

## 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<sup>1</sup> [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 <sub>S</sub> ± 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<sup>1</sup> [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 <sub>S</sub> ± 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			VDC		
Signal [Option]	Sinewave					RFS
Load		50		Ω		
Output Power@3.3V supply volt.	2	5	8	dBm	50 Ohm load	
Harmonics			-30	dBc	50 Ohm load	
Power@5V	5	8	11	dBm	50 Ohm load	

## Frequency Tuning (EFC)

Parameter	Min	Typ	Max.	Units	Condition	Ordering Code <sup>5</sup>
Tuning Range	Fixed OCXO; No adjust					0
Tuning Range	±1.0	±1.75	±2.5	ppm	with SC Cut Crystal	1
	±3.0	±5.0	±8	ppm	with AT Cut Crystal	1
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

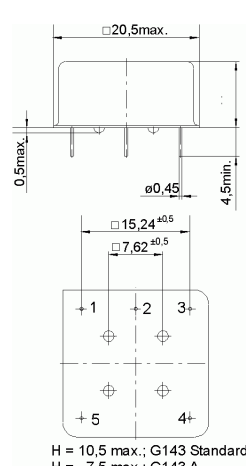
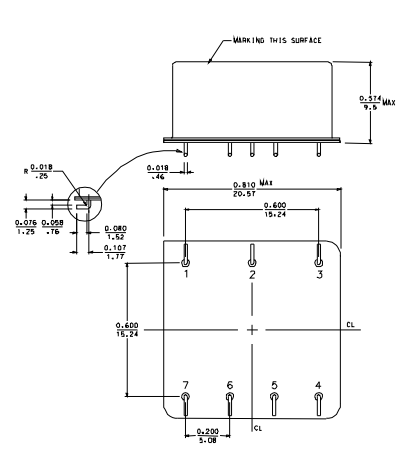
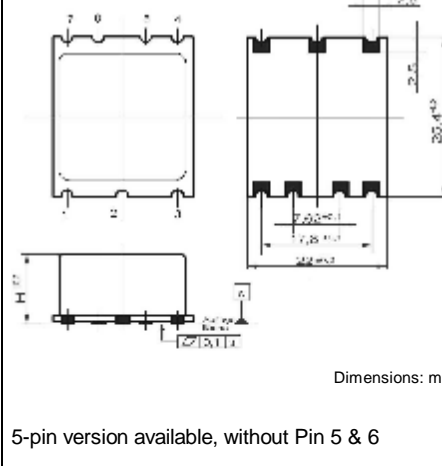
Parameter	Min	Typ	Max.	Units	Condition
Phase Noise <sup>3</sup>			-90	dBc/Hz	1 Hz with 10 MHz SC Cut
			-120	dBc/Hz	10 Hz
			-140	dBc/Hz	100 Hz
			-145	dBc/Hz	1 kHz
			-150	dBc/Hz	10 kHz
Phase Noise <sup>3</sup>			-75	dBc/Hz	1 Hz with 10 MHz AT Cut
			-105	dBc/Hz	10 Hz
			-130	dBc/Hz	100 Hz
			-140	dBc/Hz	1 kHz
			-150	dBc/Hz	10 kHz
Weight			14	g	
Processing & Packing	Handling & processing note				

## Absolute Maximum Ratings

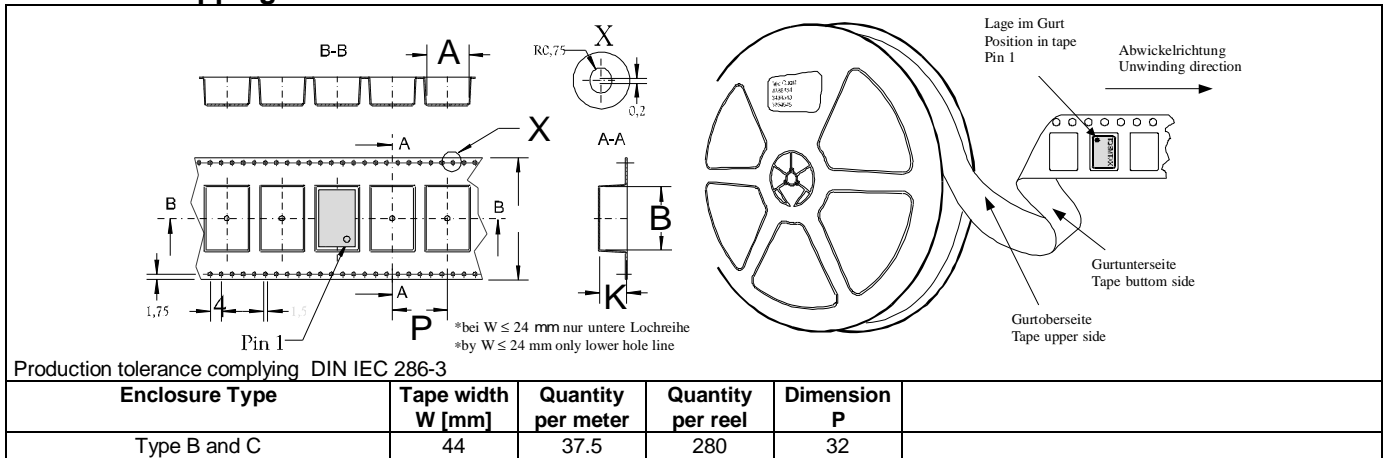
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Parameter	Min	Typ	Max.	Units	Condition
Supply voltage (Vs)			7.0	V	with Vs=5.0VDC
			15.0	V	with Vs=12VDC
			7.0	V	with Vs=3.3VDC
Output Load			50	pF	
Operable temperature range	-55		+85	°C	
Storage temperature range	-55		+125	°C	

