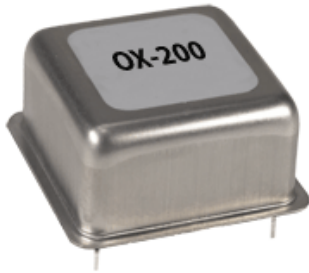


Helping Customers Innovate, Improve & Grow



OX-200

Features

- Reflow Process Compatible
- AT-Cut and SC-Cut Crystal Options
- Low Profile Compact Package

Applications

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

Performance Specifications

Frequency Stabilities ¹ (AT-Cut Crystal-Standard)					
Parameter	Min	Typical	Max	Unit	Condition
vs. operating temperature range (referenced to +25°C)	-50		+50	ppb	0 to +70°C
	-100		+100	ppb	-20 to +70°C
	-150		+150	ppb	-40 to +70°C
	-200		+200	ppb	-40 to +85°C
Initial tolerance vs. supply voltage change vs. load change vs. aging/day vs. aging/1st year vs. aging/year (following years)	-0.3		+0.3	ppm	at time of shipment, nominal EFC $V_s \pm 5\%$ static Load $\pm 5\%$ static after 30 days of operation after 30 days of operation after 30 days of operation
	-10		+10	ppb	
	-10		+10	ppb	
	-2		+2	ppb	
	-500		+500	ppb	
-250		+250	ppb		
Warm-up time			5	minutes	to ± 100 ppb of final frequency (1 hour reading) @ +25°C
Frequency Stabilities ¹ (SC-Cut Crystal-Option)					
vs. operating temperature range (referenced to +25°C)	-10		+10	ppb	0 to +70°C
	-20		+20	ppb	-20 to +70°C
	-25		+25	ppb	-40 to +70°C
	-30		+30	ppb	-40 to +85°C
Initial tolerance vs. supply voltage change vs. load change vs. aging/day vs. aging/1st year vs. aging/year (following years)	-100		+100	ppb	at time of shipment, nominal EFC $V_s \pm 5\%$ static Load $\pm 5\%$ static after 30 days of operation after 30 days of operation after 30 days of operation
	-5		+5	ppb	
	-5		+5	ppb	
	-1		+1	ppb	
	-100		+100	ppb	
-50		+50	ppb		
Warm-up time			5	minutes	to ± 10 ppb of final frequency (1 hour reading) @ +25°C

