OX-400 / OX 401

Oven Controlled Crystal Oscillator

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[1] (SC-Cut Crystal 10 to 40 MHz)					
Parameter	Min	Typical	Max	Units	Condition
vs. operating temperature range (referenced to +25°C)	-5 -10 -5 -10 -10		+5 +10 +5 -10 -10	ppb ppb ppb ppb ppb	-20 to +70°C -20 to +70°C -40 to +85°C -40 to +85°C -40 to +95°C
Initial tolerance vs. supply voltage change vs. load change vs. aging / day vs. aging / year vs. aging / 10 years	-0.2 -10 -10 -1.0 -100 -1000		+0.2 +10 +10 +1.0 +100 +1000	ppm ppb ppb ppb ppb ppb	at time of shipment, nominal EFC V_S ±5% static Load ±5% static after 30 days of operation after 30 days of operation 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

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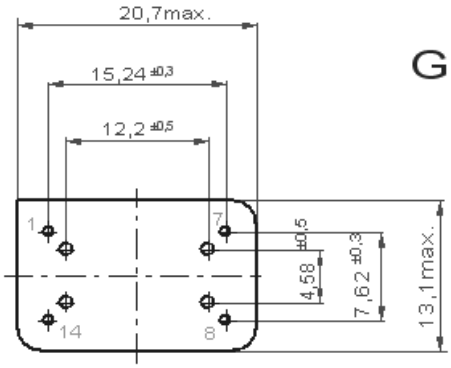
Performance Specifications

Parameter	Min	Typical	Max	Units	Condition	
Supply Voltage (Vs)						
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					Option[5]
	±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[3]		-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		

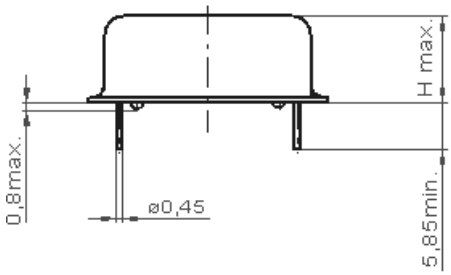
Outline Drawing / Enclosure

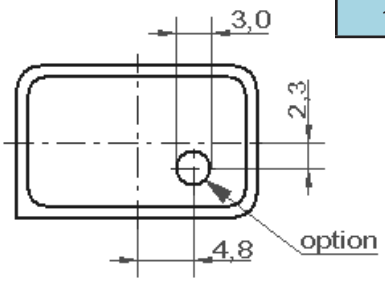
G 125



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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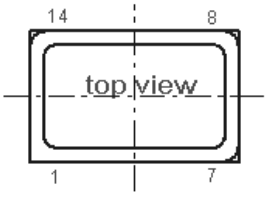
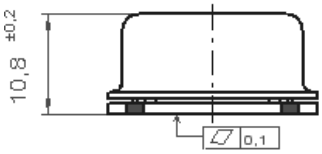


OX-401	
Height "H"	Pin Length "L"
10.8	N/A



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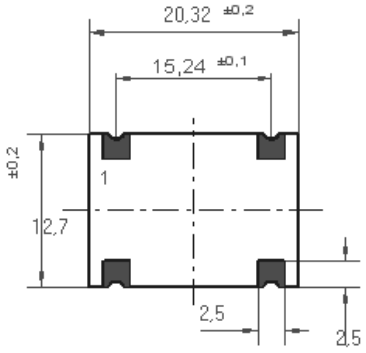
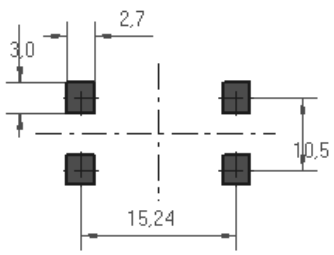
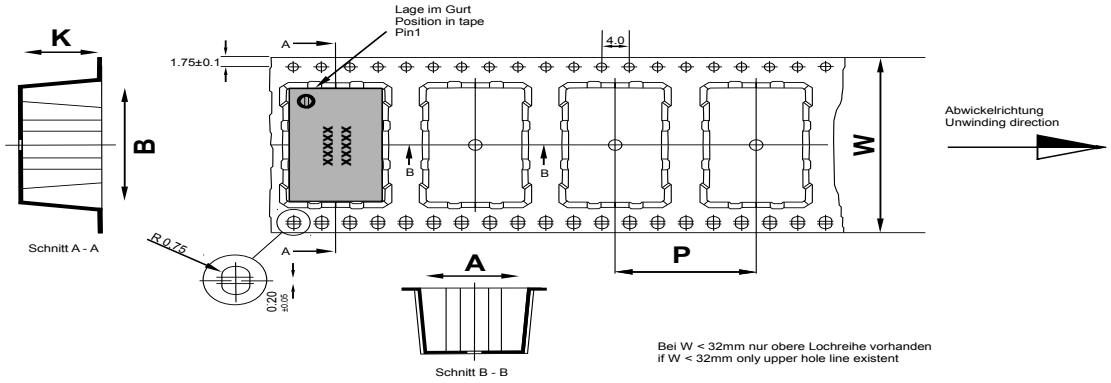




