OX-405

Oven Controlled Crystal Oscillator

Features

- 4-Pin Dip
- Fast Warm-up
- Frequency Range: 80 MHZ to 120 MHZ
- Low g-sensitivity
- Low Phase Noise

Applications

- Base Stations
- Test Equipment
- Synthesizers
- Military Communication Equipment

Performance Specifications

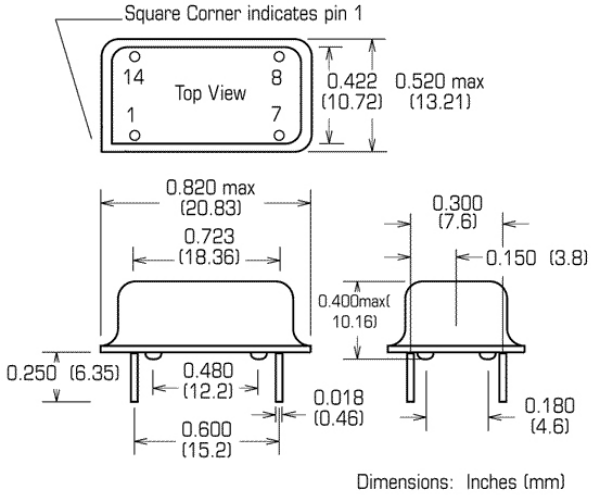
Frequency Stabilities[1] (SC-Cut Crystal-Option)					
Parameter	Min	Typical	Max	Unit	Condition
vs. operating temperature range (referenced to +25°C)	-200 -150 -100 -50 -35 -25		+200 +150 +100 +50 +35 +25	ppb ppb ppb ppb ppb ppb	-40 to +85°C -20 to +70°C -0 to +70°C -40 to +85°C (height code 0 and 3 only) -20 to +70°C (height code 0 and 3 only) -0 to +70°C (height code 0 and 3 only)
Initial tolerance vs. supply voltage change vs. load change vs. aging/day vs. aging/1st year	-400 -50 -25 -10 -3 -300		+400 +50 +25 +10 +3 +300	ppb ppb ppb ppb ppb ppb	at time of shipment, nominal EFC V_S ±5% static (CMOS outputs) V_S ±5% static (sine outputs) Load ±5% static after 30 days of operation after 30 days of operation
Warm-up time			2	minutes	to ±100ppb of final frequency (1 hour reading) @ +25°C

