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CRYSTAL UNITS IN METAL HOLDER, BASED ON TYPE T1507,

FREQUENCY RANGE 2.5 - 50MHZ

ESCC Detail Specification No. 3501/009

(Follow-up specification to ESCC Detail Specification Nos. 3501/002)

ISSUE 4 March 2010





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1.1 SCOPE

This specification details the values, physical and electrical characteristics, test and inspection data for Crystal Units in Metal Holder, based on Type 807, Frequency Range 4.0 - 140MHz.

It shall be read in conjunction with ESCC Generic Specification No. 3501, the requirements for which are supplemented herein.

This is a follow-up specification to ESCC Detail Specification No. 3501/001. ESCC 3501/001 should also be consulted by:-

- (a) Users seeking information concerning the availability of variants additional to those listed in this specification.
- (b) Manufacturers before requesting the introduction of a new variant in accordance with the requirements of Para. 1.2 of this specification.

1.2 COMPONENT TYPE VARIANTS

A list of the type variants of the crystal units specified herein, which are also covered by this specification, is given in "Table 1(a) - Type Variant Summary".

For each type variant, the full electrical and physical characteristics are given in individual Tables 1(a) - "Type Variant Detailed Information" at the end of this specification.

The contents of the individual Tables 1(a) shall be as shown in Table 1(c) and the characteristics therein listed shall relate to the design parameters of the individual crystal units, optimised for the intended application.

The specific characteristics shall be negotiated between the Manufacturer and the Orderer. The Manufacturer shall then apply to the ESCC Secretariat for a type variant number for each individual crystal unit concerned, by sending a finalised Table 1(a) which shall also be copied to the ESCC Executive.

1.3 MAXIMUM RATINGS

The maximum ratings, which shall not be exceeded at any time during use or storage, applicable to the crystal units specified herein, are as scheduled in Table 1(b).

1.4 PHYSICAL DIMENSIONS

The physical dimensions of the crystal units specified herein are shown in Figure 2.

1.5 FUNCTIONAL DIAGRAM

The functional diagram showing lead identification of the crystal units specified herein is shown in Figure 3.

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TABLE 1(a) - TYPE VARIANT SUMMARY

N.B. For additional information concerning type variants, see Para. 1.1.

