VFOV200

OCXO – High Frequency, High Stability

HCMOS / SINE WAVE

CTS ELECTRONIC COMPONENTS

Features

- 5MHz to 250MHz frequency range
- High stability (up to 5ppb over -40°C to +85°C)
- HCMOS or sine wave output

RoHS Status

RoHS 6/6

Applications

- PLL Reference for Telecommunication Systems
- Stratum 3E Clock Systems
- Base Station Reference Source
- GPS Holdover
- Instrumentation / Test and Measurement

Electrical Specifications

Parameter	Symbol	Condition	Min	Typ	Max	Unit	Note
Frequency Range	F		5		250	MHz	
Frequency Stability	ΔF/F	Vs. Operating temperature G: -40°C to +85°C		± 5		ppb	STD option shown. See "How to Order" Chart below
		Vs. Supply Voltage		±1		ppb	Ref. Vcc typ.
		Vs. Aging / Day Vs. Aging / Year		0.5 0.1		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		10Hz 100Hz 1kHz 10kHz 100kHz		-125 -143 -150 -158 -160		dBc/Hz	For 10MHz oscillator (For 100MHz see plot next page)
Retrace		After 30 min.			±20	ppb	
G-sensitivity		worst direction			±1	ppb/g	
Supply Voltage	Vcc		11.4 4.75 3.15	12.0 5.0 3.3	12.6 5.25 3.45	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	to 0.1ppm accuracy		2	3	min	

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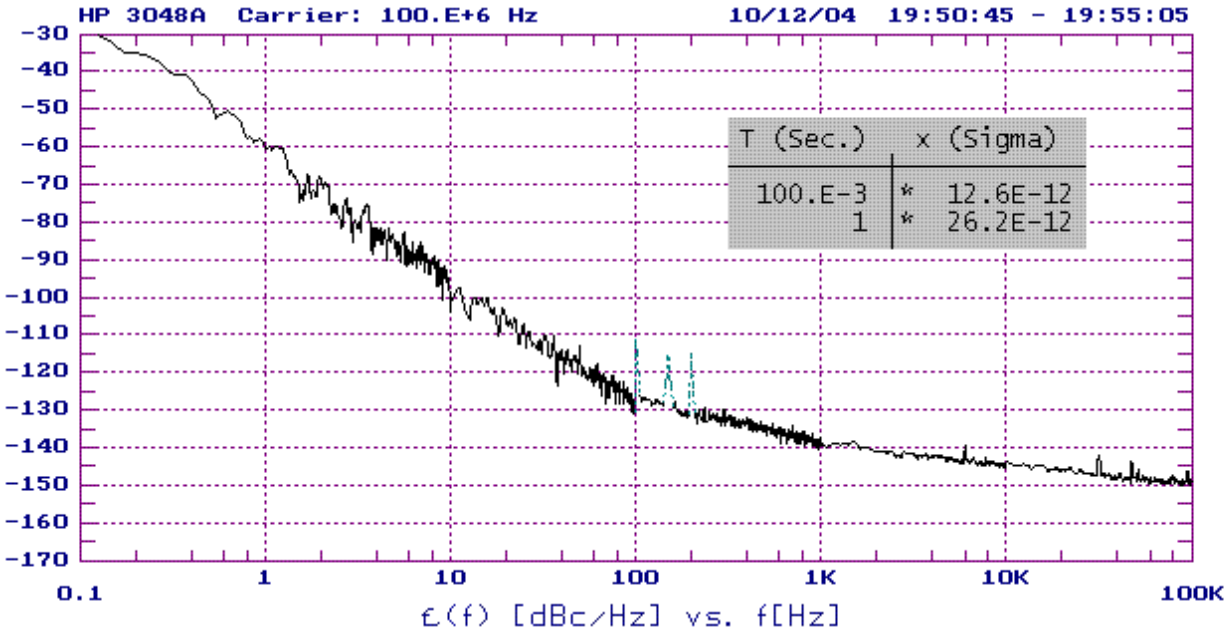
Electrical Specifications

