

## Typical Applications

Base Stations  
 Test Equipment  
 Synthesizers  
 Digital Switching

## Previous Vectron Model Numbers

## Frequency range

## Standard frequencies

## Features

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



OCO700

6 MHz – 60 MHz

8.192; 10; 12, 12.8; 16.384; 20; 32.768; 38.88, 61.44MHz

## 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		
Signal Level (Vol)			0.5	VDC	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 (Voh)	4.5		0.3	VDC		
	3.0			VDC		
Duty cycle	45		55	%		

## 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

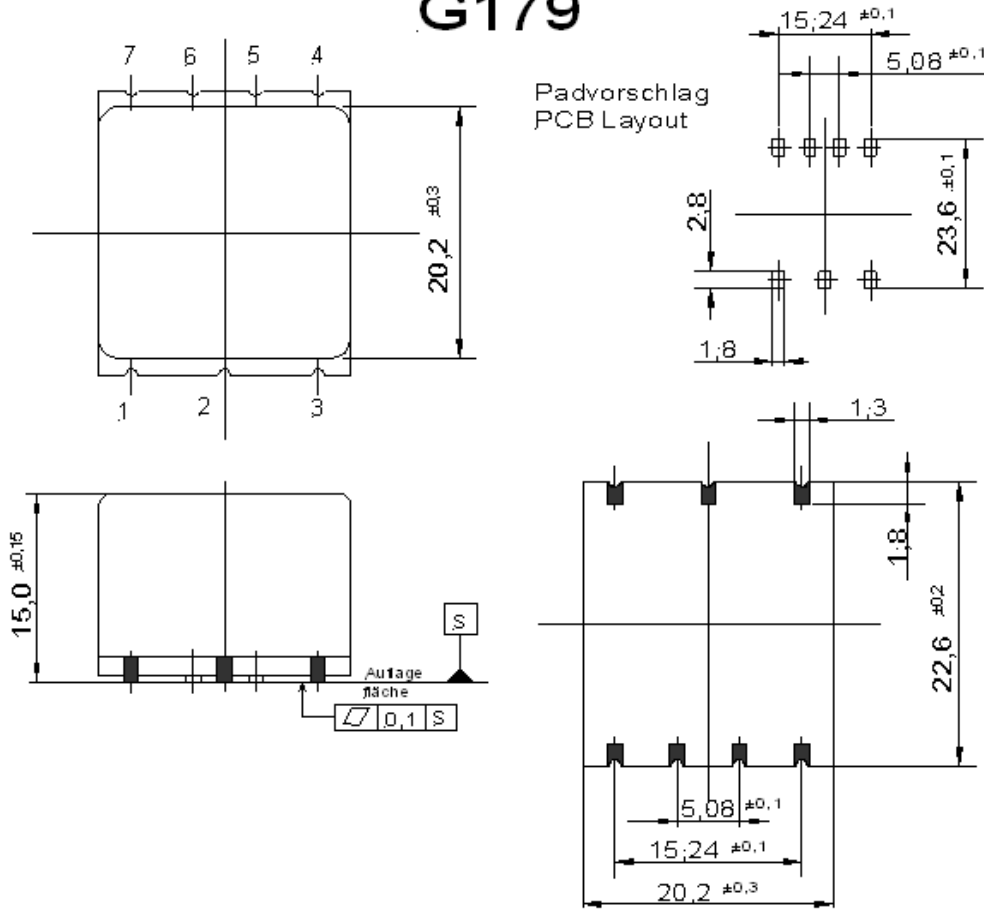
Parameter	Min	Typ	Max.	Units	Condition
Supply voltage (Vs)			7.0	V	with Vs=5.0VDC
			15.0	V	with Vs=12VDC
			7.0	V	with Vs=3.3VDC
Output Load			50	pF	
Operable temperature range	-55		+85	°C	
Storage temperature range	-55		+125	°C	

**Type A**

Package Codes:

Code A1	Height "H" 15.0	G179
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**G179**



