

## Typical Applications

Base Stations  
 Test Equipment  
 Synthesizers  
 Digital Switching

## Features

4-Pin Dip  
 Surface Mount Package Optional  
 Fast Warm-up  
 TCXO Replacement for better short term stability



## Previous Vectron Model Numbers

4887, TQDILOC, OC-400

## Frequency range

10 MHz – 160 MHz

## Standard frequencies

10; 12, 12.8, 16.384, 19.44, 20, 38.88, 51.84, 133Mhz

## Frequency stabilities<sup>1</sup> [AT-Cut Crystal – Standard – 10 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	-0.5		+0.5	ppm	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	-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			2	minutes	to ± 100ppb of final frequency (1 hour reading) @ +25°C	

## Frequency stabilities<sup>1</sup> [SC Cut Crystal – Option – 10 to 52MHz]

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
	-25		+25	ppb	-20 ... +70°C	D258
	-50		+50	ppb	-40... +85°C	F508
Parameter	Min	Typ	Max.	Units	Condition	
Initial tolerance	-0.2		+0.2	ppm	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		+5	ppb	after 30 days of operation	
vs aging / year	-100		+100	ppb	≤ 60MHz; after 30 days of operation	
vs. aging / year	-500		+500	ppb	>60MHz; after 30 days of operation	
Warm-up Time			2	minutes	to ± 100ppb 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			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=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		
			0.3	VDC		
Signal Level (Voh)	3.7			VDC		
	2.4			VDC		
Duty cycle	45		55	%		

## Frequency Tuning (EFC) 10 to 80MHz

Parameter	Min	Typ	Max.	Units	Condition
Tuning Range	±5.0		±12	ppm	with AT cut Crystal
Tuning Range	±1.0		±3	ppm	with SC cut Crystal
Linearity			5	%	
Tuning Slope	Positive				
Control Voltage Range	0	2	4	VDC	with Vs=12.0V or 5.0V
Control Voltage Range	0.0	1.4	2.8	VDC	with Vs=3.3V

## Additional parameters

Parameter	Min	Typ	Max.	Units	Condition
Phase Noise <sup>3</sup>			-65	dBc/Hz	1 Hz @ 10 MHz 10 Hz 100 Hz 1 kHz 10 kHz
			-95	dBc/Hz	
			-120	dBc/Hz	
			-140	dBc/Hz	
			-145	dBc/Hz	
Weight			8.0	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
			28	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		
Package Codes:					
Code A1 A2	Height "H" 9.3 8.3	Pin Length "L" 5.85min. 5.85min.	Code B1	Height "H" 10.4	Pin Length "L" NA
<p>Square Corner indicates pin 1</p> <p>Top View: 14, 8, 7, 1</p> <p>Dimensions: Inches (mm)</p>			<p>Dimensions: mm</p>		
<p><b>Pin Connections</b></p> <ul style="list-style-type: none"> <li>1 Electrical Frequency Adjust Input (EFC)</li> <li>7 Ground (Case)</li> <li>8 RF Output</li> <li>14 Supply Voltage Input</li> </ul>			<p><b>Pin Connections</b></p> <ul style="list-style-type: none"> <li>1 Electrical Frequency Adjust Input (EFC)</li> <li>7 Ground (Case)</li> <li>8 RF Output</li> <li>14 Supply Voltage Input</li> </ul>		

**Standard Shipping Method (For Type B Enclosures)**

Production tolerance complying DIN IEC 286-3

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

Lage im Gurt Position in tape Pin 1

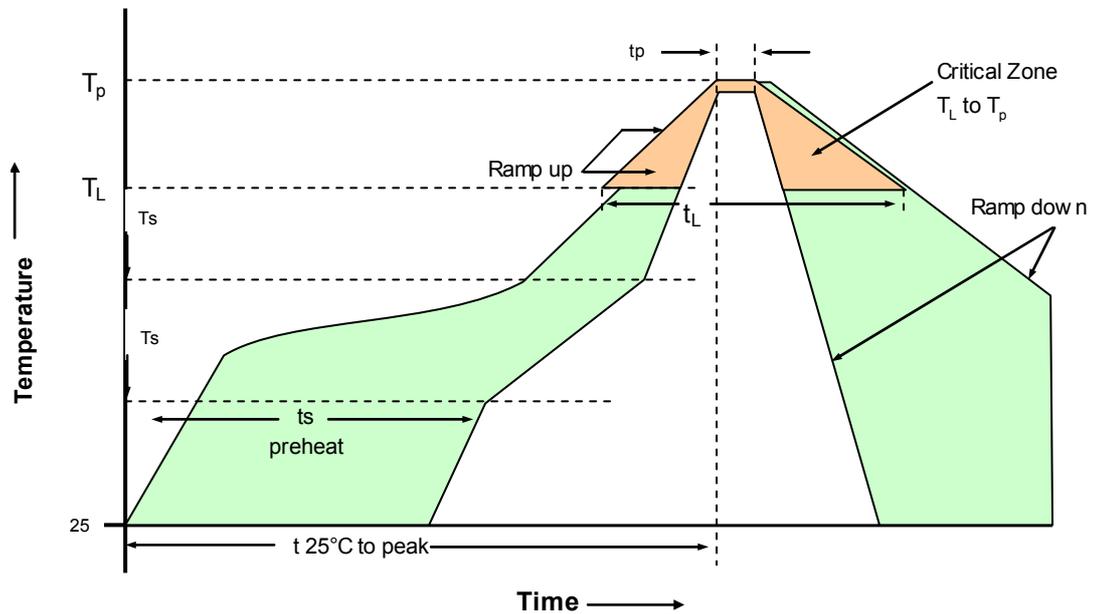
Abwickelrichtung Unwinding direction

Gurtunterseite Tape bottom side

Gurtoberseite Tape upper side

Enclosure Type	Tape width W [mm]	Quantity per meter	Quantity per reel	Dimension P
Type B	44	50	300	20

**Recommended Reflow Profile**



Profile Feature	Pb-Free Assembly/Sn-Pb Assembly
Average ramp-up rate ( $T_L$ to $T_p$ )	3°C/second 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
$T_{s_{max}}$ to $T_L$ - Ramp-up Rate	3°C/second max.
Time maintained above - Temperature ( $T_L$ ) - Time ( $t_L$ )	217°C 60-150 seconds
Peak Temperature ( $T_p$ )	max 260°C
Time within 5°C of actual Peak Temperature ( $t_p$ )	20-40 seconds
Ramp-down Rate	6°C/second max.
Time 25°C to Peak Temperature	8 minutes max.

Note: All temperatures refer to topside of the package, measured on the package body surface.

## How to Order this Product:

<b>Step 1</b>	<b>Use this worksheet to forward the following information to your factory representative:</b>				
<b>Model</b>	<b>Stability Code</b>	<b>Supply Voltage Code</b>	<b>RF Output Code</b>	<b>Package Code</b>	<b>Frequency</b>
C4400			RFH		

*Example*  
 : C4400                      D207                      SV050                      RFH                      A1                      10.000 Mhz

<b>Step 2</b>	<b>The factory representative will then respond with a Vectron Model Number in the following configuration:</b>		
<b>Model</b>	<b>Package Code</b>	<b>Dash</b>	<b>Dash Number</b>
C4400	[Customer Specified Package Code]	-	[Factory Generated 4 digit number]

*Typical P/N = C4400A1-0001*

### 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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