Dynamic Engineers Inc.
2550 Gray Falls Dr., Suite#128, Houston, TX, 77077
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OCXO2020C-LP-UHS_series
Ultra-low power high stability OCXO

Features and Benefits

Low power consumption up to <180 mW
High stability up to ±5 x 10^{-10} at -40°C to +85°C
Low aging rate up to ±2 x 10^{-10}/day, 2 x 10^{-8}/year
Low Allan variance value up to 3 x 10^{-12} at 1s
About 5 cm^3 miniature packaging
Frequency range from 8 MHz to 150 MHz

Typical Applications

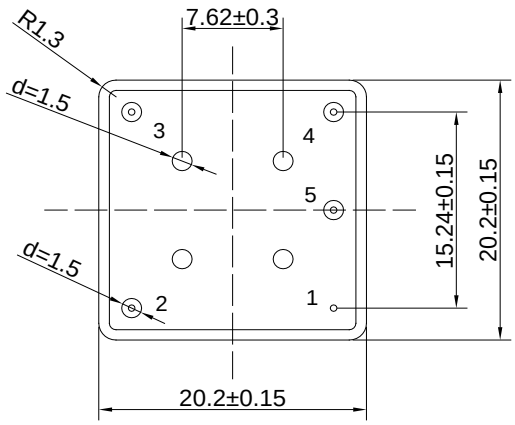
GPS Disciplined Mobile Frequency Standards
Battery Supply Beacons
Mobile Communication Systems
Portable Instrumentation

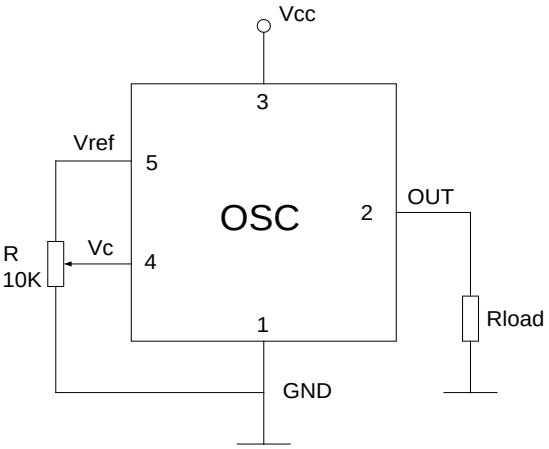
Description

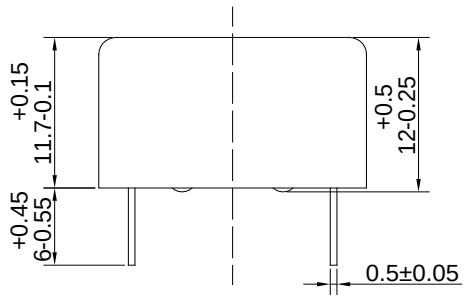
A state-of-the-art ultra-low power OCXO technology based on internally heated resonator techniques capable of delivering up to five times less power consumption than traditional OCXO designs without sacrificing overall frequency stability.