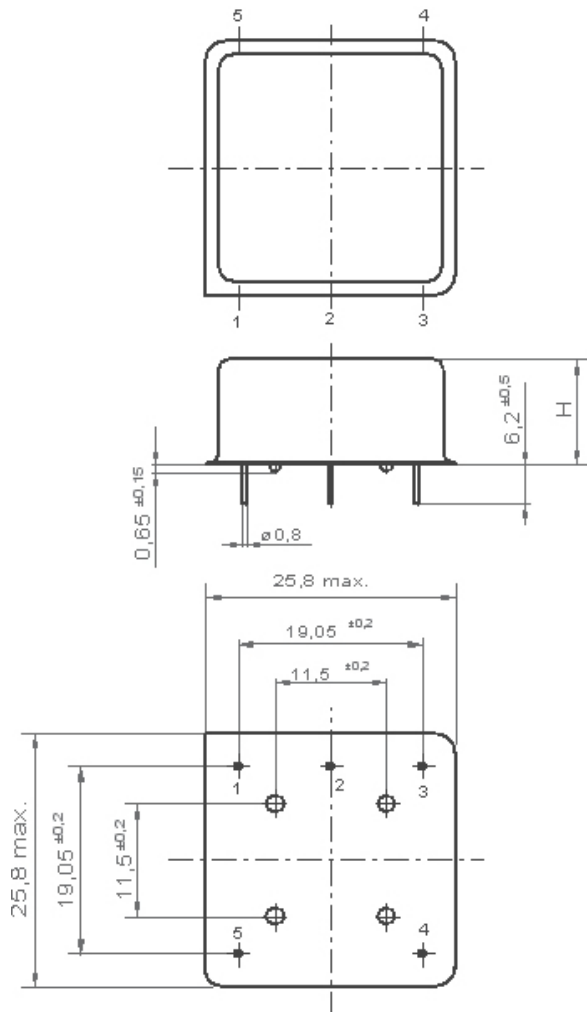
Performance Specifications

Supply Voltage (Vs)						
Parameter	Min	Typical	Max	Unit	Condition	
Supply Voltage	3.135	3.3	3.465	VDC		
Supply Voltage	4.75	5.0	5.25	VDC		
Supply Voltage	11.4	12.0	12.6	VDC		
Power Consumption			3.0 1.0	Watts Watts	during warm-up steady state @ +25°C	
RF Output						
Signal [Standard]	HCMOS					
Load		15		pF		
Signal Level (Vol)			0.4 0.5	VDC VDC	with Vs=3.3V and 15 pF Load with Vs=5V & 12V and 15 pF Load	
Signal Level (Voh)	2.4 3.5			VDC VDC	with Vs=3.3V and 15 pF Load with Vs=5V & 12V and 15 pF Load	
Duty Cycle	45		55	%	@ (Voh-Vol)/2	
Signal	Sinewave					
Load		50		Ohms		
Output Power	+2.0 +5.0	+5.0 +8.0	+8.0 +11.0	dBm dBm	with Vs=3.3V and 50 Ohm load with Vs=5V & 12V and 50 Ohm load	
Harmonics			-30	dBc	50 Ohm load	
Frequency Tuning (EFC)						
Tuning Slope	Fixed OCXO; No adjust					
Tuning Range	±3.0 ±0.75		±8.0 ±2.0	ppm ppm	with AT cut crystal with SC cut crystal	
Linearity			10	%		
Tuning Slope	Positive					
Control Voltage Range	0.0 0.0	1.4 2.0	2.8 4.0	VDC VDC	with Vs=3.3V with Vs=5V & 12V	
Reference Voltage Output (VRef)						
Reference Voltage	2.75 3.92 4.9	2.8 4.0 5.0	2.85 4.08 5.1	VDC VDC VDC	with Vs=3.3V with Vs=5V with Vs=12V	
Additional Parameters						
Phase Noise ³			-90 -120 -140 -145 -150	dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz	1 Hz 10 Hz 100 Hz 1 kHz 10 kHz	@ 10MHz with SC cut
Phase Noise ³			-75 -100 -130 -140 -150	dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz	1 Hz 10 Hz 100 Hz 1 kHz 10 kHz	@ 10MHz with AT cut
Weight			14	g		

Absolute Maximum Ratings						
Parameter	Min	Typical	Max	Unit	Condition	
Supply Voltage (Vs)			6.5 15	V V	with Vs=3.3V & 5V with Vs=12V	
Output Load			50	pF		
Operable Temperature Range	-55		+85	°C		
Storage Temperature Range	-55		+125	°C		

