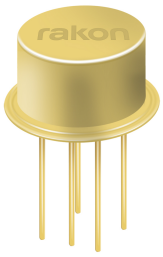
CFPX3000

A range of European Space Components Coordination (ESCC) approved crystals. For use in space applications.



Rakon has had a range of quartz crystal units approved to the requirements of ESCC, as defined in the ESCC generic specification for 30 years. Rakon can therefore provide customers with a source of released quartz crystal units, suitable for use in any ESA project. New type variants can be raised to cover specific customer applications providing the requirement is within the scope of the ESCC detail specifications. The applicable generic specification is ESCC 3501. The applicable detailed specifications (concerning Rakon approval) are : CFPX3750: 3501/001, 3501/008, 3501/011, 3501/012, 3501/018 CFPX3758: 3501/002, 3501/009, 3501/019.

Product description

These crystals are available in two types of holders : T807 cold welded, frequency range 14MHz to 140MHz and T1507 cold welded, frequency range 3MHz to 50MHz.

Applications

- Other
- Satellite Communication
- Communications
- Guidance
- Navigation

Features

- All processing and testing is performed in accordance with an ESCC approved Process Identification Document (PID)
- Fully approved to the requirements of ESCC system
- Lot acceptance testing (LAT) is performed to the level specified by the customer
- Variants tailored to specific customer requirements

Specifications

1.0 SPECIFICATION REFERENCES

Line	Parameter	Test Condition
1.1	Model description	CFPX3000
1.2	RoHS compliant	Yes
1.3	Package sizes available	10.7mm x 8.8mm (CFPX3750)
1.4	Package sizes available	15.75mm x 6.8mm (CFPX3758)
1.5	Package sizes available	22.0mm x 11.8mm (Non ESCC)

2.0 FREQUENCY RANGE

Line	Parameter	Test Condition	Value	Unit
2.1	Frequency range	CFPX3750 in fundamental, 3rd overtone and 5th overtone mode	14 to 140	MHz
2.2	Frequency range	CFPX3758 in fundamental, 3rd overtone and 5th overtone mode	3 to 50	MHz
2.3	Frequency range	Non ESCC. AT-Cut. CNES approved	2 to 50	MHz
2.4	Frequency stability over temperature	Customer specified (see customer order form)		
2.5	Temperature range	Customer specified (see customer order form)		
2.6	Load sensitivity	Customer specified (see customer order form)		
2.7	Long term stability	Customer specified (see customer order form)		

3.0 ENVIRONMENTAL

Line	Parameter	Test Condition
3.1	Storage temperature	Customer specified (see customer order form)
3.2	Final production test flow	CFPT3000 (see final production test flow diagram)

4.0 MARKING

Line	Parameter	Test Condition
4.1	Type	Engraved
4.2	Line 1	RAKON and manufacturing identification

5.0 MANUFACTURING INFORMATION

Line	Parameter	Test Condition
5.1	Reflow shift	Hand soldering
5.2	Packaging description	As per customised requirements