Padvorschlag
PCB Layout

Dimensions in inches mm

Standard Shipping Method (OX-401)



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

All dimensions in millimeters unless otherwise stated

Enclosure Type	Tape Width W (mm)	Quantity per meter	Quantity per reel	Dimension P
Typ OX-401	44	50	300	20

Standard Shipping Method (OX-400)

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

Recommended Reflow Profile

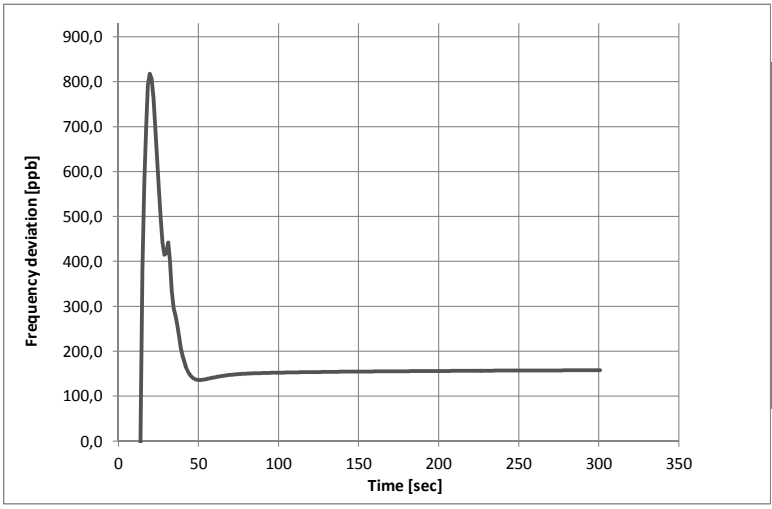
IPC/JEDEC J-STD-020 (latest revision)
Additional Information:
This SMD oscillator has been designed for pick and place reflow soldering.
SMD oscillators must be on the top side of the PCB during the reflow process.

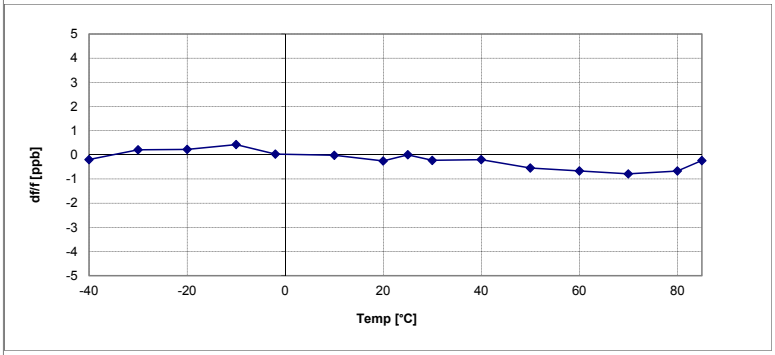
Additional Environmental Conditions

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 (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-E Class 2 10* 2000V
Moisture Sensit.	Level 1 JESD22-A113-B
RoHS compliance	100% RoHS 6 compliant
Washable	washable device

