

Product Description

The RK406 NS is a low cost and low power consumption Space OCXO dedicated to the New Space market (mini satellites and constellations) where tolerance to TiD, low power consumption and a good phase noise are required for a mission of 5 years or less. The product can be adapted for longer missions.

The RK406 NS platform is available at 10MHz and 100MHz as standard frequencies but can be adapted to any frequency from 10MHz to 125MHz. It is available in a small 1"x1" package.

Features

- Standard frequencies: 10 & 100MHz
- Low profile 1"x1": 12mm
- Supply Voltage : 3.3V or +5V
- Steady state consumption : 400 mW
- Overall 5y Frequency Stability: ± 0.6ppm
- ADEV (1s) <2E-11
- Output Wave Form : sine 50 Ohms or square
- TiD: 30kRads
- Latch up free up to LET=43 MeV/mg/cm²

Applications

- Frequency converters
- GPS receivers
- Synthesizers
- Reference for MRO

Specifications

Environmental conditions

Parameters	Conditions/remarks	Min	Nom	Max	Unit
Operating Temperature	T _{Op}	-40	25	70	°C
Switch-on Temperature	T _{So}	-40		85	°C
Non-Operating Temperature	T _{NOp}	-40		85	°C
Random Vibration	20 to 50 Hz : +6dB/oct 50 to 350 Hz : 0.8 g ² /Hz 350 to 2000 Hz : -6dB/oct				
Shocks	Mechanical shock as per MIL-STD-202, Method 213 : half sine with a peak acceleration of 2000g for duration of 0.5msec				
Radiation	Total Ionizing Dose of 30 kRad, low dose rate (36 to 360 rad/h) Latch up free up to LET=43 MeV/mg/cm ²				

Electrical interface

Parameters	Conditions/remarks	Min	Nom	Max	Unit
Power supply		4.75	5	5.25	V
Load Impedance		45	50	55	Ω

Screening options

Screening Operation	Requirements & Conditions	OPTIONS	
		EM	FM
Random acceleration	Level as per MIL-STD-202, Method 214, Condition I-D	-	√
Thermal shocks	MIL-STD-202, Method 107, Condition A1	-	√
Ageing	@ max operating temp. range	-	√
Final measurement	MIL-STD-883 , method 2020, Condition B	√	√
External Visual Inspection	MIL-STD-883 , Method 2009	√	√

