

MODEL VTXO200A

SMD Voltage Controlled Temperature Compensated Crystal Oscillators

Small low profile SMD VCTCXO with standard 6-terminal interface, clipped sinewave output and manual trimmer. Frequencies ranging from 10MHz to 32MHz available.

Product Description

This Colpitts oscillator uses the direct two-port temperature compensation method. Operating on the fundamental mode, the low-profile AT-cut crystal is housed in a seam-sealed ceramic package.

The product can be configured to operate on any voltage between 2.7V and 5V. A mechanical trimmer is available for adjusting the frequency.

Applications include

TDMA/APMS/CDMA cellular and satellite phones, PCMCIA CDPD cards, two-pagers and many other wireless possibilities.



Features

- Excellent phase noise performance, very little aging and low temperature hysteresis
- Clipped sinewave frequency output (10MHz to 32MHz)
- Standard temperature stability choices are ± 1 ppm, ± 1.5 ppm and ± 2.5 ppm, over wide temperature range
- This product has a manual trimmer as standard, but can be supplied with no trimmer to allow for an aqueous wash process
- Power supply alternatives are 2.7V to 5V, and the unit consumes only 1.2mA typically
- Frequency control ranges from 6 to 50ppm available

1.0 SPECIFICATION REFERENCES

1.1	Model Description	VTXO210A-5 10.0 MHz
1.2	Reference Number	72681
1.3	Company	Rakon Limited
1.4	Internal Part Number	502758 (TX4885)
1.5	Customer Part Number	

2.0 FREQUENCY CHARACTERISTICS

Line	Parameter	Test Condition	Min.	Max.	Units
2.1	Nominal Frequency	Nominal Frequency referenced to 25 deg. C.		10.0	MHz
2.2	Frequency calibration	Frequency at 23 deg. C ± 2 deg. C sixty minutes after reflow		1.0	\pm -ppm
2.3	Frequency stability over temperature	Referenced to frequency reading at 25 deg. C. Temperature varied at max. of 2 deg. C per minute. Control voltage held at voltage control range midpoint. (Note 2)		1.0	\pm -ppm
2.4	Temperature range	The operating temperature range over which the frequency stability is measured (Note 3)	-30.0	75.0	Degrees C
2.5	Frequency	Peak to peak amplitude of frequency perturbation	0.0	0.5	ppm

	perturbations	within operating temperature range (Note 1)			
2.6	Frequency slope of perturbations	Minimum of 1 frequency reading every 2 degrees C, over the operating temperature range (Note 1)	0.0	0.5	ppm/deg C
2.7	Static temperature hysteresis	Frequency change after reciprocal temperature ramped over the operating range. Frequency measured before and after at 25 deg C		0.4	+/-ppm
2.8	Supply voltage stability	Supply voltage varied +/-5% at 25 deg C. Frequencies above 25MHz are not able to be specified below the max. value given. (Note 1)		0.3	+/-ppm
2.9	Load sensitivity	+/-10% load change		0.2	+/-ppm
2.10	Root Allan Variance	1 second Tau. (Note 1)		1.0	ppb
2.11	Long term stability	Frequency drift over 1 year (Note 1)		1.0	+/-ppm
2.12	G Sensitivity	Gamma vector of all three axes from 30Hz to 1500Hz, typical values (Note 1)		2.0	ppb/G
2.13	Trimmer adjustment	Manual adjustment using trimmer tool	3.0		+/-ppm

3.0 POWER SUPPLY

Line	Parameter	Test Condition	Min.	Max.	Units
3.1	Supply voltage	Supply voltage range based on nominal 5V	4.75	5.25	V
3.2	Current	At Max. supply voltage		2.0	mA

4.0 CONTROL VOLTAGE

Line	Parameter	Test Condition	Min.	Max.	Units
4.1	Control voltage range	Determined by supply voltage (Note 5). The nominal control voltage value is midway between the minimum and maximum.	0.5	4.5	V
4.2	Frequency tuning	Frequency shift from Min. to Max. control voltages (Note 6)	16.0		ppm
4.3	Frequency tuning linearity	Deviation from straight line curve fit (Note 1)		5.0	%
4.4	Port input impedance		100.0		K Ohms

