


**OX-400 / 401**

### Features

- 4-Pin Dip
- Fast warm-up
- TCXO replacement for better short term stability
- Frequency Range, 10 MHz to 40 MHz
- Standard frequencies, 10,19.44,20,24.576,25,26,38.88, 40 MHz;

### Applications

- Base stations
- Test equipment
- Synthesizers
- Military communication equipment

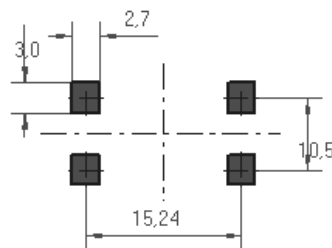
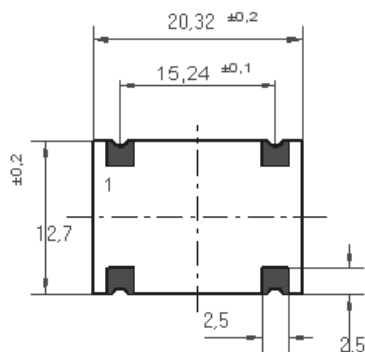
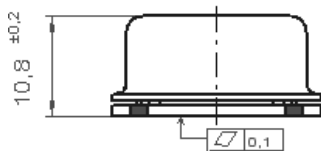
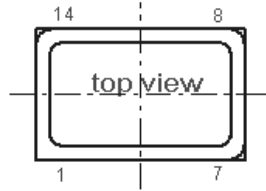
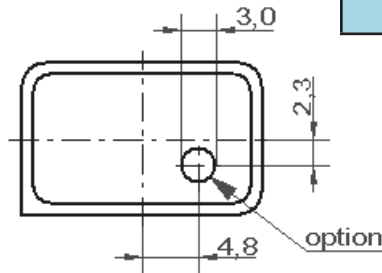
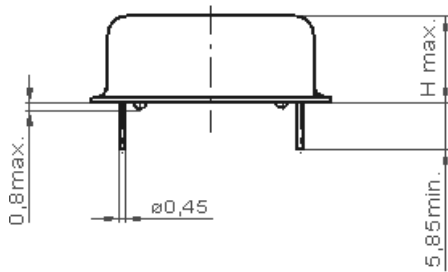
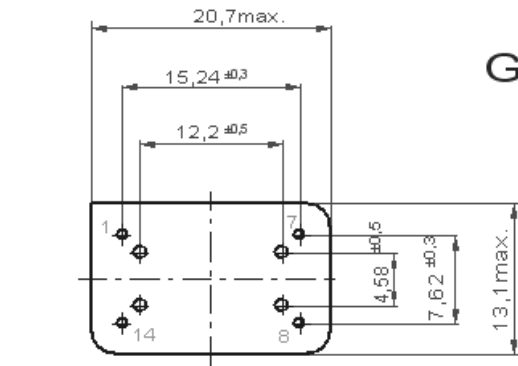
### Performance Specifications

Frequency Stabilities <sup>1</sup> ( 10 to 40 MHz)					
Parameter	Min	Typical	Max	Units	Condition
vs. operating temperature range (referenced to +25°C)	-5		+5	ppb	-40 to +85°C
	-10		-10	ppb	-40 to +85°C
	-10		-10	ppb	-40 to +95°C
Initial tolerance	-0.2		+0.2	ppm	at time of shipment, nominal EFC
vs. supply voltage change	-10		+10	ppb	V <sub>s</sub> ±5% static
vs. load change	-10		+10	ppb	Load ±5% static
vs. aging / day	-1.0		+1.0	ppb	after 30 days of operation
vs. aging / year	-100		+100	ppb	after 30 days of operation
vs. aging / 10 years	-1000		+1000	ppb	after 30 days of operation
hold over					
start up time					
Warm-up time			3	minutes	to ±100ppb of final frequency (1 hour reading) @ +25°C

