C4500 OCXO

Typical Applications
Base Stations
Test Equipment
Synthesizers
Digital Switching

Features
Surface Mount Package Optional
Reflow Process Compatible Optional
AT-Cut and SC-Cut Crystal Options
Low Profile Compact Package



Previous Vectron Model Numbers OCO50, OCO1000, MC4004X4

Frequency range 6 MHz – 60 MHz

Standard frequencies 8.192; 10; 12, 12.8; 16.384;20; 32.768; 38.88MHz

Frequency stabilities[1] [AT Cut Crystal – Standard]

Parameter	Min	Typ	Max.	Units	Operating temp range	Ordering Code
vs. operating temperature range	-50		+50	ppb	-20 … +70°C	D508
(Referenced to +25°C)	-100		+100	ppb	-20 … +70°C	D107
	-100		+100	ppb	-40 … +85°C	F107
Parameter	**Min**	**Typ**	**Max.**	**Units**	**Condition**	
Initial tolerance	-500		+500	ppb	at time of shipment, nominal EFC	
vs. supply voltage change	-10		+10	ppb	V_S ± 5%	
vs. load change	-10		+10	ppb	Load ± 5%	
vs. aging / day	-5.0		+5.0	ppb	after 30 days of operation	
vs. aging / year	-250		+250	ppb	after 30 days of operation	
Warm-up Time			3	minutes	to ± 100ppb of final frequency (1 hour reading) @ +25°C	

Frequency stabilities[1] [SC Cut Crystal – Option]

Parameter	Min	Typ	Max.	Units	Operating temp range	Ordering Code
vs. operating temperature range	-10		+10	ppb	-20 … +70°C	D108
(Referenced to +25°C)	-20		+20	ppb	-20 … +70°C	D208
	-20		+20	ppb	-40 … +85°C	F258
Parameter	**Min**	**Typ**	**Max.**	**Units**	**Condition**	
Initial tolerance	-200		+200	ppb	at time of shipment, nominal EFC	
vs. supply voltage change	-2.0		+2.0	ppb	V_S ± 5%	
vs. load change	-5.0		+5.0	ppb	Load ± 5%	
vs. aging / day	-1.0		+1.0	ppb	after 30 days of operation	
vs aging / year	-75		+75	ppb	after 30 days of operation	
Warm-up Time			3	minutes	to ± 10ppb of final frequency (1 hour reading) @ +25°C	

Supply voltage (Vs)

Parameter	Min	Typ	Max.	Units	Condition	Ordering Code
Supply voltage [Standard]	4.75	5	5.25	VDC		SV050
Supply voltage [Option]	11.4	12.0	12.6	VDC		SV120
Supply voltage [Option]	3.135	3.3	3.465	VDC		SV033
Power consumption			3.0	Watts	during warm-up	
			1.0	Watts	steady state @ +25°C	

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RF output

Parameter	Min	Typ	Max.	Units	Condition	Ordering Code
Signal [Standard]		HCMOS				RFH
Load		15		pF		
Signal Level (Vol)			0.5	VDC	with Vs=12.0V or 5.0V and 15pF load	
			0.3	VDC	with Vs=3.3V and 15pF load	
Signal Level (Voh)	4.5			VDC	with Vs=12.0V or 5.0V and 15pF load	
	3.0			VDC	with Vs=3.3V and 15pF load	
Duty cycle	45		55	%	@ (Voh-Vol)/2	

Frequency Tuning (EFC)

Parameter	Min	Typ	Max.	Units	Condition
Tuning Range	±1.0	±1.75	±2.5	ppm	with SC Cut Crystal
	±3.0	±5.0	±8	ppm	with AT Cut Crystal
Linearity			5	%	
Tuning Slope		Positive			
Control Voltage Range	0.0	2.0	4.0	VDC	with Vs=5.0VDC
	0.0	2.0	4.0	VDC	with Vs=12VDC
	0.0	1.4	2.8	VDC	with Vs=3.3VDC

Reference Voltage Output (Vref)

