

Helping Customers Innovate, Improve & Grow



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, 20MHz, 24.576MHz and 25MHz)
- 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

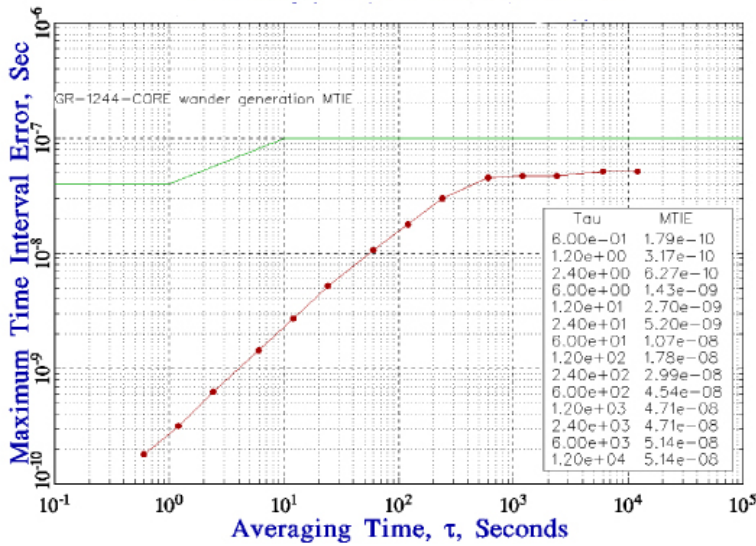
Frequency Stability ¹					
Parameter	Min	Typ	Max	Units	Notes
Over all stability (df/f ₀)			±4.6	ppm	Free run accuracy
Holdover			10	ppb	Over 24 hours and 40°C window
Drift			±1.0	ppb	Over 24 hours and ±2.8°C
Temperature stability (df/f)			±10	ppb	-40 to 85°C (-20 to 70°C for 2226 version)
Initial Tolerance (df/f ₀)			±500	ppb	@25°C
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; @25°C
vs. aging / month (df/f)			± 25	ppb	after 30 days; @25°C
vs. aging / year (df/f)			± 100	ppb	after 30 days; @25°C
vs. aging / 10 years (df/f)			± 1	ppm	after 30 days; @25°C
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

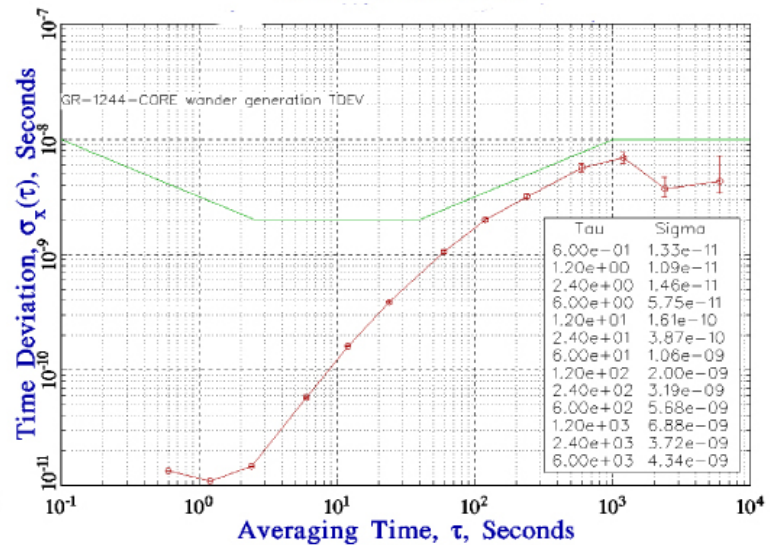
Phase Stability (continued)					
Parameter	Min	Typ	Max	Units	Notes
TDEV 1s		0.015		ns	Wander Generation per GR1244, system performance when locked through a 1mHz loop bandwidth, see typical performance data.
TDEV 10s		0.13		ns	
TDEV 100s		1.5		ns	
TDEV 1000s		5.0		ns	
Phase Noise					
Parameter	Min	Typ	Max	Units	Notes
Phase Noise at 1 Hz Offset		-85	-60	dBc/Hz	20MHz output
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 Nosit at 10 kHz Offset		-150	-145	dBc/Hz	
RF Output					
Signal	LVCMOS				
Load	15			pF	±10%
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	< 400			mA	Steady state, @ V _s nom, 25°C
Current consumption	< 950			mA	During warm up, @ V _s
Additional Parameters					
Warm Up Time	< 5			minutes	@ 25°C 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	°C	
Storage temperature range	-50		85	°C	
Supply Voltage			5.5	V	

