MODEL TXO600CGT

Temperature Compensated Crystal Oscillators with High Speed CMOS Output

Gull−wing style TCXO with high speed CMOS output using standard DIP−14 pin package. Frequencies ranging from 8.2MHz to 32MHz.

Product Description

This Colpitts oscillator uses the direct two−port temperature compensation method. Operating on the fundamental mode, the circular AT−cut crystal is housed in the environmentally rugged UM−1 SLIM resistance weld package.

The product can be configured to operate on any voltage between 2.7V and 5V.

Customized frequencies readily available make this model suitable for many timing and frequency applications where an HCMOS output is required.

Features

- Able to operate over industrial temperature ranges
- Excellent temperature stability performance
- Low temperature hysteresis
- Excellent vibration performance
- Very good phase noise performance

1.0 *SPECIFICATION REFERENCES*

1.1	**Model Description**	TXO610CGT 20.0 MHz RoHS compliant
1.2	**RoHS Compliant**	Yes
1.3	**Reference Number**	56548
1.4	**Company**	Rakon Limited
1.5	**Internal Part Number**	503087 (TX5148)
1.6	**Customer Part Number**	

2.0 *FREQUENCY CHARACTERISTICS*

Line	*Parameter*	*Test Condition*	*Min.*	*Max.*	*Units*
2.1	**Nominal Frequency**			20.0	MHz
2.2	**Nominal frequency tolerance**	Frequency at 23ºC ±2ºC (Note 1)		1.0	±ppm
2.3	**Frequency stability over temperature**	Referenced to frequency reading at 25ºC. Temperature varied at max of 2ºC per minute (Note 2)		1.0	±ppm
2.4	**Temperature range**	The operating temperature range over which the frequency stability is measured (Note 3)	−10.0	50.0	ºC
2.5	**Frequency slope**	Minimum of 1 frequency reading every 2ºC, over the operating temperature range (Note 1)		0.50	ppm/ºC
2.6	**Static temperature hysteresis**	Frequency change after reciprocal temperature ramped over the operating range. Frequency measured before and after at 25ºC.		0.4	±ppm
2.7	**Supply voltage stability**	Supply voltage varied ±5% at 25ºC. Frequencies above 25MHz are not able to be specified below the max. value given. (Note 1)		0.3	±ppm

2.8	**Load sensitivity**	±10% load change	0.2	±ppm
2.9	**Root Allan Variance**	1 second Tau (Note 1)	1.0	ppb
2.10	**Long term stability**	Frequency drift over 1 year (Note 1)	1.0	±ppm
2.11	**G Sensitivity**	Gamma vector of all three axes from 30Hz to 1500Hz, typical values (Note 1)	2.0	ppb/G

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		20.0	mA

4.0 *OSCILLATOR OUTPUT*

Line	*Parameter*	*Test Condition*	*Min.*	*Max.*	*Units*
4.1	**Output waveform**	Square CMOS			
4.2	**Duty cycle**	Measured at 50% Vcc trigger level	40.0	60.0	%
4.3	**Rise and fall times**	CMOS logic output at 10% to 90% Vcc		3.0	ns
4.4	**Voltage Output Low (VOL)**	10% maximum of Vcc		0.5	V
4.5	**Voltage Output High (VOH)**	90% of Vcc	4.5		V
4.6	**TTL load**	LS TTL gates		10.0	gates
4.7	**CMOS load**	HCMOS logic output		15.0	pF

5.0 *SSB PHASE NOISE*

Line	*Parameter*	*Test Condition*	*Min.*	*Max.*	*Units*
5.1	**Typical SSB phase noise density**	1Hz offset		−60.0	dBc/Hz
5.2	**Typical SSB phase noise density**	10Hz offset		−90.0	dBc/Hz
5.3	**Typical SSB phase noise density**	100Hz offset		−120.0	dBc/Hz
5.4	**Typical SSB phase noise density**	1KHz offset		−140.0	dBc/Hz
5.5	**Typical SSB phase noise density**	10KHz offset		−150.0	dBc/Hz

6.0 *ENVIRONMENTAL*

6.1	**Shock**	Half sinewave acceleration of 100G peak amplitude for 11ms duration, 3 cycles each plane.
6.2	**Random Vibration**	10G RMS 30Hz to 1500Hz duration of 6 hours.
6.3	**Humidity**	After 48 hours at 85ºC ±2ºC 85% relative humidity non−condensing
6.4	**Thermal shock test**	

		Exposed at −40ºC for 30 minutes then to 85ºC for 30 minutes constantly for a period of 5 days.
6.5	**Storage temperature**	−40 to 85ºC.

