

Helping Customers Innovate, Improve & Grow



### Description

The Holdover Reference Oscillator family is designed specifically to meet the need for a high accuracy cost effective backup reference. These high stability oscillators will provide consistent, repeatable, extended holdover to the stated phase accuracy - making them ideal for applications where GPS, 1588 or other sources of timing are intermittent or prone to extended periods of unavailability.

### Features

- Available in 8 hour and 24 hour version
- Holdover accuracy available to  $\leq 8\mu\text{s}$  and  $\leq 1\mu\text{s}$
- Specifically designed for inter-operability with existing designs based on conventional OCXO's.
- Advanced digital compensation techniques take place inside the Holdover Reference - no need for programming or other user intervention.

### Applications

- Precision Timing Applications in:
  - Wireless Base Stations
  - Wireless Backhaul
  - Digital Video Broadcast
  - Low latency optical networking
  - Power distribution
  - Test and Measurement

### Specifications

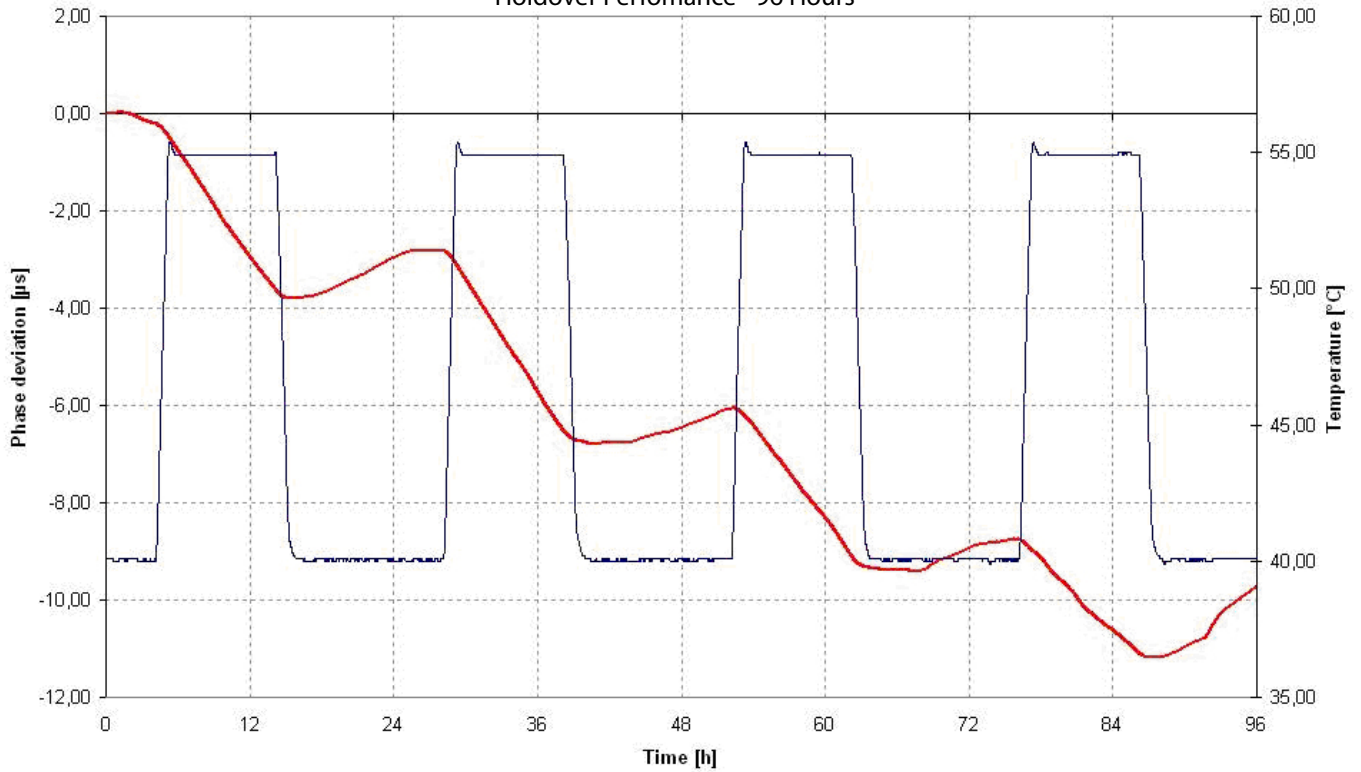
Parameter	Min	Typical	Max	Units	Condition
Output Frequency	5		20	MHz	
Holdover Accuracy over 8 hours (ordering option)			8.0	$\mu\text{s}$	15°C range, Vs $\pm 5\%$ , Load $\pm 5\%$ , after 24 hours of operation
Holdover Accuracy over 8 hours (ordering option)			1.0	$\mu\text{s}$	15°C range, Vs $\pm 5\%$ , Load $\pm 5\%$ , after 24 hours of operation
Holdover Accuracy over 24 hours (ordering option)			8.0	$\mu\text{s}$	15°C range, Vs $\pm 5\%$ , Load $\pm 5\%$ , after 24 hours of operation
Warm up time			5	minutes	to $\pm 10\text{ppb}$ of final frequency (1 hour reading) @25 °C