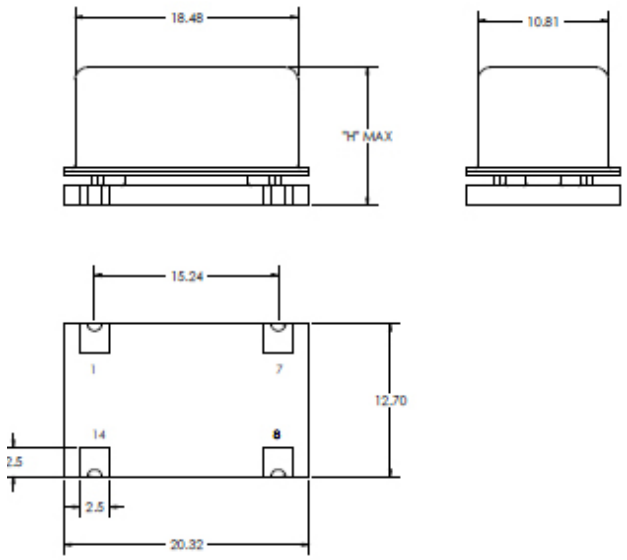
Performance Specifications

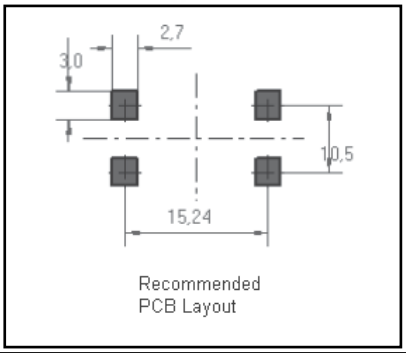
Supply Voltage (Vs)					
Parameter	Min	Typical	Max	Unit	Condition
Supply Voltage	4.75	5.0	5.25	VDC	
	3.165	3.3	3.465	VDC	
Power Consumption			3.5 4.5 1.0	Watts Watts Watts	during warm-up (5V versions) during warn-up (3V version) steady state @ +25°C
RF Output					
Signal [Standard]		HCMOS			
Load		15		pF	
Signal Level (Vol)			0.5	VDC	with Vs=5V and 15 pF Load
Signal Level (Voh)	4.7			VDC	with Vs=5V and 15 pF Load
Signal Level (Vol)			0.3	VDC	with Vs=3.3V and 15 pF Load
Signal Level (Voh)	3.0			VDC	with Vs=3.3V and 15 pF Load
Duty Cycle	40		60	%	@ (Voh-Vol)/2
	Sinewave (5V supply, height code 0 or 3 only)				
Load		50		Ω	
Output Power @ 5V	5	8	11	dBm	50 Ω load
Harmonics			-40	dBm	
Frequency Tuning (EFC)					
Tuning Range	±1.0		±3.0	ppm	
Linearity			5	%	
Tuning Slope		Positive			
Control Voltage Range	0.0	2.0	4.0	VDC	5 V versions
	0	1.5	3.0	VDC	3.3 V versions
Additional Parameters					
Phase Noise[3]			-95 -125 -145 -155 -160	dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz	10 Hz 100 Hz 1 kHz 10 kHz 100 kHz @ 100MHz
G-Sensitivity			1 0.5	ppb/g ppb/g	worst direction - standard worst direction - request a custom part
Weight			8	g	
Absolute Maximum Ratings					
Supply Voltage (Vs)			6.0	V	
Output Load			50	pF	
Operable Temperature Range	-55		+85	°C	
Environmental and Product Classification					
Shock (Endurance)	MIL-STD-202, Method 213, Condition J, 30 g 11 ms				
Sine Vibration (Endurance)	MIL-STD-202, Method 201 and 204, Condition A, except 5 g to 500 Hz, 1 sweep each axis				
Random Vibration (Endurance)	MIL-STD-202, Method 214, Condition I-D				
Humidity	MIL-STD-202, Method 103, Condition B, 100% rh				
Seal	MIL-STD-202, Method 112, Condition D				
Altitude	MIL-STD-202, Method 105, sea level to space				
Resistance to Soldering Heat	MIL-STD-202, Method 210, Condition A,B,C				
Terminal Strength	MIL-STD-202, Method 11, Condition C (5 bends at 45°, 2 lbs)				
Moisture Sensitivity level	1				
ROHS Compliantt	Yes				
Storage Temperature Range	-55		+125	°C	

Performance Specifications

Outline Drawing / Enclosure







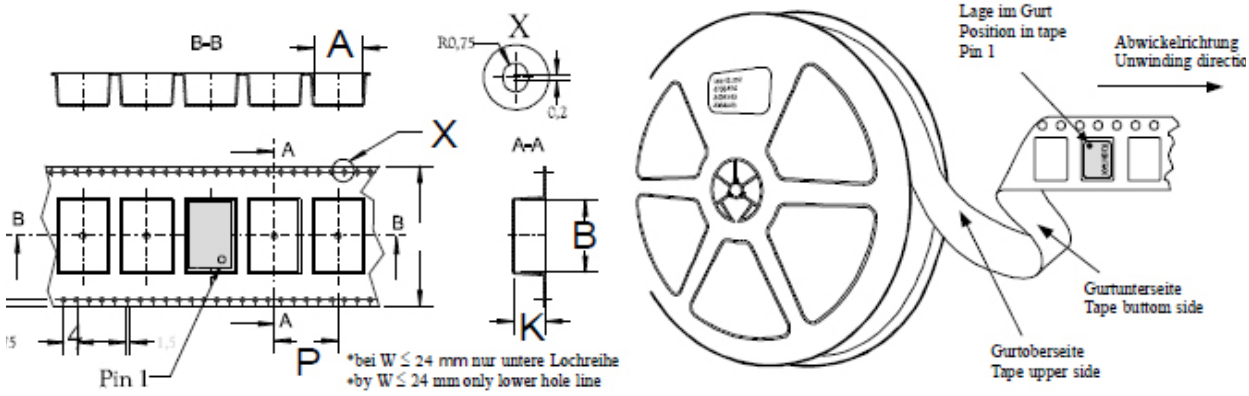
Dimensions in inches (mm)

