



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	Units	Condition	Options ⁵
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	-20 to +70°C	
	-200		+200	ppb	-40 to +85°C	
Initial tolerance	-0.3		+0.3	ppm	at time of shipment, nominal EFC	
vs. supply voltage change	-10		+10	ppb	V _s ±5% static	
vs. load change	-10		+10	ppb	Load ±5% static	
vs. aging / day	-2		+2	ppb	after 30 days of operation	
vs. aging / year	-500		+500	ppb	after 30 days of operation	
vs. aging / year (following year)	-250		+250	ppb	after 30 days of operation	
Warm-up time			5	minutes	to ±100ppb of final frequency (1 hour reading) @ +25°C	
Frequency Stabilities ¹ (SC-Cut Crystal-Option - 10 to 160 MHz)						
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	-20 to +70°C	
	-30		+30	ppb	-40 to +85°C	
Initial tolerance	-0.2		+0.2	ppm	at time of shipment, nominal EFC	
vs. supply voltage change	-5		+5	ppb	V _s ±5% static	
vs. load change	-5		+5	ppb	Load ±5% static	
vs. aging / day	-1		+1	ppb	after 30 days of operation	
vs. aging / year	-100		+100	ppb	after 30 days of operation	
vs. aging / year (following year)	-50		+50	ppb	after 30 days of operation	
Warm-up time			5	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	
	11.4	12.0	12.6	VDC	
Power consumption			3.0	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 & 12V 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 & 12V and 15pF Load
Duty Cycle	45		55	%	@ (Voh-Vol)/2
Signal	Sine Wave				
Load		50		Ω	
Output Power @3,3V	2	5	8	dBm	50 Ω load
Putput Power @ 5.0V	5	8	11	dBm	50 Ω load
Harmonics			-30	dBm	50 Ω load
Frequency Tuning (EFC)					
Tuning Range	Fixed OCXO; No adjust				
Tuning Range	±3.0		±8	ppm	with AT cut crystal
	±0.75		±2.0	ppm	with SC cut crystal
Linearity	10%				
Tuning Slope	Positive				
Control Voltage Range	0.0	1.4	2.8	VDC	with Vs=3.3V
	0.0	2.0	4.0		with Vs=5.0V
	0.0	2.0	4.0	VDC	with Vs=12.0V
Reference Voltage Output (Vref)					
Reference Voltage	2.75	2.8	2.85	VDC	with Vs = 3.3 VDC
	3.92	4.0	4.08	VDC	with Vs = 5.0 VDC
	4.9	5.0	5.1	VDC	with Vs =12 VDC
Additional Parameters					
Phase Noise ³			-90	dBc/Hz	1 Hz
			-120	dBc/Hz	10 Hz
			-140	dBc/Hz	100 Hz
			-145	dBc/Hz	1 kHz
			-150	dBc/Hz	10 kHz
Phase Noise ³			-75	dBc/Hz	1 Hz
			-100	dBc/Hz	10 Hz
			-130	dBc/Hz	100 Hz
			-140	dBc/Hz	1 kHz
			-150	dBc/Hz	10 kHz
Weight			14	g	
Processing & Packing	Handling & Processing Note				

