VECTRON INTERNATIONAL
A DOVER COMPANY

OX-222

Oven Controlled Crystal Oscillator

Description

The OX-222 is part of a series of oscillators specifically designed to support Timing Over Packet applications, in particular 1588-2008 based frequency and phase reference systems. The OX-222 is stratum 3E compliant.

Features

- Available in three standard frequencies (10MHz, 12.8MHz and 20MHz)
- Excellent temperature stability
- Superior long term stability
- Optimised to support Timing Over Packet applications
- Stratum 3E compliant according to GR1244

Applications

- SETS clock support
- Wireless Base Stations
- Edge and Core Routers

Performance Specifications

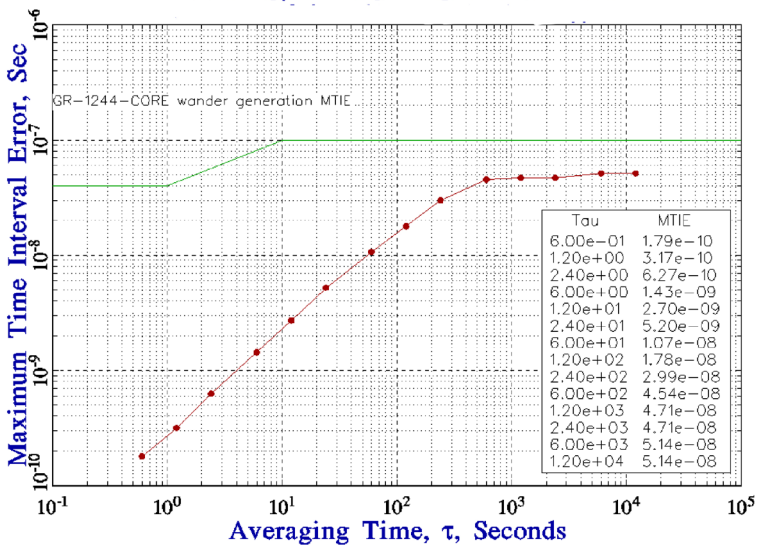
Frequency Stability[1]					
Parameter	Min	Typ	Max	Units	Notes
Over all stability (df/f_0)			±4.6	ppm	Free run accuracy
Holdover			10	ppb	Over 24 hours and 40ºC window
Drift			±0.8	ppb	Over 24 hours and ±2.8ºC
Temperature stability (df/f)			±10	ppb	-40 to 85ºC
Initial Tolerance (df/f_0)			±500	ppb	@25ºC
vs. supply voltage change (df/f)			±5	ppb	static; 3.3V ± 5%
vs. load change (df/f)			±5	ppb	static; Load ± 5%
vs. aging / daily (df/f)			± 1	ppb	after 30 days; @25ºC
vs. aging / month (df/f)			± 25	ppb	after 30 days; @25ºC
vs. aging / year (df/f)			± 100	ppb	after 30 days; @25ºC
vs. aging / 10 years (df/f)			± 1	ppm	after 30 days; @25ºC
Phase Stability					
Parameter	Min	Typ	Max	Units	Notes
Jitter			< 1.00	ps rms	@12kHz to 20MHz
MTIE 1s		0.2		ns	Wander Generation per GR1244, system performance when locked through a 1mHz loop bandwidth, see typical performance data.
MTIE 10s		2.0		ns	
MTIE 100s		10.0		ns	
MTIE 1000s		40.0		ns	

