STP3599 LF / ROX5242T2N 10MHz Sine 12V

1.0 Description

The "ROX5242T2N" platform is a High End OCXO providing an ultimate frequency stability versus all operational conditions.

2.0 Application

- Grandmaster clock
- "Stratum-2" timing modules
- Instrumentation

3.0 Features

- Stability < 0.2ppb over operating temperature range from -40°C to +85°C
- Package: 51.3 x 41.3 x 14.2 mm max
- 12V Single Power Supply
- 10MHz sine wave output
- Analog EFC

4.0 Absolute Maximum Ratings

Parameter	Min.	Max.	Unit.
Storage temperature	-45	95	°C
Supply voltage (Vcc)	-0.3	13	V
Load for sine wave RF output	45	55	Ω
Continuous output current for HCMOS optional RF output		± 50	mA

5.0 Power Supply

Parameter	Min.	Typ.	Max.	Unit	Test Condition / Description
Supply voltage (Vcc)	11.4	12.0	12.6	V	
Current consumption (Warm up)			600	mA	
Current consumption (Steady state in still air at 25°C)		200		mA	

6.0 Temperature Range

Parameter	Min.	Typ.	Max.	Unit	Test Condition / Description
Operating temperature range	-40		+85	°C	Max airflow 2 m/s
Operable temperature range	-45		+90	°C	The oscillator will continue to provide an output signal, though not necessarily within the specified tolerances of frequency

7.0 Frequency stability versus operational conditions

Parameter	Min.	Typ.	Max.	Unit	Test Condition / Description
Nominal frequency		10.0		MHz	
Frequency calibration (at time of shipment)	-50		+50	ppb	At 25°C ± 2°C, EFC at 2.5V, reference to nominal frequency [1]
10 years stability (over all)			±350	ppb	After stabilization of the device (14 days of continuous operation)
Aging					
per day			±0.15	ppb	Measured before shipment
per year			±20	ppb	Cumulated – extrapolation
for 10 years			±200	ppb	Cumulated - extrapolation
Frequency stability over operating temperature			0.2	ppb	Reference to (Fmax - Fmin) peak to peak
Load variation sensibility	-0.1		+0.1		(50 ± 5) Ω
Supply voltage stability	-0.1		+0.1	ppb	Nominal VCC ±0.6V variation
Warm-up time @ 25°C			3	min	Within 10ppb in reference to final frequency after 1h of continuous operation
Warm-up time @ -40°C			5	min	Within 10ppb in reference to final frequency after 1h of continuous operation
Retrace Vs operating temperature range		±1	±5	ppb	24h on, 24h off, 1h on
Acceleration sensitivity		± 2.5		ppb/g	vs. static orientation
SSB Phase Noise, over +/-1.5Hz offset from frequency at 2.5V EFC, ambient temperature					Static conditions
1Hz			-110	dBc/Hz	
10Hz			-140	dBc/Hz	
100Hz			-150	dBc/Hz	
1kHz			-155	dBc/Hz	
10kHz			-155	dBc/Hz	
Short Term Stability (ADEV) , over +/-1.5Hz offset from frequency at 2.5V EFC, ambient temperature, no airflow					Static conditions
1s integration time			0.6	ppt	
10s integration time			0.8	ppt	
100s integration time			1	ppt	

8.0 Sine wave RF Output

Parameter	Min.	Typ.	Max.	Unit	Test Condition / Description
Waveform	Sine wave				
Load	45	50	55	Ω	
Output Power	5.5	7	8.5	dBm	
Harmonics			-40	dBc	
Spurious			-80	dBc	
Start-up time			1	Sec	

[1] The characteristics of the OCXO may be temporarily affected by the processes of assembly and soldering. The frequency specifications apply 48 hours after assembly. Nominal conditions apply unless otherwise stated

9.0 Frequency Control

Parameter	Min.	Typ.	Max.	Unit	Test Condition / Description
Control voltage (Vc)	0		5.0	V	
Frequency tuning	+/-0.3		+/-0.5	Ppm	Reference to frequency at Vc=2.5V
Linearity			±10	%	Deviation from the linear response over the control voltage range
Reference voltage		5.0		V	+/-5%

