VFOV103

OCXO – Ultra Low Noise, Ultra Stable

Features

- 5MHz to 120MHz frequency range
- Ultra Low Phase Noise: (fundamental crystal)
  - -155 dBc/Hz @ 1kHz offset
  - -168 dBc/Hz floor
- Sinewave or HCMOS output

Dimensions: 25.4 x 25.4 x 13.35 mm

Description

- PLL reference for Telecommunication Systems
- Microwave Communications / RADAR signal source
- GPS holdover
- Instrumentation / Test and Measurement

Table 1 - Ordering Information

Model		Stability	Temp Range	Supply Voltage	Aging	Output		Frequency
VFOV103	-	U	B	E	B	H	-	10.000MHz

Code	Stability
R	±1x10^{-7}
T	±5x10^{-8}
U	±2x10^{-8}
V	±1x10^{-8}

Code	Temp range
A	0 to 50°C
B	0 to 70°C
C	-10 to 60°C
D	-20 to 70°C
E	-30 to 70°C
G	-40 to 85°C

Code	Supply
D	5V ± 5%
E	3.3V ± 5%
B	12V ±5%

Code	Output
H	HCMOS
S	Sinewave

Code	Per day	Per year	
A	5ppb	0.5ppm	Above 50MHz
F	3ppb	0.3ppm	
B	2ppb	0.2ppm	
D	0.5ppb	60ppb	Below 50MHz
E	0.4ppb	50ppb	

Available Frequency Stabilities over Operating Temperature Ranges

Code	Temperature Range	Stability			
		R	T	U	V
		±1x10^{-7}	±5x10^{-8}	±2x10^{-8}	±1x10^{-8}
A	0 to 50°C	*	*	*	*
B	0 to 70°C	*	*	*	
C	-10 to 60°C	*	*	*	*
D	-20 to 70°C	*	*	*	
E	-30 to 70°C	*	*	*	
G	-40 to 85°C	*	*		

Part Number Example:

VFOV103-UBEBH-50.000MHz

Electrical Specifications

Parameter	Conditions & Remarks	Min	Typical	Max	Unit
Operating Conditions					
Operating Temperature Range	See "Ordering Information" table	-30	-	+70	°C
Supply Voltage	V_{CC}	3.14 4.75 11.4	3.3 5.0 12.0	3.47 5.25 12.6	Vdc
Power Consumption	During warm up Steady state @ 25°C Steady state @ -30°C	- - -	3.2 1.0 2.0	3.5 1.2 2.2	W
Load	HCMOS (10 MHz) HCMOS (100 MHz) Sine wave		10Kohm / 15pF 10Kohm / 5pF 50		Ω
Frequency Stability					
Frequency	F_{NOM}	5		120	MHz
Freq. vs Temperature	(See Table 1 options)	-	-	±10	ppb
Freq. vs Supply Voltage	V_{CC} ±5%	-	±3	±5	ppb
Freq. vs Time (Aging)	After 30 days of operation (See Table 1 options)	- -	- -	±0.5 ±60	ppb/day ppb/year
G-Sensitivity	Worst axis	-	1	-	ppb/g
Allan Variance	1 sec	-	0.01	-	ppb
Retrace	After 30 minutes	-	-	±20	ppb
Warmup-Up Time	T_A=25°C; to within 0.1 ppm accuracy of freq. @ 30 min	-	2	3	minutes
Phase Noise (Note 1)	Offset 1Hz 10Hz 100Hz 1KHz 10KHz 100KHz	10MHz (typical) -90 -120 -140 -155 -165 -168	100MHz (typical) - -90 -120 -140 -160 -165		dBc/Hz

Output Parameters

HCMOS/TTL (order code H)	V_{CC} = 5.0 or 12V	V_{OL}	- -	- -	0.4 0.4	V
	V_{CC} = 3.3V	V_{OH}	3.8 2.4	- -	- -	V
Rise / Fall Times	@ 100MHz		-	-	10	ns
Duty Cycle			45	50	55	%

Output Parameters - continued

Sinewave Output (order code S)		V_{CC} = 5.0 or 12V V_{CC} = 3.3V	+6 +3	+8 +4	+10 +5	dBm
	R_L		-	50	-	Ω
Harmonics			-	-	-25	dBc
Sub-harmonics				None		Fundamental

Note 1 - Additional phase noise options are available. Please consult factory.

Electronic Frequency Control

Control Voltage	V_C	V_{CC} = 5.0 or 12V V_{CC} = 3.3V	0 0	- -	4.2 2.8	V
Pull Range	From F_{NOM}		±0.5	±1	-	ppm
Deviation Slope	Monotonic, positive	V_{CC} = 5.0 or 12V V_{CC} = 3.3V	0.125 0.4	- -	- -	ppm/V
Reference output	V_{REF}	V_{CC} = 5.0 or 12V V_{CC} = 3.3V	4.1 2.7	4.2 2.8	4.3 2.9	V

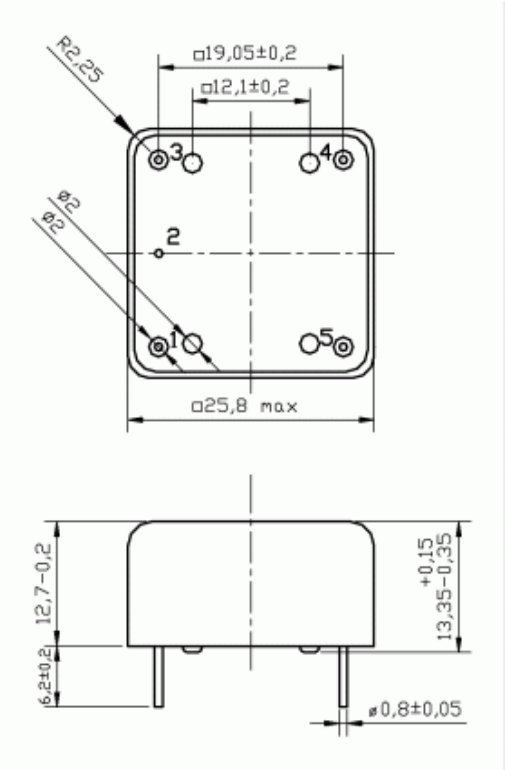
Absolute Maximum Ratings

Supply Breakdown Voltage	V_{CC}	-0.5	-	V_{CC} + 20%	V
Control Voltage	V_C	-1	-	6	V

Mechanical and Environmental

Storage Temperature	-60°C to +90°C
Humidity	Hermetically sealed
Mechanical Shock	Per MIL-STD-202G, meth 213B, 30g, 11 ms, ½ sine pulse
Vibration	Per MIL-STD-202G, meth 204D, 1.5mm DA 10 to 55Hz, 10g pk sine to 2000Hz
Soldering Conditions	260°C for 10s. Hand solder only – not reflow compatible

Mechanical Specifications



Pin	Connection
1	Output
2	Ground
3	V_C
4	V_{REF}
5	V_{CC}