Type A		
Code	Height "H"	Pin Length "L" Min
0	9.3	5.85
1	8.3	5.85
Pin Connections		
1	Electronic Frequency Control Input (EFC)	
7	Ground (Case)	
8	RF Output	
14	Supply Voltage Input (VS)	

Dimensions in mm

Type B		
Code	Height "H"	Pin Length "L" Min
2	10.4	NA
3	11.4	NA
Pin Connections		
1	Electronic Frequency Control Input (EFC)	
7	Ground (Case)	
8	RF Output	
14	Supply Voltage Input (VS)	

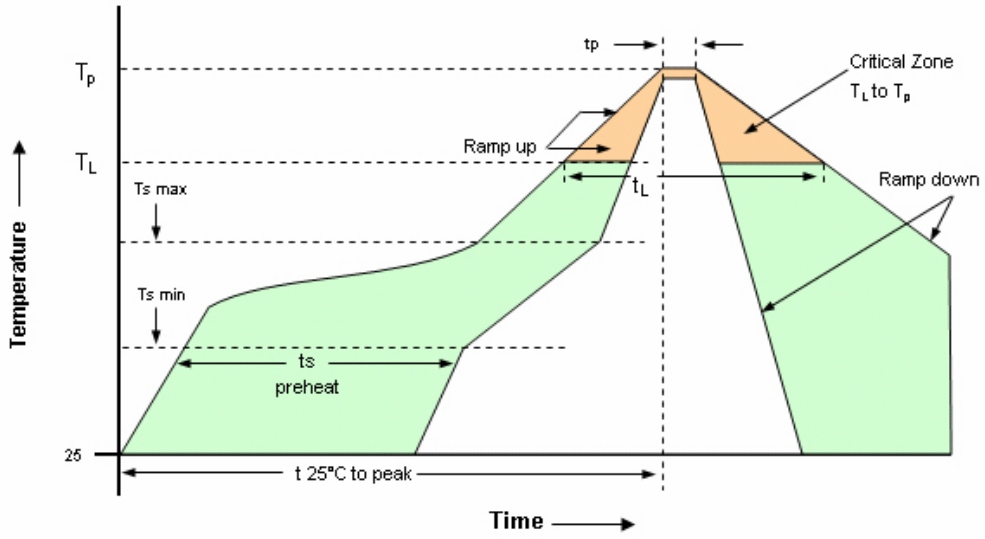
Standard Shipping Method



Enclosure Type	Tape width W [mm]	Quantity per meter	Quantity per reel	Dimension P
Type B	44	50	300	20

Recommended Reflow Profile

Solderprofile:



Profile Feature	Pb-Free Assembly /Sn-Pb Assembly	Profile Feature	Pb-Free Assembly /Sn-Pb Assembly
Average ramp-up rate (T_L to Tp)	3°C/second max.	Time 25°C to Peak Temperature	8 minutes max.
Preheat -Temperature Min Ts_{min}) -Temperature Min Ts_{max}) -Time (min to max) (ts)	150°c 200°c 60-180 seconds	Time maintainted above - Temperature (T_L) - Time (t_L)	217°C 60-150 seconds
Ts_{max} to T_L - Ramp-up Rate	3°C/second max.		
Time maintainted above - Temperature (T_L) - Time (t_L)	217°C 60-150 seconds	Time within 5°C of actual Peak Temperature (tp)	20-40 seconds
Peak Temperature (Tp)	max 260°C	Ramp-down Rate	6°C/second max.

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

Ordering Information

OX - 405 0 - D A E - 107 0 - 100M0000000

Product Family
OX: OCXO

Package
405

Height
0: A9.3 mm (THT)
1: A8.3 mm (THT)
2: B10.4 mm (SMD)
3:B11.4mm (SMD)

Supply Voltage
D: +5V
E:+3.3V (HCMOS only)

RF Output Code
A: HCMOS
E:Sinewave (height code 0 and 3 only)

Temperature Range
E: -40°C to +85°C
J: -20°C to +70°C
T: 0°C to +70°C

Stability Code
207: ±200ppb
157: ±150ppb
107: ±100ppb
508: ±50ppb (height code 0 and 3 only)
358: ±35ppb (height code 0 and 3 only)
258: ±25ppb (height code 0 and 3 only)

Frequency Control
0: No Tuning
2: ±1.0 to ±3ppm

Frequency

G Sensitivity - standard parts will be delivered at 1 ppb/g
If 0.5ppb/g is requested please contact the factory and a custom part number will be assigned

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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