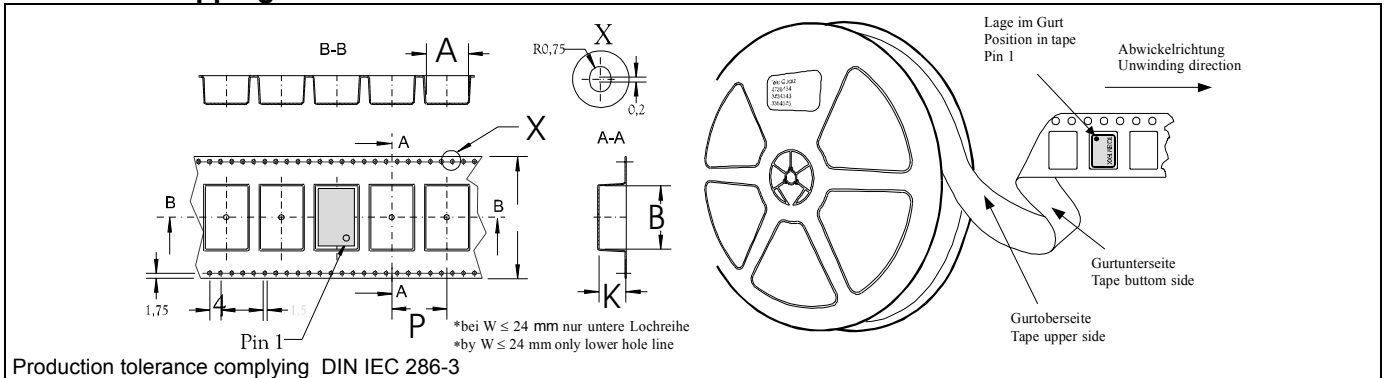
Dimensions: mm

**Pin Connections**

- 1 RF output
- 2 GND, Case
- 3 Control Voltage (Vc)
- 4 Reference Voltage Output
- 5 Oven Control Output
- 6 GND, Case
- 7 Supply Voltage Vs

\* Pin 5 must be remain unconnected.

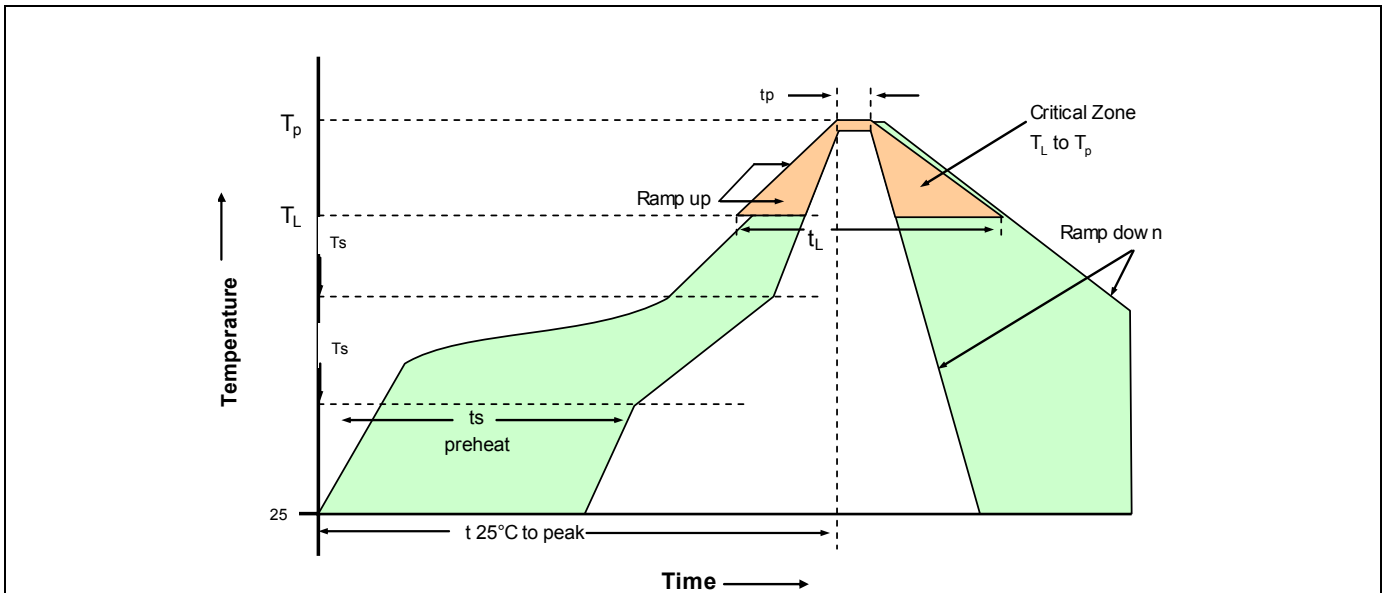
## Standard Shipping Method



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 informations to your factory representative :						
Model	Stability Code	Supply Voltage Code	RF Output Code	Package Code	Frequency Control/ Enable	Frequency
C4505	D508	SV050	RFH	A1	1	6MHz

### Vs.operat. Temp. Range

D508:	±50ppb	-20...+70°C
D107:	±100ppb	-20...+70°C
F107:	±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)

### Supply:

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

### Enclosure:

A1: G179

Step 2 The factory representative will then respond with a Vectron Model Number in the following configuration:			
Model	Package Code	Dash	Dash Number
C4505	[Customer Specified Package Code]	-	[Factory Generated 4 digit number]

Typical P/N = C4505A1-0001

### Notes:

- Contact factory for improved stabilities or additional product options. Not all options and codes are available at all frequencies.
- 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)
- Phase noise degrades with increasing output frequency.
- Subject to technical modification.
- Contact factory for availability.