

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 stabilities¹ [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 -250 -250		+100 +250 +250	ppb ppb ppb	-20 ... +70°C -20 ... +70°C -40 ... +85°C	D107 D257 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 _s ± 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 stabilities¹ [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 -50		+25 +50	ppb ppb	-20 ... +70°C -40 ... +85°C	D258 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 _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 / 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 1.0	Watts Watts	during warm-up steady state @ +25°C	

RF output

Parameter	Min	Typ	Max.	Units	Condition	Ordering Code
Signal [Standard]	HCMOS					RFH
Load		15		pF	with Vs=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		
	2.4			VDC		
Duty cycle	45		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
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	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

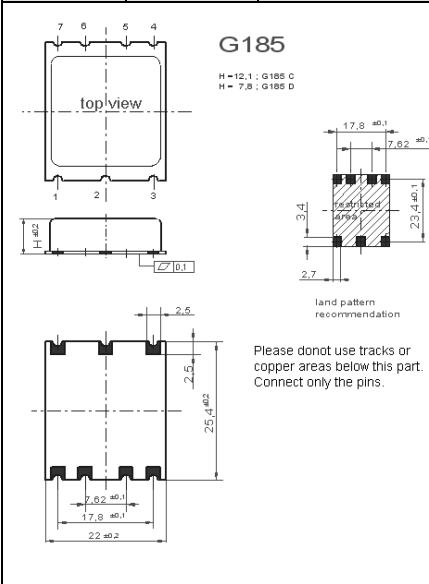
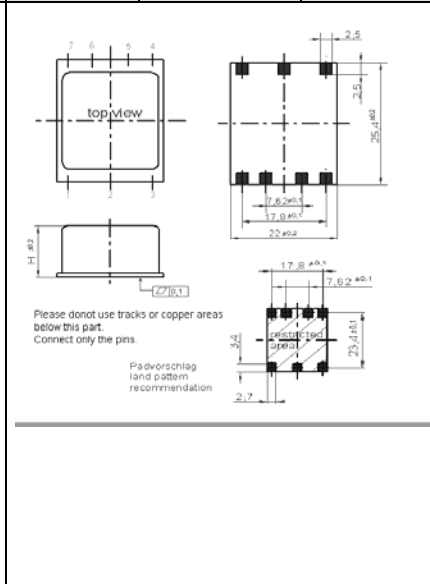
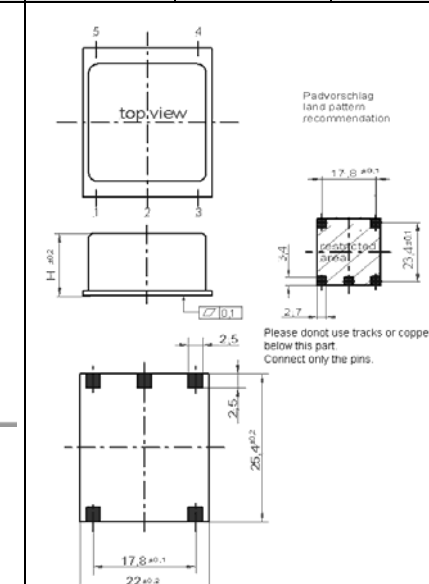
Additional parameters

Parameter	Min	Typ	Max.	Units	Condition
Phase Noise ³		-75		dBc/Hz	1 Hz with 30.72 MHz 10 Hz SC-Cut 100 Hz HCMOS 1 kHz 10 kHz
		-110		dBc/Hz	
		-135		dBc/Hz	
		-150		dBc/Hz	
		-150		dBc/Hz	
Phase Noise ³		-75		dBc/Hz	10 Hz with 110 MHz AT Cut 100 Hz Sinewave 1 kHz 10 kHz 100 kHz
		-105		dBc/Hz	
		-130		dBc/Hz	
		-155		dBc/Hz	
		-160		dBc/Hz	
Weight			10	g	
Processing & Packing	Handling & processing note				

