



OX-502

Features

- 6-Pin SMD package
- Fast warm-up
- Frequency Range, 10 MHz to 40 MHz
- Standard freq: 10, 12.8, 20, 24.576, 25, 30.72 MHz
- High Reliability (based on fully intergrated Design)
- Low Power

Applications

- Base stations 5G & 4 G)
- Test equipment
- Small Cell
- Military communication equipment
- Stratum 3
- SyncE; 1588

Performance Specifications

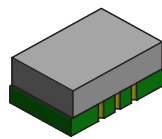
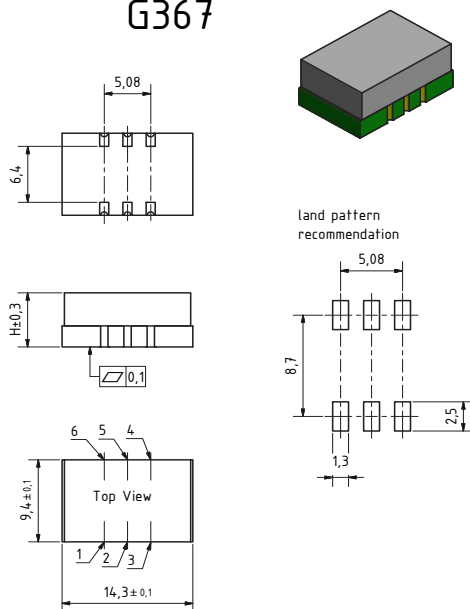
Frequency Stabilities ¹ 10 to 40 MHz						
Parameter	Min	Typical	Max	Units	Condition	Options ⁵
vs. operating temperature range (referenced to +25°C)	-20		+20	ppb	-40 to +85°C	
	-10		+10	ppb	-40 to +85°C	
	-20		+20	ppb	-40 to +95°C	
slope	-2		+2	ppb/°C	@ Temp stab. +-10ppb	
Initial tolerance	-0.5		+0.5	ppm	at time of shipment, nominal EFC	
vs. supply voltage change	-10		+10	ppb	V _c ±5% static	
vs. load change	-10		+10	ppb	Load ±5% static	
vs. aging / day	-5	±2	+5	ppb	after 30 days of operation	
vs. aging / year	500		+500	ppb	after 30 days of operation	
vs. aging / 10 years	-3		3	ppm	after 30 days of operation	
Holdover drift			5	ppb	over 24 hours, constant temperature (<±1°C) ; after 30 days continous operation	
Start up time			200	msec		
Warm-up time			3	minutes	to ±20ppb of final frequency (1 hour reading) @ +25°C	
Loop bandwidth for wander generation compliance	3			mHz	MTIE compliant with GR-1244 Fig 5-5 TDEV compliant with GR- 1244 Fig 5-4 ; measurement setup: oscillator stabilized 24 hours at Constant Temperature (±1°C, still air), data collected over 100,000 seconds at 1 second intervals (-3dB cutoff, 1st order high pass loop filter)	

Performance Specifications

Supply Voltage (Vs)						
Parameter	Min	Typical	Max	Units	Condition	
Supply voltage (standard)	3.135	3.3	3.465	VDC		
Power consumption		1.3	1.5	Watts	during warm-up	
		0.65	0.8	Watts	steady state @ +25°C	
RF Output						
Signal [standard]	LVHCMOS					
Load		15		pF		
Signal Level (Vol)			0.4	VDC	with Vs=3.3V and 15pF Load	
Signal Level (Voh)	2.97	3.3		VDC	with Vs=3.3V and 15pF Load	
Duty Cycle	45		55	%	@ (Voh-Vol)/2	
Ron		26.5		Ω		
Roff		22		Ω		
Frequency Tuning (EFC)						
Tuning Range	Fixed OCXO; No adjust				Opti-on ⁵	
Tuning Range	±3		±8	ppm		not available for all frequencies
Linearity	10%					
Tuning Slope	Positive					
Control Voltage Range	0.0	1.4	2.8	VDC		
Additional Parameters						
Phase Noise ³		-99	-90	dBc/Hz	10 Hz	@ 20MHz
		-125	-120	dBc/Hz	100 Hz	
		-145	-140	dBc/Hz	1 kHz	
		-155	-150	dBc/Hz	10 kHz	
		-160	-155	dBc/Hz	100kHz	
Weight			1.0	g		
Processing & Packing	Handling & Processing Note					
Absolute Maximum Ratings						
Supply voltage (Vs)			3.8	V	with Vs=3.3 VDC	
Output Load			50	pF		
Operable Temperature Range	-40		+95	°C		
Storage Temperature Range	-40		+125	°C		