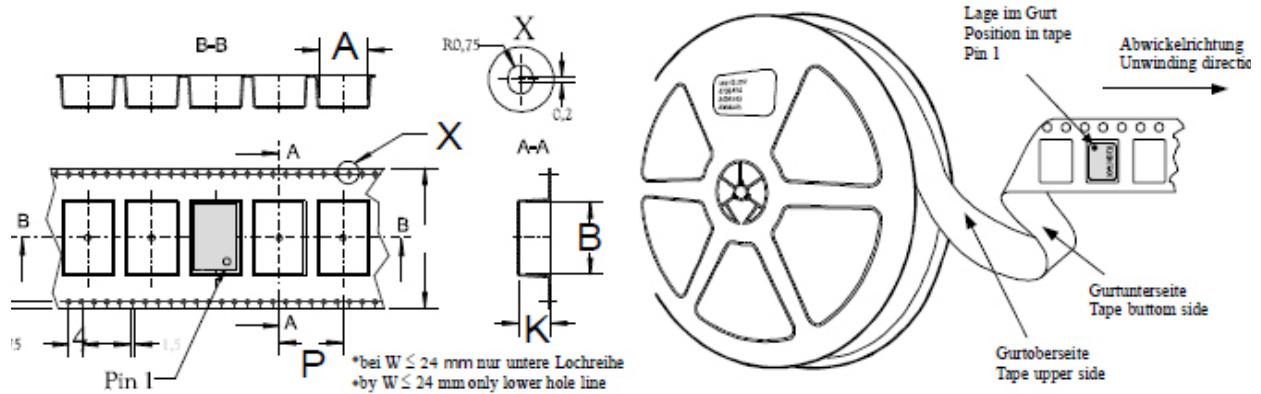
Environmental and Product Classification				
Shock (Endurance)	MIL-STD-202, Method 213, Condition J, 30 g 11 ms			
Sine Vibration (Endurance)	MIL-STD-202, Method 201 and 204, Condition A, except 5 g to 500 Hz, 1 sweep each axis			
Random Vibration (Endurance)	MIL-STD-202, Method 214, Condition I-D			
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 30,000 ft			
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 Sensitive Level	1			
RoHS	6 (fully compliant) - no pure tin options available upon request, the device will be assigned a customer part number , not orderable through ordering codes			
Storage Temperature Range	-55		+125	°C

Outline Drawing / Enclosure



OX-200		
Code	Height "H"	Pin Length "L" Min
0	10.4	6.2
1	12.7	6.2
2	13.4	6.2
Pin Connections		
1	RF Output	
2	Ground (Case)	
3	Electronic Frequency Control Input (EFC)	
4	Reference Voltage Option	
5	Supply Voltage Input (VS)	

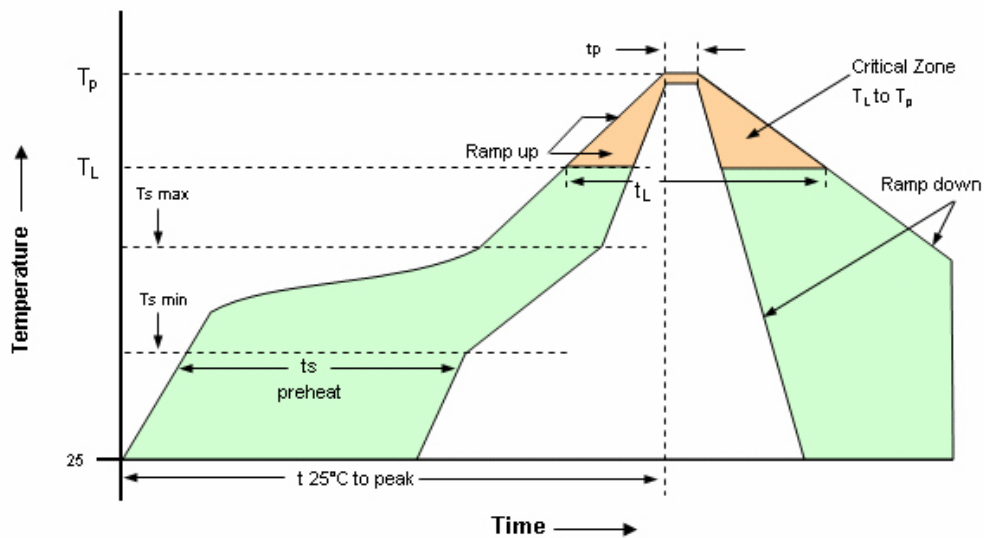
Standard Shipping Method



Enclosure Type	Tape width W [mm]	Quantity per meter	Quantity per reel	Dimension P
Type B	44	33.3	250	34
Type C	44	33.3	250	34

