

O-CE8-XYZXX-X-X-XX-X

Precision Ultra Low Phase Noise OCXO in 36x27 mm “Europack” with OSC Disable and Oven Alarm features for Instrumentation

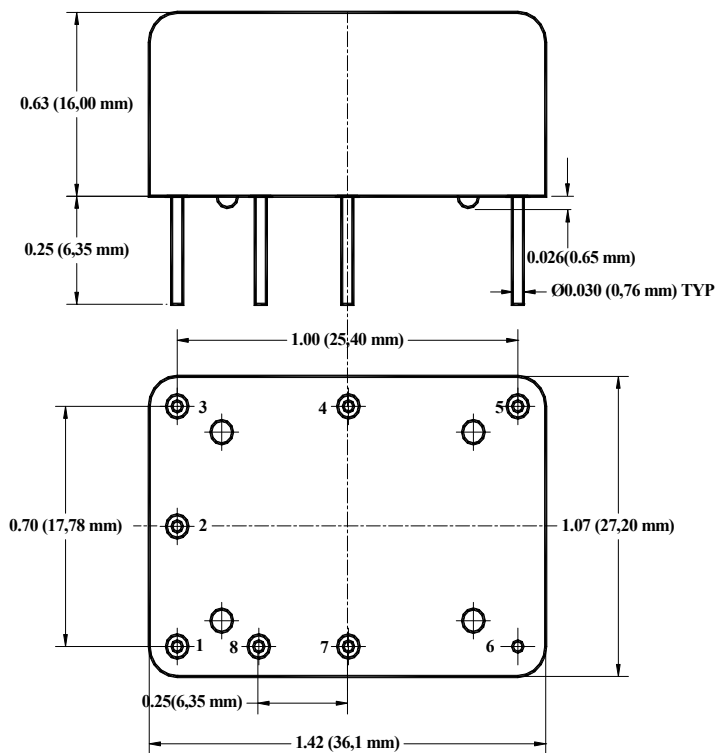
Product Data Sheet

Features

- SC-cut crystal
- High Stability
- Low Aging
- Ultra Low Phase Noise Option:
 - Standard(L) -140dBc/Hz at 10Hz;
-172dBc/Hz on the floor
 - Premium(P) -143dBc/Hz at 10Hz;
-172dBc/Hz on the floor
 - Ultimate(U) -145dBc/Hz at 10Hz
-172dBc/Hz on the floor
 - Extraordinary(E) -120 dBc/Hz at 1 Hz
-148 dBc/Hz at 10 Hz
-172 dBc/Hz on the floor

Applications

- Instrumentation
- Telecommunication Systems
- Data Communications
- GPS
- COTS/Dual use



Parameter	Symb	Condition	Min	Typ	Max	Unit	Note
<i>Absolute Maximum Ratings</i>							
Input Break Down Voltage	Vcc	12 V supply 5 V supply	-0.5 -0.5		13.0 5.5	V	
Storage temper.	Ts		-40		85	°C	
Control Voltage	Vc		-1 -5 -1		5.5 5 11	V	Slope option "P" Slope option "N" Slope option "L"

Electrical (4)

Frequency	F		8	10.000	13	MHz																	
Frequency stability	ΔF/F	vs. Temp.		±10		ppb	See chart below																
		vs. Supply		0.2	0.3	ppb/10%Vcc																	
Aging		per day per year, first year second year		5E-10 1E-7 3E-8			after 30 days 5E-8 available																
Allan Deviation		0.1 s 1.0 s 10 s		5E-13 2E-12 5E-12			Premium version, option P																
SSB Phase Noise (achieved after 10 minutes warm-up)		1 Hz 10 Hz 100 Hz 1 KHz 10 KHz 100 KHz				dBc/Hz	Standard version, option L																
								1 Hz 10 Hz 100 Hz 1 KHz 10 KHz 100 KHz						Premium version, option P									
															1 Hz 10 Hz 100 Hz 1 KHz 10 KHz 100 KHz						Ultimate version, Option U		
																						1 Hz 10 Hz 100 Hz 1 KHz 10 KHz 100 KHz	
		Retrace		After 30 minutes			±10																
								G-sensitivity		worst direction			±1.0	ppb/G									
		Input Voltage	Vcc		4.75 11.4	5.0 12.0	5.25 12.6								V	See chart below to specify							
								Power consumption	P	steady state, 25°C steady state, -30°C start-up @ -30°C		1.2 1.5 2.5	1.5 3.2	W			Still air						
		Spectral Purity		Spurious Harmonics/Sine		-35	-80 -30								dBc	Non-harmonic							
								Load		Internally AC-coupled 50 Ohm													
		Warm-up time	τ	to 0.1ppm accuracy to 10ppb accuracy		3	5 10			minutes	Off time <24 hrs Aging rate was reached												
								Output Waveform				HCMOS/TTL compatible or Sinewave											
		Output Power			+10	+13				dBm	Output Code S												
								Logic 1 (CMOS)	Voh				0.7 Vref			V	Output Code T						