## Specifications (continued)

Parameter	Min	Typical	Max	Units	Condition
Supply					
Supply voltage	4.75	5	5.25	Vdc	
Power Consumption			3.1	Watts	during warmup
Power Consumption			1.5	Watts	steady state at 25 °C
Output					
Signal	HCMOS				
Load		15		pF	
Signal Level (Vol)			0.5	Vdc	With Vs=5.0 and 15pF load
Signal Level (Voh)	3.5			Vdc	With Vs=5.0 and 15pF load
Duty Cycle	40		60	%	@ (Voh-Vol)/2
Signal	Sine Wave				
Load		50		Ohm	
Output Power @ 5.0V	0	3	6	dBm	50 Ohm Load
Sub Harmonics			-25	dBc	50 Ohm Load
Spurious			-65	dBc	50 Ohm Load
Tuning Range	Fixed OCXO; No adjustment				
Tuning Range	+0.15		+0.4	ppm	
Linearity	10%				
Tuning Slope	Positive				
Control Voltage Range	0	1.65	3.3	Vdc	With Vs = 5.0 Vdc
Phase Noise 1 Hz		-98	-90	dBc/Hz	@10MHz
Phase Noise 10 Hz		-125	-120	dBc/Hz	
Phase Noise 100 Hz		-135	-130	dBc/Hz	
Phase Noise 1kHz		-143	-138	dBc/Hz	
Phase Noise 10kHz		-150	-145	dBc/Hz	
Maximum Ratings					
Maximum supply voltage			6.0	Vdc	
Maximum output load			50	pF	
Operable Temperature Range	-40		85	°C	
Storage Temperature Range	-55		85	°C	
Mechanical					
Weight	16.0			g	
Dimensions	25.8x25.8x15.35			mm	