## Performance Specifications

Supply Voltage (Vs)						
Parameter	Min	Typical	Max	Units	Condition	
Supply voltage (standard)	3.135	3.3	3.465	VDC		
	4.75	5.0	5.25	VDC		
Power consumption			2.5	Watts	during warm-up	
			1.0	Watts	steady state @ +25°C	
RF Output						
Signal [standard]	HCMOS					
Load		15		pF		
Signal Level (Vol)			0.4	VDC	with Vs=3.3V and 15pF Load	
Signal Level (Vol)			0.5		with Vs=5.0V and 15pF Load	
Signal Level (Voh)	2.4			VDC	with Vs=3.3V and 15pF Load	
Signal Level (Voh)	3.5				with Vs=5.0V and 15pF Load	
rise time			5	ns		
fall time			5	ns		
Duty Cycle	45		55	%	@ (Voh-Vol)/2	
Frequency Tuning (EFC)						
Tuning Range	Fixed OCXO; No adjust				Opti- on <sup>s</sup>	
	±1.0		±3	ppm		
Linearity	10%					
Tuning Slope	Positive					
Control Voltage Range	0.0	1.4	2.8	VDC	with Vs=3.3V	
	0.0	2	4.0	VDC	with Vs=5.0V	
Additional Parameters						
Phase Noise <sup>3</sup>		-85 -121 -140 -152 -155		dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz	1 Hz 10 Hz 100 Hz 1 kHz 10 kHz	@ 20MHz
Weight			8.0	g		
Processing & Packing	Handling & Processing Note					
Absolute Maximum Ratings						
supply voltage (Vs)			5.5	V	with Vs=3.3 & 5.0 VDC	
Output Load			50	pF		
Operable Temperature Range	-45		+85	°C		
Storage Temperature Range	-45		+85	°C		

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Padvorschlag  
PCB Layout

OX-400

Height "H"	Pin Length "L"
8.5	5.85min.

Pin Connections

1	Electronic Frequency Control Input (EFC)
7	Ground (Case)
8	RF Output
14	Supply Voltage Input

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OX-401

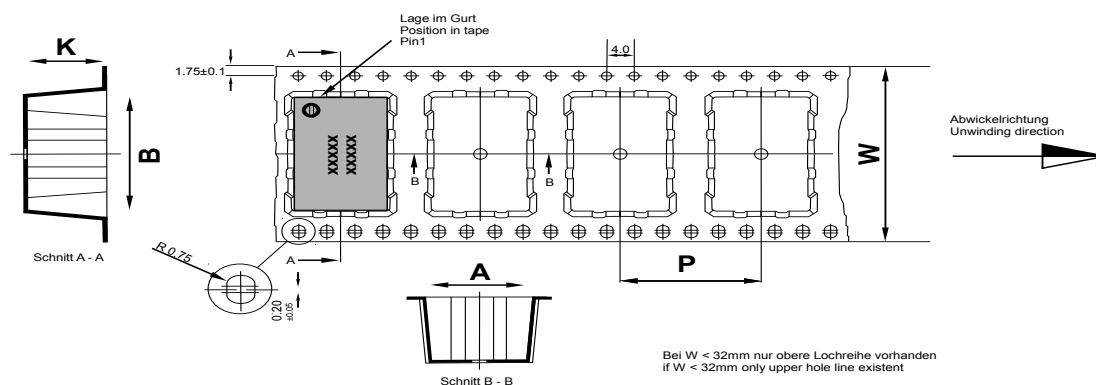
Height "H"	Pin Length "L"
10.8	N/A

Pin Connections

1	Electronic Frequency Control Input (EFC)
7	Ground (Case)
8	RF Output
14	Supply Voltage Input

Dimensions in inches mm

## Standard Shipping Method (OX-401)



Enclosure Type	Tape Width W (mm)	Quantity per meter	Quantity per reel	Dimension P
Typ OX-401	32	50	250	20

## Standard Shipping Method (OX-400)

Enclosure Type	Method	columns	rows	Quantity per Tray
Typ OX-400	Tray	10	8	80

## 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	JESD22-B104-B 100G 1,5ms 6 shocks in each direction
Solderability	J_STD_002C Cond A, Through hole device/ Cond. B, SMD 255C (dipping 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-E Class 2 10* 2000V
Moisture Sensit.	Level 1 JESD22-A113-B
RoHS compliance	100% RoHS 6 compliant
Washable	washable device