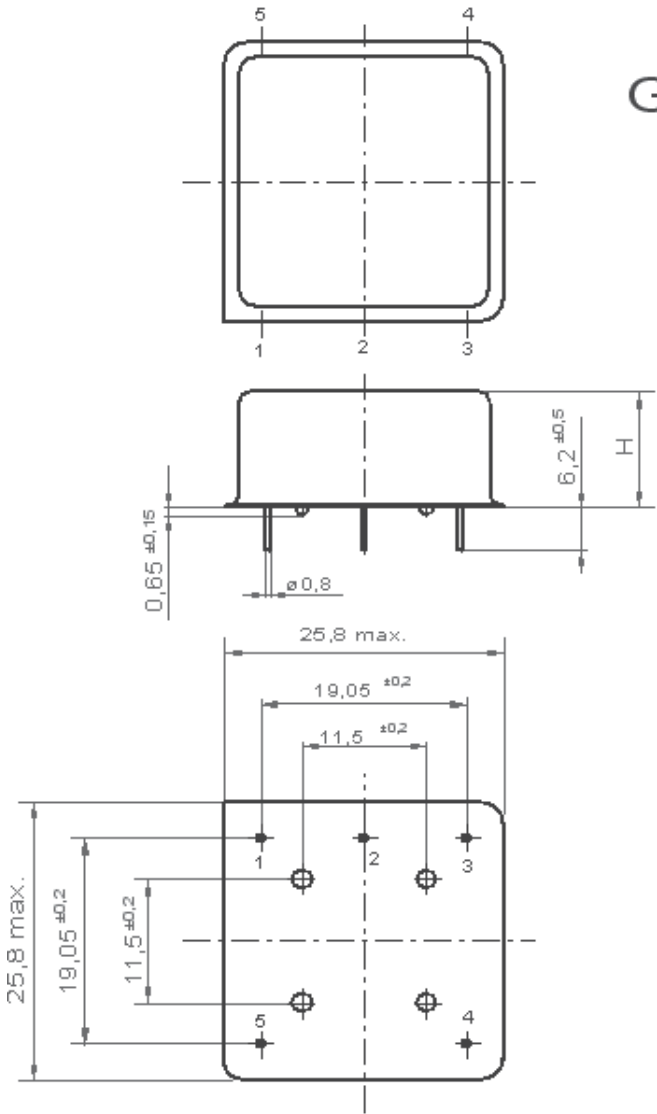
Absolute Maximum Ratings					
supply voltage (Vs)			6.5	V	with Vs=3.3 & 5.0 VDC
			15.0	V	with Vs= 12 VDC
Output Load			50	pF	
Operable Temperature Range	-55		+85	°C	
Storage Temperature Range	-55		+125	°C	

Outline Drawing / Enclosure

G265

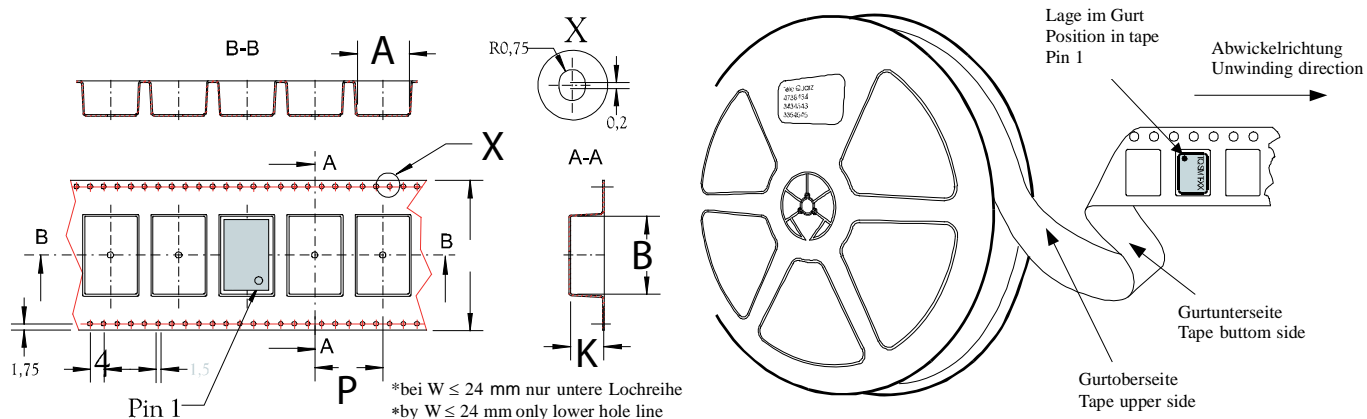
OX-200	
Height "H"	Pin Length "L"
10.4	6.2 min.
12.7	6.2 min
13,4	6.2 min

Pin Connections	
1	RF Output
2	Ground (Case)
3	Electronic Frequency Control Input (EFC)
4	Reference Voltage Option
5	Supply Voltage Input (VS)