Typical Performance

FREQUENCY STABILITY

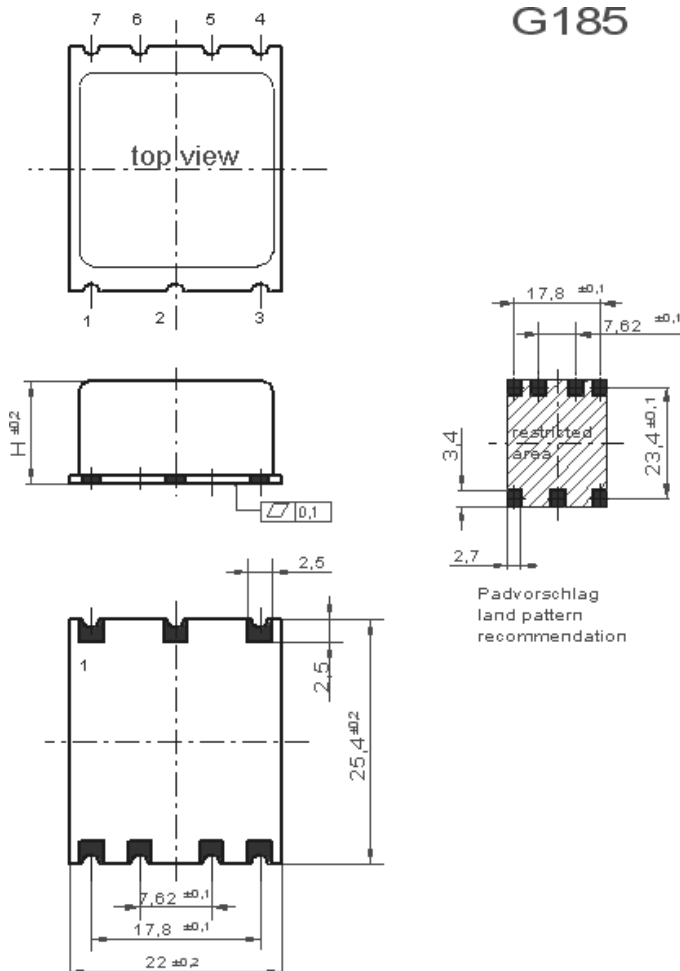


TIME STABILITY



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

Outline Drawing / Enclosure



Dimensions in mm

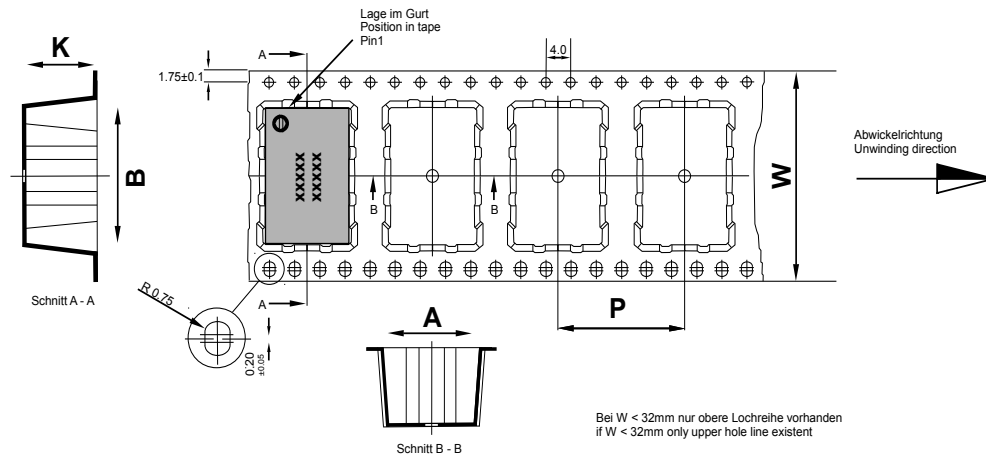
Height Codes

Code	Height "H"
1	12.1
6	8.3

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)

Tape and Reel Dimensions



Enclosure Type	Tape Width W (mm)	Quantity per meter	Quantity per reel	Dimension P
OX-2221 (12.1mm)	44	37.5	175	28
OX-2226 (8.3mm)	44	37.5	250	28

Recommended Reflow Profile

IPC/JEDEC J-STD-020 (latest revision)

Additional Information:

This SMD oscillator has been designed for pick and place reflow soldering.

SMD oscillators must be on the top side of the PCB during the reflow process.

Additional Environmental Conditions

Parameter	Description
Rapid temperature changes	MIL-883-1010 Cond B 1000 cycles -55/125C
Vibration	MIL-STD-883 Meth 2007 Cond A 20G 20-2000Hz 4x in each 3axis 4 min
Shock	Mech.Shock MIL-STD-202 Meth 213 Cond.C 100G 6ms 6 shocks in each direction
Solderability	J_STD_002C Cond A, Through hole device/ Cond. B, SMD 255C (diving time 50,5sec.) Dip+Look with 8h damp pre-treatment: solder wetting >95%
Solvent resistance	MIL-STD-883 Meth 2015 Solv. 1,3,4
ESD	HBM JESD22-A114-F Class 1C 10* 1000V
Moisture Sensit.	Level 1 JESD22-A113-B
RoHS compliance	100% RoHS 6 compliant
Washable	non-washable device

Note: All temperatures refer to topside of the package, measured on the package body surface.

Ordering Information

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

Product Family
OX: OCXO

Package
25x22mm SMT

Height
1: 12.1mm
6: 8.3mm

Supply Voltage
E: +3.3V

RF Output Code
A: HCMOS

Temperature Range
E: -40°C to +85°C
J: -20°C to +70°C
N: -5°C to +70°C

Stability Code
108: ±10ppb

Frequency
Frequency Control
0: Fixed 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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Vectron:

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[OX-2221-EAE-1080-25M00](#)