Outline Drawing / Enclosure

G367



OX-502

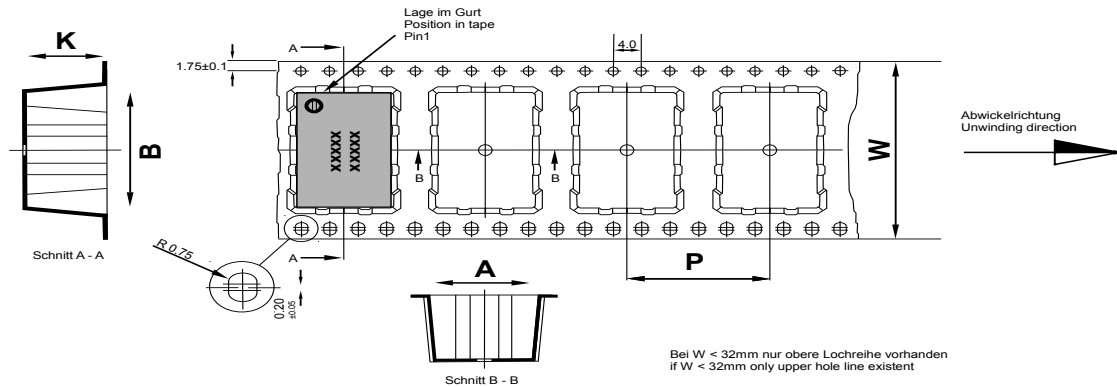
Height "H"	cover material
6.2	plastic

Pin Connections

1	I.C (Do not connect) / EFC (option)
2	N.C
3	Ground (Case)
4	RF Output
5	N.C
6	Supply Voltage Input

Dimensions in mm

Standard Shipping Method (OX-502)



Maßangaben in mm: A, B und K Maße von Bauelement abhängig Fertigungstoleranzen entsprechen der DIN IEC 286-3	Dimension in mm: A, B und K are dependent upon component dimensions production tolerance complying DIN IEC 286-3
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All dimensions in millimeters unless otherwise stated

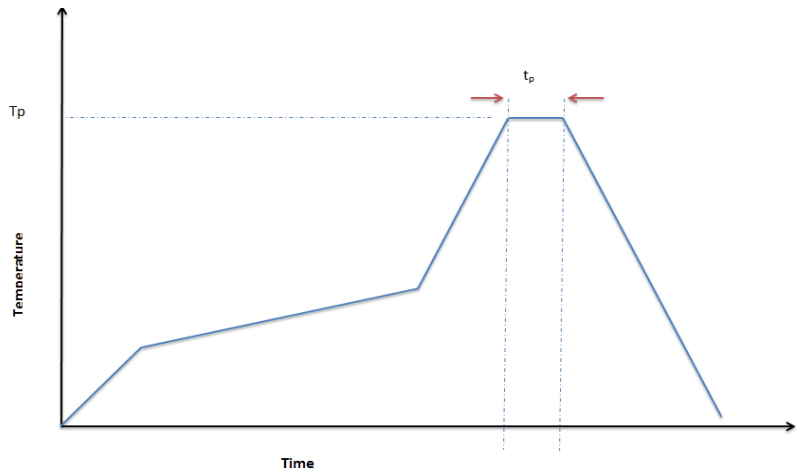
Enclosure Type	Tape Width W (mm)	Quantity per meter	Quantity per reel	Dimension P
OX-502 (6.2 mm)	24	83.3	400	12

