, LLC, including its affiliates, employees, agents and other persons acting on its behalf (collectively Raltron/RAMI Tech), disclaim any and all liability for any errors or inaccuracies contained in this data sheet. While Raltron/RAMI Tech has made every reasonable effort to ensure the accuracy of all product information, specifications and data contained herein, Raltron/RAMI Tech does not guarantee that the information is accurate, reliable or current. The product information is provided for reference purposes only and is subject to change, correction or revision, at any time without notice. Raltron/RAMI Tech does not assume any liability arising out of an application or use of any product described herein and disclaims any warranties expressed or implied. The user of products in such applications shall assume all risks of such use and will agree to hold Raltron/RAMI Tech, harmless against all damages.