Performance Specifications

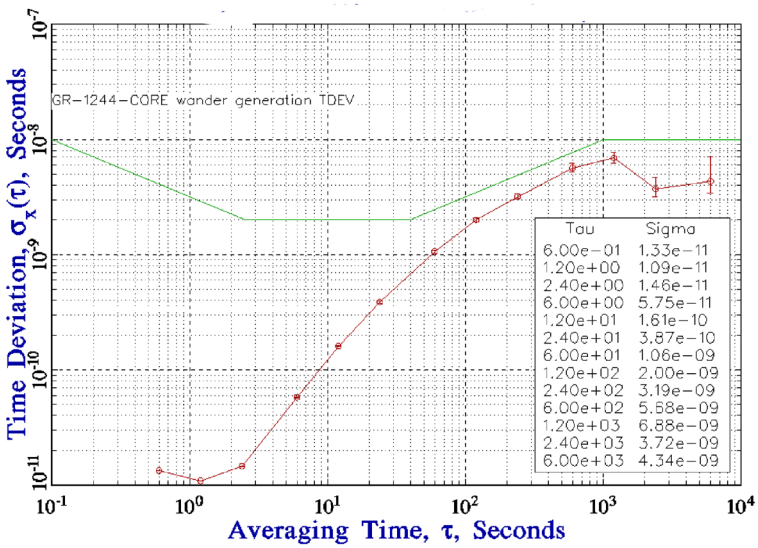
Phase Stability (continued)					
Parameter	Min	Typ	Max	Units	Notes
TDEV 1s		0.015		ns	Wander Generation per GR1244, system performance when locked through a 1mHz loop bandwidth, see typical performance data.
TDEV 10s		0.13		ns	
TDEV 100s		1.5		ns	
TDEV 1000s		5.0		ns	
Phase Noise					
Parameter	Min	Typ	Max	Units	Notes
Phase Noise at 1 Hz Offset		-85	-60	dBc/Hz	
Phase Noise at 10 Hz Offset		-110	-90	dBc/Hz	
Phase Noise at 100 Hz Offset		-130	-115	dBc/Hz	
Phase Noise 1 kHz Offset		-143	-130	dBc/Hz	
Phase Nosie at 10 kHz Offset		-150	-145	dBc/Hz	
RF Output					
Signal		LVCMOS			
Load		15		pF	±10%
Fan out		3			
Rise Time		< 10		ns	@ 10% to 90% V_{out}
Fall Time		<10		ns	@90% to 10% V_{out}
Duty Cycle		45/55		%	@ 1.65 V
V Low		x < 0.4		V	
V High		x > 2.4		V	
Supply					
Supply Voltage (V_S)		3.3±10%		V	
Current consumption		< 330		mA	Steady state, @ $V_S$nom, 25ºC
Current consumption		< 757		mA	During warm up, @ V_S
Additional Parameters					
Warm Up Time		< 5		minutes	@ 25ºC to final frequency
ROHS	100% ROHS 6 compliant				
Washable	Non-washable device (non-hermetic).				
Absolute Maximum Ratings					
		Min		Max	Units
Operating temperature range		-40		85	ºC
Storage temperature range		-50		90	ºC

Typical Performance

FREQUENCY STABILITY

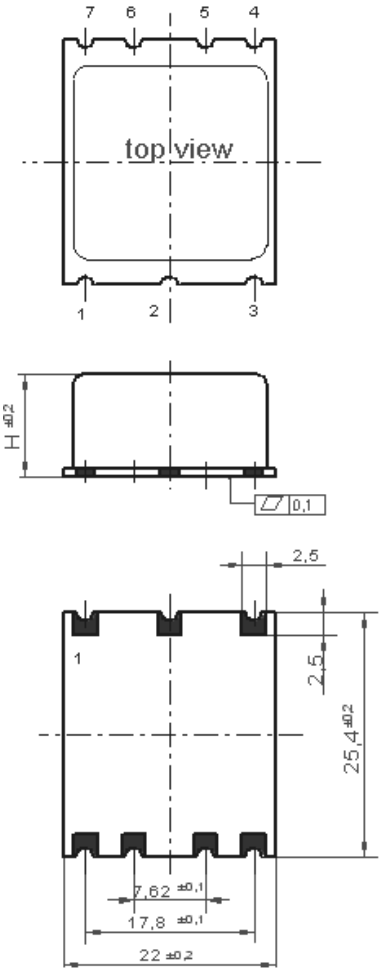


TIME STABILITY



Wander Generation per GR1244, system performance when locked through a 1mHz loop bandwidth.

Outline Drawing / Enclosure



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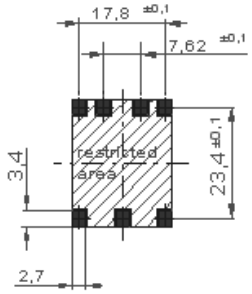

Padvorschlag
land pattern
recommendation

Dimensions in mm

Height Codes	
Code	Height "H"
1	12.1

Pin Assignment	
Pin	Connection
1	I.C. (do not connect)
2	N.C
3	V_S (Supply)
4	RF Out
5	N.C
6	N.C
7	GND (case)

Ordering Information

OX - 222 1 - E A E - 108 0 - 20M0000000

- Product Family: OX: OCXO
- Package: 25x22mm SMT
- Height: 1: 12.1mm
- Supply Voltage: E: +3.3V
- RF Output Code: A: HCMOS
- Temperature Range: E: -40°C to +85°C
- Stability Code: 108: ±10ppb
- Frequency Control: 0: Fixed Frequency
- Frequency

Notes:

1. Contact factory for improved stabilities or additional product options. Not all options and codes are available at all frequencies.
2. Unless other stated all values are valid after warm-up time and refer to typical conditions for supply voltage, frequency control voltage, load, temperature (25°C).
3. Phase noise degrades with increasing output frequency.
4. Subject to technical modification.
5. Contact factory for availability.

For Additional Information, Please Contact

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