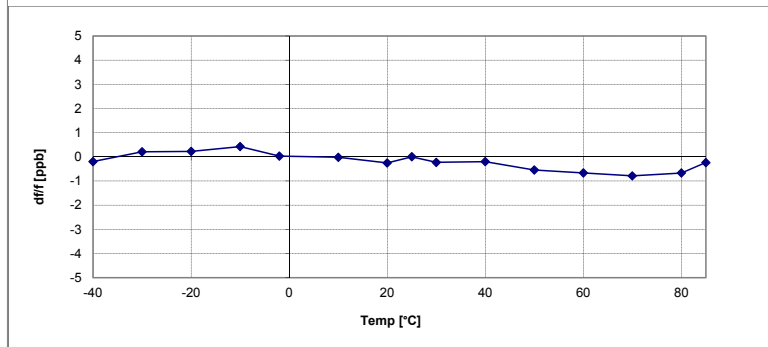
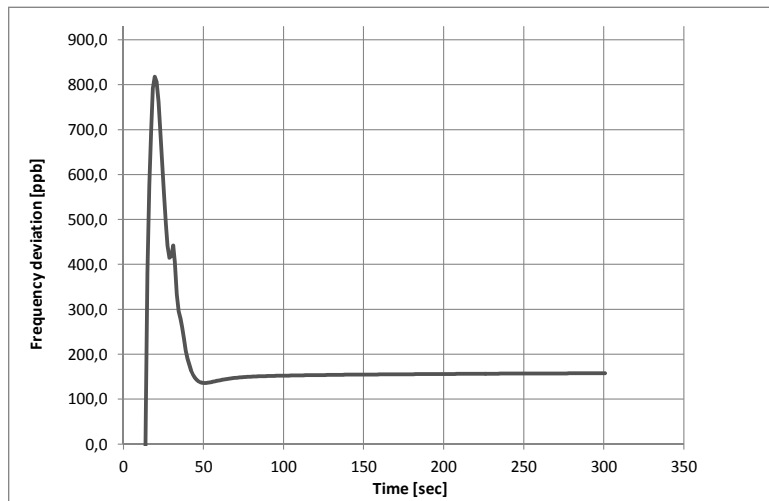
# typical performance data

## typical warm up

@ OX-400-EAE-1080-20M000

## typical temp stability

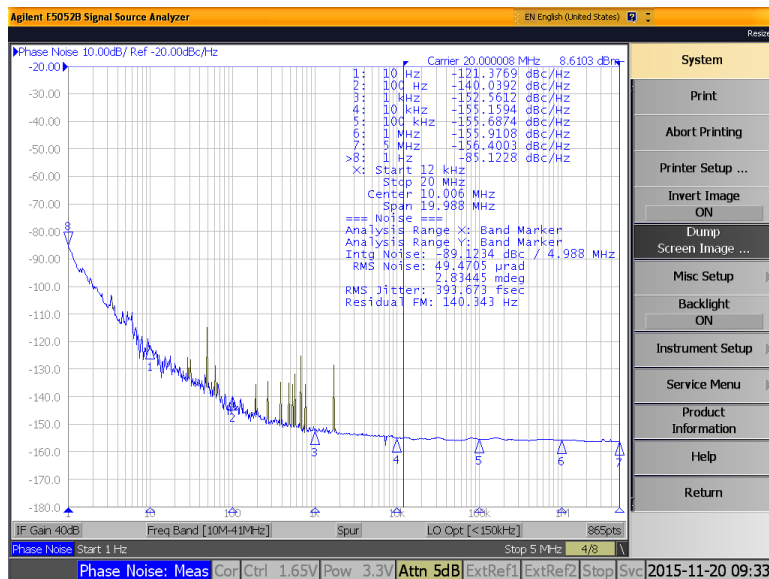
@ OX-400-EAE-1080-20M000



## typical Phase Noise

@ OX-400-EAE-1080-20M000

@ OX-400-EAE-1080-20M000



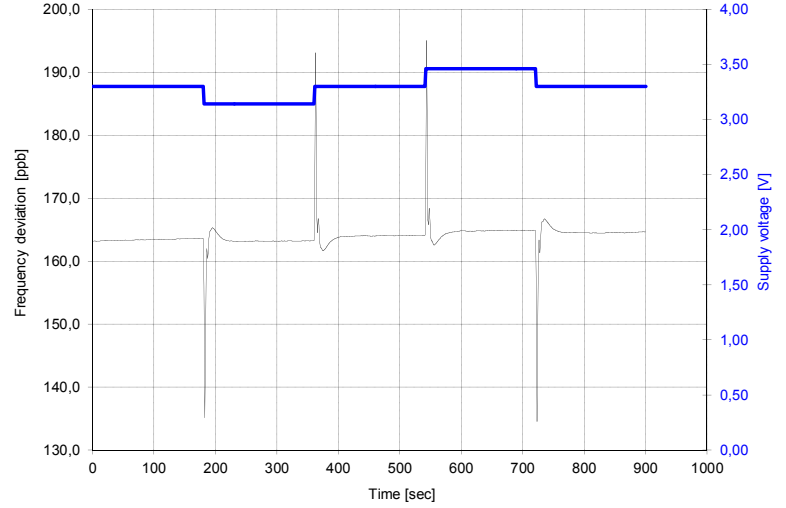
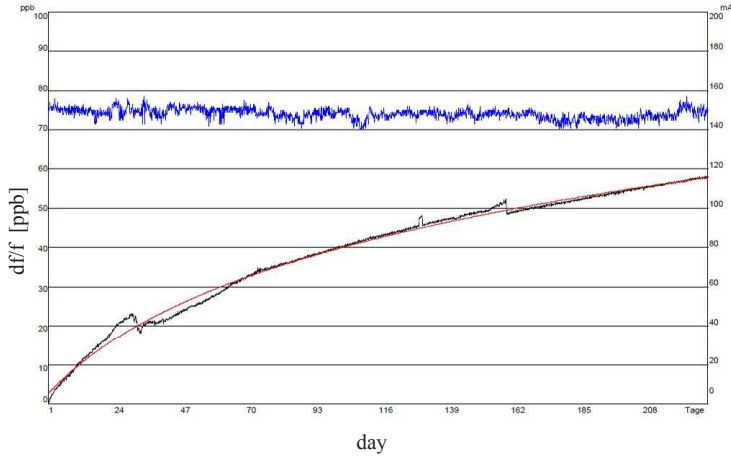
# typical performance data

