VECTRON INTERNATIONAL
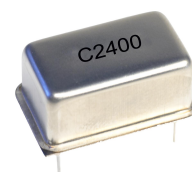A DOVER COMPANY

C2400

TCXO

Typical Applications
PCS Base Stations
Land Mobile Radio
Cellular Telephony
Radio in the Local Loop

Features
EFC Standard
Hermetic
Wide Frequency Range

Previous Vectron Model Numbers

TQDILTC; 979; 979W, 959; 959W, TC-400

Frequency Range

10 MHz – 200 MHz

Standard Frequencies

10, 19.44, 20.48, 38.88, 77.76MHz;

Frequency stabilities[1]

Parameter	Min	Typ	Max.	Units	Operating temp range	Ordering Code[5]
vs. operating temperature range (Referenced to +25°C)	-2.0		+2.0	ppm	-40 … +85°C	F206
	-1.0		+1.0	ppm	-40 … +85°C	F106
	-2.0		+2.0	ppm	-20 … +70°C	D206
	-1.0		+1.0	ppm	-20 … +70°C	D106
	-1.0		+1.0	ppm	0 … +50°C	B106
	-0.5		+0.5	ppm	0 … +50°C	B507
Parameter	**Min**	**Typ**	**Max.**	**Units**	**Condition**	
Initial tolerance	- 2.5		+2.5	ppm	at time of shipment, nominal EFC	
vs. supply voltage change	- 0.2		+0.2	ppm	$V_S \pm 5\%$	
vs. load change	- 0.2		+0.2	ppm	Load ± 10%	
vs aging		1.0		ppm/yr		

Supply voltage (Vs)

Parameter	Min	Typ	Max.	Units	Condition	Ordering Code[5]
Supply voltage [Standard]	3.135	3.3	3.465	VDC		SV033
Supply voltage [Option]	4.75	5	5.25	VDC		SV050
Current consumption			15	mA	@ +25°C & 3.3VDC & clipped sinewave	
			50	mA	@ +25°C & 3.3VDC & CMOS	
			18	mA	@ +25°C & 5.0VDC & clipped sinewave	
			50	mA	@ +25°C & 5.0VDC & CMOS	

RF output

Parameter	Min	Typ	Max.	Units	Condition	Ordering Code[5]
Signal [Standard]		HCMOS				RFH
Load	13.5	15	16.5	pF		
Signal Level (Vol)			0.5	VDC	with Vs= 5.0V and 15pF load	
			0.3	VDC	with Vs=3.3V and 15pF load	
Signal Level (Voh)	4.5			VDC	with Vs= 5.0V and 15pF load	
	3.0			VDC	with Vs=3.3V and 15pF load	
Rise and Fall time			5	ns		
Duty cycle	40	50	60	%	@ (Voh-Vol)/2	
Signal [Option]		clipped Sinewave				RFC
Load R	9	10	11	kΩ		
|| C	9	10	11	pF		
Output power	0.7			V_{pp}	@ 10kΩ ||10pF	
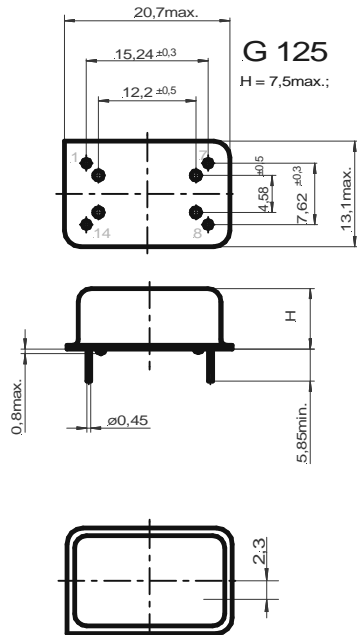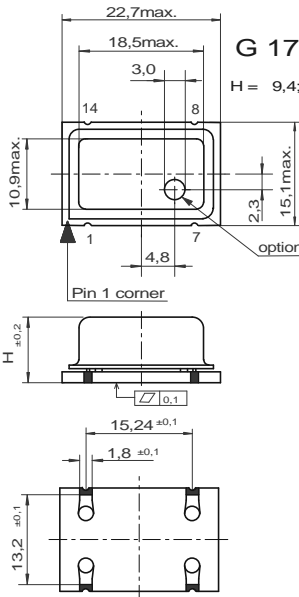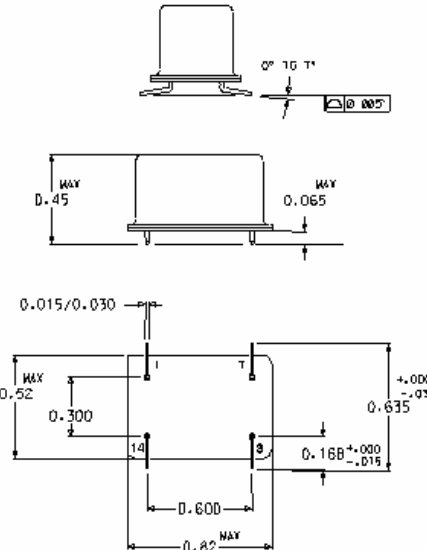
Frequency Tuning (EFC)