10.0 Marking

Parameter	Description
Type	Label marked
Barcode	Data matrix
Line 1	**RAKON**
Line 2	**STP3599 LF**
Line 3	10MHz
Line 4	[SN: Lnnnnn] = serial number (letter + 5 numerals)
Line 5	[DC: yy w] = date-code year / week

11.0 Manufacturing Information

Parameter	Description
Soldering	Hand or wave soldering
Assembly condition	Do not solder during upside down placement without mechanical fixation
Packaging description	All quantities will be provided in boxes
Moisture Sensitivity Level	MSL1 – Hermetically sealed package
Shelf life	No detrimental effect from a long shelf life (over 1 year). However, device requires 2 weeks max. of continuous operation prior to recovering its stability versus time (ageing).

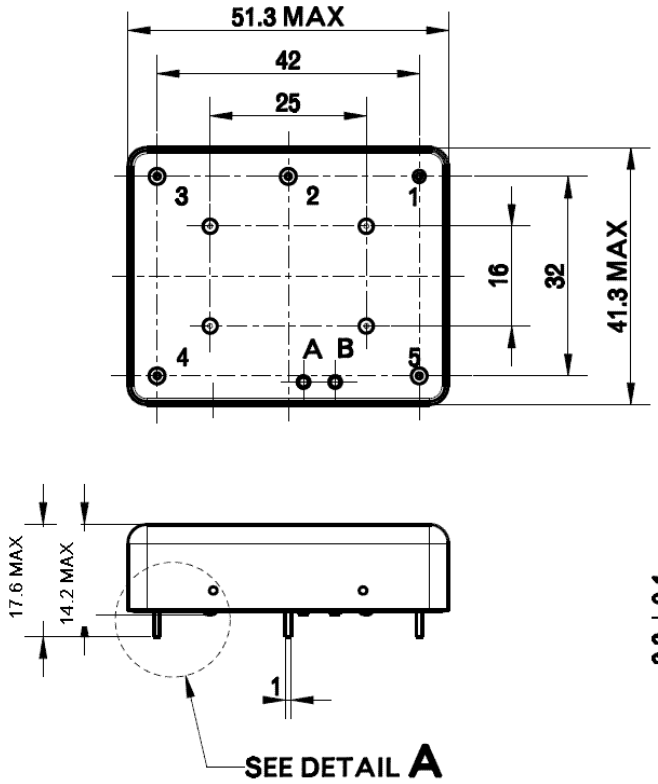
12.0 Environmental Specification[2]

Parameter	Description
RoHS	Parts are fully compliant with the European Union directives 2002/95/EC and 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and equipment
Shock	IEC 68-2-27 Test Ea (50g, 11ms, ½ sine. 5 directions x 3 shocks)
Vibration	IEC 68-2-06 Test Fc (10g, 10-500Hz 30 minutes/axis 1.5 hour total)

[2] For qualification, not operational

13.0 Model Outline: ROX5242T1N

Outline in mm - Package 51B



Pin	Function
1	Mechanical GND and supply
2	Frequency control input
3	Ref. voltage output
4	Supply input
5	Signal output
A	For internal use
B	For internal use

All tolerances ±0.2 mm

14.0 Pin Connections

Parameter	Description
Pin 1	GND (mechanical and supply)
Pin 2	Frequency control input (Vc)
Pin 3	Reference voltage output
Pin 4	Supply Voltage (Vcc)
Pin 5	RF output
Pin A	Pin trimmed before shipment - For internal use only
Pin B	Pin trimmed before shipment - For internal use only

15.0 Application Notes

- Application notes :
  - 093186 – RAKON EVK Hardware Installation Guide
  - 093187- RAKON EVK Software User Guide
- Evaluation Kit ref : 516257 (ROX5242T1N EVK)

16.0 Disclaimer

Parameter	Description
Disclaimer	"Samples supplied according to this specification are supplied from our development or pre-production programme and as such are not qualification approved products. No condition, warranty or representation regarding quality, suitability, performance, life or continuation of supply is given or implied and Guarantee in clause 6.1 of our standard Conditions of Sale is not applicable. The right is reserved to change the design or specification or cease supply without notice." – RAKON Limited.

17.0 Specification History

Version	User	Changes	Approver	Date
-	F. Vittrant	Preliminary datasheet "STP3599 LF" release to be approved by customer	D. Thorax	2020-11-17