5.0 OSCILLATOR OUTPUT

Line	Parameter	Test Condition	Min.	Max.	Units
5.1	Output waveform	Clipped sinewave.			
5.2	Output voltage level	At min. supply voltage	1.0		V
5.3	Output load resistance	Operating range	18.0	22.0	K Ohms
5.4	Output load capacitance	Operating range	4.5	5.5	pF

6.0 SSB PHASE NOISE

<i>Line</i>	<i>Parameter</i>	<i>Test Condition</i>	<i>Min.</i>	<i>Max.</i>	<i>Units</i>
6.1	Typical SSB phase noise density	1Hz offset		-65.0	dBc/Hz
6.2	Typical SSB phase noise density	10Hz offset		-95.0	dBc/Hz
6.3	Typical SSB phase noise density	100Hz offset		-125.0	dBc/Hz
6.4	Typical SSB phase noise density	1KHz offset		-145.0	dBc/Hz
6.5	Typical SSB phase noise density	10KHz offset		-150.0	dBc/Hz

7.0 ENVIRONMENTAL

7.1	Shock	Half sinewave acceleration of 100G peak amplitude for 11ms duration, 3 cycles each plane.
7.2	Random Vibration	10G RMS 30Hz to 1500Hz duration of 6 Hours.
7.3	Humidity	After 48hours at 85 deg C +/-2% deg C 85% relative humidity non-condensing
7.4	Thermal shock test	Exposed at -40 deg C for 30 minutes then to 85 deg C for 30 minutes constantly for a period of 5 days.
7.5	Storage Temperature	-40 to 85 deg C.

8.0 MARKING

8.1	Type	Engrave
8.2	Line 1	Rakon logo
8.3	Line 2	Model description
8.4	Line 3	Frequency in MHz (to 3 decimal places or greater depending on the no. of significant digits after the decimal point)
8.5	Line 4	Date code WWYY

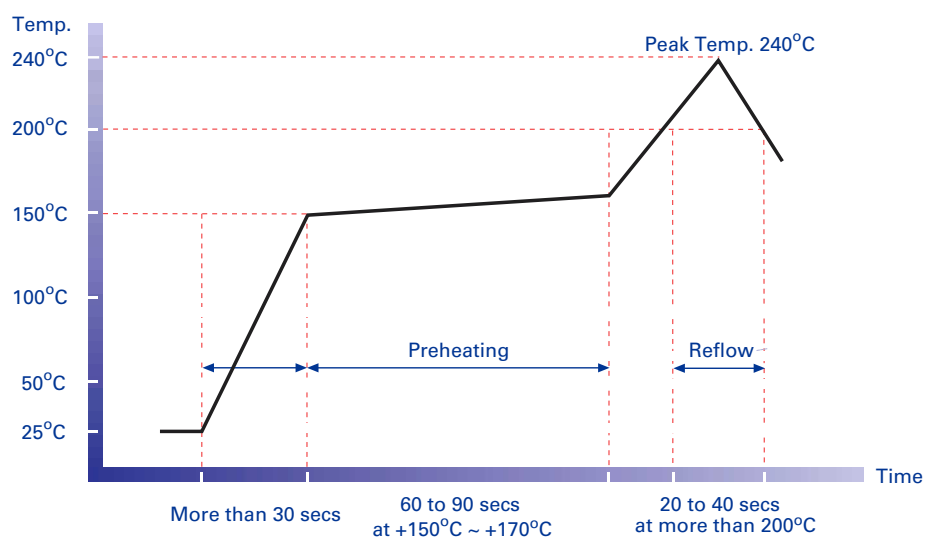
9.0 MANUFACTURING INFORMATION

9.1	Reflow and washing	Able to withstand normal solder reflow processes but not aqueous washing due to presence of trimmer with open dielectric exposure.
9.2	Packaging description	Tape and reel (1000 pc max) Typically 500.