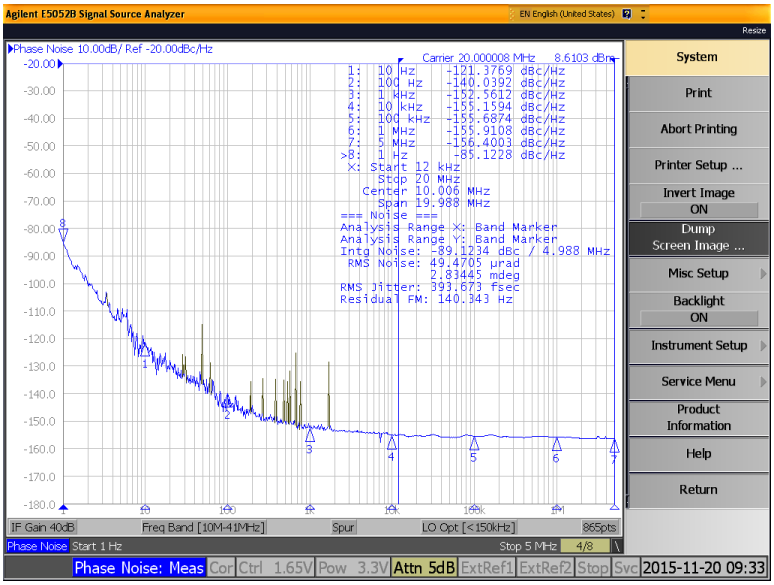
typical perforamce data

typical warm up	typical temp stability
@ OX-400-EAE-1080-20M000	@ OX-400-EAE-1080-20M000





typical Phase Noise	
@ OX-400-EAE-1080-20M000	@ OX-400-EAE-1080-20M000



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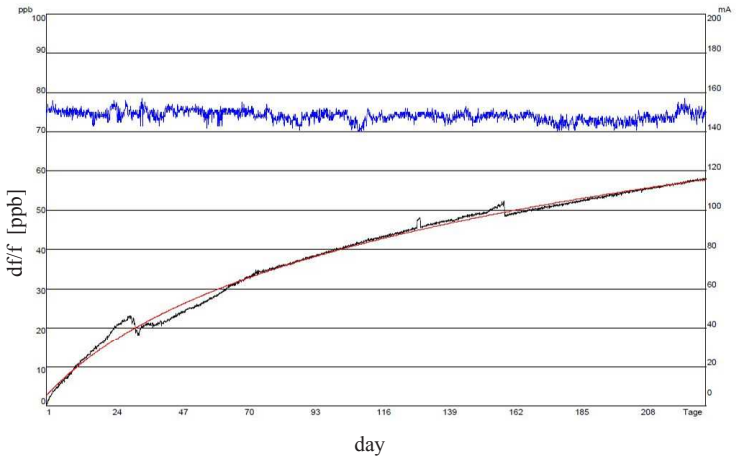
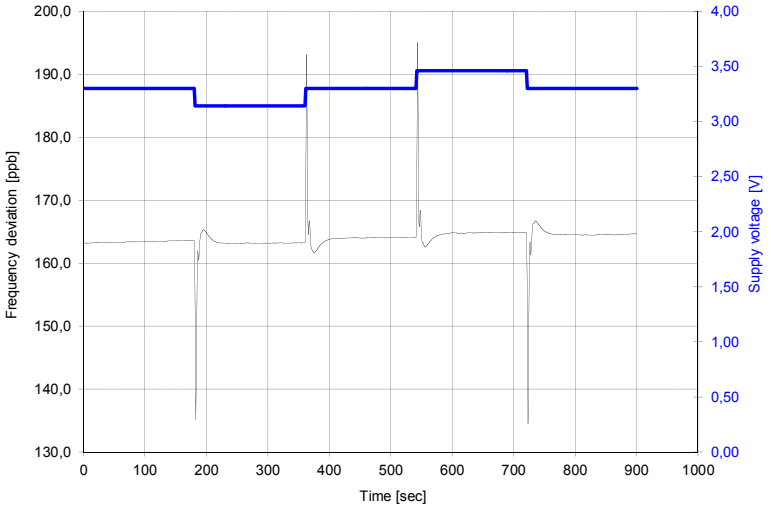
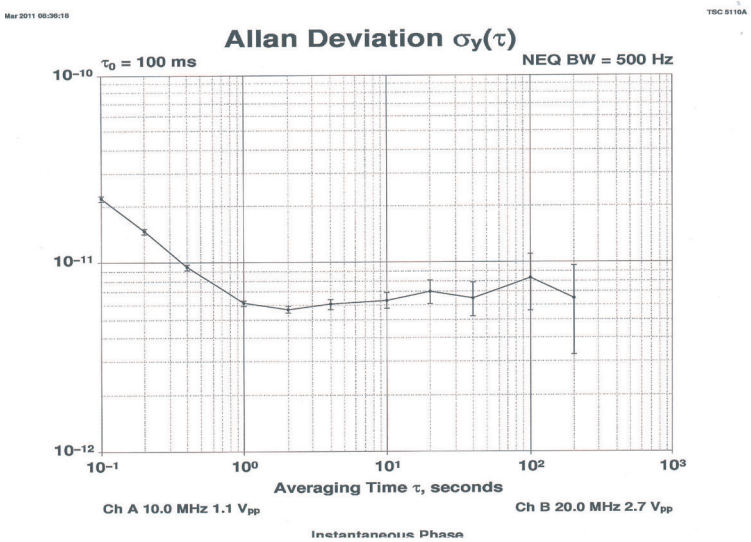
typical perforamce data