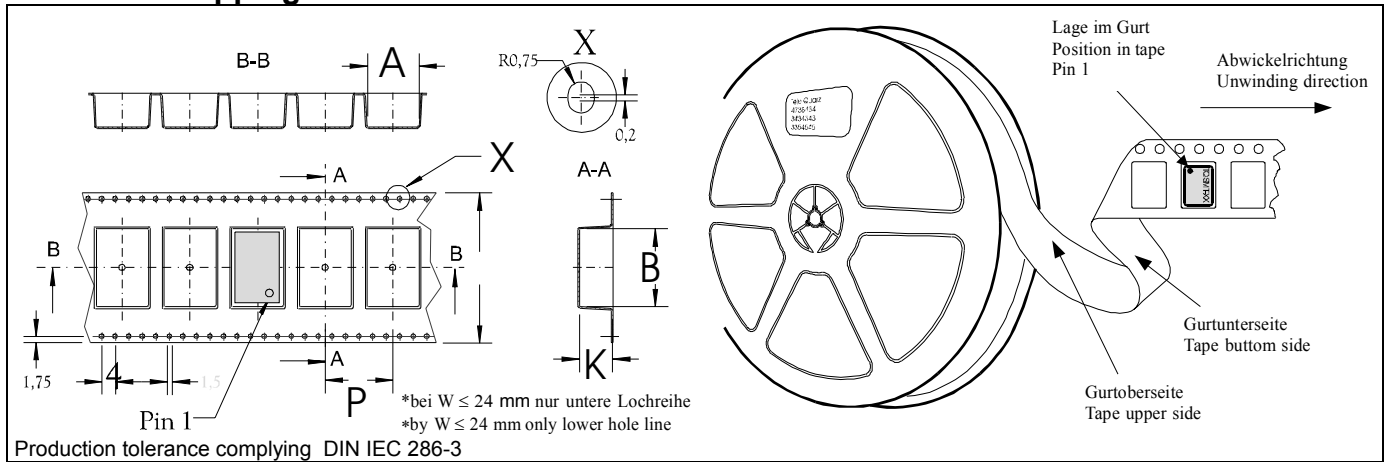
Absolute Maximum Ratings

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"	Pin Length "L"	Code	Height "H"	Pin Length "L"	Code	Height "H"	Pin Length "L"
A1	12.1	N/A	B1	12.1	N/A	C1	12.1	N/A
A2	7.8	N/A	B2	7.8	N/A	C2	7.8	N/A
 <p>G185 H = 12.1; G185 C H = 7.8; G185 D</p> <p>land pattern recommendation</p> <p>Please donot use tracks or copper areas below this part. Connect only the pins.</p>			 <p>land pattern recommendation</p> <p>Please donot use tracks or copper areas below this part. Connect only the pins.</p> <p>Padvororschlag land pattern recommendation</p>			 <p>Padvororschlag land pattern recommendation</p> <p>Please donot use tracks or copper areas below this part. Connect only the pins.</p>		
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.								

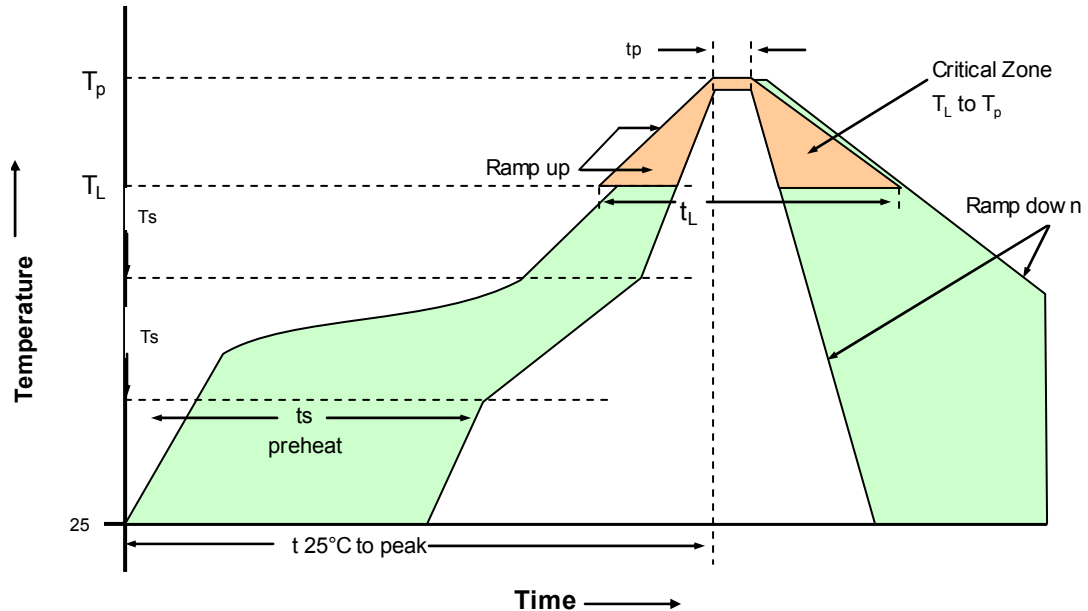
Standard Shipping Method



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



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) (ts)	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 (tp)	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
C4530					

Example: C4530 D207 SV050 RFH A1 20.0MHz

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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