

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 stabilities¹ [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 _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			2	minutes	to ± 100ppb of final frequency (1 hour reading) @ +25°C	

Frequency stabilities¹ [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 _S ± 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		
Signal Level (Voh)	3.7		0.3	VDC		
Duty cycle	2.4		55	%		
Signal [Option]	Sinewave					RFS
Load		50		Ω		
Output Power @3,3V supply volt.	2	5	8	dBm	50 Ohm load	
Harmonics			-30	dBc	50 Ohm load	
Power @5V	5	8	11	dBm	50 Ohm load	

Frequency Tuning (EFC) 10 to 80MHz

Parameter	Min	Typ	Max.	Units	Condition	Ordering Code ⁵
Tuning Range	Fixed OCXO; No adjust					0
Tuning Range	±5.0		±12	ppm	with AT cut Crystal	1
	±1.0		±3	ppm	with SC cut Crystal	1
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	

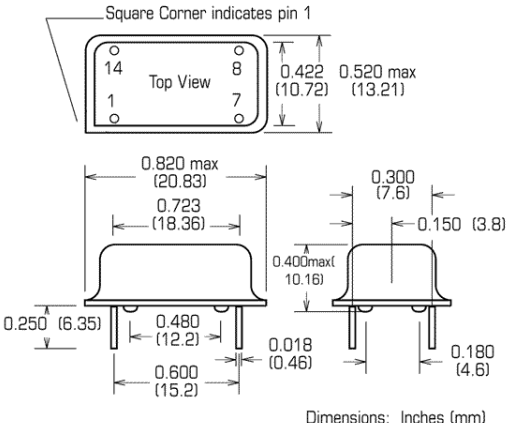
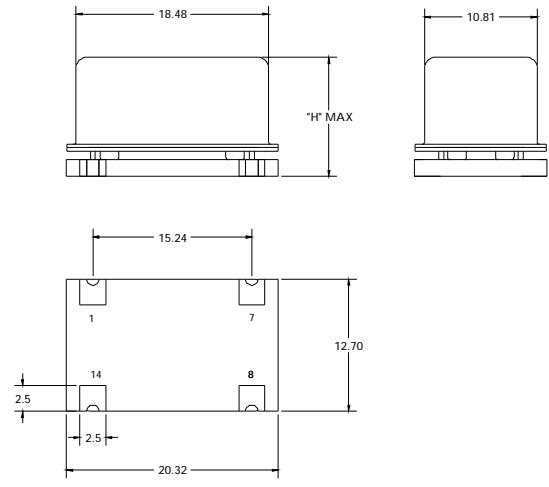
Additional parameters

Parameter	Min	Typ	Max.	Units	Condition
Phase Noise ³			-65	dBc/Hz	1 Hz @ 10 MHz
			-95	dBc/Hz	10 Hz
			-120	dBc/Hz	100 Hz
			-140	dBc/Hz	1 kHz
			-145	dBc/Hz	10 kHz
Weight			8.0	g	
Processing & Packing	Handling & processing note				

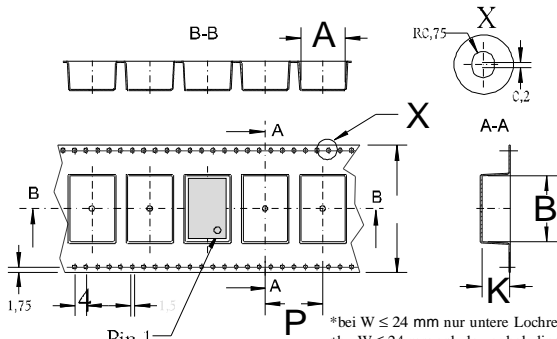
Absolute Maximum Ratings

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	

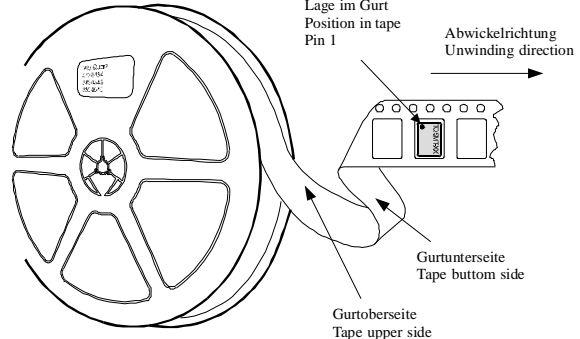
Enclosures

Type A			Type B		
Package Codes:					
Code	Height "H"	Pin Length "L"	Code	Height "H"	Pin Length "L"
A1	9.3	5.85min.	B1	10.4	NA
A2	8.3	5.85min.			
 <p>Square Corner indicates pin 1</p> <p>Top View: 14, 8, 1, 7</p> <p>Dimensions: Inches (mm)</p>			 <p>Dimensions: mm</p>		
<p>Pin Connections</p> <ul style="list-style-type: none"> 1 Electrical Frequency Adjust Input (EFC) 7 Ground (Case) 8 RF Output 14 Supply Voltage Input 			<p>Pin Connections</p> <ul style="list-style-type: none"> 1 Electrical Frequency Adjust Input (EFC) 7 Ground (Case) 8 RF Output 14 Supply Voltage Input 		