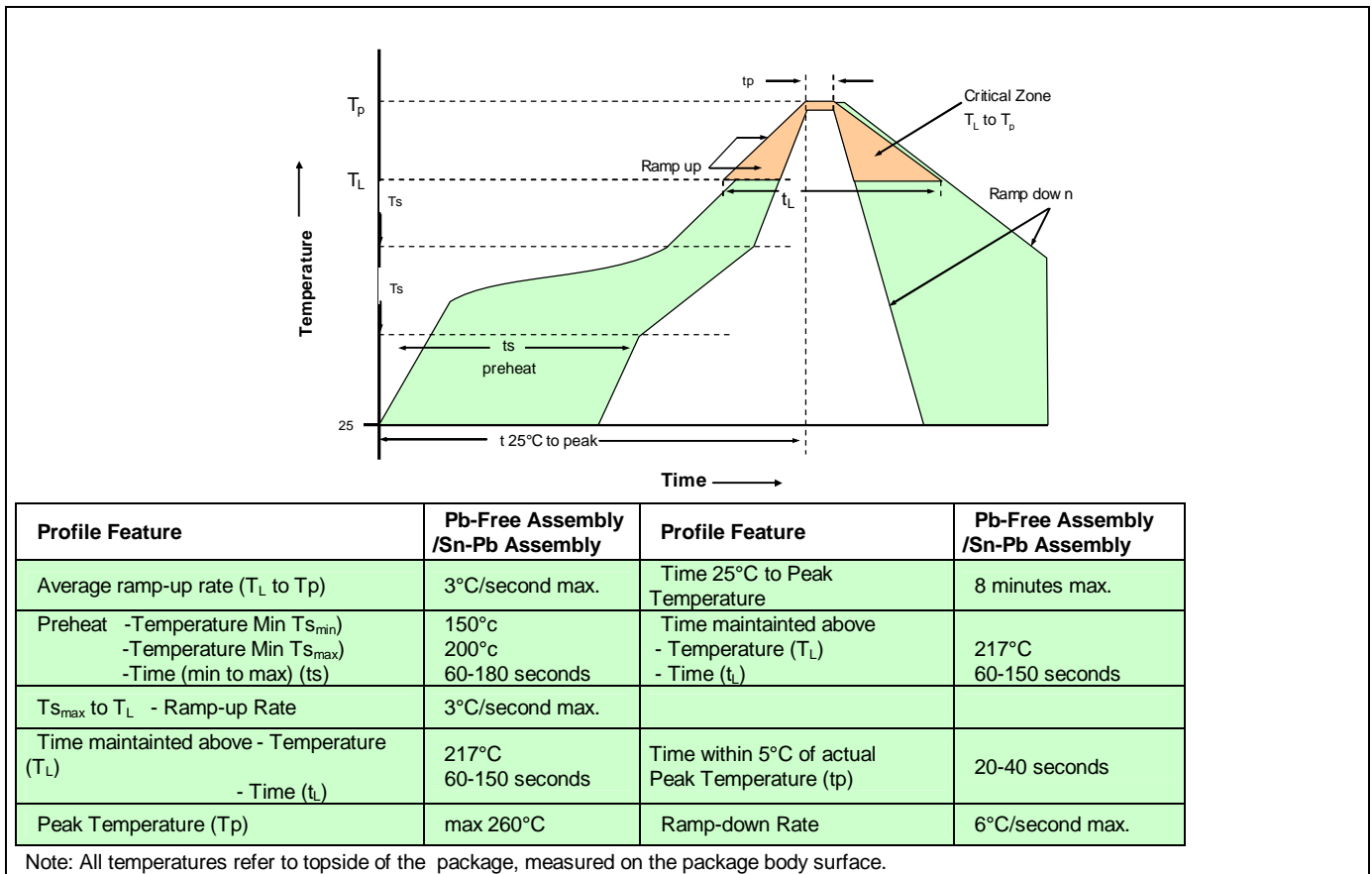
## Enclosures

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>MARKING THIS SURFACE</p> <p>Dimensions: mm</p>			 <p>Dimensions: mm</p> <p>5-pin version available, without Pin 5 &amp; 6</p>		
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



## Recommended Reflow Profile



## 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 Control/ Enable	Frequency
C4500	D508	SV050	RFH	A1	1	6MHz

### Vs.operat. Temp. Range

C508:	±50ppb	-20 ...+70°C
D107:	±100ppb	-20 ...+70°C
F157:	±100ppb	-40 ...+85°C
D108:	±10ppb	-20 ...+70°C
D208:	±20ppb	-20 ...+70°C
F258:	±20ppb	-40 ...+85°C

### Signal:

RFH: HCMOS

### Tuning Range:

0: Fixed OCXO; No adjust  
 1: ±1.0 ppm ..±2.5 ppm(SC)  
 1: ±3.0 ppm ..±8.0 ppm(AT)

### Enclosure:

A1: H: 10.5 L: 4.5min  
 B1: H: 12.7 L: NA  
 C1: H: 11.3 L: NA  
 C2: H: 15.0 L: NA

### Supply:

SV050: 5V  
 SV120: 12V  
 SV033: 3.3V

Step 2	The factory representative will then respond with a Vectron 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.