7.0 *MARKING*

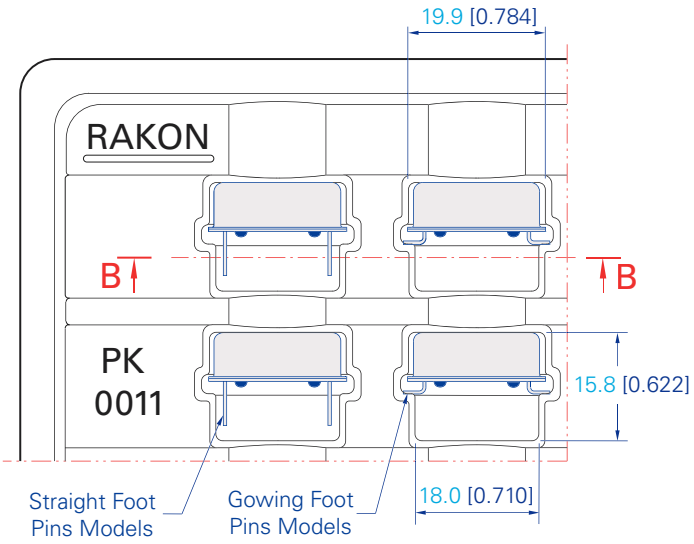
7.1	**Type**	Engraved
7.2	**Line 1**	Rakon logo
7.3	**Line 2**	Model descriptive
7.4	**Line 3**	Frequency in MHz (to 3 decimal places or greater depending on the no. of significant digits after the decimal point)
7.5	**Line 4**	Date code WWYY

8.0 *MANUFACTURING INFORMATION*

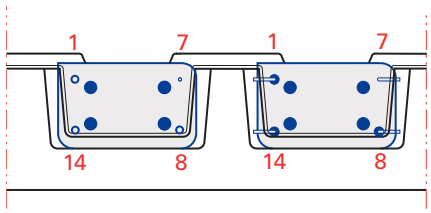
8.1	**Washing**	Able to withstand normal aqueous wash processes.
8.2	**Packaging description**	Anti−static trays, 50 units per tray, 10 trays per inner carton, 4 cartons per outer carton

9.0 *SPECIFICATION NOTES*

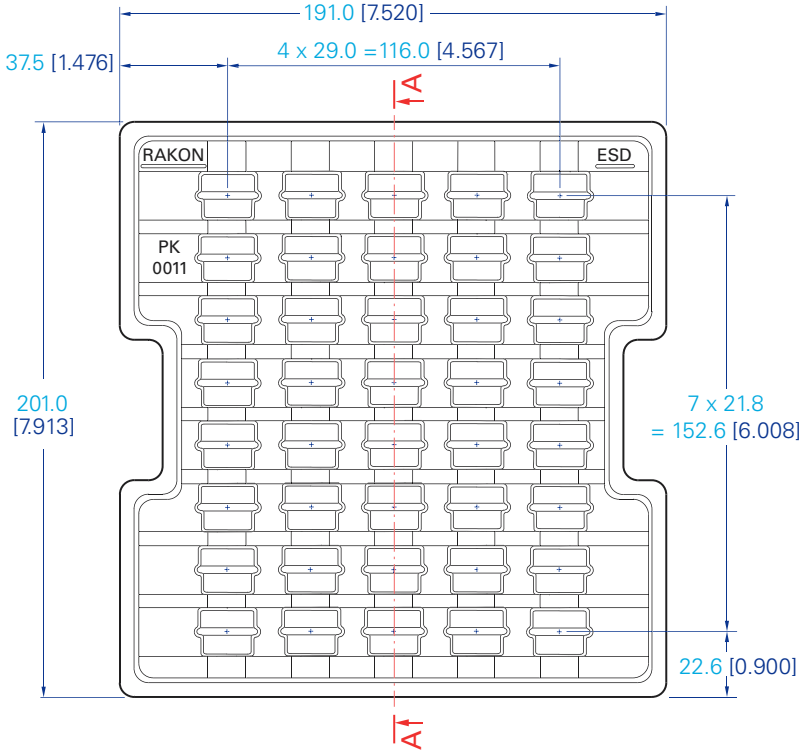
9.1	**Note 1**	The maximum value is the specification. A minimum value, if present, indicates the tightest specification available.
9.2	**Note 2**	A maximum frequency stability over the temperature is required to be specified. For this model series, values between to ±1ppm and ±10ppm are available. Standard options are ±1ppm, ±1.5ppm, ±2ppm and ±2.5ppm.
9.3	**Note 3**	The operating temperature range needs to be specified. The extremes for this model are −40 and +85ºC. If either or both ends of the operating temperature range are at these extremes, then the frequency stability options are limited to greater than ±1.5ppm.
9.4	**Note 4**	Standard power supply options are 2.7V, 3V, 3.3V, 4V or 5V. The unit will operate within ±5% of the nominal value.



