C4530

OCXO

Typical Applications

Base Stations
Test Equipment
Synthesizers
Digital Switching

Features

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

Previous Vectron Model Numbers OCO1000, C4500

Frequency range 10 MHz – 160 MHz

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

Frequency stabilities[1] [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 stabilities[1] [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	

Vectron International Headquarters
267 Lowell Road
Hudson, New Hampshire 03051
+1-888-328-7661 tel
+1-888-329-8328 fax

Vectron International LLC.
100 Watts Street
Mount Holly Springs, PA 17065
USA
+1-717-486-3411 tel
+1-717-486-5920 fax

Vectron international GmbH & Co. KG
Landstrasse
D-74924 Neckarbischofsheim
Germany
+49-07268-801-0 tel
+49-07268-801-281 fax

Vectron Asia Pacific Sales Office
1F-2F, No 8 Workshop, No 308 Fenju Road, WaiGaoQiao Free Trade Zone, Pudong, Shanghai, P.R. China 200131
+86 21 5048 0777 tel.
+86 21 5048 1881 fax

RF output

Parameter	Min	Typ	Max.	Units	Condition	Ordering Code
Signal [Standard]		HCMOS				RFH
Load		15		pF		
Signal Level (Vol)			0.5	VDC	with Vs=r 5.0V and 15pF load	
			0.3	VDC	with Vs=3.3V and 15pF load	
Signal Level (Voh)	3.7			VDC	with Vs= 5.0V and 15pF load	
	2.4			VDC	with Vs=3.3V and 15pF load	
Duty cycle	45		55	%	@ (Voh-Vol)/2	
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
		-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[3]		-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	

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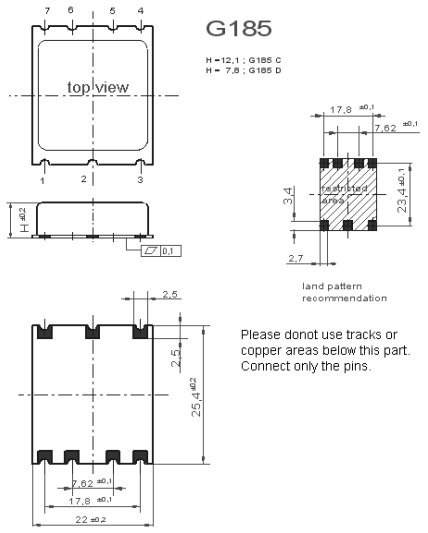
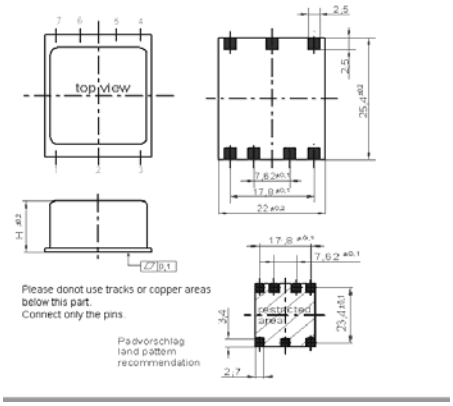
Enclosures

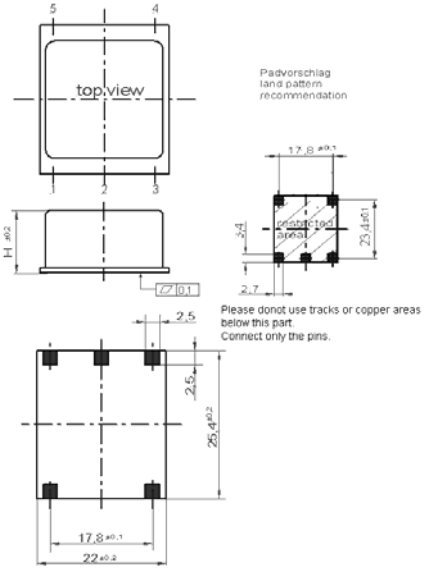
Type A, for HCMOS output	Type B, for Sinewave output, only with reduced AT-stabilities available	Type C, for HCMOS output

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







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.		