Reflow Profile

TP: max 250°C (@ solder joint, customer board level)
Tp: max: 10...40 sec

Additional Information:
This SMD oscillator has been designed for pick and place reflow soldering

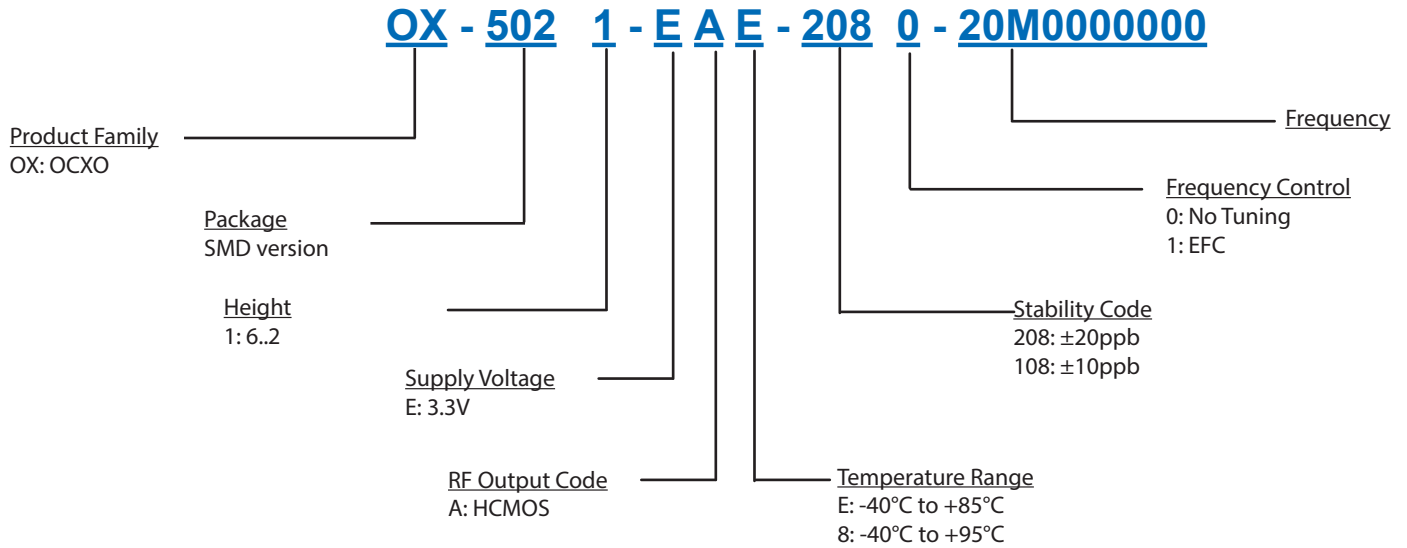
SMD oscillators must be on the top side of the PCB during the reflow process.



Additional Environmental Conditions

Parameter	Description
Temperature Cycling	JESD22-A104-D Cond.G - 500cycles -40/+125C;cycle time 30min
Vibration, Sine	MIL-STD-883 Meth 2007 Cond A - 20g 20-2000Hz 4x in each 3 axis 4min sweep time
Mechanical Shock	MIL-STD-202 Meth 213B Cond. F - 1500g 0,5ms 6 shocks in each direction
Solderability	J-STD-002C Cond. A, Trough hole device; Cond.B, SMD (correspond to MIL-STD-883 Meth 2003) - 255C (diving Time 5 0,5sec.) Dip&Look with 8h damp pre-treatment: solder wetting >95%
Solvent resistance	MIL-STD-883 Meth 2003) - 255C (diving Time 5 0,5sec.) Dip&Look with
ESD	8h damp pre-treatment: solder wetting >95%
Moisture Sensit.	JESD22-A113-B - only if > MSL 1
RoHS compliance	100% RoHS 6 compliant
Washable	non-washable device
High temp operating life(HTOL)	MIL-STD-202 Meth108A Cond C - 1000h @ 105C power on
Low temp operating life(LTOL)	IEC 60068-2-1 Cond. Ae - 1000h @ -40C power on

Ordering Information



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.

