

Features

- 5MHz to 120MHz Frequency Range
- Ultra Low Phase Noise: (fundamental crystal)
 - -155 dBc/Hz @ 1KHz offset
 - -168 dBc/Hz floor
- Sine Wave or HCMOS output

RoHS Status



RoHS
6/6

Applications

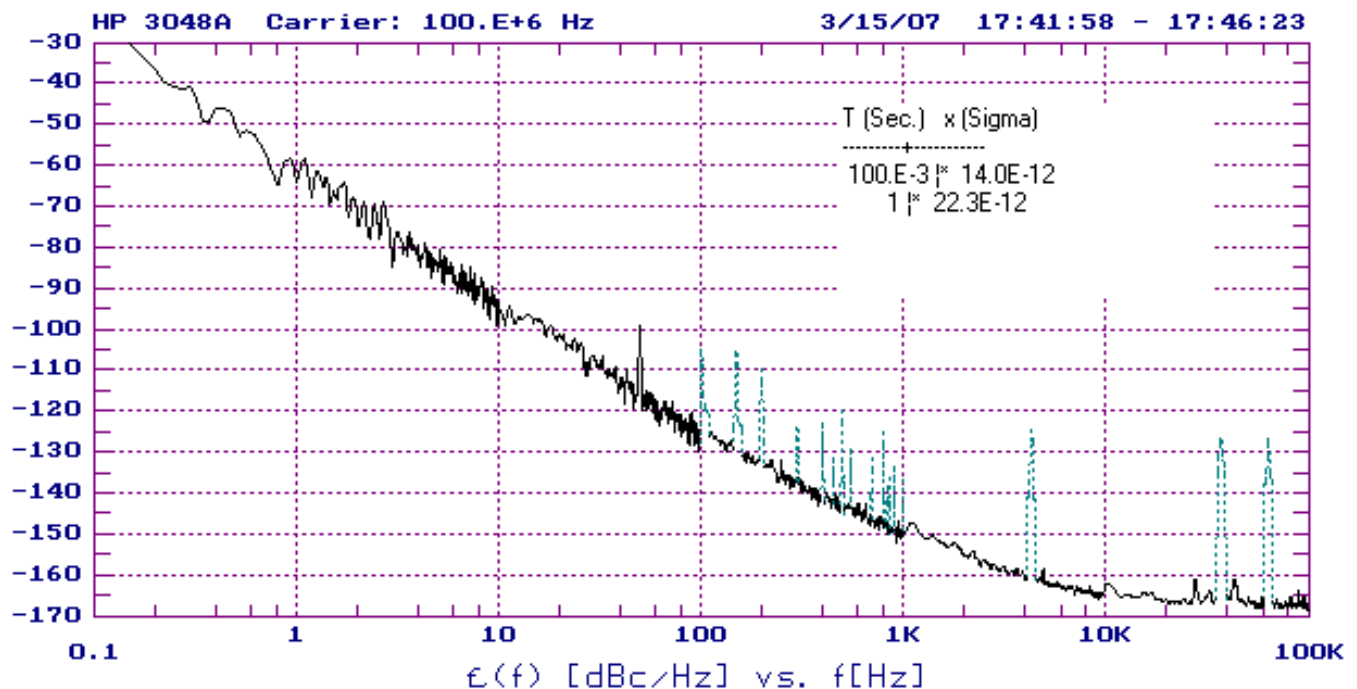
- PLL reference for Telecommunication Systems
- Microwave Communications / RADAR signal source
- GPS holdover
- Instrumentation / Test and Measurement