10.0 SPECIFICATION NOTES

10.1	Note 1	The Max. value is the specification. A Min. value, if present, indicates the tightest specification available.
10.2	Note 2	A max. frequency stability over the temperature is required to be specified. For this model series, values between to +/-1ppm and +/-10ppm are available. Standard options are +/-1ppm, +/-1.5ppm, +/-2ppm and +/-2.5ppm.
10.3	Note 3	The operating temperature range needs to be specified. The extremes for this model are -40 and +85 deg C. If either or both ends of the operating temperature range are at these extremes, then the frequency stability options are limited to greater than +/-2ppm.

- 10.4 Note 4** Standard power supply options are 2.7V, 3V, 3.3V, 4V or 5V, but any value between Min. &Max. is available.
- 10.5 Note 5** This range is normally 0.5V to Supply voltage less 0.5V i.e. for a supply voltage of 3V, the range is 0.5V to 2.5V.
- 10.6 Note 6** The Min value is the specification. A Max value, if present, indicates the widest tuning range available for this model (subject to other parameters).



TITLE: 200 SERIES REFLOW

FILENAME: CAT015

REVISION: C

RELATED DRAWINGS:

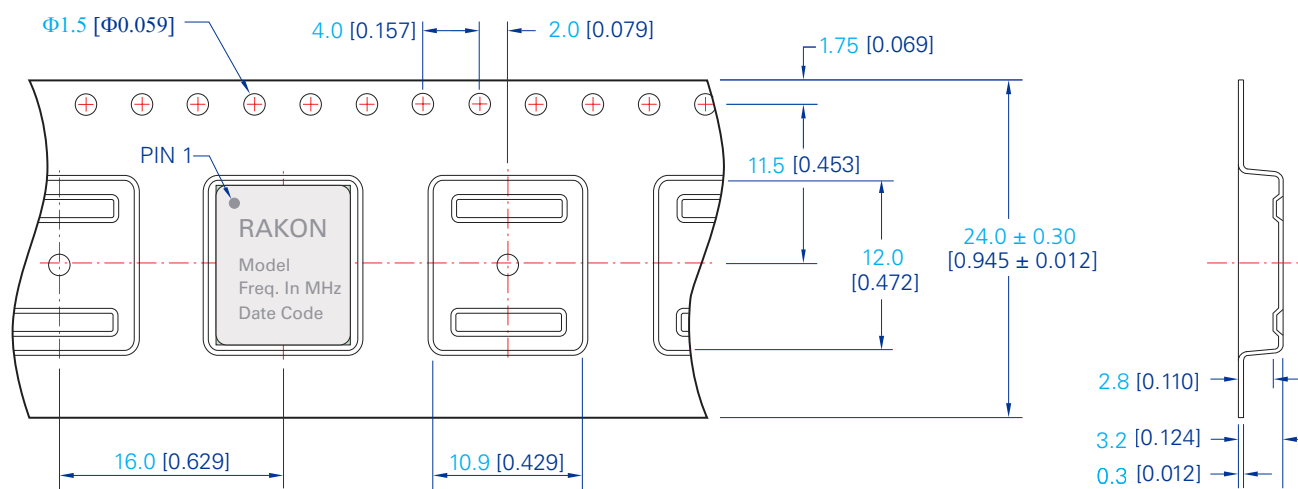
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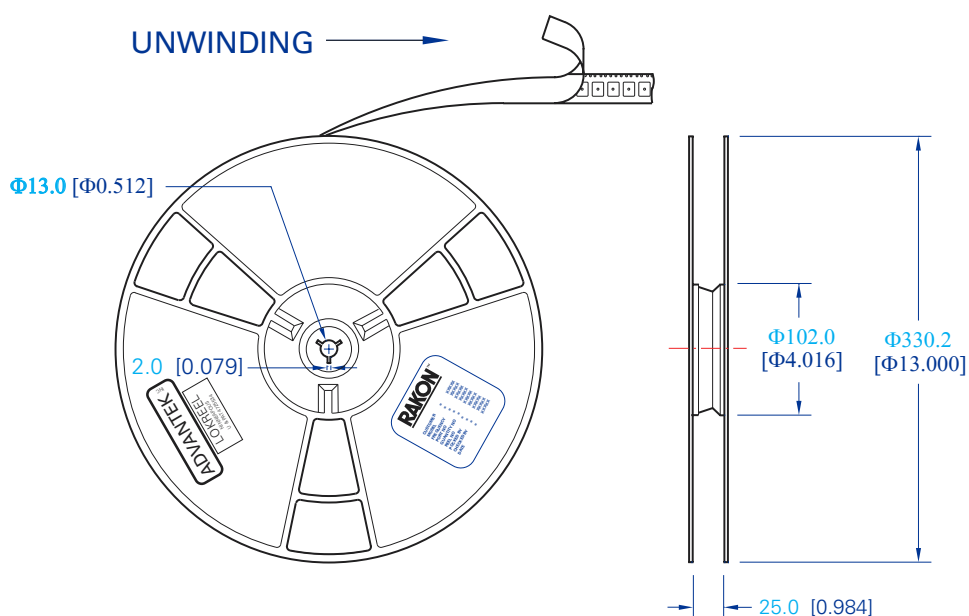
Millimetres [inch]