Standard Shipping Method (For Type B Enclosures)



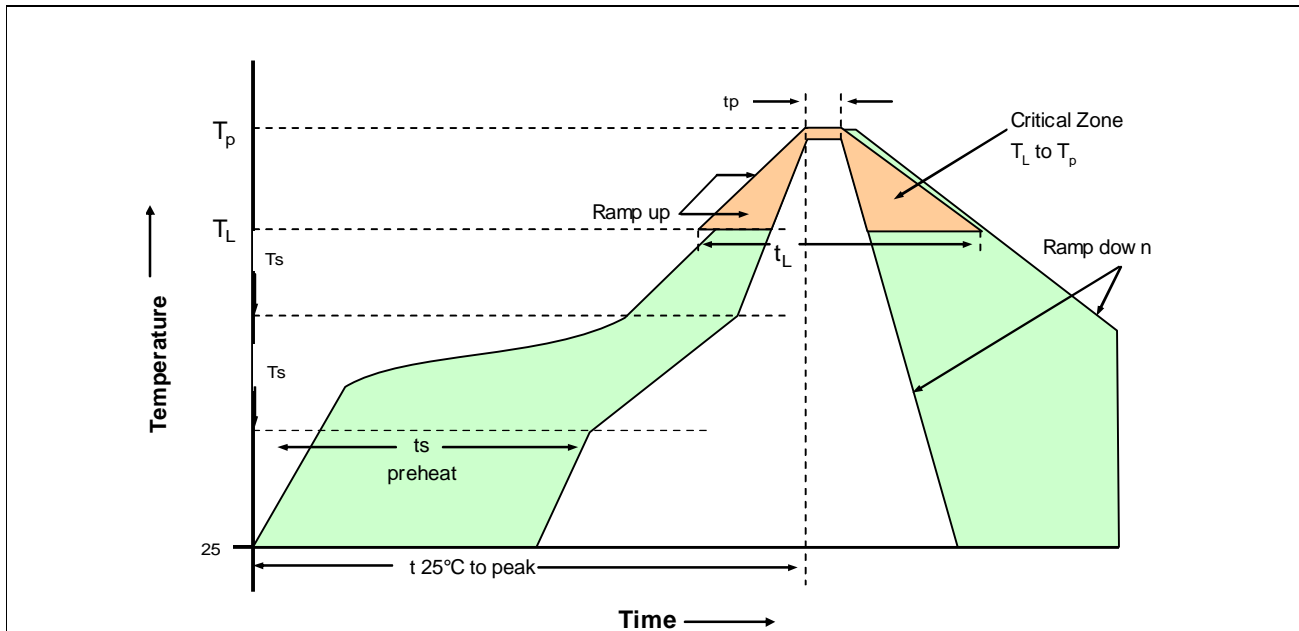
*bei W ≤ 24 mm nur untere Lochreihe
*by W ≤ 24 mm only lower hole line



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

Production tolerance complying DIN IEC 286-3

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 information to your factory representative :					
Model	Stability Code	Supply Voltage Code	RF Output Code	Package Code	Frequency Control/ Enable	Frequency
C4400	D107	SV050	RFH	A1	1	10MHz

Vs.operat. Temp. Range

D107:	±100ppb	-20 ...+70°C
D257:	±250ppb	-20 ...+70°C
F257:	±250ppb	-40 ...+85°C
D108:	±10ppb	-20 ...+70°C
D258:	±25ppb	-20 ...+70°C
F508:	±50ppb	-40 ...+85°C

Signal:

RFH: HCMOS

Tuning Range:

0: Fixed OCXO; No adjust
 1: ±5.0 ppm.. ±12 ppm(AT)
 1: ±1.0 ppm ..±3.0 ppm(SC)

Enclosure:

A1: H: 9.3 L: 5.85min
 A2: H: 8.3 L: 5.85min
 A3: H: 10.4 L: NA

Supply:

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

Step 2	The factory representative will then respond with a Vectron Model Number in the following configuration:		
Model	Package Code	Dash	Dash Number
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.