Parameter	Min	Typ	Max.	Units	Condition
Reference Voltage	3.92	4.0	4.08	VDC	with Vs=5.0VDC
	4.9	5.0	5.1	VDC	with Vs=12VDC
	2.75	2.8	2.85	VDC	with Vs=3.3VDC

Additional parameters

Parameter	Min	Typ	Max.	Units	Condition	
Phase Noise[3]			-90	dBc/Hz	1 Hz	with 10 MHz SC Cut
			-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	with 10 MHz AT Cut
			-105	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

Parameter	Min	Typ	Max.	Units	Condition
Supply voltage (Vs)			7.0	V	with Vs=5.0VDC
			15.0	V	with Vs=12VDC
			7.0	V	with Vs=3.3VDC
Output Load			50	pF	
Operable temperature range	-55		+85	°C	
Storage temperature range	-55		+125	°C	

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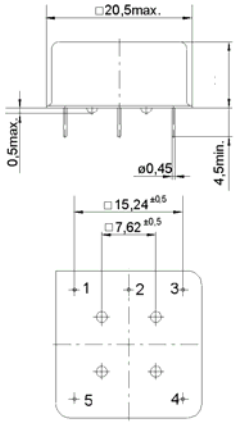
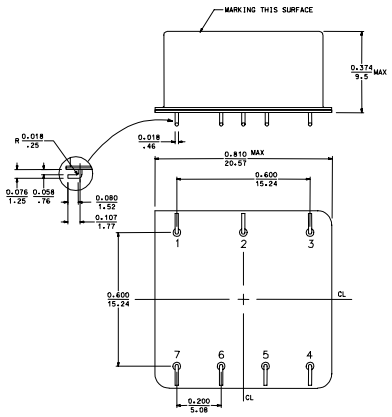
Enclosures

Type A			Type B			Type C		
Package Codes:								
Code	Height "H"	Pin Length "L"	Code	Height "H"	Pin Length "L"	Code	Height "H"	Pin Length "L"
A1	10.5	4.5 min.	B1	12.7	NA	C1 C2	11.3 15.0	NA NA



H = 10,5 max.; G143 Standard
H = 7,5 max.; G143 A

Dimensions: mm



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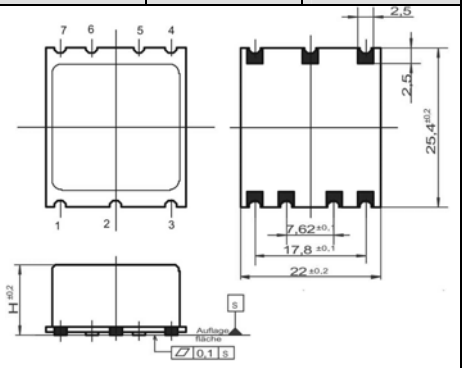
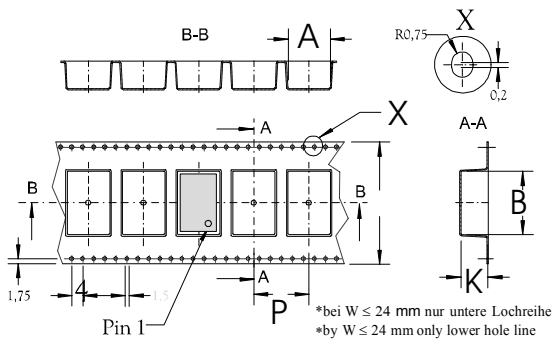


