VECTRON INTERNATIONAL
A DOVER COMPANY

OX-501
Oven Controlled Crystal Oscillator

Features

- 6-Pin SMD package
- Fast warm-up
- TCXO replacement for better short term stability
- Frequency Range, 10 MHz to 100 MHz
- Standard frequencies, 10, 12.8, 16.384, 19.44, 20, 30.72, 38.88, 51.84 MHz

Applications

- Base stations
- Test equipment
- Femto base station
- Military communication equipment

Performance Specifications

Frequency Stabilities[1] (AT-Cut Crystal-Standard - 7 to 20 MHz)						
Parameter	Min	Typical	Max	Units	Condition	
vs. operating temperature range (referenced to +25°C)	-100 -250 -250		+100 +250 +250	ppb ppb ppb	-20 to +70°C -20 to +70°C -40 to +85°C	Options[5]
Initial tolerance	-0.5		+0.5	ppm	at time of shipment, nominal EFC	
vs. supply voltage change	-20		+20	ppb	V_S ±5% static	
vs. load change	-20		+20	ppb	Load ±5% static	
vs. aging / day	-10		+10	ppb	after 30 days of operation	
vs. aging / year	-300		+300	ppb	≤ 60MHz; after 30 days of operation	
vs. aging / year	-500		+500	ppb	≥ 60MHz; after 30 days of operation	
Warm-up time			2	minutes	to ±200ppb of final frequency (1 hour reading) @ +25°C	
Frequency Stabilities[1] (SC-Cut Crystal-Option - 20 to 40 MHz)						
vs. operating temperature range (referenced to +25°C)	-30 -50		+30 +50	ppb ppb	-20 to +70°C -40 to +85°C	Options[5]
Initial tolerance	-0.2		+0.2	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	-5.0		+5.0	ppb	after 30 days of operation	
vs. aging / year	-100		+100	ppb	≤ 60 MHz; after 30 days of operation	
vs. aging / year	-500		+500	ppb	≥ 60MHz; after 30 days of operation	
Warm-up time			2	minutes	to ±100ppb of final frequency (1 hour reading) @ +25°C	

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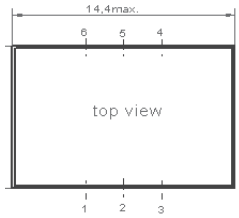
Performance Specifications

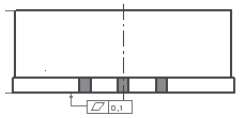
Supply Voltage (Vs)						
Parameter	Min	Typical	Max	Units	Condition	
Supply voltage (standard)	3.135	3.3	3.465	VDC		
Power consumption			2.2	Watts	during warm-up	
			0.7	Watts	steady state @ +25°C	
RF Output						
Signal [standard]	HCMOS					
Load		15		pF		
Signal Level (Vol)			0.4	VDC	with Vs=3.3V and 15pF Load	
Signal Level (Voh)	2.4			VDC	with Vs=3.3V and 15pF Load	
Duty Cycle	45		55	%	@ (Voh-Vol)/2	
Frequency Tuning (EFC)						
Tuning Range	Fixed OCXO; No adjust					Option[5]
Tuning Range	±5.0		±12	ppm	with AT cut crystal	
	±1.0		±3	ppm	with SC cut crystal	
Linearity	10%					
Tuning Slope	Positive					
Control Voltage Range	0.0	1.4	2.8	VDC	with Vs=3.3V	
Additional Parameters						
Phase Noise[3]			-65 -95 -120 -140 -145	dBc/Hz dBc/Hz dBc/Hz dBc/Hz dBc/Hz	1 Hz 10 Hz 100 Hz 1 kHz 10 kHz	@ 10MHz
Weight			8.0	g		
Processing & Packing	Handling & Processing Note					
Absolute Maximum Ratings						
Supply voltage (Vs)			5.5	V	with Vs=5.0VDC	
Output Load			50	pF		
Operable Temperature Range	-55		+85	°C		
Storage Temperature Range	-55		+125	°C		