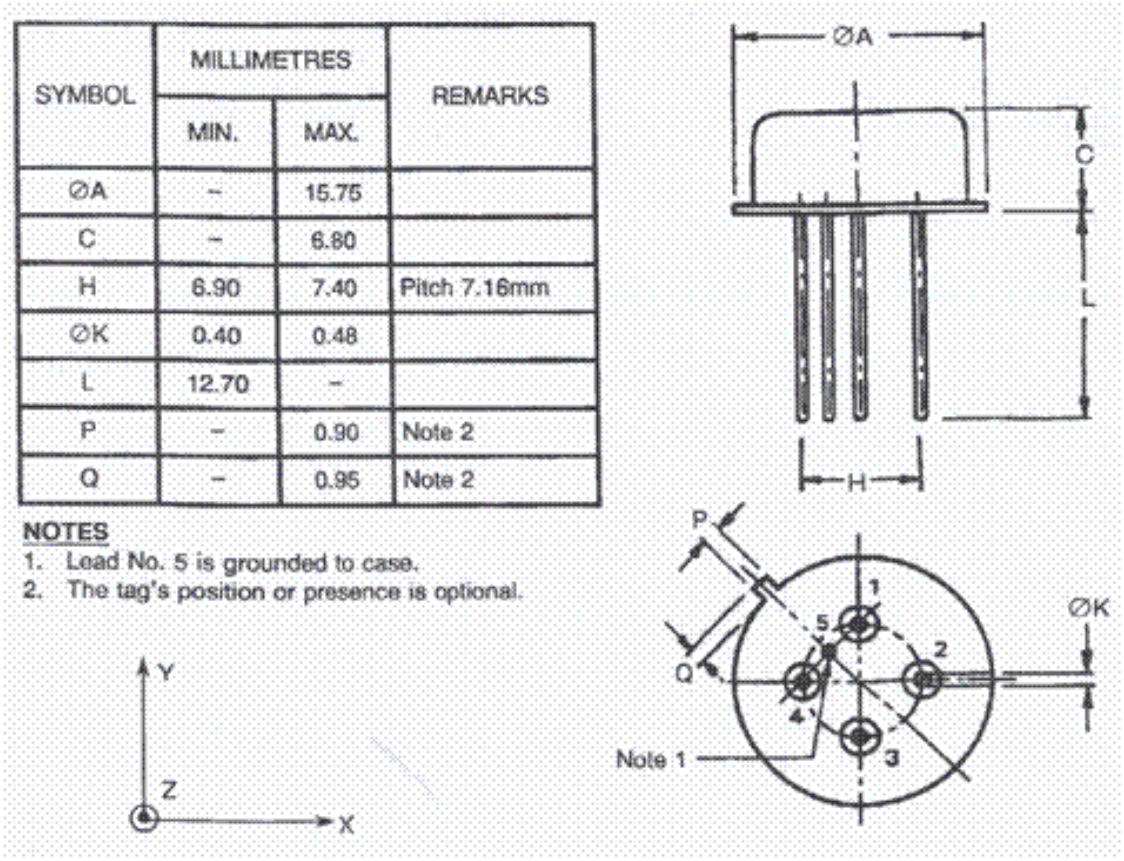
T1507

PHYSICAL DIMENSIONS

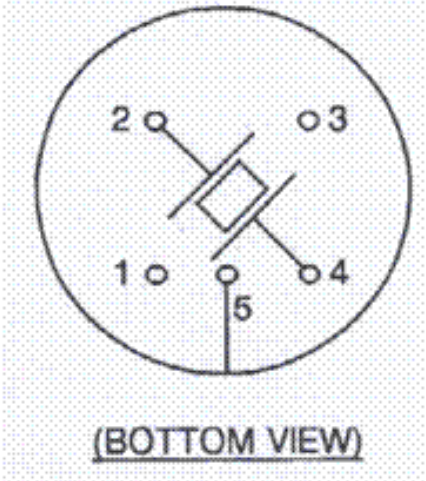
SYMBOL	MILLIMETRES		REMARKS
	MIN.	MAX.	
ØA	–	15.75	
C	–	6.80	
H	6.90	7.40	Pitch 7.16mm
ØK	0.40	0.48	
L	12.70	–	
P	–	0.90	Note 2
Q	–	0.95	Note 2

NOTES

1. Lead No. 5 is grounded to case.
2. The tag's position or presence is optional.



FUNCTIONAL DIAGRAM

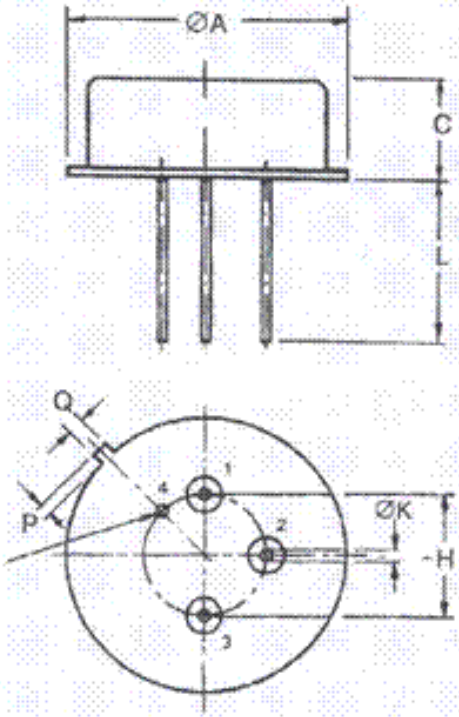


(BOTTOM VIEW)

T2111

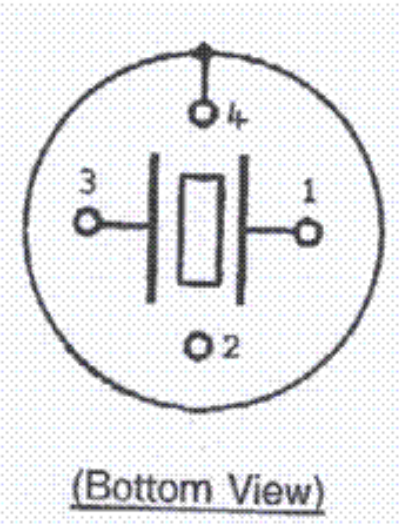
PHYSICAL DIMENSIONS

Symbol	Millimetres		Remarks
	Min.	Max.	
ØA	-	22.00	
C	-	11.60	
H	9.29	9.77	Pitch 9.52mm
ØK	0.40	0.48	
L	12.70	-	
P	-	0.90	Note 2
Q	-	0.95	Note 2