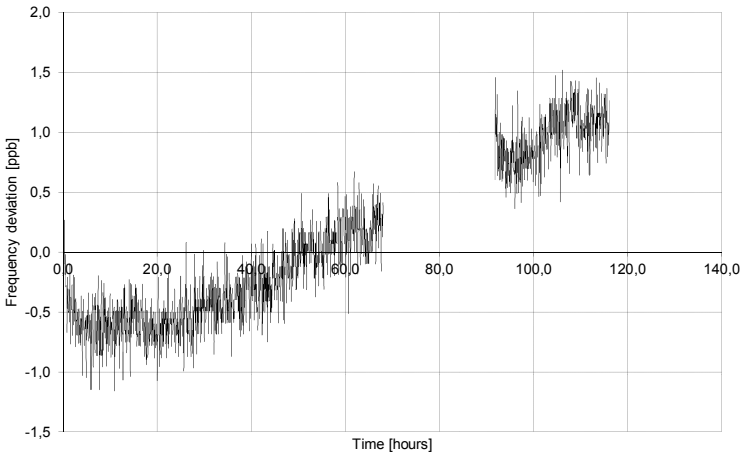
typical aging data	typical frequeny vs. supply voltage
@ OX-400-EAE-1080-20M000	@ OX-400-EAE-1080-20M000





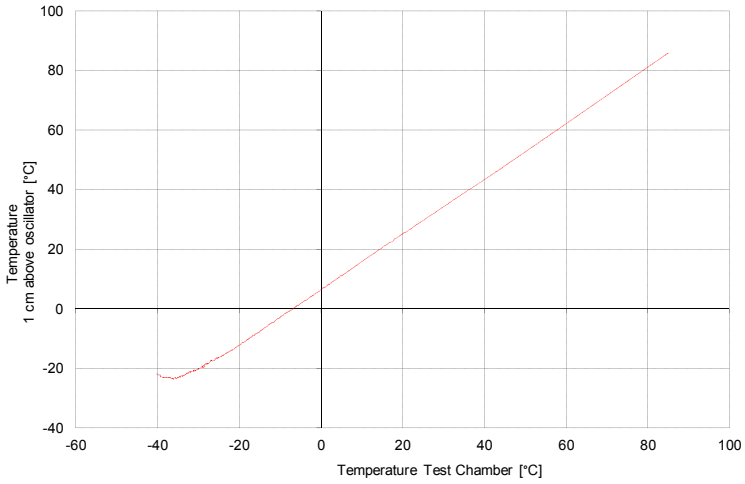
typical ADEV	typical retrace
@ OX-400-EAE-1080-20M000	@ OX-400-EAE-1080-20M000