Electrical Specifications

Parameter	Symbol	Condition	Min	Typ	Max	Unit	Note
Frequency Range	F		5		120	MHz	
Frequency Stability	$\Delta F/F$	Vs. Operating Temp. E: -30°C to +70°C		± 10		ppb	STD option shown. See "How to Order" Chart below
		Vs. Supply Voltage		± 3	± 5	ppb	Ref. Vcc typ.
		Vs. Aging / Day Vs. Aging / Year		3 0.3		ppb ppm	after 30 days 0.2ppb available
Operating Temperature Range	T		-30°		+70°	°C	STD option shown. See "How to Order" Chart below
Allan Variance		1s		10e-12			
SSB Phase Noise		1Hz 10Hz 100Hz 1KHz 10KHz 100KHz		-95 -125 -145 -155 -165 -168		dBc/Hz	For 10MHz Oscillator (For 100MHz see plot on next page)
Retrace		After 30 min.			± 20	ppb	
G-sensitivity		worst direction			± 1	ppb/g	
Supply Voltage	Vcc		11.4 4.75 3.14	12.0 5.0 3.3	12.6 5.25 3.47	V	
Power Consumption	P	steady state, 25°C steady state, -30°C start-up		1.0 2.0 3.2	1.2 2.2 3.5	W	
Warm up time	τ	+25°C		2	3	min	to 0.1ppm accuracy

Electrical Specifications

Parameter	Symbol	Condition	Min	Typ	Max	Unit	Note
HCMOS / TTL Output Levels		HCMOS/TTL	10KOhm / 15pF				Order Code H
	V _H	V _{cc} = 5 or 12V V _{cc} =3.3V	3.9 2.4			V	
	V _L				0.4	V	
Rise / Fall time		At 100MHz			10	ns	
Duty Cycle			45		55	%	
Sine-Wave Output Levels		V _{cc} =5 or 12V V _{cc} =3.3V	+6 +3	+8 +4	+10 +5	dBm	Order Code S
	R _L			50		Ω	
Harmonics					-25	dBc	
Sub-Harmonics			none				Fundamental
Control Voltage	V _c	V _{cc} = 5 or 12V V _{cc} =3.3V	0 0		4.2 2.8	V	
Pull Range		from nominal F	±0.5	±1		ppm	
Deviation slope		V _{cc} = 5 or 12V V _{cc} = 3.3V	0.125 0.4			ppm/ V	Monotonic, Positive
Reference output	V _{ref}	V _{cc} = 5 or 12V V _{cc} =3.3V	4.1 2.7	4.2 2.8	4.3 2.9	V	



Absolute Ratings

Parameter	Symbol	Condition	Min	Typ	Max	Unit	Note
Supply Break Down Voltage	V _{cc}		-0.5		V _{cc} +20%	V	
Control Voltage	V _c		-1		9	V	

Environmental and Mechanical

Parameter	Specification
Storage Temperature	-60°C to +90°C
Humidity	Hermetically Sealed
Mechanical Shock	Per MIL-STD-202, 30g, half sine, 11ms
Vibration	Per MIL-STD-202, 10g swept Sine to 500Hz
Soldering Conditions	260°C for 10s

How to Order

Model	Stability	Temperature Range	Supply Voltage	Aging	Output	Frequency, MHz
VFOV102	W	D	E	C	H	10

Package Dimensions (mm)	
VFOV102	27 x 35

Code	Specification
R	1x10 ⁻⁷
T	5x10 ⁻⁸
U	2x10 ⁻⁸
V	1x10 ⁻⁸

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

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	
I	1.5ppb	0.15ppm	

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

Code	Specification
H	HCMOS
S	Sinewave

Available Frequency Stabilities over Operating Temperature Ranges

Order Code	Temperature Range	Stability			
		1x10 ⁻⁷	5x10 ⁻⁸	2x10 ⁻⁸	1x10 ⁻⁸
A	0°C to 50°C	*	*	*	*
B	0°C to 70°C	*	*	*	
C	-10°C to 60°C	*	*	*	*
D	-20°C to 70°C	*	*	*	
E	-30°C to 70°C	*	*	*	
G	-40°C to 85°C	*	*	*	

OCXO – Ultra Low Noise, Ultra Stable HCMOS / SINEWAVE



Package