## typical aging data

@ OX-400-EAE-1080-20M000

## typical frequency vs. supply voltage

@ OX-400-EAE-1080-20M000

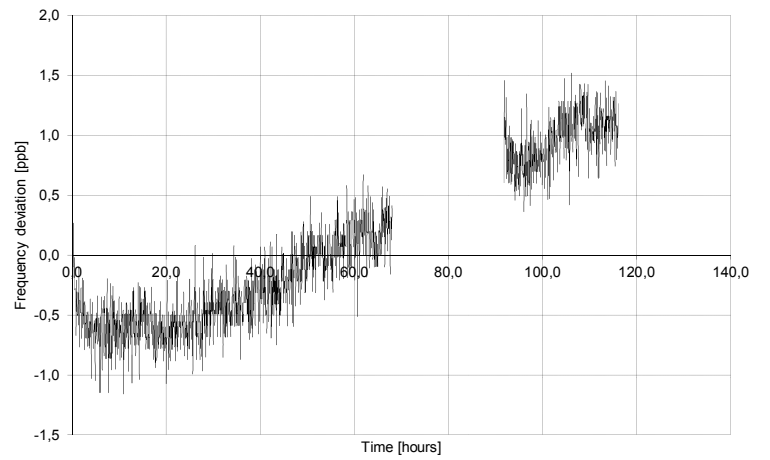
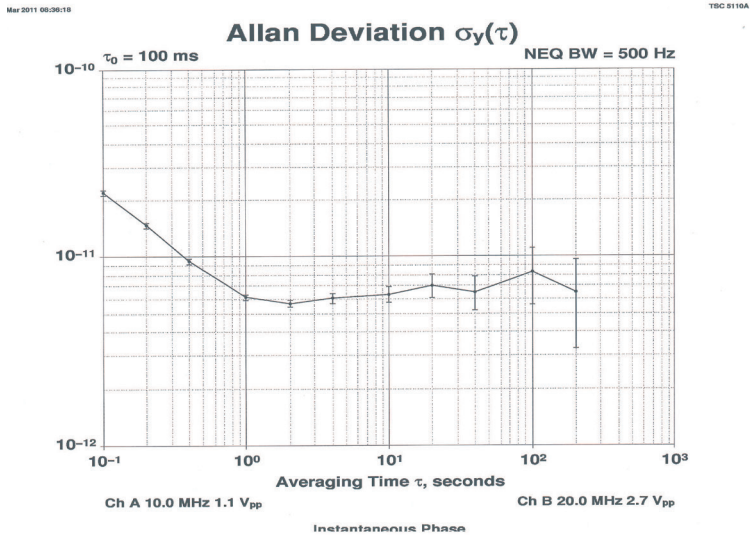


