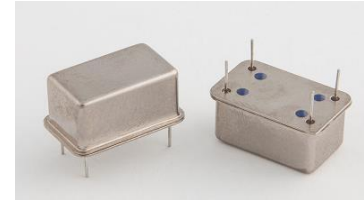


OCXO SERIES 2000

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 ± 100 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 $(f_{max} + f_{min})/2$. 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	$T_{(stg)}$		-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/VO L	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

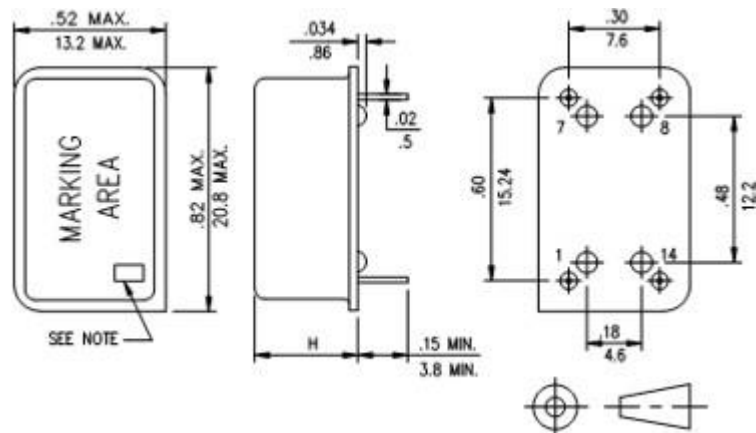
Table 1

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

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



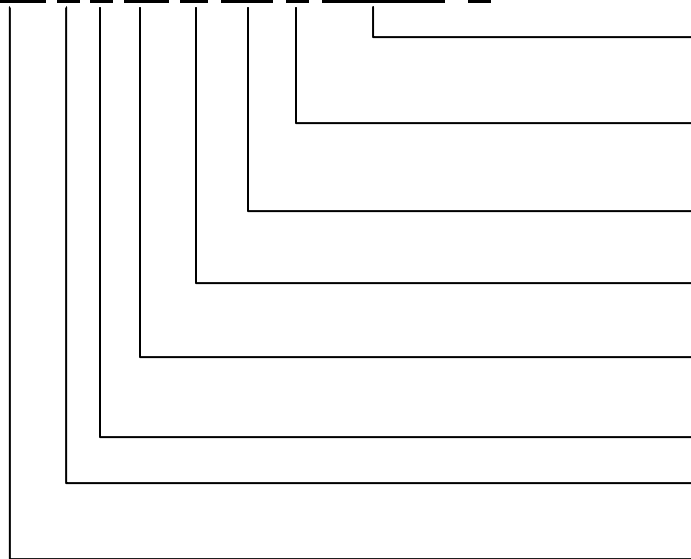
PIN	SYMBOL	FUNCTION
1	N/C or Vc	No connect or Control Voltage
7	GND	Ground
8	OUTPUT	RF Output
14	Vs	Supply Voltage

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

OX 4 5 20 A-D3-1-20.000- 5



Supply Voltage: 5 V
 Frequency: 20 MHz
 Temp Stability: 1 x 10E -2 = ±0.01 ppm
 Operating Temp Range: -40° C to 85°C
 Revision: "A"
 SERIES: 2000
 Electrical Control Voltage
 Output: LVCMOS
 Prefix: OCXO

March 2021