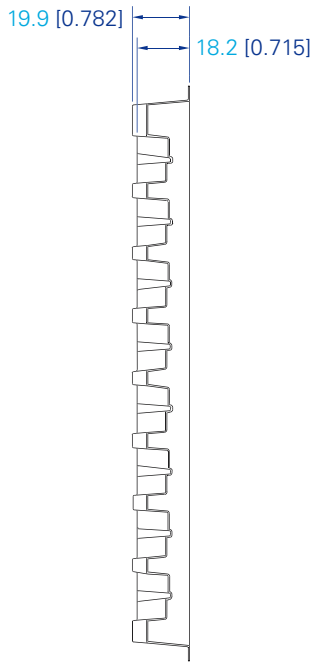
MODELS ORIENTATION (Scale 1:1)



SECTION B – B (Scale 1:1)



TRAY DETAIL (Scale 1:2)

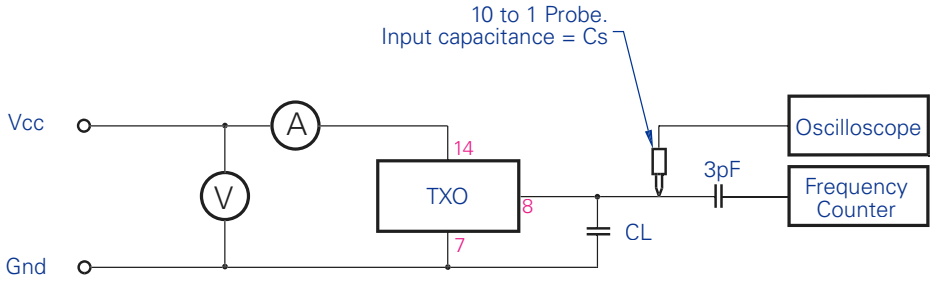


SECTION A–A (Scale 1:2)

Note: 40 Oscilators Per Tray. 11 (10+1 top) Trays Per Small Box. 4 Small Boxes Per Large Box.

TITLE: 600/6000 SERIES TRAY	FILENAME: CAT093	REVISION: E	Tolerances: XX =±0.5, X.X =±0.2, X.XX =±0.10, X.XXX =±0.05, X° =±1.0°, Hole =±0.10
RELATED DRAWINGS:		DATE: 11-Nov-03	
		SCALE: See Above	
		Millimetres [inch]	

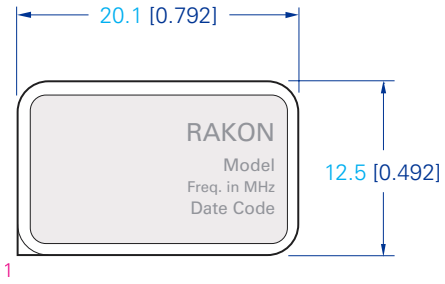
RAKON PRECISION QUARTZ CRYSTALS



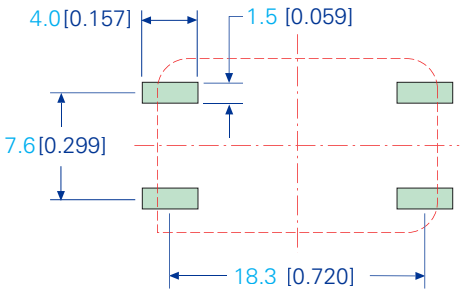
CL = 15pF Total FIxture and Probe Capavcitance

TITLE: TXO CMOS TEST CIRCUIT	FILENAME: CAT130	REVISION:	B
RELATED DRAWINGS:		DATE:	19-Jun-03
		SCALE:	NTS
		Millimetres [inch]	

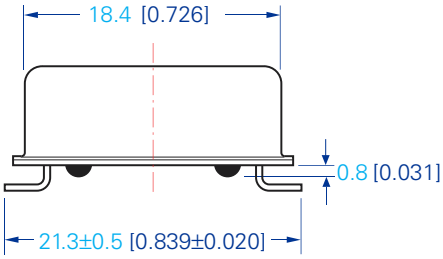
RAKON PRECISION QUARTZ CRYSTALS



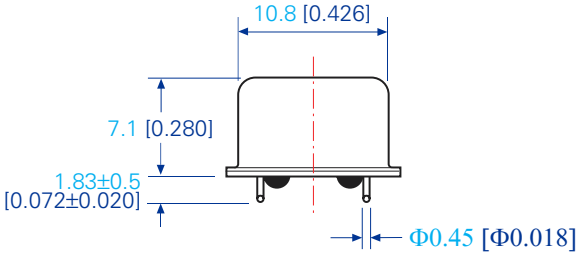
TOP VIEW



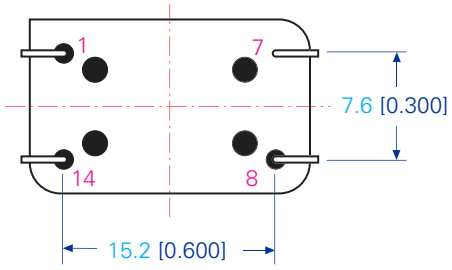
TOP VIEW



SIDE VIEW



END VIEW



BOTTOM VIEW

	PIN CONNECTIONS
1	N/C
7	COMMON & CASE
8	OUTPUT
14	+ Vcc

TITLE: TXO600CGT MODEL FILENAME: CAT329 REVISION: A

RELATED DRAWINGS:

DATE: 22-Mar-05

SCALE: 2 : 1

Millimetres [inch]

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

RAKON PRECISION QUARTZ CRYSTALS