Parameter	Symbol	Condition	Min	Typ	Max	Unit	Note
HCMOS / TTL Output Levels		HCMOS/TTL		10kOhms / 15pF			*Order Code H*
	V_H	V_{CC}=5 or 12V V_{CC}=3.3V	3.8 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	+6	+8	+10	dBm	*Order Code S*
	R_L			50		Ω	
Harmonics					-25	dBc	
Sub-Harmonics		Frequency <30MHz Frequency >30MHz	None		-40	dBc	***Multiplied fundamental*
Control Voltage	V_C	V_{CC} = 5 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		0.4		ppm/V	
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	

** High frequency fundamental (up to 120MHz) available without sub-harmonics. Please refer to VFOV100.



100MHz output with internal multiplied 20MHz fundamental crystal

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Absolute Maximum 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		6	V	

Environmental and Mechanical Conditions

Parameter	Condition
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
Marking	Epoxy ink or laser engraved

How to Order

Model	Stability	Temperature Range	Supply Voltage	Aging	Output	Frequency, MHz
VFOV200	W	D	E	C	H	10

Package Dimensions (mm)	
VFOV200	25.4 x 22

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
C	1ppb	0.1ppm
D	0.5ppb	50ppb
G	0.2ppb	30ppb

Code	Specification
R	$1x10^{-7}$
T	$5x10^{-8}$
U	$2x10^{-8}$
V	$1x10^{-8}$
W	$5x10^{-9}$

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

Code	Specification
H	HCMOS
S	Sine wave

Available Frequency Stabilities over Operating Temperature Ranges**

Order Code	Temperature Range	Stability				
		$1x10^{-7}$	$5x10^{-8}$	$2x10^{-8}$	$1x10^{-8}$	$5x10^{-9}$
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	*	*	*	*	◊

◊ Only available below 30MHz.

**Not all combinations are available. Consult factory for the right configurations that will meet your requirements.

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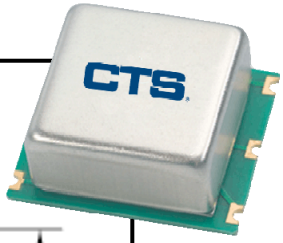
Package



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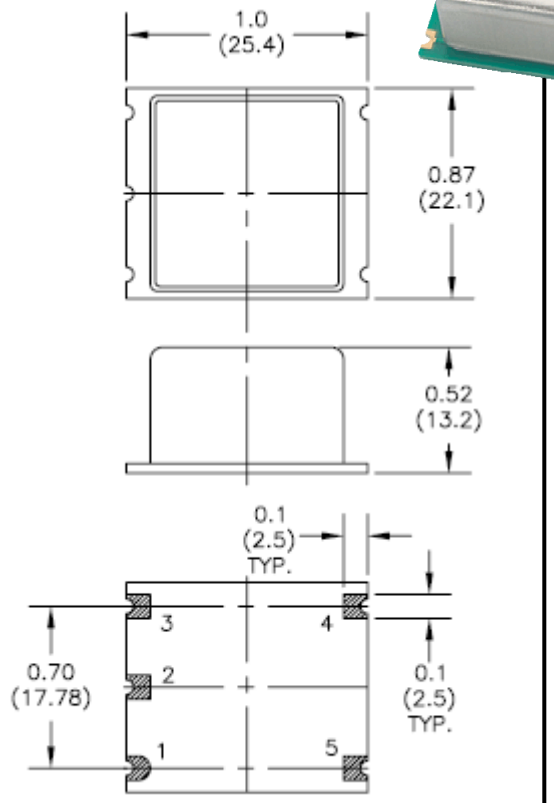

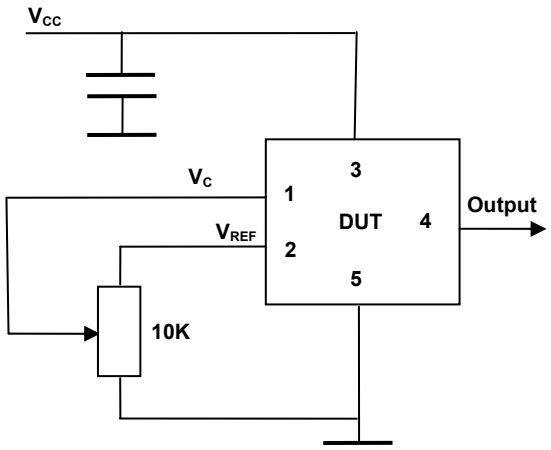

Pin #	Connection
1	V_C
2	V_{REF}
3	V_{CC}
4	Output
5	GND