## typical ADEV

@ OX-400-EAE-1080-20M000

## typical retrace

@ OX-400-EAE-1080-20M000



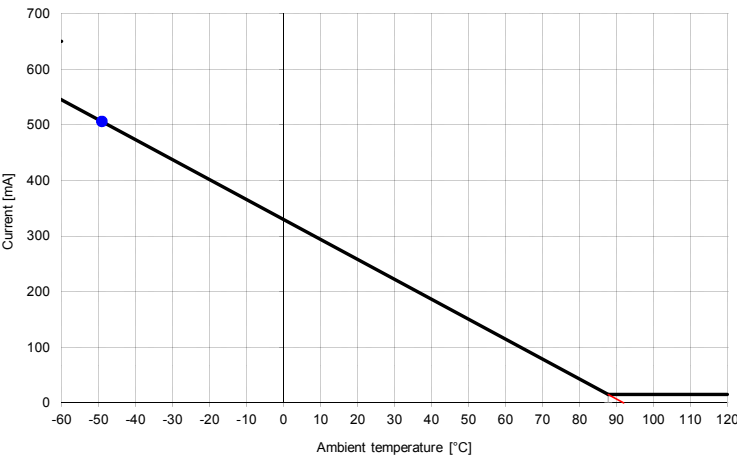
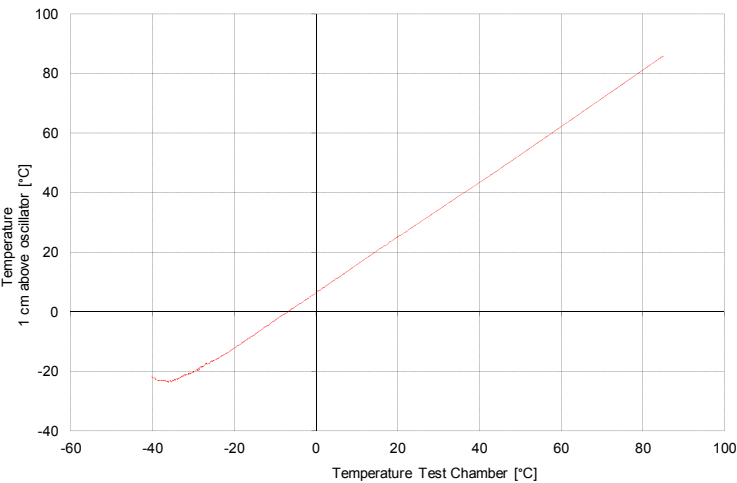
typical performace data

typical case temperature vs outside temperature

@ OX-400-EAE-1080-20M000

typical power consumption vs operating temperauture

@ OX-400-EAE-1080-20M000

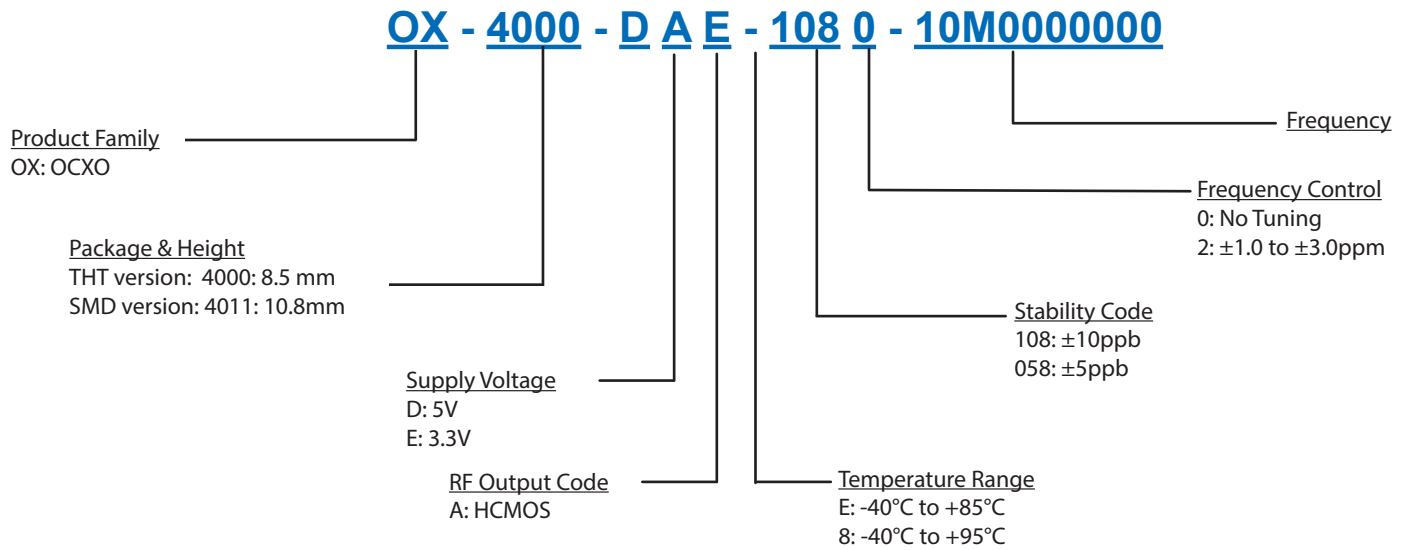


recomended power on time after x days of power off

@ OX-400-EAE-1080-20M000



## 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.



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