Contact Information

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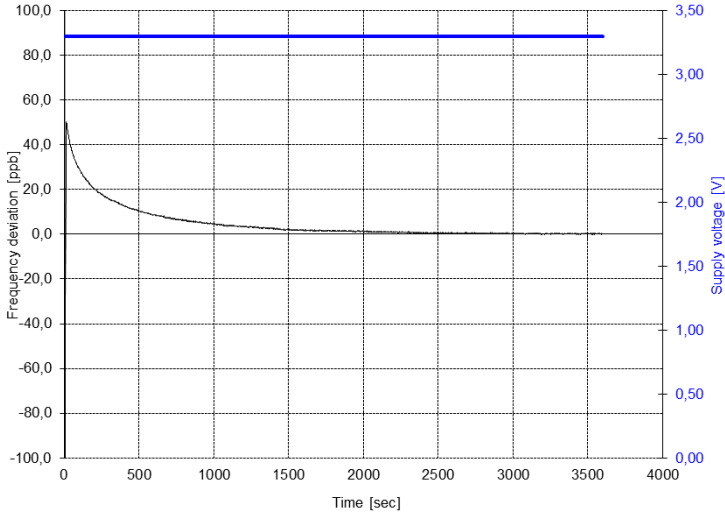
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typical performance data

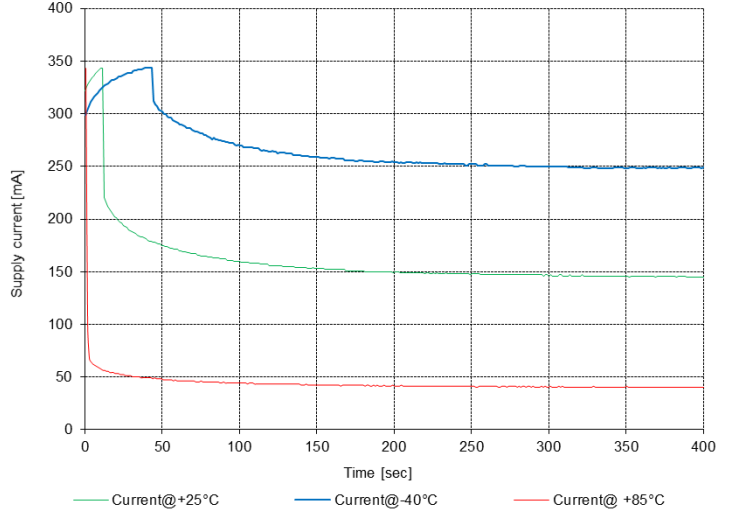
typical warm up (frequency vs. time)

@ OX-5021-EAE-1080-20M000



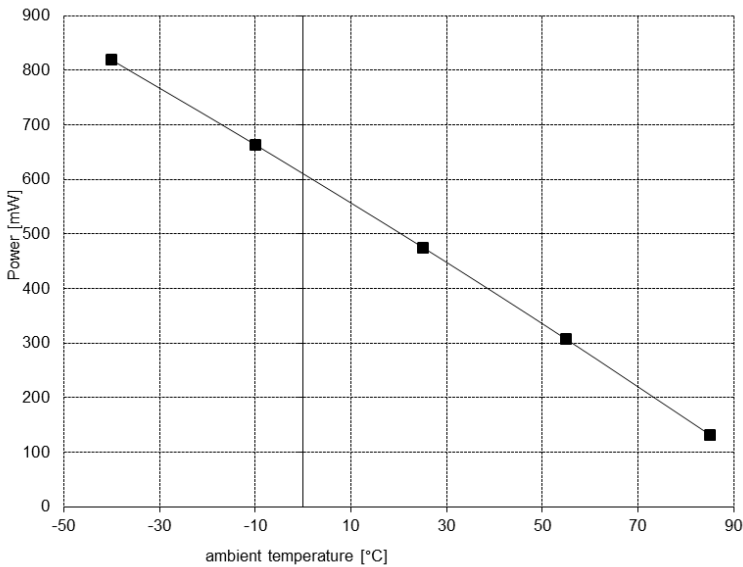
typical current consumption during power on

