

RK115

The high reliability (hi-rel) XO RK115 series is designed for space applications and is based on hybrid technology, making it resistant to extreme environments such as radiation, shock and vibration. The key advantages of this oscillator are low power consumption and short lead times. The Space XO series is available in five varieties of J-lead and flatpack packages. The enhanced J-lead package type utilises the second generation advanced technology, which enhances the efficiency of its PCB assembly as a part of the production core process. Four flatpack types are available to support different end application PCB configuration requirements. This hi-rel XO series is pin-to-pin compatible with most Space XOs.

Features

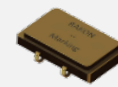
- ITAR-free
- Frequency Range: 2 MHz to 100 MHz
- AHCMOS or AC MOS output
- Low consumption: 25 mA
- Supply Voltage: +3.3 V
- Global frequency stability: ± 68 ppm over 18 years

Applications

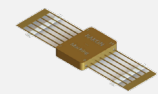
- Space
 - Digital cards
 - FPGA clock

Packages

J-Lead (JL)



Flatpack (FP)



Environmental Conditions

Parameter	Condition / Remarks	Min.	Typ.	Max.	Unit
Operating temperature	Option C: -40°C to 110°C	-40	25	110	°C
Switch-on temperature	TS ₀	-40	-	110	°C
Non-operating temperature	TNO _P	-40	-	110	°C
Random vibration	Level as per MIL-STD-202, Method 214, Condition I-K (46, 3 grms)				
Shocks	Mechanical shock as per MIL-STD-202, Method 213 (half sine with a peak acceleration of 2000 g for a duration of 0.3 ms)				
Acceleration	Acceleration as per MIL-STD-883, Method 2001, Condition A (5000 g)				
Radiation	Total ionizing Dose of 100 kRad, low dose rate as per ESICC22900 Latchup free up to LET = 62.5 MeV.cm ² /mg				

Frequency Characteristics

Parameter	Condition / Remarks	Min.	Typ.	Max.	Unit
Nominal frequency	-	2	-	100	MHz
Steady state input current power	AHCMOS	-	25	-	mA
Global frequency stability ¹	Option C: -40°C to 110°C	-	-	± 68	ppm
Initial frequency accuracy	-	-	± 10	± 25	ppm
Frequency stability over temperature	Option C: -40°C to 110°C	-	-	± 30	ppm
Supply voltage stability	Over operating temperature	-	-	± 3	ppm
Load sensitivity	Over operating temperature	-	-	± 5	ppm
Ageing	Over 18 years	-	-	± 15	ppm
Start-up time	-	-	-	10	ms
Output level	AHCMOS	2.4	-	0.4	V
Duty cycle	-	45	50	55	%
Rise time	10% to 90% V _{CC}	-	-	5	ns

¹ Including initial accuracy + frequency temperature stability + power supply stability + ageing over 18 years.

Fall time	90% to 10% V _{CC}	-	-	5	ns
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Electrical Interface

Parameter	Condition / Remarks	Min.	Typ.	Max.	Unit
Power supply option 1	3.3 V	3.13	3.3	3.465	V
Load impedance (AHCMOS 3.3 V)	2 MHz ≤ Frequency < 80 MHz	13	15	18	pF
Load impedance (AHCMOS 3.3 V)	80 MHz ≤ Frequency ≤ 100 MHz	9.1	10	11	pF
Load impedance (ACMOS 3.3 V)	2 MHz ≤ Frequency ≤ 100 MHz	13	15	18	pF

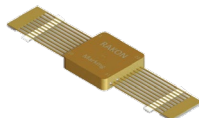
Package Options

Standard packages

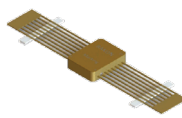
RK115 JL2
14x9x3.8 mm, 4 leads, 2g
[RK115 JL2 3D STEP file](#)



RK115 FP2
16x16x3.8 mm, 20 leads, 5g
[RK115 FP2 3D STEP file](#)

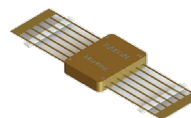


RK115 FP4
13x10x3 mm, 16 leads, 5g
[RK115 FP4 3D STEP file](#)

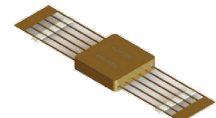


Custom package (available on request)

RK115 FP1
15x20x3.6 mm, 14 leads, 5g
[RK115 FP1 3D STEP file](#)



RK115 FP3
16x16x3.6 mm, 12 leads, 5g
[RK115 FP3 3D STEP file](#)



Model Grade

Parameter	EM	EQM	FM
components	Passive commercial parts, active parts from the same manufacturer of the hi-rel parts	MIL grade parts procured from the same manufacturer of hi-rel parts	Hi-rel parts
Crystal materials	Swept quartz	Swept quartz	ESCC3501 Swept quartz
Mechanical interface	Flight representative in form-fit-function	Flight representative in form-fit-function	Flight design
Electrical interface	Flight design	Flight design	Flight design
Tests	Acceptance testing	Qualification test	Acceptance testing (including screening groups A & B)

Ordering Part Example

