

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 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			VDC		
	45		55	%		
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 ⁵
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

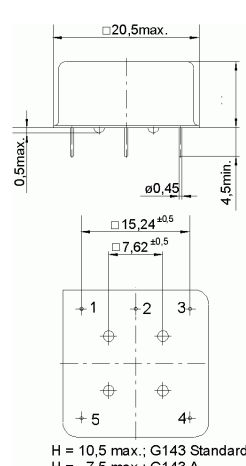
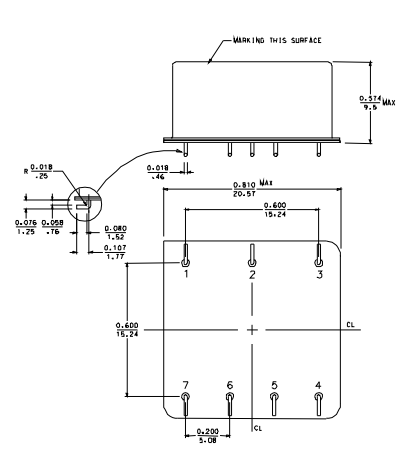
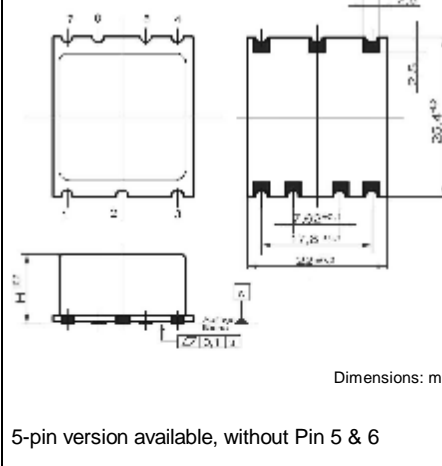
Parameter	Min	Typ	Max.	Units	Condition
Phase Noise ³			-90	dBc/Hz	1 Hz
			-120	dBc/Hz	10 Hz
			-140	dBc/Hz	100 Hz
			-145	dBc/Hz	1 kHz
			-150	dBc/Hz	10 kHz
Phase Noise ³			-75	dBc/Hz	1 Hz
			-105	dBc/Hz	10 Hz
			-130	dBc/Hz	100 Hz
			-140	dBc/Hz	1 kHz
			-150	dBc/Hz	10 kHz
Weight			14	g	
Processing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

Absolute Maximum Ratings

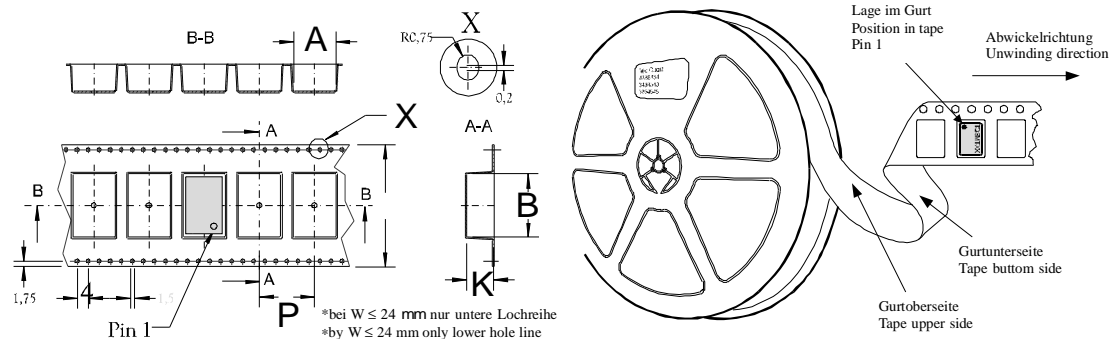
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Parameter	Min	Typ	Max.	Units	Condition
Supply voltage (Vs)			7.0	V	with Vs=5.0VDC
			15.0	V	with Vs=12VDC
			7.0	V	with Vs=3.3VDC
Output Load			50	pF	
Operable temperature range	-55		+85	°C	
Storage temperature range	-55		+125	°C	

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 & 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.		

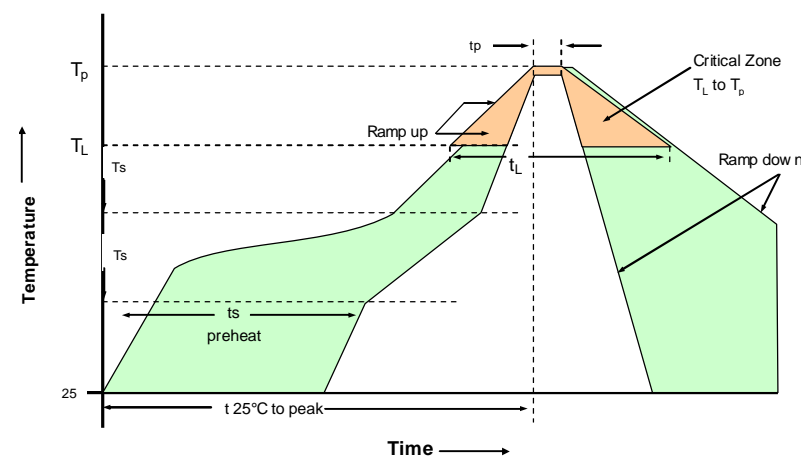
Standard Shipping Method



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

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 $T_{s(min)}$ -Temperature Min $T_{s(max)}$ -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
$T_{s(max)}$ to T_L - Ramp-up Rate	3°C/second max.		
Time maintained above - Temperature (T_L) - Time (t_L)	217°C 60-150 seconds	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.

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.