@ OX-5021-EAE-1080-20M000



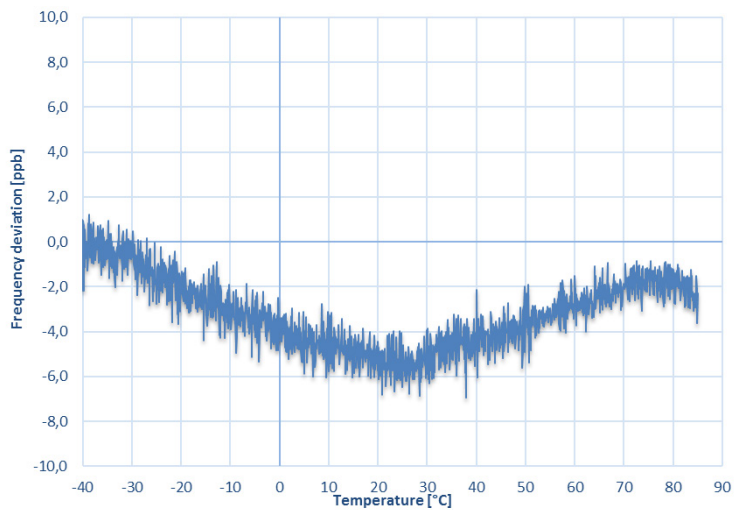
typical power consumption vs. operating temperature