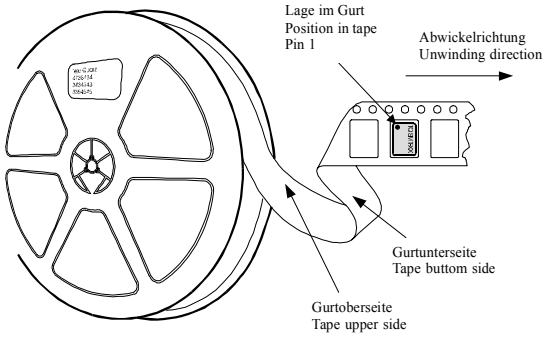
Dimensions: mm

5-pin version available, without Pin 5 & 6

Pin Connections	Pin Connections	Pin Connections
1 Supply Voltage Input (Vs) 2 RF Output 3 Ground (Case) 4 Electronic Frequency Control Input (EFC) 5 N.C. or Reference Voltage Output Version with 7 pins available see Type B * Pin 5 must be remain unconnected.	1 Supply Voltage Input (Vs) 2 RF Output 3 Ground (Case) 4 Electronic Frequency Control Input (EFC) 5 N/C* 6 RF Output Enable (Option) 7 Reference Voltage Output *Pin 5 must be remain unconnected.	1 Electronic Frequency Control Input (EFC) 2 Reference Voltage Output 3 Supply Voltage Input (Vs) 4 RF Output 5 N/C* 6 N.C. or RF Output Enable (Option) 7 Ground (Case) *Pin 5 must be remain unconnected.

Standard Shipping Method





Production tolerance complying DIN IEC 286-3

Enclosure Type	Tape width W [mm]	Quantity per meter	Quantity per reel	Dimension P	
Type B and C	44	37.5	280	32	

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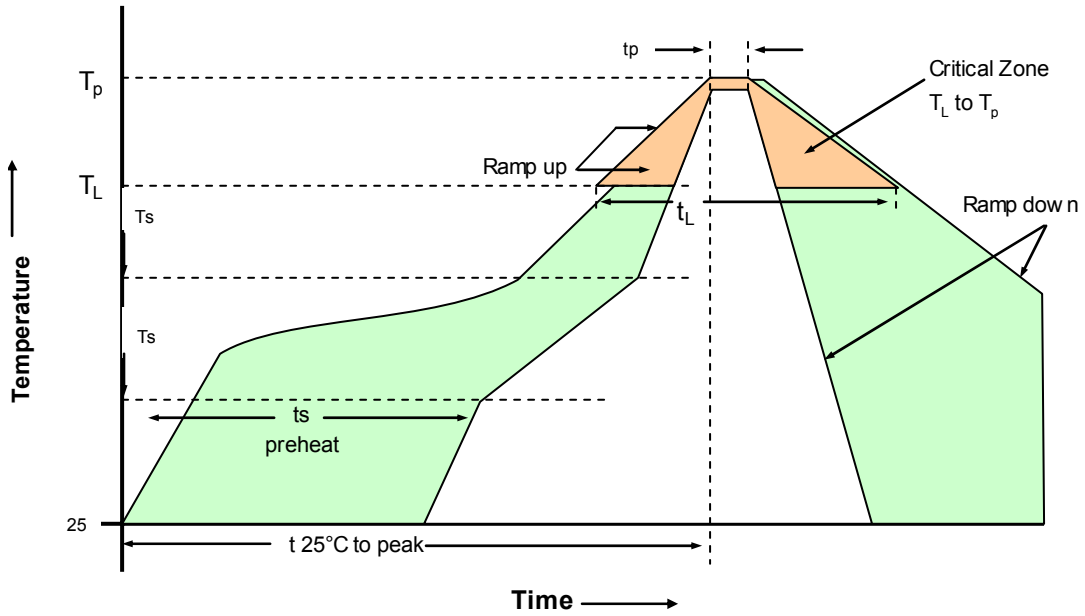
Recommended Reflow Profile



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

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

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How to Order this Product:

Step 1	Use this worksheet to forward the following information to your factory representative:					
	Model	**Stability Code**	**Supply Voltage Code**	**RF Output Code**	**Package Code**	**Frequency**
	C4500					
Example:	*C4500*	*D107*	*SV050*	*RFH*	*A1*	*20MHz*

Step 2	The factory representative will then respond with a Corning Model Number in the following Configuration:			
	Model	**Package Code**	**Dash**	**Dash Number**
	C4500	[Customer Specified Package Code]	-	[Factory Generated 4 digit number]

Typical P/N = C4500A1-0001

Notes:

1 Contact factory for improved stabilities or additional product options. Not all options and codes are available at all frequencies.
2 Unless otherwise 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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