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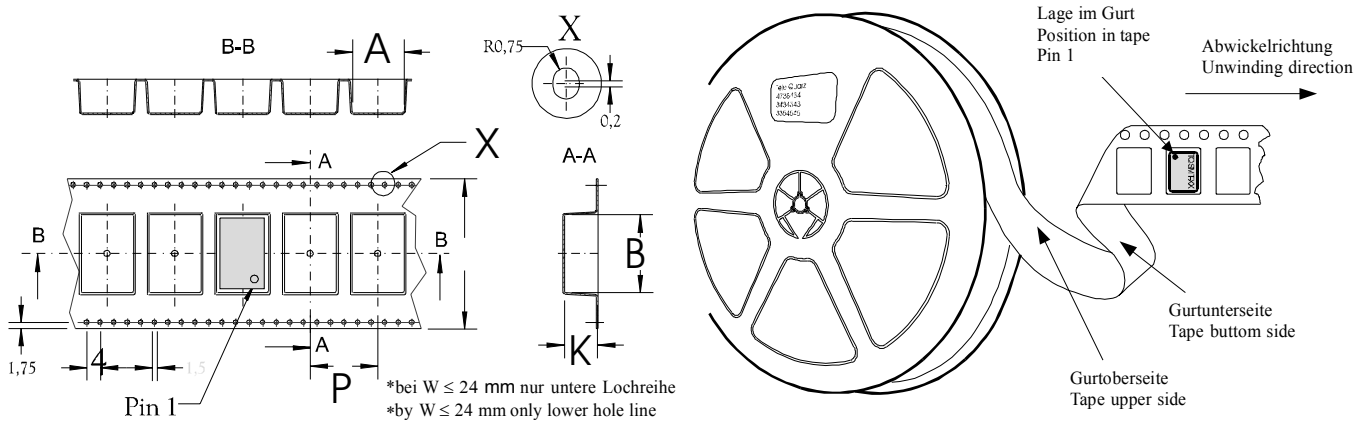
Standard Shipping Method



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	

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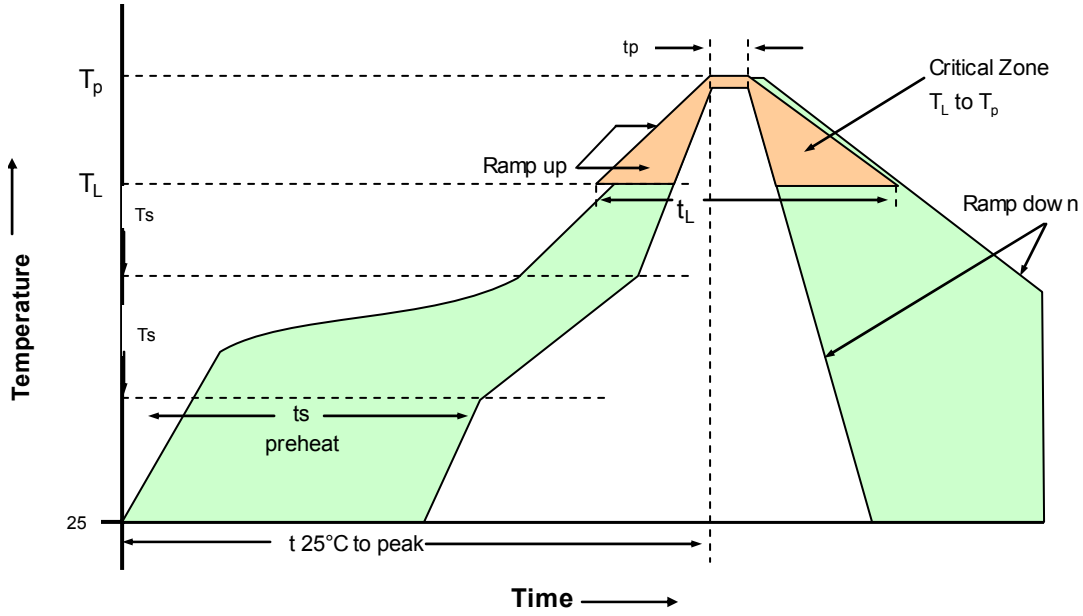
Recommended Reflow Profile



Profile Feature	Pb-Free Assembly /Sn-Pb Assembly	Profile Feature	Pb-Free Assembly /Sn-Pb Assembly
Average ramp-up rate (T_L to Tp)	3°C/second max.	Time 25°C to Peak Temperature	8 minutes max.
Preheat -Temperature Min Ts_{min}) -Temperature Min Ts_{max}) -Time (min to max) (ts)	150°c 200°c 60-180 seconds	Time maintainted above - Temperature (T_L) - Time (t_L)	 217°C 60-150 seconds
Ts_{max} to T_L - Ramp-up Rate	3°C/second max.		
Time maintainted 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 (Tp)	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.

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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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