

## Typical Applications

Base Stations  
 Test Equipment  
 Synthesizers  
 Digital Switching

## Previous Vectron Model Numbers

## Frequency range

10 MHz – 160 MHz

## Standard frequencies

10; 12.8; 16.384; 19.2 ; 20; 26, 30.72, 38.4, 52 MHz

## Features

Surface Mount Package  
 Reflow Process Compatible  
 AT-Cut and SC-Cut Crystal Options  
 Low Profile Compact Package  
 OCO1000, C4500



## Frequency stabilities<sup>1</sup> [AT Cut Crystal – 10 MHz to 160MHz]

Parameter	Min	Typ	Max.	Units	Operating temp range	Ordering Code
vs. operating temperature range (Referenced to +25°C)	-100		+100	ppb	-20 ... +70°C	D107
	-250		+250	ppb	-20 ... +70°C	D257
	-250		+250	ppb	-40 ... +85°C	F257
Parameter	Min	Typ	Max.	Units	Condition	
Initial tolerance	-500		+500	ppb	at time of shipment, nominal EFC	
vs. supply voltage change	-20		+20	ppb	V <sub>s</sub> ± 5%	
vs. load change	-10		+10	ppb	Load ± 5%	
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			3	minutes	to ± 100ppb of final frequency (1 hour reading) @ +25°C	

## Frequency stabilities<sup>1</sup> [SC Cut Crystal – 15 to 40 MHz]

Parameter	Min	Typ	Max.	Units	Operating temp range	Ordering Code
vs. operating temperature range (Referenced to +25°C)	-25		+25	ppb	-20 ... +70°C	D258
	-50		+50	ppb	-40 ... +85°C	F508
Parameter	Min	Typ	Max.	Units	Condition	
Initial tolerance	-200		+200	ppb	at time of shipment, nominal EFC	
vs. supply voltage change	-5.0		+5.0	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 / 1 Year	-100		+100	ppb	after 30 days of operation	
vs. aging / year (following Years)	-80		+80	ppb		
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]	3.135	3.3	3.465	VDC		SV033
Power consumption			2.5	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=r 5.0V and 15pF load with Vs=3.3V and 15pF load with Vs= 5.0V and 15pF load with Vs=3.3V and 15pF load @ (Voh-Vol)/2	
Signal Level (Vol)			0.5	VDC		
Signal Level (Voh)	3.7		0.3	VDC		
Duty cycle	2.4		55	%		
Signal [Option]	Sinewave					RFS
Load		50		Ω		
Output Power	+0	+2.5	+5.0	dBm	50 Ohm load	
Harmonics			-30	dBc	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	1.4	2.8	VDC	with Vs=3.3VDC	

## Reference Voltage Output (Vref)

Parameter	Min	Typ	Max.	Units	Condition
Reference Voltage	3.85	4.0	4.15	VDC	with Vs=5.0VDC
	2.7	2.8	2.9	VDC	with Vs=3.3VDC

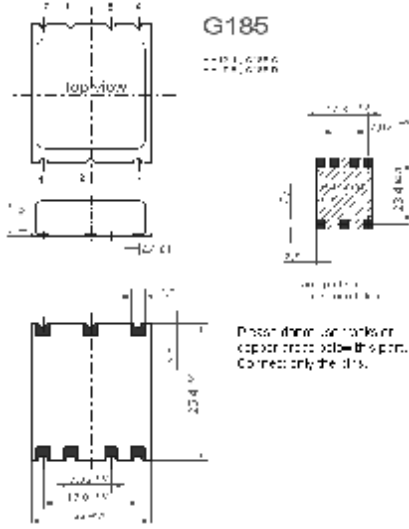
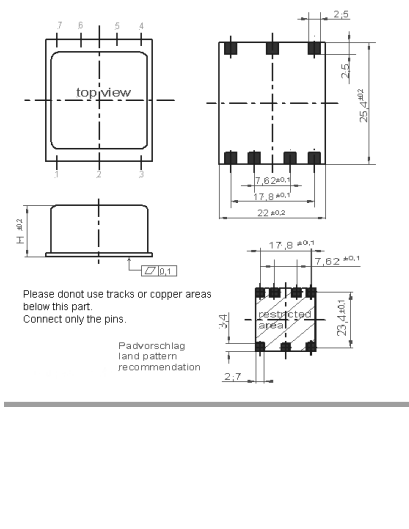
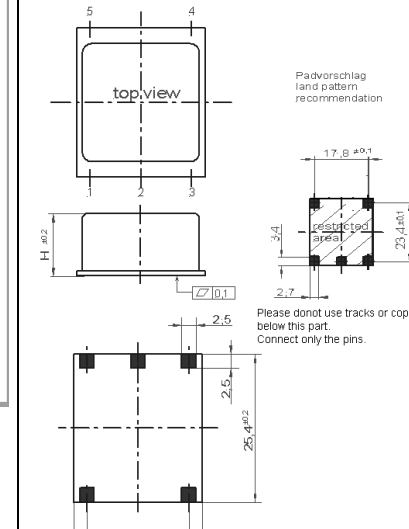
## Additional parameters

