

Guidelines for use of 7x5mm Network Timing TCXOs

This application note gives best practice advice on how to optimise the wander performance of applications using Rakon's 7x5 mm 'Pluto' TCXOs.

General Guidelines

Use a low noise, stable power supply. Decouple the TCXO supply locally with a 100 nF capacitor.

Use standard RF practice when designing the circuit board and place the TCXO close to the Timing PLL in order to minimise signal trace length.

Thermal Guidelines

The oscillator and board on which it is placed should be allowed to warm-up before starting measurements. The board temperature is often 20-25°C higher than ambient after warm-up.

A change in the temperature of the TCXO will result in phase and frequency variations (i.e. frequency wander). Changes in temperature can be a result of variation in airflow e.g. when fan speed varies with temperature or when fans kick in at a certain temperature. When designing a TCXO into the application effort should be made to reduce the effects of temperature and airflow on the device. Throughout all layers beneath the TCXO, avoid solid copper planes for any reason (power, ground). More copper increases heat transfer exchange with the TCXO, and decreases thermal stability. Keep the TCXO away from heat sources as a temperature gradient across the oscillator will make it more sensitive to wander. Place the oscillator where air flow is low. Tall components or mechanical parts can be used to shield the oscillator from airflow locally.

If after taking these guidelines into consideration the application does not have sufficient wander margin it may be necessary to repackage the 7x5 TCXO in a larger enclosure in order to insulate it more from the environment. Rakon does offer repackaged devices that are optimised for wander in standard 14 x 9 x 6 mm outline. Please contact our sales office.

As a temporary fix Rakon offers a plastic cover (P/N PCV00015AA1, attached) which can be placed over the TCXO as extra insulation from the environment (note this is less effective than using a Rakon repackaged device).

To fit the cover drill 4 holes (0.7 mm diameter, x=13.5 mm, y=8.5 mm) equidistant from the TCXO location as per following sketch:



The cover needs to be secured with adhesive.

Next step:

For more information email: info@rakon.co.uk

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APPROVALS

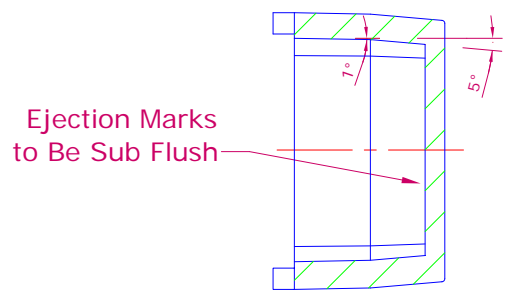
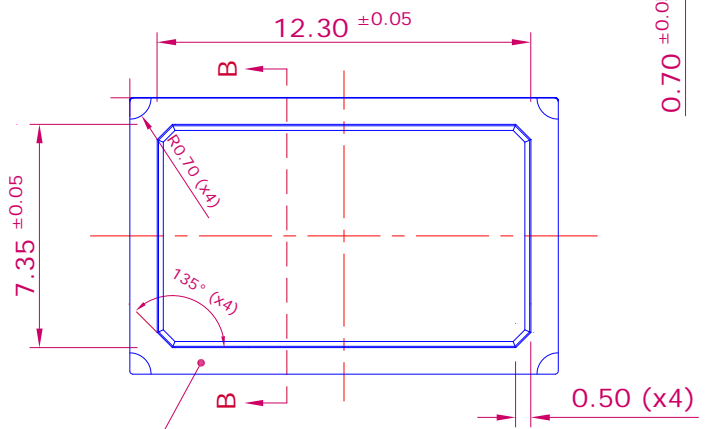
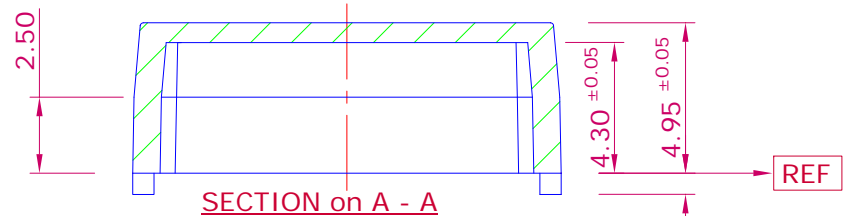
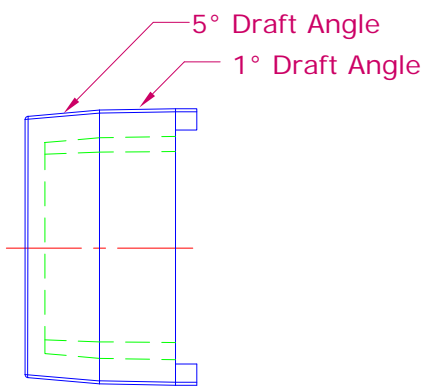
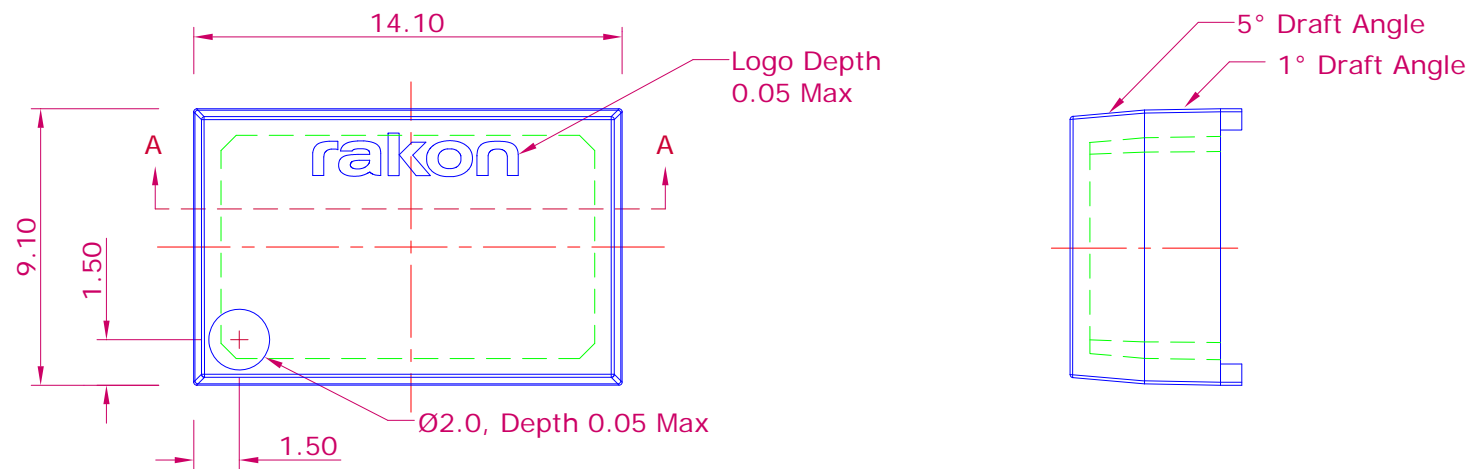
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Lower Face Free From Flash

MATERIAL	VECTRA E130i LCP
FINISH	BLACK (20 VDI)
TOLERANCES	2 PLACES ± 0.05 1 PLACE ± 0.1
UNLESS OTHERWISE STATED	

rakon

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DRAWN BY:	DIMENSIONS:	SCALE:	3RD ANGLE	APPROVED:
ITH	mm	4:1		G.W. 16FEB99
TITLE:	TRITON (14.1 x 9.1 x 4.95) LID			
CODE:	82P CV00 015 AA1			SHEET: 1of1