Parameter	Min	Typ	Max.	Units	Condition
Tuning Range	± 8.0	±12.0	± 20.0	ppm	Standard Version
Linearity			10	%	
Tuning Slope		Positive			
Control Voltage Range	0.3	1.65	3.0	VDC	with Vs=3.3VDC
	0.5	2.5	4.5	VDC	with Vs=5.0VDC
Freq. control input impedance	10			kΩ	

Additional parameters

Parameter	Min	Typ	Max.	Units	Condition		
Phase Noise[3]		-90		dBc/Hz	10	Hz	@40 MHz
		-120		dBc/Hz	100	Hz	
		-140		dBc/Hz	1	kHz	
		-150		dBc/Hz	10	kHz	
Weight			6	g			
Processing & Packing		Handling & processing note					

Enclosures

Type G125			Type G175			Type C		
Package Codes:								
Code	Height "H"	Pin Length "L"	Code	Height "H"	Pin Length "L"	Code	Height "H"	Pin Length "L"
A1	7.5	5.85	B1	9.4	NA	C1	0.45	NA
A2	8.0	5.85						
A3	10.1	5.85						

G 125
H = 7,5max.;
20,7max.
15,24 ±0,3
12,2 ±0,5
4,58 ±0,5
7,62 ±0,3
13,1max.
0,8max.
ø0,45
5,85min.
2,3
Dimensions: mm

G 175
H = 9,4; G175 Standard
22,7max.
18,5max.
3,0
14   8
10,9max.
15,1max.
2,3
option
7
4,8
Pin 1 corner
H ±0,2
15,24 ±0,1
1,8 ±0,1
13,2 ±0,1
Dimensions: lmm

Type C
0° TO T°
MAX 0.45
MAX 0.065
0.015/0.030
MAX 0.52
0.300
MAX 0.82
0.600
14   8
0.168 +.000 -.015
0.635 +.000 -.03
Dimensions: inches

Pin Connections	Pin Connections	Pin Connections

1   Electronic Frequency Control Input (EFC)
7   Ground (Case)
8   RF Output
14   Supply Voltage Input (Vs)
 	
    Outline Drawing: G125
	1 Electronic Frequency Control Input (EFC)
	7 Ground (Case)
	8 RF Output
	14 Supply Voltage Input (Vs)
	
	    Outline Drawing: G175
		1 Electronic Frequency Control Input (EFC)
		7 Ground (Case)
		8 RF Output
		14 Supply Voltage Input (Vs)
		
		    Outline Drawing: VD-XXXXX

Marking

C2400xx-xxxx
  Frequency
  * C AYYWW

Absolute Maximum Ratings

Parameter	Min	Typ	Max.	Units	Condition
Supply voltage (Vs)			**6.0**	V	
Control Voltage	0		**Vs**	V	
Maximum output load @ CMOS			50	pF	
Operable temperature range	-40		+85	°C	
Storage temperature range	-55		+125	°C	