Recommended Reflow Profile

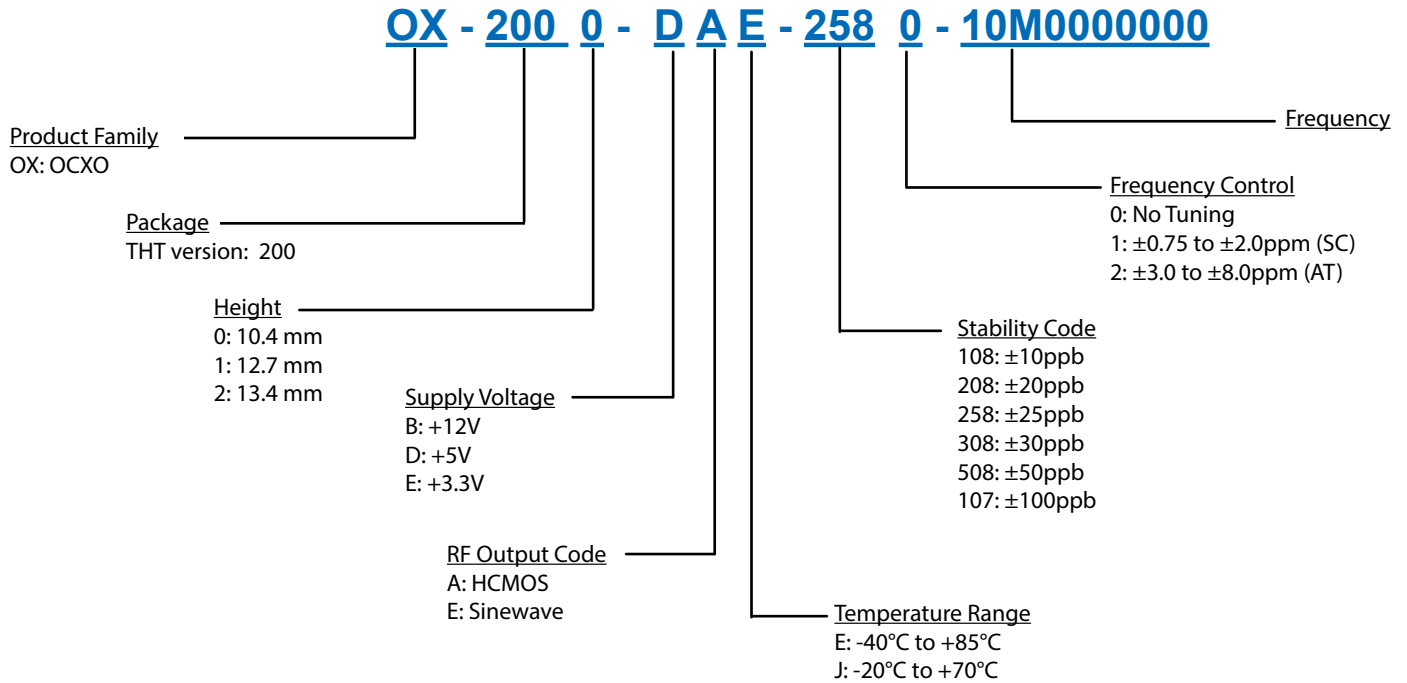
Solderprofile:



Profile Feature	Pb-Free Assembly /Sn-Pb Assembly	Profile Feature	Pb-Free Assembly /Sn-Pb Assembly
Average ramp-up rate (T_L to T_p)	3°C/second max.	Time 25°C to Peak Temperature	8 minutes max.
Preheat -Temperature Min T_{smin} -Temperature Min T_{smax} -Time (min to max) (t_s)	150°C 200°C 60-180 seconds	Time maintained above - Temperature (T_L) - Time (t_L)	217°C 60-150 seconds
T_{smax} to T_L - Ramp-up Rate	3°C/second max.		
Time maintained above - Temperature (T_L) - Time (t_L)	217°C 60-150 seconds	Time within 5°C of actual Peak Temperature (t_p)	20-40 seconds
Peak Temperature (T_p)	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



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

USA:

100 Watts Street
Mt Holly Springs, PA 17065
Tel: 1.717.486.3411
Fax: 1.717.486.5920

Europe:

Landstrasse
74924 Neckarbischofsheim
Germany
Tel: +49 (0) 7268.801.0
Fax: +49 (0) 7268.801.281



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