Performance @10MHz

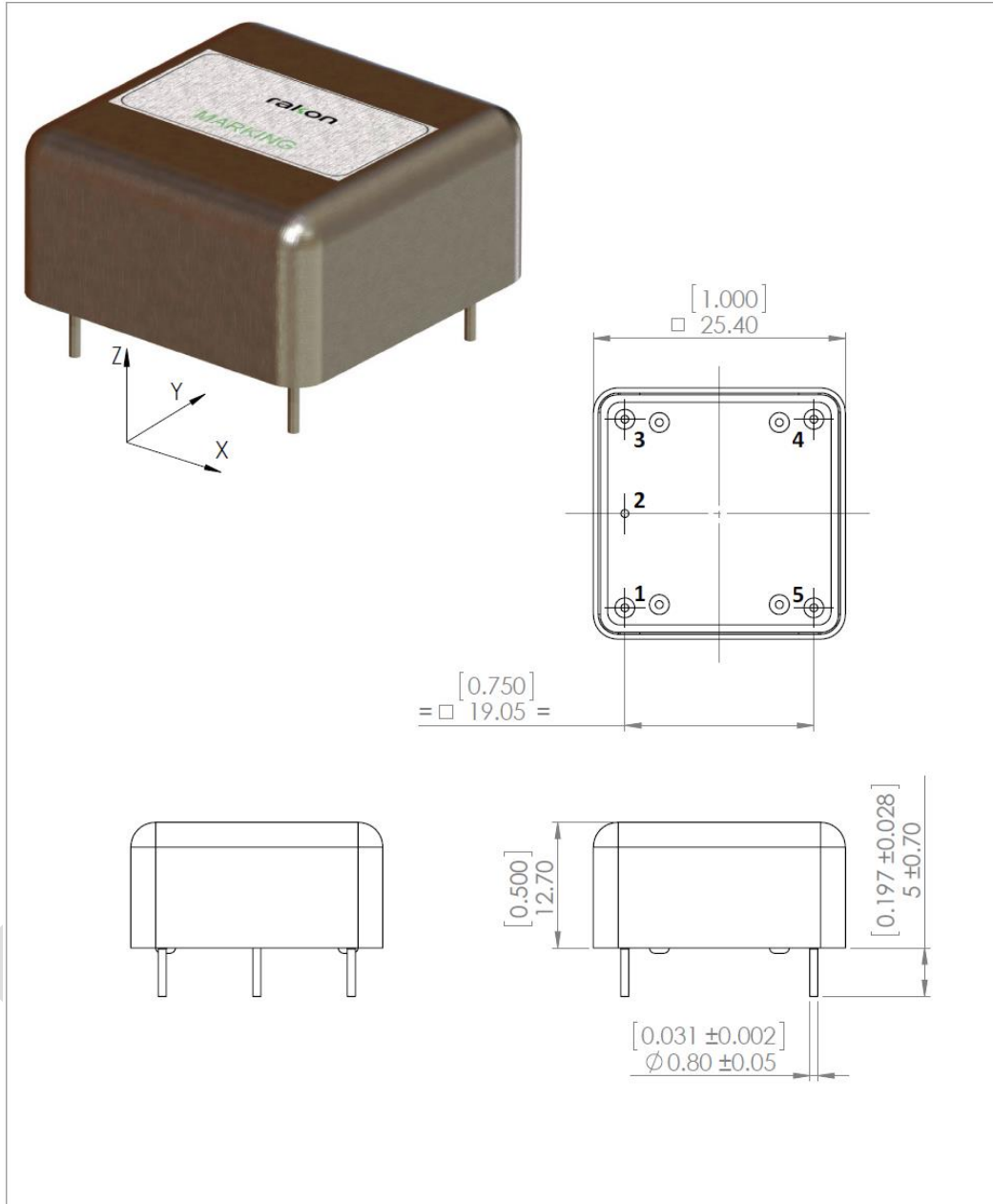
Parameters	Conditions/Remarks	Min	Typ	Max	Unit
Nominal Frequency			10		MHz
Initial frequency accuracy	Vacuum, at time of shipment			± 250	ppb
Overall frequency drift	Initial, temp. range, EoL (5y)			± 600	ppb
Frequency stability vs temperature	Referenced to +25°C			± 100	ppb
Frequency stability vs. supply voltage				± 50	ppb
Frequency stability vs. load				± 50	ppb
Frequency stability vs pressure	Atm to vacuum			± 200	ppb
Frequency ageing	Over 1 day			± 1	ppb
Allan Standard Deviation	Tau = 1s @25°C			2.E-11	
Frequency warm up	@25°C Vacuum			10	mn
Phase noise (achieved after 10mn warm-up) @25°C	@1Hz			-85	dBc/Hz
	@10Hz			-115	dBc/Hz
	@100Hz			-135	dBc/Hz
	@1kHz			-150	dBc/Hz
	@10kHz			-160	dBc/Hz
	@100kHz			-163	dBc/Hz
Output waveform		Sine			
Output level	End of Life	0			dBm
Steady state supply power	@-40°C Vacuum			800	mW
	@25°C Vacuum			400	mW
Warm up supply power		600		1	W
Pull range (option)	Sufficient for 5 years	± 600			ppb
Harmonics level				-25	dBc
Spurious level	100Hz to 5GHz			-80	dBc

Performance @100MHz

Parameters	Conditions/Remarks	Min	Typ	Max	Unit
Nominal Frequency			100		MHz
Initial frequency accuracy	Vacuum, at time of shipment			± 500	ppb
Overall frequency drift	Initial, temp. range, EoL (5y)			± 1.2	ppm
Frequency stability vs temperature	Referenced to +25°C			± 300	ppb
Frequency stability vs. supply voltage				± 50	ppb
Frequency stability vs. load				± 50	ppb
Frequency stability vs pressure	Atm to vacuum			± 200	ppb
Frequency ageing	Over 1 day			± 10	ppb
Allan Standard Deviation	Tau = 1s @25°C			4.E-11	
Frequency warm up	@25°C Vacuum			1	mn
Phase noise (achieved after 10mn warm-up) @25°C	@1Hz			-65	dBc/Hz
	@10Hz			-95	dBc/Hz
	@100Hz			-125	dBc/Hz
	@1kHz			-150	dBc/Hz
	@10kHz			-160	dBc/Hz
	@100kHz			-163	dBc/Hz
Output waveform		Sine			
Output level	End of Life	0			dBm
Steady state supply power	@-40°C Vacuum			800	mW
	@25°C Vacuum			400	mW
Warm up supply power				1	W
Pull range (option)	Sufficient for 5 years	± 1.2			ppm
Harmonics level				-25	dBc
Spurious level	100Hz to 5GHz			-80	dBc

Mechanical features

Assembly variants	Dimensions	
1"x1" pin through hole	1"x1"x0.5" 25x25x12 mm	



DOCUMENT : 150-Plan d'encombrement 150-Outline drawing				GEN. TOL. +/- 0.3[0.011]	UNITS: mm [inch]	SCALE 2:1
51001716.150-A0		ISSUE : A0	ORIGINATOR: M.Jouan	DATE: 18/07/2013	RELEASED IN AGILE BY WORKFLOW	FORMAT A4
Pin number	Name	Description				
1	Fout	Frequency output				
2	GND	Electrical & mechanical ground				
3	Vc	Voltage control for electrical tuning				
4	Vref	Reference voltage output				
5	Vcc	Supply voltage				