Dimensions in mm

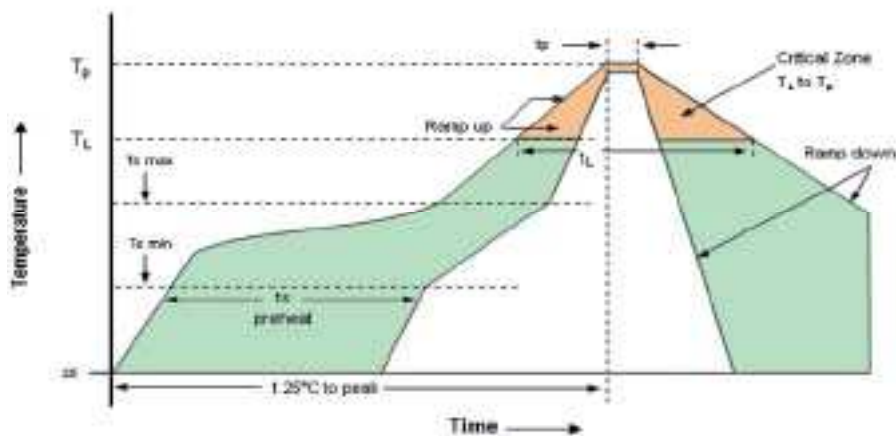
Standard Shipping Method (OX-301)



Enclosure Type	Tape Width W (mm)	Quantity per meter	Quantity per reel	Dimension P
Typ OX-401	44	37.5	280	32

Recommended Reflow Profile

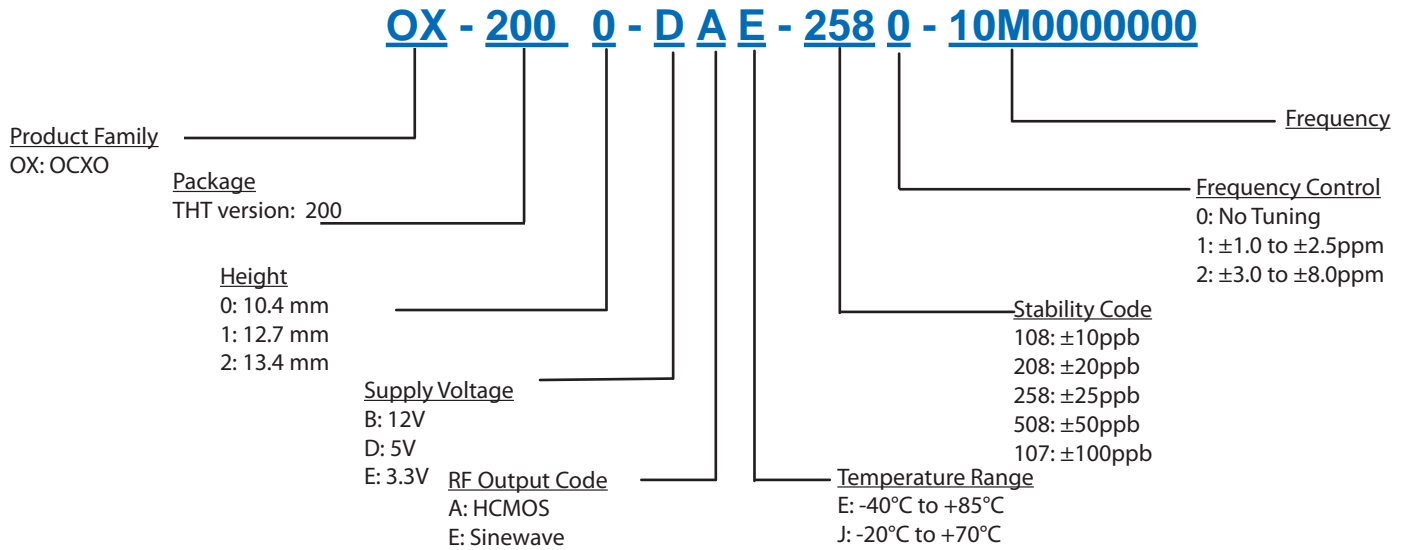
Solderprofile:



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.

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Rev:30.Mar 2010