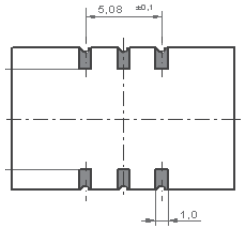
Outline Drawing / Enclosure

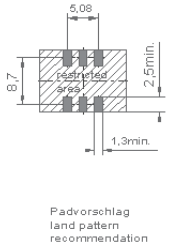


Dimensions in mm

OX-500	
Height "H"	Pin Length "L"
9.9	N/A
6.4	N/A

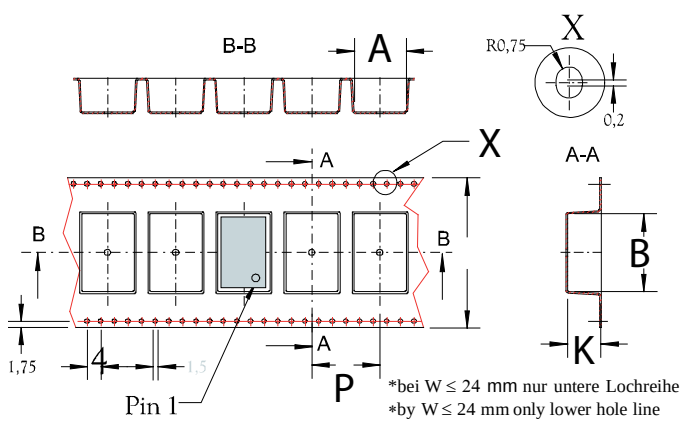


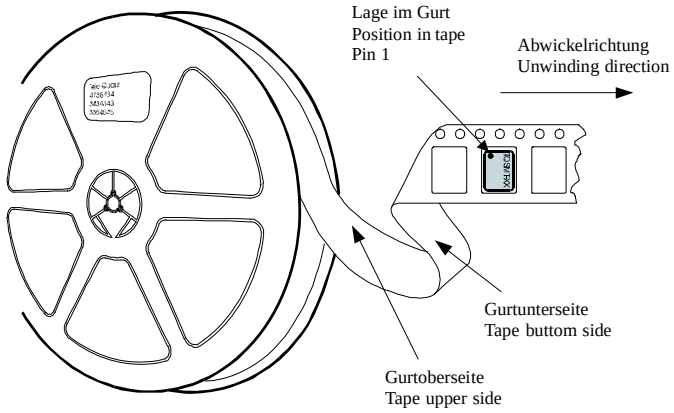




Pin Connections	
1	Electronic Frequency Control Input (EFC)
2	Enable
3	Ground (Case)
4	RF Output
5	Uref
6	Supply Voltage Input

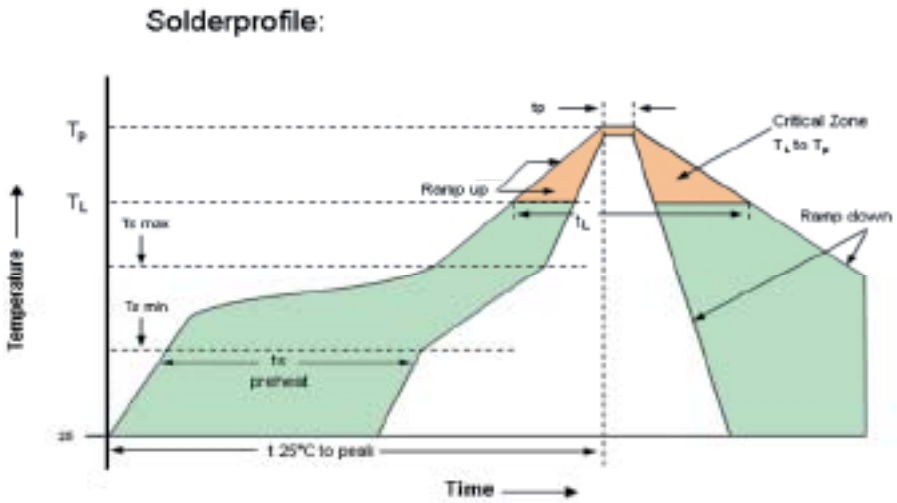
Standard Shipping Method (OX-501)





Enclosure Type	Tape Width W (mm)	Quantity per meter	Quantity per reel	Dimension P
Typ OX-501	N/A	N/A	N/A	N/A

Recommended Reflow Profile



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
TSmax to TL -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.

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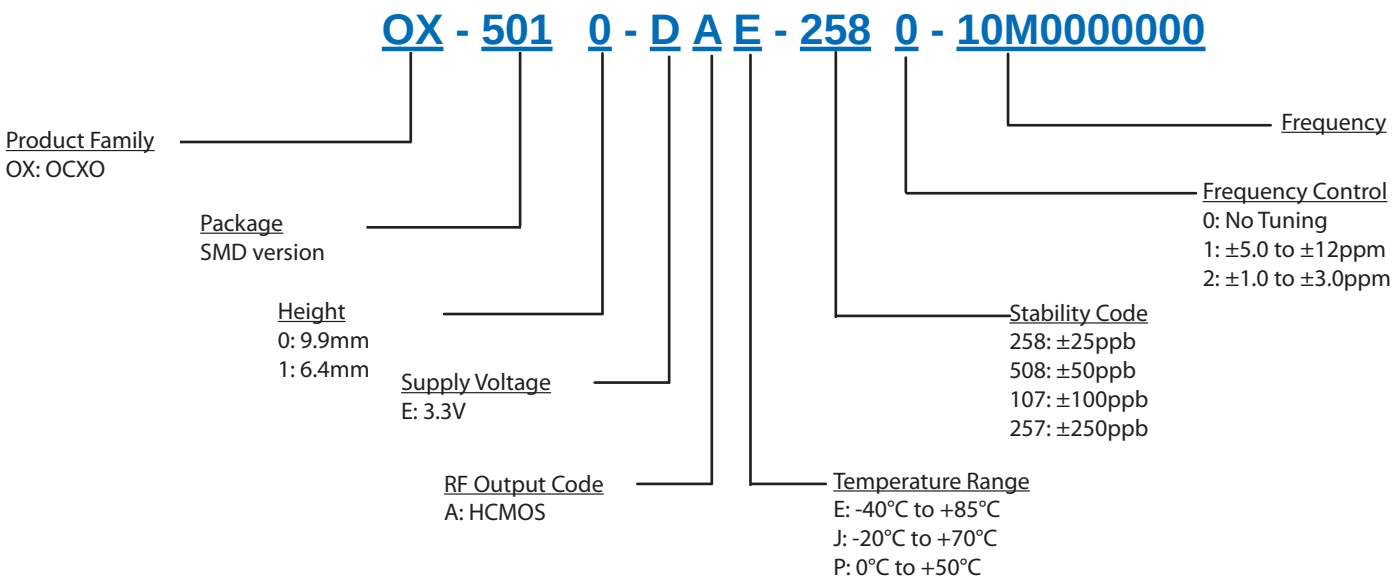
Ordering Information



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.

For Additional Information, Please Contact

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