

### OCXO SERIES 8000

#### FEATURES

Small OCXO in 1" SQ. package  
Frequencies up to 100 MHz  
AT and SC-Cut option



#### 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			1.25	W
	$P_{s,w}$	During warm-up, @ 25°C			3.0	
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	$\frac{\Delta f/f_o}{(\Delta V_{CC})}$	$T_a = 25^\circ\text{C}$ , $V_s \pm 5\%$ , load = 15pF	-1		+1	ppb
Frequency Stability vs. Load Variation	$\Delta f/f_o (\Delta I)$	$T_a = 25^\circ\text{C}$ , $V_s$ , load = 15pF $\pm 5\%$	-1		+1	ppb
Aging, after 30 days of operation	$\Delta f/\Delta t_d$	Per day	-0.3		+0.3	ppb
	$\Delta f/\Delta t_y$	First year	-80		+80	ppb
	$\Delta f/\Delta t_y$	10 years	-0.4		+0.4	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 10.000MHz, 5V

**OCXO SERIES 8000**

**PHASE NOISE**

PARAMETER	SYMBOL	CONDITION	VALUE			UNIT
			Min.	Typ.	Max.	
@1 Hz Offset	$\mathcal{E} (\Delta f)$				-90	dBc/Hz
@10 Hz Offset	$\mathcal{E} (\Delta f)$				-120	dBc/Hz
@100 Hz Offset	$\mathcal{E} (\Delta f)$				-140	dBc/Hz
@1 kHz Offset	$\mathcal{E} (\Delta f)$				-145	dBc/Hz
@10 kHz Offset	$\mathcal{E} (\Delta f)$				-150	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 <sub>CC</sub> = 5.0V, load = 15pF		4.5/0.5		V
Duty Cycle	DC	load = 15pF		45/55		%
Rise/Fall Time	t <sub>r</sub> /t <sub>f</sub>	10% ~ 90% V <sub>out</sub>			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		$\Omega$

Table 1

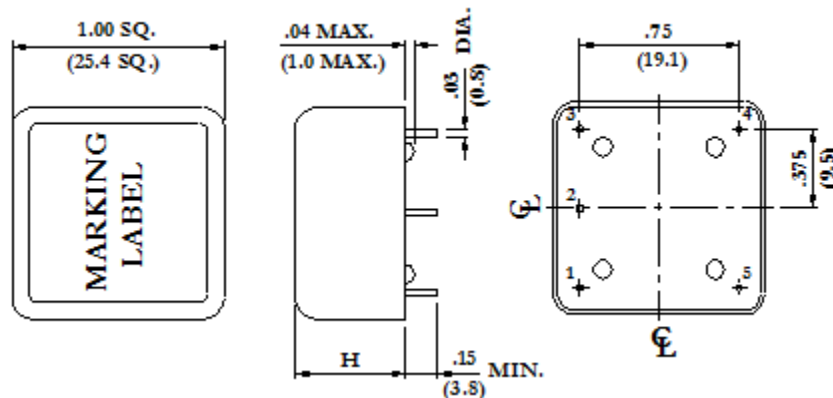
TEMPERATURE RANGE °C	FREQUENCY STABILITY (ppb)						
	5	10	20	30	50	100	200
0 ~ +60	Y	Y	Y	Y	Y	Y	Y
-10 ~ +60	Y	Y	Y	Y	Y	Y	Y
-20 ~ +70	Y	Y	Y	Y	Y	Y	Y
-30 ~ +70	Y	Y	Y	Y	Y	Y	Y
-40 ~ +75	Y	Y	Y	Y	Y	Y	Y
-40 ~ +85	Y	Y	Y	Y	Y	Y	Y
-55 ~ +85	-	-	Y	Y	Y	Y	Y

**OCXO SERIES 8000**

**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 <sup>2</sup> , each 4000±10times, 6ms pulse duration time
Vibration Test	Frequency range: 1Hz-4Hz-100Hz-200Hz Acceleration: 0.0001g <sup>2</sup> /Hz-0.01g <sup>2</sup> /Hz-0.01g <sup>2</sup> /Hz-0.001g <sup>2</sup> /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**

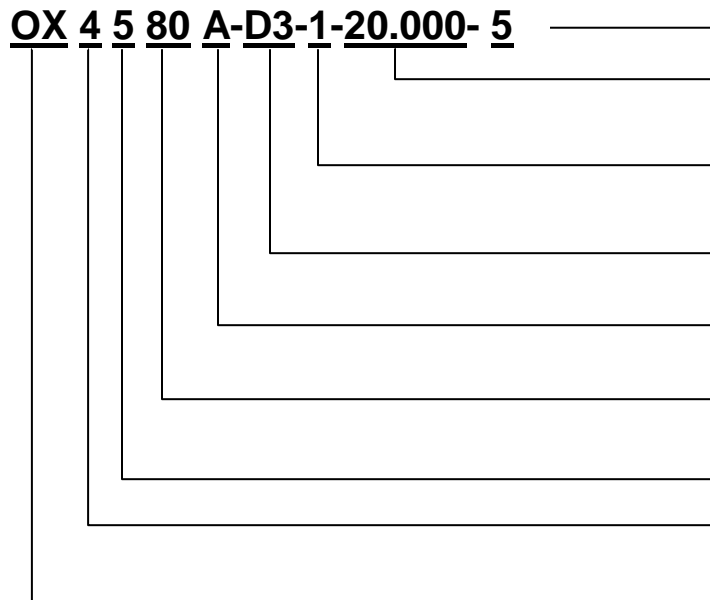


PIN	SYMBOL	FUNCTION
1	N/C or V <sub>C</sub>	No connect or Control Voltage
2	N/C or V <sub>ref</sub>	No connect or Reference Voltage
3	V <sub>s</sub>	Supply Voltage
4	OUTPUT	RF Output
5	GND	Case/Ground

**OCXO SERIES 8000**

■ PART NUMBERING SYSTEM

Prefix	Output Type	Cut Type	Series	Revision	Temperature Range	Stability	Frequency	Supply Voltage
OX	4: LVCMOS 6: SINE	1: No Control Voltage 5: Control Voltage	80:8000	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



Supply Voltage: 5 V  
 Frequency: 20 MHz  
 Temp Stability:  $1 \times 10E^{-2} = \pm 0.01$  ppm  
 Operating Temp Range: -40° C to 85°C  
 Revision: "A"  
 SERIES: 8000  
 Electrical Control Voltage  
 Output: LVCMOS  
 Prefix: OCXO

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