Mechanical Drawing & Pin Connections

Drawing No:MD140069-2







Pin Connections

Pin	Signal
1	GND
2	RF Out
3	+V Supply
4	Electrical tuning
5	Reference voltage

Unit : mm
1mm=0.0394inch

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Specifications

General Specifications									
Parameter		Sym	Condition	Value			Unit	Note
				Min.	Typ.	Max		
Frequency Range		F_0		8		150	MHz	
Initial Tolerance		$(f-f_0)f_0$	+25°C, $V_c=V_{c0}$	±0.01	±0.1		ppm	
RF Output								
HCMOS (TTL) option	**Load**			10		15	kOhm pF	For 10 MHz operational frequency
	H-level voltage	V_H	V_{cc}=5V V_{cc}=3.3V	3.8 2.4			V	
	L-level voltage	V_L				0.4	V	
	Duty Cycle			45		55	%	
	Rise / Fall Time					10	ns	For 10 MHz operational frequency
Sine-wave option	**Level**	L			+8		dBm	
	Load	R_L			50		Ohm	
	Harmonics level					-30	dBc	
Sub-harmonics level				None				
Frequency Control*								
Control Voltage Range		V_c	V_{cc}=5V V_{cc}=3.3V	0 0		4.2 2.8	V	Tuning slope - positive
Tuning Range					±0.3		ppm	
Reference voltage		V_{ref}	V_{cc}=5V V_{cc}=3.3V	4.1 2.7	4.2 2.8	4.3 2.9	V	
Frequency Stability								
Vs. temperature			-40°C to+80°C, ref 25°C	±0.5			ppb	See chart below
Vs. supply voltage			Ref V_{cc} typ.			±0.2	ppb	
Retrace			24h after 24h off			±10	ppb	
Power Supply								
Voltage		V_{CC}		4.75	5.0	5.25	V	3.3V available
Power Consumption			Warm-up state Steady state, +25°C		180	1.2	W mW	
Warm-up time		t_{up}	At 25°C to Δf/f = 1e-8 to Δf/f = 1e-7			150 90	Sec	Ref to frequency after 20 min
SSB Phase Noise			1 Hz	-105/-65	-95/-60		dBc/Hz	For 10 MHz / 100 MHz operational frequency
			10 Hz	-135/-97	-125/-90			
			100 Hz	-151/-130	-145/-120			
			1 kHz	-160/-155	-155/-153			
			10 kHz	-170/-170	-165/-165			
			100 kHz	-172/-172	-168/-168			
Allan variance			1s	3	5		e-12	
Aging	Per day		After 30 days of operation	±0.2			ppb	For 10 MHz operational frequency
	First year			±20			ppb	

Environmental, mechanical conditions.	
Operating temperature range	See chart below
Storage temperature range	-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 10 to 500Hz
Soldering Conditions	Hand solder only – not reflow compatible 260°C 10s (on pins)
Washing Conditions	Washing with water or alcohol based detergent allowed only with final enough drying stage

* No frequency control option – on customer requirement

Ordering Code

OCXO2020C-LP-UHS	-	2	6	4	2	1	-	10 MHz
Group		1	2	3	4	5		

For example, OCXO2020C-LP-UHS-26421-10MHz denotes the OCXO has the following specifications:

Temperature Range	-10°C to +60°C
Stability Over Temperature	±10ppb
Aging per day / year	1.0ppb / 0.10 ppm
Supply Voltage	3.3V ±10%
Output	HCMOS
Frequency	10MHz

1	**Temperature Range**
Code	Specification
1	0°C..+50°C
2	-10°C..+60°C
3	0°C..+70°C
4	-20°C..+70°C
5	-30°C..+70°C
6	-40°C..+85°C
7	-55°C..+85°C

2	**Stability Over Temperature**	
Code	Specification	Available temperature range code
1	±0.3 ppb	-
2	±0.5 ppb	-
3	±1.0 ppb	-
4	±3.0 ppb	1, 2
5	±5.0 ppb	1, 2, 3, 4, 5, 6*
6	±10.0 ppb	1, 2, 3, 4, 5, 6, 7
7	±20.0 ppb	1, 2, 3, 4, 5, 6, 7
8	±30.0 ppb	1, 2, 3, 4, 5, 6, 7
9	±50.0 ppb	1, 2, 3, 4, 5, 6, 7
10	±100.0 ppb	1, 2, 3, 4, 5, 6, 7

3	**Aging per day/year, ppb/ppm**	
Code	Specification	
1	0.2/0.02	≤10MHz
2	0.3/0.03	
3	0.5/0.05	≤20MHz
4	1.0/0.10	≤40MHz
5	1.5/0.15	≤50MHz
6	2.0/0.20	≤120MHz
7	3.0/0.30	
8	3.0/0.30	≤150MHz

4	**Supply voltage**
Code	Specification
1	+5V ±5%
2	+3.3V ±10%

5	**Output**
Code	Specification
1	HCMOS
2	Sine wave + 6 dBm min

*for 10 MHz operational frequency

Disclaimer: Not all option choices available across entire frequency range
Please contact Dynamic Engineers Inc. for further details.