Standard Shipping Method

B-B

R0,75 X

Lage im Gurt
Position in tape
Pin 1

Abwickelrichtung
Unwinding direction

A-A

Gurtunterseite
Tape buttom side

Gurtoberseite
Tape upper side

Pin 1

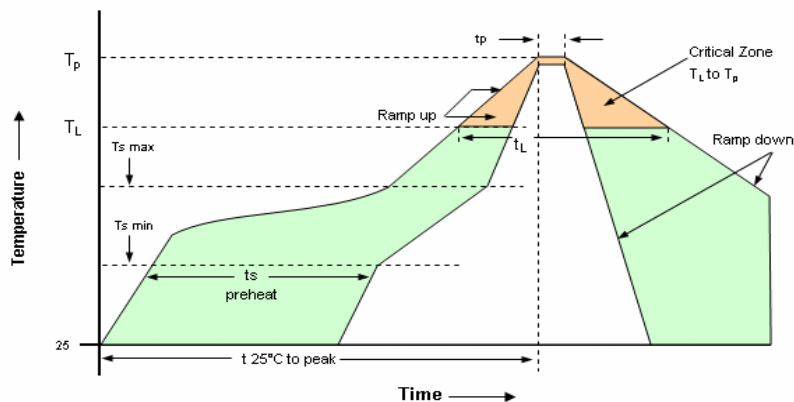*bei W ≤ 24 mm nur untere Lochreihe
*by W ≤ 24 mm only lower hole line
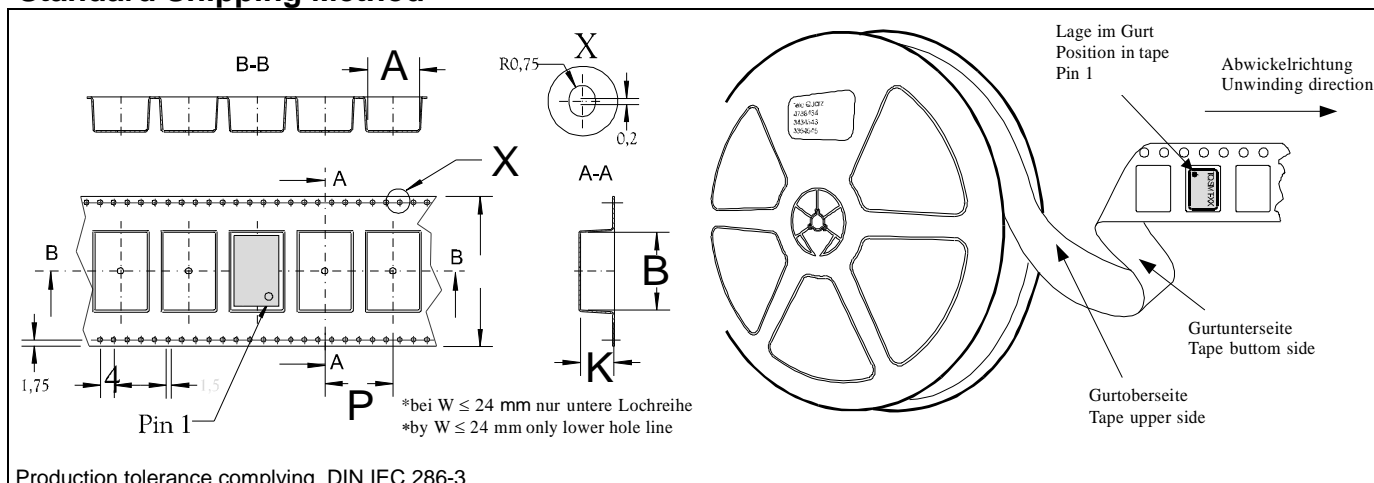
Production tolerance complying DIN IEC 286-3

Enclosure Type	Tape width W [mm]	Quantity per meter	Quantity per reel	Dimension P	
G175	44	50	300	20	

Recommended Reflow Profile

Solderprofile:

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.

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**
	C2400					

Example: *C2400*   *D256*   *SV033*   *RFC*   *A1*   *20.48 MHz*

Step 2	The factory representative will then respond with a Vectron Model Number in the following Configuration:		
	Model	**Package Code**	**Dash**	**Dash Number**
	C2400	[Customer Specified Package Code]	-	[Factory Generated 4 digit number]

Typical P/N = C2400A1-0001

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.