All parameters for 10 MHz



Logic 0 (CMOS)	Vol				0.1 Vref	V	Output Code T
Control voltage	Vc	No internal bias	0 -4.0 0		Vref 4.0 10	V	Slope option "P" Slope option "N" Slope option "L"
Reference Voltage	Vref	Vcc = 12V Vcc = 5V		5 or 4.5 4.5		V	N/A w/slope options "N" and "L"
Output Impedance		At Vref pin		100		Ohm	
Pull range		from nominal F	±0.4	±0.6		ppm	
Deviation slope		Monotonic, positive Monotonic, negative Monotonic, positive		1.0/Vref -0.13 0.12		ppm/V	Slope option "P" Slope option "N" Slope option "L"
Setability	Vc0	@25°C, Fnom. No internal bias for slope option "L"		Vref/2 ± 0.5 0 ± 0.5 5 ± 0.5		V	Slope option "P" 3* Slope option "N" Slope option "L"
Oven Ready		V pin #7	3.3		0.5	V	Ready Not Ready
Output Enable		CMOS Logic "1" (4.5V>V>2.5) or floating Logic "0" (V<0.5V)		Enabled Disabled		V	Pout< -30 dBm
Modulation Bandwidth	Fm		DC		1	KHz	Note 5

Notes:

- *. For highest operating temperature higher than 70°C the power consumption will be higher (about 20% for 85°C). Values listed are for test in still air environment, the values will go up while testing in the temperature chamber.
- 2*. It is recommended to specify Slope option "N" for Ultimate Phase noise performance. For recommended phase noise test, contact factory. It's assumed that phase noise test is performed under static conditions (no vibration), in still air, and care is taken for minimizing EMI.
- 3*. Longer storage time, especially at low temperatures, may affect both retrace and setability parameters. It may require few days on power for re-stabilization.
- 4. All parameters, unless otherwise specified, are at nominal conditions, ie: T=25°C, Nominal Vcc & Nominal Load.
- 5. Older and stock units may have MBW of 150 Hz Max.
- 6*. Pin 2 is connected to Vref only for Slope Option "P".

Environmental and Mechanical

Operating temp. range	-30°C to 70°C Standard, Other options – see chart below
Mechanical Shock	Per MIL-STD-202, 30G, 11ms
Vibration	Per MIL-STD-202, 5G to 2000 Hz
Soldering Conditions	260°C for 10s Max leads only

Electrical Connections

Pin Out	Pin #1-Vc ; Pin#2-Vref or N/C (6*), Pin #8 – For internal use – do not connect; Pin #3 – Vcc; Pin #4 – Output Enable; Pin #5 – RF Output; Pin #6 – GND; Pin #7 – Oven Ready indicator
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Creating a Part Number

Q - **C** **E8** **X** **X** **YZ** **XX - X - X - XX - X** **FREQ**
OCXO |
Conventional Power

Package Code
 Europack 36x27mm, 8 pin

Supply Voltage

Code	Specification
0	5V ± 5%
F	12V ± 5%

Output

Code	Specification
T	CMOS/TTL
S	Sinewave

Temperature Stability

Code	Specification
17	1x10 ⁻⁷
58	5x10 ⁻⁸
28	2x10 ⁻⁸
18	1x10 ⁻⁸
59	5x10 ⁻⁹
YZ	Yx10 ^{-Z}

Temperature Range

Code	In 5°C steps **
First letter	Lowest temperature from A = -40°C
Second letter	Highest temperature to Z = 85°C
Examples	
AZ	-40°C to 85°C
GU	-10°C to 60°C
EW	-20°C to 70°C

****Temperature Code Table**

Letter	Temp °C	Letter	Temp °C	Letter	Temp °C	Letter	Temp °C	Letter	Temp °C	Letter	Temp °C
A	-40	F	-15	K	10	P	35	U	60	Z	85
B	-35	G	-10	L	15	Q	40	V	65		
C	-30	H	-5	M	20	R	45	W	70		
D	-25	I	0	N	25	S	50	X	75		
E	-20	J	5	O	30	T	55	Y	80		

Not all combinations are available. Consult Factory.

Environmental

Code	Specification
L	Contains a level of lead that is in excess of RoHS directive and is not designed for reflow
R	RoHS compliant, not designed for reflow

Aging

Insert Value per day times 1E-10	
Examples	
05	5E-10 = 0.5 ppb/day
10	1E-9 = 1 ppb/day

Phase Noise (See Table)

Code	Specification
L	Standard
P	Premium
U	Ultimate
E	Extraordinary

Deviation slope

Code	Specification
P	Positive, 0 to Vref
N	Negative, -4 to 4V
L	Positive, 0 to 10 V