Parameter	Min	Typ	Max.	Units	Condition
Phase Noise <sup>3</sup>		-75		dBc/Hz	1 Hz with 30.72 MHz
		-110		dBc/Hz	10 Hz SC-Cut
		-135		dBc/Hz	100 Hz HCMOS
		-150		dBc/Hz	1 kHz
		-150		dBc/Hz	10 kHz
Phase Noise <sup>3</sup>		-75		dBc/Hz	10 Hz with 110 MHz AT Cut
		-105		dBc/Hz	100 Hz Sinewave
		-130		dBc/Hz	1 kHz
		-155		dBc/Hz	10 kHz
		-160		dBc/Hz	100 kHz
Weight			10	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
			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, for HCMOS output			Type B, for Sinewave output, only with reduced AT-stabilities available			Type C, for HCMOS output		
Package Codes:								
Code	Height "H"		Code	Height "H"		Code	Height "H"	
A1	12.1	G185C	B1	12.1	G185C	C1	12.1	G270C
A2	7.8	G185D	B2	7.8	G185D	C2	7.8	G270C
								
Pin Connections			Pin Connections			Pin Connections		
1	Electronic Frequency Control Input (EFC)		1	RF Output		1	Electronic Frequency Control Input (EFC)	
2	Reference Voltage Output		2	N.C.		2	Reference Voltage Output	
3	Supply Voltage Input (Vs)		3	Ground (Case)		3	Supply Voltage Input (Vs)	
4	RF Output		4	N.C.		4	RF Output	
5	Oven Alarm		5	Electronic Frequency Control Input (EFC)		5	Ground (Case)	
6	I.C. Intern Connected		6	Supply voltage Vs oscillator				
7	Ground (Case)		7	Supply voltage Vs heater				
*Pin 6 must be remain unconnected.								

## Standard Shipping Method

\*bei  $W \leq 24$  mm nur untere Lochreihe  
 \*by  $W \leq 24$  mm only lower hole line

Production tolerance complying DIN IEC 286-3

Enclosure Type	Tape width W [mm]	Quantity per meter	Quantity per reel	Dimension P
Type A1/A2	44	37.5	175 or 230	32

## Recommended Reflow Profile

**Solderprofile:**

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.

Processing note:

This FR 4 based SMD OCXO is a non-hermetic construction for use in No-Clean reflow processes and is 6/6 RoHS compliant. If you intend to wash this SMD OCXO, please contact your Sales representative to discuss the possibility.

## 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
C4530	D107	SV050	RFH	A1	1	10MHz

<p><b>↓</b></p> <p><b>Vs.operat. Temp. Range</b></p> <p>D107: ±100ppb -20 ...+70°C          D257: ±250ppb -20 ...+70°C          F257: ±250ppb -40 ...+85°C          D258: ±25ppb -20 ...+70°C          F508: ±50ppb -40 ...+85°C</p>	<p><b>↓</b></p> <p><b>Supply:</b></p> <p>SV050: 5V          SV033: 3.3V</p>	<p><b>↓</b></p> <p><b>Signal:</b></p> <p>RFH: HCMOS          RFS: Sinewave</p>	<p><b>↓</b></p> <p><b>Enclosure:</b></p> <p>A1: G185C          A2: G185D          B1: G185C          B2: G185D          C1: G270D          C2: G270D</p>
		<p><b>↓</b></p> <p><b>Tuning Range:</b></p> <p>0: Fixed OCXO; No adjust          1: ±1.0 ppm..±2.5 ppm(SC)          1: ±3.0 ppm..±8.0 ppm(AT)</p>	

Step 2	The factory representative will then respond with a Vectron Model Number in the following configuration:		
Model	Package Code	Dash	Dash Number
C4530	[Customer Specified Package Code]	-	[Factory Generated 4 digit number]

Typical P/N = C4530A1-0001

**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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