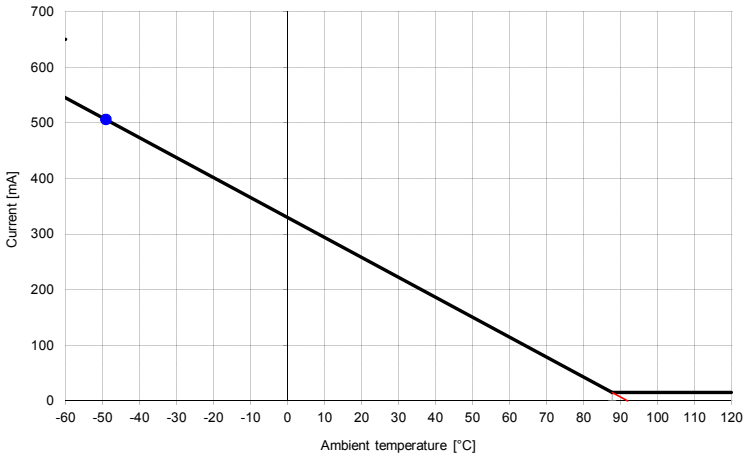




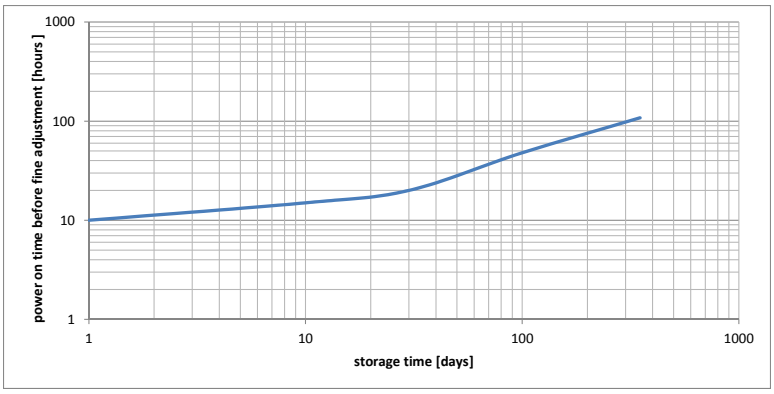
typical perforamce data

typical case temperature vs outside temperature	typical power consumption vs operating temperauture
@ OX-400-EAE-1080-20M000	@ OX-400-EAE-1080-20M000



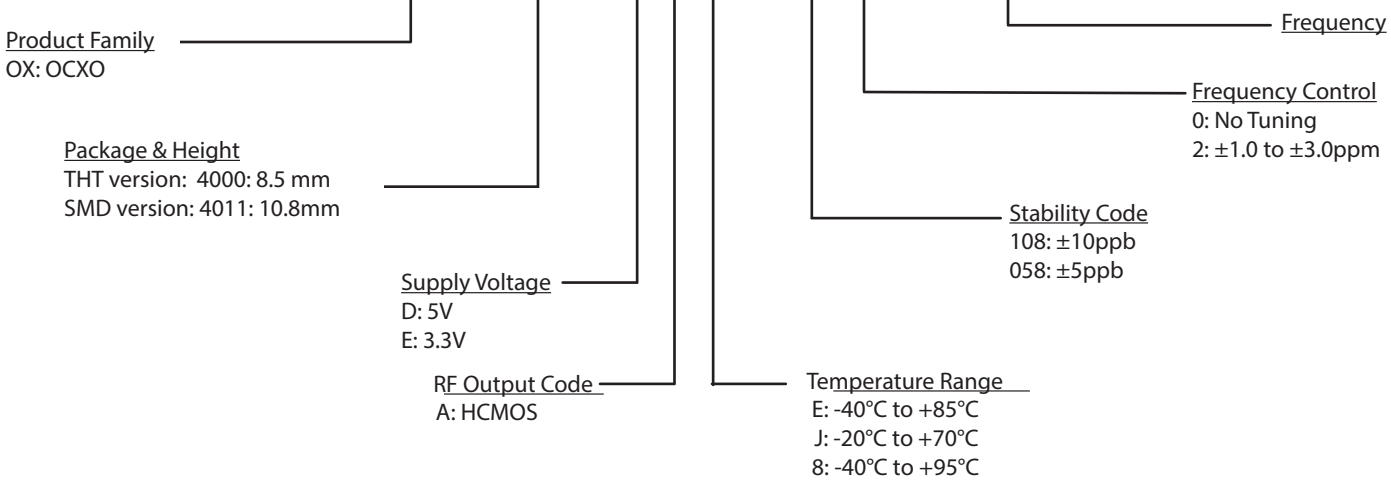


recomended power on time after x days of power off	
@ OX-400-EAE-1080-20M000	



Ordering Information

OX - 4000 - D A E - 108 0 - 10M0000000



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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