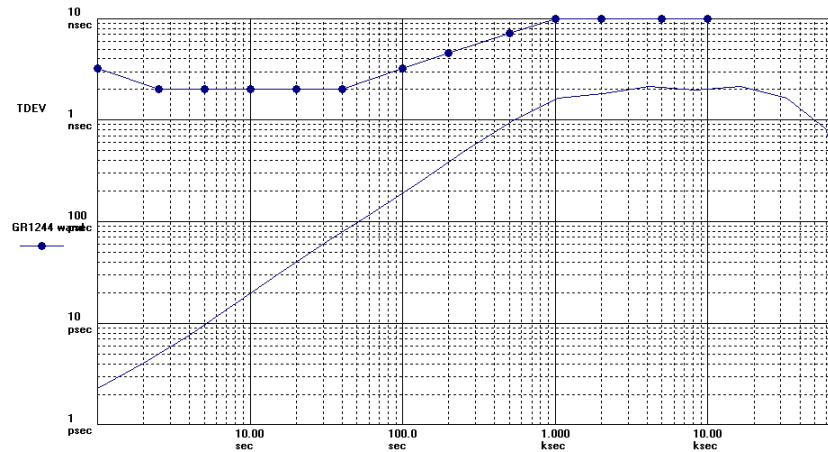
# Typical Performance Data

## Holdover Performance - 96 Hours

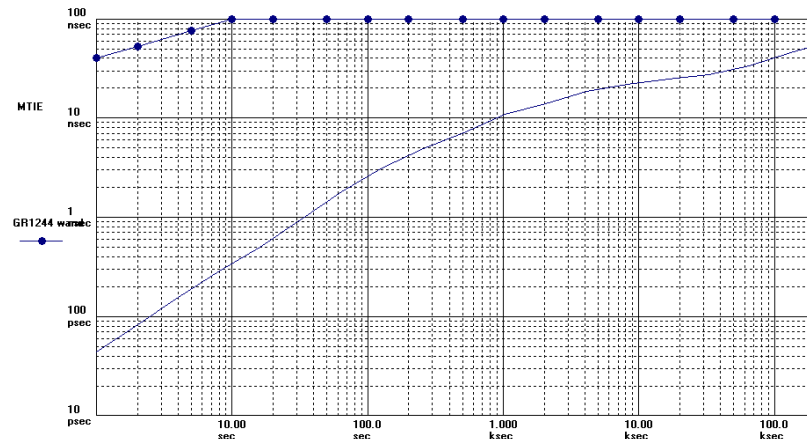


## MTIE and TDEV - 0.3mHz loop filter bandwidth

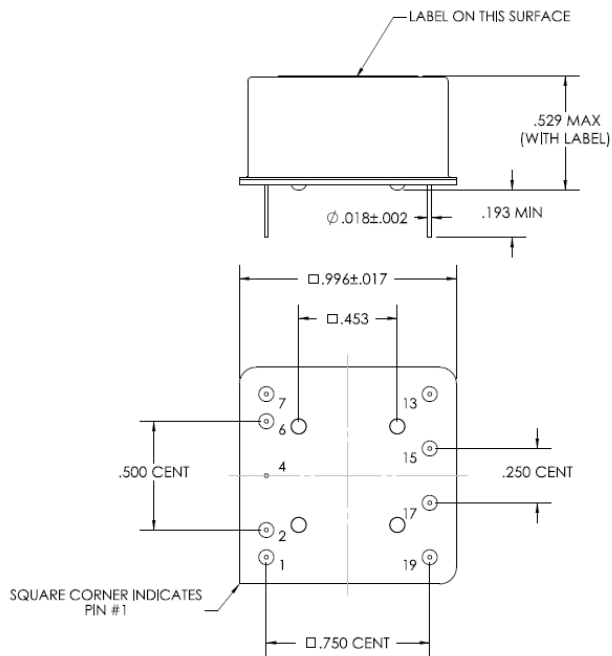
Symmetricon TimeMonitor Analyzer (file=Typ\_OX-203-0001-10M00\_Tau1s.phd)  
 TDEV: No. Avg=1; Fo=10.00 MHz; 8/3/2011 1:33:27 PM  
 Stable32 Phase; Samples: 200000



Symmetricon TimeMonitor Analyzer (file=Typ\_OX-203-0001-10M00\_Tau1s.phd)  
 MTIE: Fo=10.00 MHz; Fs=1000.0 mHz; 8/3/2011 1:33:27 PM  
 Stable32 Phase; Samples: 200000



## Outline Drawing



Pin Assignment	
Pin	Connection
1	RF Output
2	Do Not Connect
4	Case Ground
6	Do Not Connect
7	EFC (Frequency Control)
13	Do Not Connect
15	Do Not Connect
17	Do Not Connect
19	Supply Voltage

## Ordering Information

**OX - 203 1 - D A E - 808 0 - 10M000000**

**Product**

OX: OCXO

**Package Type**

203: THT Version

**Height**

1: 15.35mm

**Supply Voltage**

D: 5.0V

**Output**

A: HCMOS

E: Sinewave

**Frequency**

**Frequency Control**

0: No Tuning

1:  $\pm 0.15$  to  $\pm 0.4$ ppm

**Holdover Range**

808: 8 $\mu$ s over 8 hours

824: 8 $\mu$ s over 24 hours

108: 1 $\mu$ s over 8 hours

**Temperature Range**

E: -40 to +85 °C

J: -20 to +70 °C

P: 0 to +50 °C

*\*Note: not all combination of options are available.  
Other specifications may be available upon request.*

## For Additional Information, Please Contact

**USA:**

Vectron International  
267 Lowell Road, Suite 102  
Hudson, NH 03051  
Tel: 1.888.328.7661  
Fax: 1.888.329.8328

**Europe:**

Vectron International  
Landstrasse, D-74924  
Neckarbischofsheim, Germany  
Tel: +49 (0) 3328.4784.17  
Fax: +49 (0) 3328.4784.30

**Asia:**

Vectron International  
68 Yin Cheng Road(C), 22nd Floor  
One LuJiaZui  
Pudong, Shanghai 200120, China  
Tel: +86 21 6194 6886  
Fax: +86 21 6194 6699

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