Note 1: Pin 4 is grounded to case
Note 2: The tag's position or presence is optional
Note 3: Pin 2 not connected

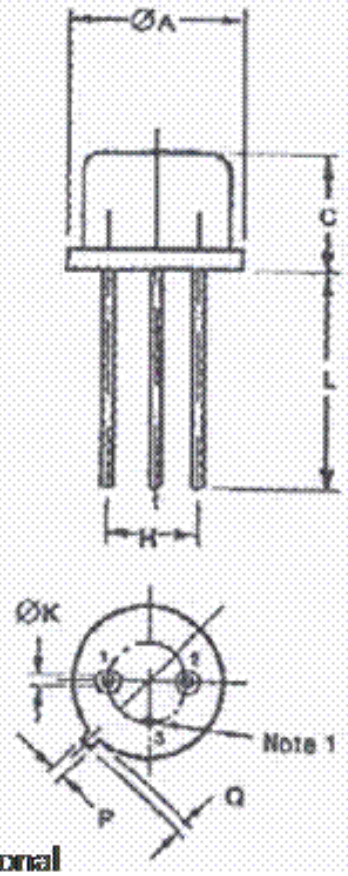
FUNCTIONAL DIAGRAM



T807

PHYSICAL DIMENSIONS

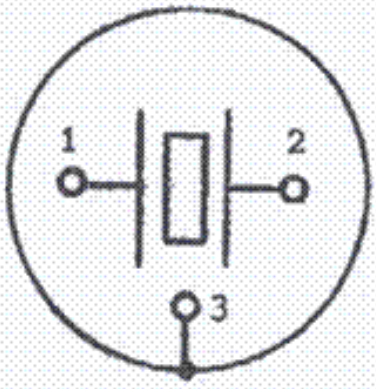
Symbol	Millimetres		Remarks
	Min	Max	
ØA	-	10 70	-
C	-	8 80	-
H	4 83	5 33	Pitch 5 08mm
ØK	0 41	0 48	-
L	12 70	-	-
P	-	0 90	Note 2
Q	-	0 90	Note 2



Note 1: Pin 3 is grounded to case

Note 2: The tag's position or presence is optional

FUNCTIONAL DIAGRAM



(Bottom View)