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UNWINDING →



REEL DETAIL (SCALE 1:5)

TITLE: 200A&B SERIES TAPE & REEL

FILENAME: CAT011

REVISION: B

Tolerances:

RELATED DRAWINGS:

DATE: 02-Nov-00

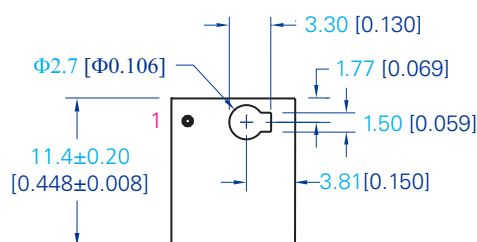
XX	= ±0.5
X.X	= ±0.2
X.XX	= ±0.10
X.XXX	= ±0.05
X°	= ±1.0°
Hole	= ±0.10

SCALE: 2 : 1

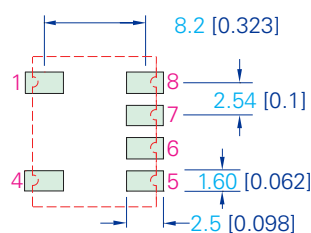
Millimetres [inch]

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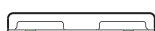


TOP VIEW

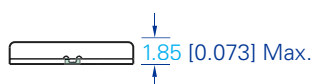


TOP VIEW

RECOMMENDED PAD LAYOUT
 TRACKS NOT RECOMMENDED UNDER OSCILLATOR



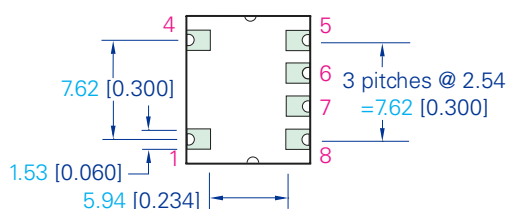
END VIEW



SIDE VIEW



END VIEW



BOTTOM VIEW

PIN CONNECTIONS

1	COMMON & CASE
4	COMMON & CASE
5	OUTPUT
6	COMMON & CASE
7	CONTROL VOLTAGE
8	+ Vcc

TITLE: VTXO200A MODEL

FILENAME: CAT004

REVISION: E

RELATED DRAWINGS:

DATE: 23-Jul-02

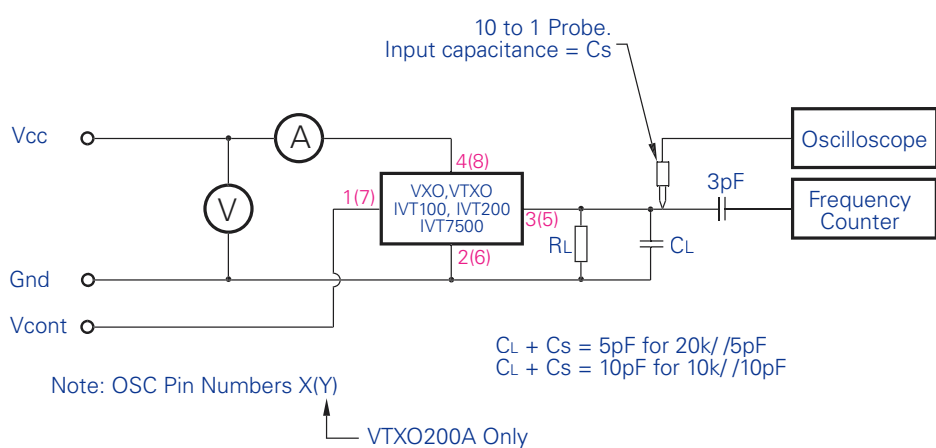
SCALE: 2 : 1

Millimetres [inch]

Tolerances:

XX ± 0.5 X.X ± 0.20 X.XX ± 0.10 X.XXX ± 0.05 X° $\pm 1.0^\circ$ Hole ± 0.10
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TITLE: VTXO & IVT CLIPPED SINEWAVE TEST CIRCUIT

FILENAME: CAT003

REVISION: E

RELATED DRAWINGS:

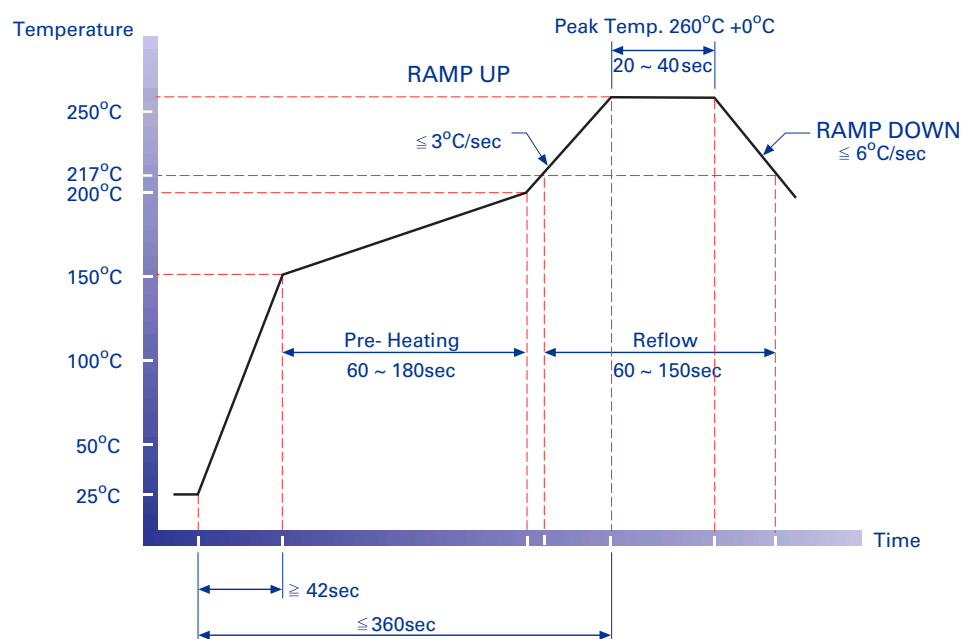
DATE: 29-Mar-05

SCALE: NTS

Millimetres [inch]

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NOTE:

1. The product has been tested to withstand the Reflow Profile shown. The Reflow Profile used to solder Rakon TCXO is determined by the solder paste manufacturer's specification. It is recommended that the Reflow Profile used does not exceed the one shown in this picture.

TITLE: 200A & B SERIES Pb-FREE REFLOW

FILENAME: CAT384

REVISION: A

RELATED DRAWINGS:

DATE: 16-Mar-06

SCALE: NTS

Millimetres [inch]

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