@ OX-5021-EAE-1080-20M000



typical frequency vs. temperature stability

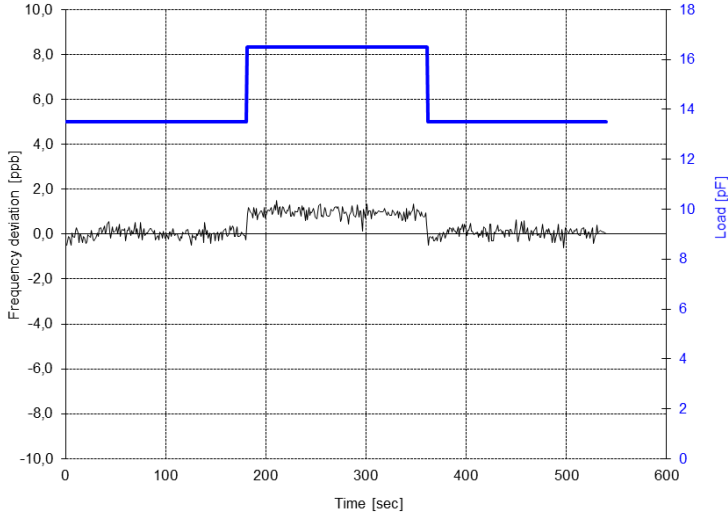
@ OX-5021-EAE-1080-20M000



typical performance data

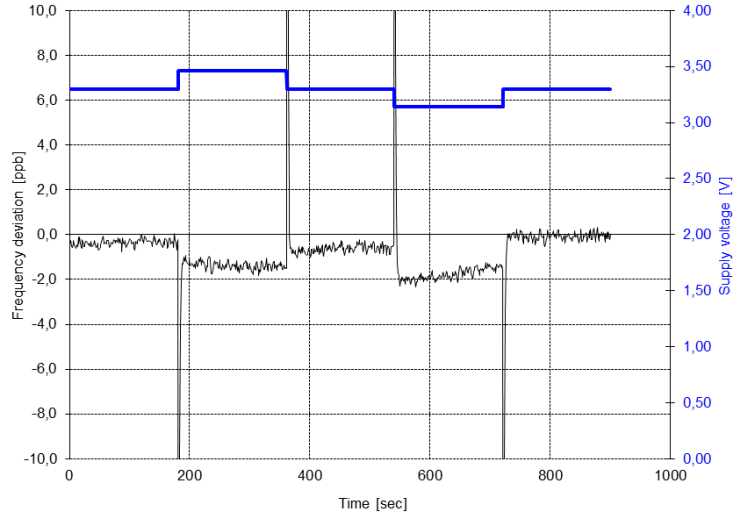
typical frequency vs. load change

@ OX-5021-EAE-1080-20M000



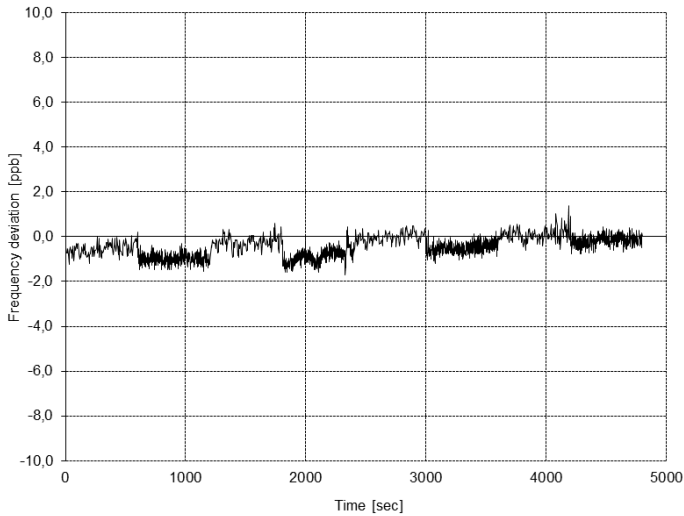
typical frequency vs. supply voltage

@ OX-5021-EAE-1080-20M000



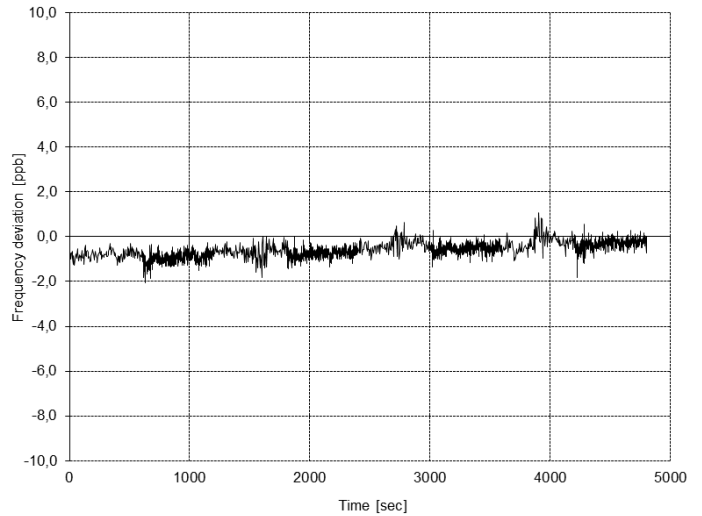
typical frequency. vs cycled airflow without additional cover

@ OX-5021-EAE-1080-20M000



typical frequency. vs cycled airflow with additional cover

@ OX-5021-EAE-1080-20M000



typical performance data

typical MTIE @ 3mHz loop Bandwidth

@ OX-5021-EAE-1080-20M000

typical TDEV @ 3mHz loop Bandwidth

@ OX-5021-EAE-1080-20M000

