For this product, full and detailed specifications can be delivered on request. Specific request can be addressed to RAKON <u>info@rakon.fr</u>

#### **Product Description**

This Low Noise Space OCXO is designed for Clocks, Navigation and Positioning Systems. It is used in such applications as GPS receivers, digital cards, onboard calculators, down and up converters, synthesizers.



This frequency source is featured by remarkable frequency stability vs. temperature range down to ±20 ppb under vacuum and a noise floor down to -165dBc/Hz.

The RK408 is manufactured in accordance with MIL-PRF-55310 (Class 1, type 4, level S), is available in different packages in a volume of 40x50x20mm.

#### Features

- ITAR-Free
- Low phase noise
- Frequency Range: 10 MHz to 125 MHz
- Supply Voltage: +5V or +12V
- Multi-package
- Warm up consumption: 5 W max
- Steady state Consumption: 2 W under vacuum and 3W under atmospheric pressure
- Frequency Stability vs. Operating Temperature Range: ±20 ppb under vacuum

#### Applications

- Transponders
- GPS receivers
- Navigation
- Converters
- **Specifications**

#### **Environmental conditions**

Parameters	Conditions/remarks	Min	Nom	Max	Unit				
	Option A	-5 25 60							
Operating Temperature	Option B -20 25 70								
	Option C	-40	25	70	°C				
	Option D	-40	25	75	°C				
Switch-on Temperature	TSo	-40		85	°C				
Non-Operating Temperature	TNOp	-55		125	°C				
Random Vibration	Level as per MIL-STD-202 Method 214,								
Random vibration	condition K (46.3Grms)								
Circo Milero ti en	Level as per MIL-STD-202 Method 204,								
Sine Vibration	condition D (20G)								
	Mechanical shock as per MIL-STD-202,								
Shocks	Method 213, Condition F (half sine with a								
	peak acceleration of 1500g for duration of								
	0.5 msec)								
	TID : 100 kRad, low dose rate (36 to 360								
Radiation	rad/h)								

- Ageing : ±0.3 ppm max over 18 years at 10 MHz
- Output Wave Form : sine 50 Ohms
- Output Level : from 10 to 12 dBm
- Component selected as per ECSS-Q-ST-60C
- Materials selected as per ECSS-Q-ST-70
- Manufacturing in accordance with:
  MIL-PRF-55310 (Class 1, type 4, level S)
  ECSS-Q-ST-70-08C and ECSS-Q-ST-70-38C
- Standard frequencies: 10, 100 and 120MHz
- Short lead time for standard frequencies
  - Onboard calculators
  - Synthesizers
  - FGU

#### **Electrical interface**

Parameters	Conditions/remarks	Min	Nom	Max	Unit
Power supply	Option 1 (5V)	4.8	5	5.3	V
	Option 2 (12V)	11	12	13	٧
Load Impedance		45	50	55	Ω
Reference voltage	Supply voltage option 1	3.1	3.2	3.3	v
	Supply voltage option 2	6.8	7.25	7.8	v
Control voltage	when voltage control option is selected	0		Vref	v

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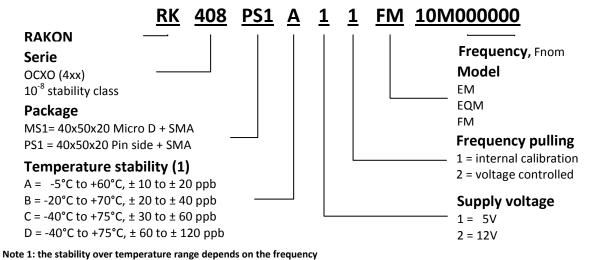


# **10<sup>-8</sup> Stability class OCXO**

Performance for standard frequencies												
Parameters	Conditions/Remarks	Unit	Min	Тур	Max	Min	Тур	Max	Min	Тур	Max	Unit
Nominal Frequency		MHz		10			100			120		MHz
Steady state input current power	Vacuum @ -20°C	W			3			3			3	W
Warm up supply power	Vacuum, EOL	W			5			5			5	W
Initial frequency accuracy	Frequency pulling Option 1	ppm			±0.25			±0.5			±0.5	ppm
initial nequency accuracy	Frequency pulling Option 2	ppm			±0.1			±0.1			±0.1	ppm
Frequency adjustment	Positive slope (option 2)	ppm	±0.4			±1.1			±1.3			ppm
	Option A	ppb			±10			±20			±20	ppb
Frequency stability vs temperature	Option B	ppb			±20			±40			±40	ppb
requency stability vs temperature	Option C	ppb			± 30			±60			±60	ppb
	Option D	ppb			±60			±120			±120	ppb
Frequency variation vs. supply voltage	Over Operating Temperature	ppb			±1			± 2			± 2	ppb
Frequency variation vs. load	Over Operating Temperature	ppb			± 25			±50			± 50	ppb
Frequency variation vs pressure		ppb			±100			±200			± 200	ppb
Frequency ageing	Over 1 year	ppb			±100			± 300			± 500	ppb
Fiequency ageing	Over 18 years	ppb			± 300			±1000			±1200	ppb
Allan variance	1s			5.E-12	1.E-11		5.E-12	1.E-11		5.E-12	1.E-11	
Frequency warm up	Time needed to reach the initial frequency accuracy (1h ref.)	mn			10			10			10	mn
Output waveform			Sine									
Output level	BOL, Supply voltage option 1	dBm	0			0			0			dBm
	BOL, Supply voltage option 2	dBm	10		12	10		12	10		12	dBm
Harmonics level		dBc			-30			-30			-30	dBc
Non harmonics level		dBc			-85			-85			-85	dBc
	1 Hz	dBc/Hz			-100			-70			-65	dBc/Hz
	10 Hz	dBc/Hz			-130			-100			-95	dBc/Hz
Phase noise	100 Hz	dBc/Hz			-150			-130			-125	dBc/Hz
	1kHz	dBc/Hz			-160			-152			-150	dBc/Hz
	10 kHz	dBc/Hz			-165			-162			-162	dBc/Hz

Package name	Description	Dimensions		
MS1	Micro D+SMA	40x50x20 mm	1 AR	
PS1	Pin side+SMA	40x50x20mm		

Ordering part number definition



Specifications subject to change without notice

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