CHART II- FINAL PRODUCTION TESTS

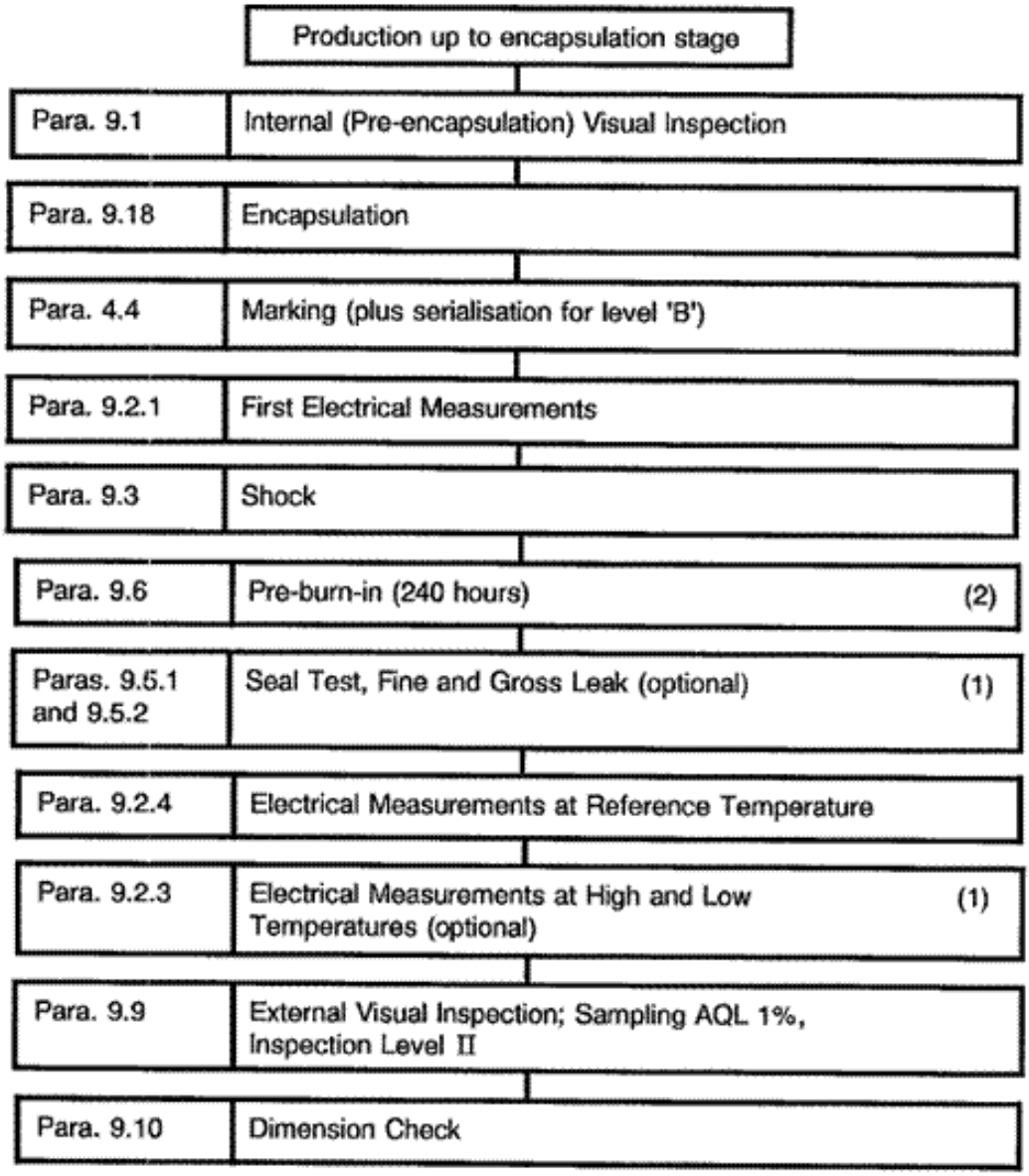


CHART III - BURN-IN AND ELECTRICAL MEASUREMENTS

		Testing Levels	
		B	C
Para. 9.2.2	Parameter Drift Value, Initial Measurements	X	-
Para. 7.1.1	Burn-in 240 hours (Level 'B') 168 hours (Level 'C')	X	X
Para. 9.2.2	Parameter Drift Value, Final Measurements	X	-
Para. 9.2.4	Electrical Measurements at Reference Temperature (1)	X	X
Para. 9.2.3	Electrical Measurements at High and Low Temperatures	X	X
Para. 9.11	Radiographic Inspection (2) (3) (4)	X	-
Paras. 9.5.1 and 9.5.2	Seal Test, Fine and Gross Leak (3)	X	X
Para. 9.9	External Visual Inspection	X	X
Para. 7.4	Check for Lot Failure	X	X

NOTES

1. The measurements of parameters for the purpose of drift value measurements need not be repeated for electrical measurements at reference temperature.
2. Radiographic Inspection may be performed at any point during the test sequence shown in this Chart.
3. Radiographic Inspection and Seal Test rejects not to be counted for lot failure.
4. Unless otherwise specified in the Detail Specification.

ESCC DETAIL SPECIFICATION N°

Table 1(a) TYPE VARIANT DETAIL INFORMATION

N°	Characteristic	Symbol	Limit		Unit	Remarks
			Min.	Max.		
1	Holder type					
2	Resonance Frequency	f_I or f_L			MHz	
3	Reference Temperature	To			°C	
4	Overtone Order	-				
5	Load Capacitance	C_L			pF	
6	Rated Drive Level	Po			mW	
7	Frequency Adjustment Tolerance	$\frac{\Delta F}{F}$			10^{-6}	At To °C
8	Resonance Resistance	R_I or R_L			Ω	At To °C
9	Frequency Variation with temperature over T_{op}.	$\frac{\Delta F}{F}$				From frequency measured at To °C
10	Resistance Variation with temperature over T_{op}	$\frac{\Delta R}{R}$			% Ω	From resistance measured at To °C
11	Operating Temperature Range	T_{op}			°C	
12	Frequency variation with Drive Level	$\frac{\Delta F}{F}$			10^{-6}	From P_{s1}= .005mW to P_{s2} =.25mW
13	Resistance variation with Drive Level	$\frac{\Delta R}{R}$			%	From P_{s1}= .005mW to P_{s2} = .25mW
14	Motional Inductance	L_1			mH	
15	Motional Capacitance	C_1			pF	
16	Static Capacitance	C_o			pF	
17	Q Factor	Q			-	
18	Ration of unwanted : Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R or IZp/R				In the frequency range : f - KHz to f + KHz
18*	Ageing	Δf/f0			10^{-6}	To be specified : per year/ over lifetime
18b **	Ageing on test oscillators (if needed)					To be specified : per year/ over lifetime
19	Terminal length	L			mm	
20	Storage Temperature Range	T_{sto}			°C	
21	Intended Application					

- * we guarantee ± 3ppm over 20 years after crystal ageing 500 hours
- ** we guarantee ± 1ppm over 20 years after crystal ageing 1000 HOURS on oscillators