

Typical Applications

Base Stations
 Test Equipment
 Synthesizers
 Digital Switching

Previous Vectron Model Numbers

Frequency range

6 MHz – 60 MHz

Standard frequencies

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

Features

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



OCO50, OCO1000, MC4004X4

Frequency stabilities¹ [AT Cut Crystal – Standard]

Parameter	Min	Typ	Max.	Units	Operating temp range	Ordering Code
vs. operating temperature range (Referenced to +25°C)	-50		+50	ppb	-20 ... +70°C	D508
	-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 stabilities¹ [SC Cut Crystal – Option]

Parameter	Min	Typ	Max.	Units	Operating temp range	Ordering Code
vs. operating temperature range (Referenced to +25°C)	-10		+10	ppb	-20 ... +70°C	D108
	-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	

RF output

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

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

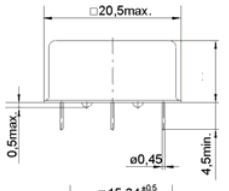
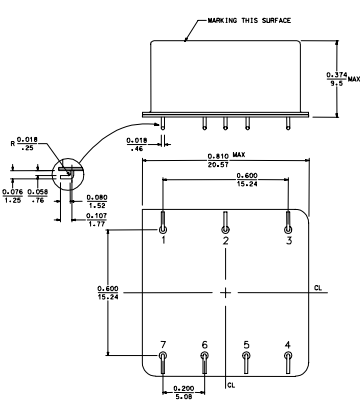
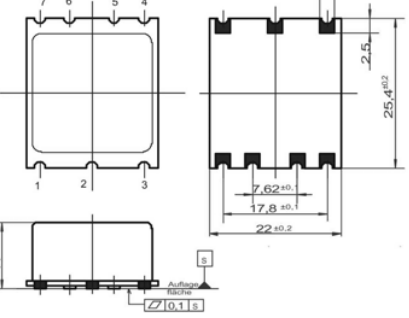
Additional parameters

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				

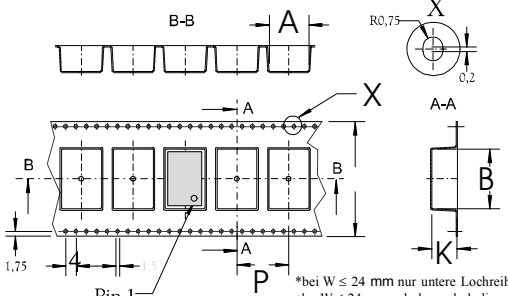
Absolute Maximum Ratings

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	

Enclosures

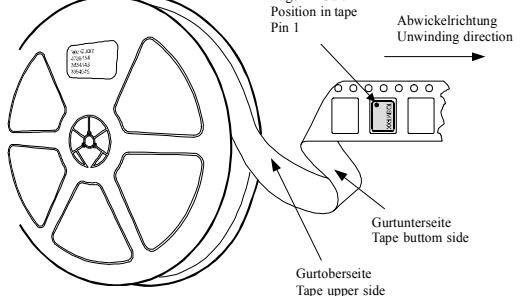
Type A			Type B			Type C		
Package Codes:								
Code A1	Height "H" 10.5	Pin Length "L" 4.5 min.	Code B1	Height "H" 12.7	Pin Length "L" NA	Code C1 C2	Height "H" 11.3 15.0	Pin Length "L" NA NA
 <p>H = 10.5 max.; G143 Standard H = 7.5 max.; G143 A</p> <p>Dimensions: mm</p>			 <p>Dimensions: mm</p>			 <p>Dimensions: mm</p> <p>5-pin version available, without Pin 5 & 6</p>		
<p>Pin Connections</p> <ol style="list-style-type: none"> Supply Voltage Input (Vs) RF Output Ground (Case) Electronic Frequency Control Input (EFC) N.C. or Reference Voltage Output <p>Version with 7 pins available see Type B</p> <p>* Pin 5 must be remain unconnected.</p>			<p>Pin Connections</p> <ol style="list-style-type: none"> Supply Voltage Input (Vs) RF Output Ground (Case) Electronic Frequency Control Input (EFC) N/C* RF Output Enable (Option) Reference Voltage Output <p>*Pin 5 must be remain unconnected.</p>			<p>Pin Connections</p> <ol style="list-style-type: none"> Electronic Frequency Control Input (EFC) Reference Voltage Output Supply Voltage Input (Vs) RF Output N/C* N.C. or RF Output Enable (Option) Ground (Case) <p>*Pin 5 must be remain unconnected.</p>		

Standard Shipping Method



Pin 1

*bei W ≤ 24 mm nur untere Lochreihe
*by W ≤ 24 mm only lower hole line



Lage im Gurt
Position in tape
Pin 1

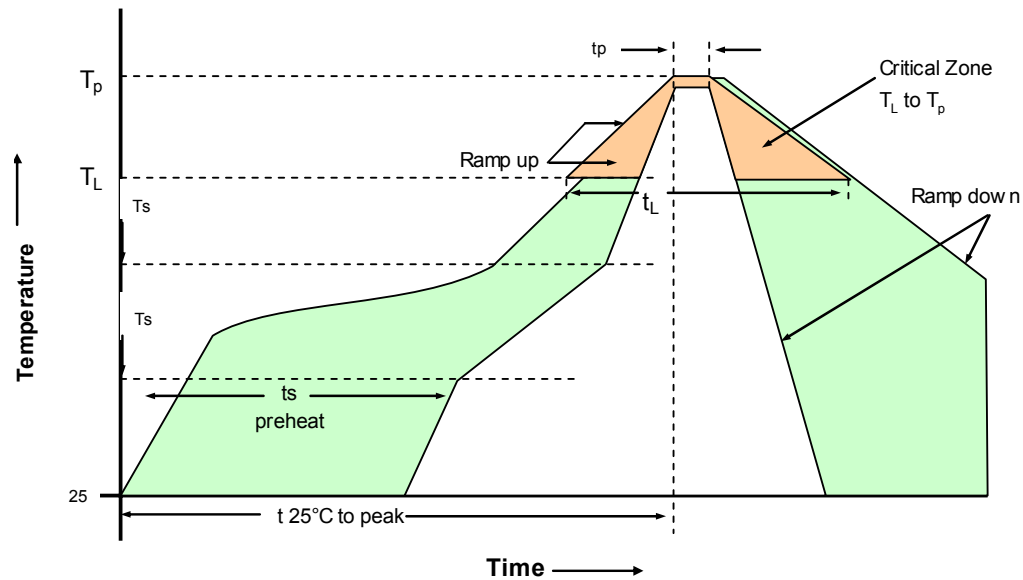
Abwickelrichtung
Unwinding direction

Gurtunterseite
Tape bottom side

Gurtoberseite
Tape upper side

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

Recommended Reflow Profile



Profile Feature	Pb-Free Assembly/Sn-Pb Assembly
Average ramp-up rate (T_L to T_p)	3°C/second max.
Preheat -Temperature Min $T_{s_{min}}$ -Temperature Min $T_{s_{max}}$ -Time (min to max) (t_s)	150°C 200°C 60-180 seconds
$T_{s_{max}}$ to T_L - Ramp-up Rate	3°C/second max.
Time maintained above - Temperature (T_L) - Time (t_L)	217°C 60-150 seconds
Peak Temperature (T_p)	max 260°C
Time within 5°C of actual Peak Temperature (t_p)	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.

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					
<i>Example: C4500</i>	<i>D107</i>	<i>SV050</i>	<i>RFH</i>	<i>A1</i>	<i>20MHz</i>

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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