Variant Resonance Frequency (MHz) Load Capacitance (C _L pF) Reference Temp. (To °C) Operating Temp. (To °C) Intended Application Lead Finish 01 4.194304 30 +30 −10 to +80 − 2 02 8.192 50 +25 −25 to +80 − 3 or 4 03 26.0 ∞ +25 −25 to +80 − 2 04 7.198 30 +25 −55 to +105 − 2 05 5.0 30 +25 −40 to +80 − 2 06 18.0 30 +25 −55 to +105 − 2 07 10.0 30 +25 −55 to +100 XO 2 08 10.0 30 +25 −55 to +100 XO 2 10 4.0 30 +25 −20 to +80 XO 2 11 10.0 30 +25 −20 to +80 XO 2 12 8.0 ∞ <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th><u>:</u></th>							<u>:</u>
02 8.192 50 +25 -25 to +80 - 3 or 4 03 26.0	Variant	Frequency	Capacitance	Temp.	Range	1	
03 26.0 ∞ +25 −25 to +80 - 2 04 7.198 30 +25 −55 to +105 - 2 05 5.0 30 +25 −40 to +80 - 2 06 18.0 30 +25 −45 to +80 - 2 07 10.0 30 +25 −55 to +125 - 2 08 10.0 30 +25 −55 to +100 XO 2 09 50.0 12 +25 −55 to +100 XO 2 10 4.0 30 +25 −55 to +100 XO 2 11 10.0 30 +25 −55 to +100 XO 2 12 8.0 ∞ +25 −20 to +80 XO 2 12 8.0 ∞ +25 −20 to +80 XO 2 13 10.0 ∞ +25 −20 to +80 TCXO 2 <t< td=""><td>01</td><td>4.194304</td><td>30</td><td>+ 30</td><td>-10 to +80</td><td>•</td><td>2</td></t<>	01	4.194304	30	+ 30	-10 to +80	•	2
04 7.198 30 +25 -55 to +105 - 2 05 5.0 30 +25 -40 to +80 - 2 06 18.0 30 +25 -45 to +80 - 2 07 10.0 30 +25 -55 to +125 - 2 08 10.0 30 +25 -55 to +100 XO 2 09 50.0 12 +25 -40 to +80 XO 2 11 10.0 30 +25 -55 to +100 XO 2 11 10.0 30 +25 -55 to +100 XO 2 12 8.0 ∞ +25 -55 to +100 XO 2 13 10.0 ∞ +25 -20 to +80 XO 2 14 6.4 30 +25 -20 to +80 XO 2 15 12.605 ∞ +25 -20 to +80 XO 4 15 12.605 ∞ +25 -20 to +80 XO 4 15 12.666 ∞ +25 -20 to +80 XO 2 17 12.666 ∞ +25 -20 to +80 XO 2 18 5.760 30 +25 -35 to +70 TCXO 2 19 8.602893 30 +60 -40 to +85 XO 2 21 20.0 30 +25 -30 to +70 XO 2 22 13.0 30 +25 -30 to +70 XO 2 23 10.0 30 +25 -30 to +70 XO 2 24 5.242880 30 +60 -40 to +85 XO 2 25 5.625 30 +25 -30 to +70 XO 2 28 3.494400 35 +25 -55 to +100 XO 2 30 30 +25 -55 to +100 XO 2 31 1.059300 50 +25 -55 to +100 XO 2 33 11.059300 50 +25 -55 to +100 XO 2 34 12.007125 30 +25 -55 to +100 XO 2 35 11.059300 50 +25 -55 to +100 XO 2 36 11.059300 50 +25 -55 to +100 XO 2 37 10.0 30 +25 -55 to +100 XO 2 38 11.059300 50 +25 -55 to +100 XO 2 39 38 11.059300 50 +25 -55 to +100 XO 2 30 30 +25 -55 to +100 XO 2 31 1.059300 50 +25 -55 to +100 XO 2 31 1.059300 50 +25 -55 to +100 XO 2	02	8.192	50	+ 25	-25 to +80	-	3 or 4
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24 5.242880 30 +60 -40 to +85 XO 2 25 5.625 30 +25 -40 to +85 XO 2 26 11.250 30 +25 -50 to +100 XO 2 27 8.0 ∞ +25 -30 to +70 XO 2 28 3.494400 35 +25 -55 to +100 XO 2 29 3.832 30 +25 -40 to +80 XO 2 30 3.072 30 +25 -40 to +80 XO 2 31 4.0 30 +25 -40 to +80 XO 2 32 16.0 30 +25 -55 to +125 XO 2 33 11.059200 30 +25 -55 to +100 XO 2 34 12.007125 30 +25 -40 to +90 TCXO 2 35 11.059300 50 +25 -55 to +100 XO 2	22	13.0	30	+ 25	-40 to +80	XO	2
25 5.625 30 +25 -40 to +85 XO 2 26 11.250 30 +25 -50 to +100 XO 2 27 8.0 ∞ +25 -30 to +70 XO 2 28 3.494400 35 +25 -55 to +100 XO 2 29 3.832 30 +25 -40 to +80 XO 2 30 3.072 30 +25 -40 to +80 XO 2 31 4.0 30 +25 -40 to +80 XO 2 32 16.0 30 +25 -55 to +125 XO 2 33 11.059200 30 +25 -55 to +100 XO 2 34 12.007125 30 +25 -40 to +90 TCXO 2 35 11.059300 50 +25 -55 to +100 XO 2	23	10.0	30	+ 25	-55 to +100	XO	2
26 11.250 30 +25 −50 to +100 XO 2 27 8.0 ∞ +25 −30 to +70 XO 2 28 3.494400 35 +25 −55 to +100 XO 2 29 3.832 30 +25 −40 to +80 XO 2 30 3.072 30 +25 −40 to +80 XO 2 31 4.0 30 +25 −40 to +80 XO 2 32 16.0 30 +25 −55 to +125 XO 2 33 11.059200 30 +25 −55 to +100 XO 2 34 12.007125 30 +25 −40 to +90 TCXO 2 35 11.059300 50 +25 −55 to +100 XO 2	24	5.242880	30	+ 60	-40 to +85	XO	2
27 8.0 ∞ +25 -30 to +70 XO 2 28 3.494400 35 +25 -55 to +100 XO 2 29 3.832 30 +25 -40 to +80 XO 2 30 3.072 30 +25 -40 to +80 XO 2 31 4.0 30 +25 -40 to +80 XO 2 32 16.0 30 +25 -55 to +125 XO 2 33 11.059200 30 +25 -55 to +100 XO 2 34 12.007125 30 +25 -40 to +90 TCXO 2 35 11.059300 50 +25 -55 to +100 XO 2	25	5.625	30	+ 25	-40 to +85	XO	2
28 3.494400 35 +25 -55 to +100 XO 2 29 3.832 30 +25 -40 to +80 XO 2 30 3.072 30 +25 -40 to +80 XO 2 31 4.0 30 +25 -40 to +80 XO 2 32 16.0 30 +25 -55 to +125 XO 2 33 11.059200 30 +25 -55 to +100 XO 2 34 12.007125 30 +25 -40 to +90 TCXO 2 35 11.059300 50 +25 -55 to +100 XO 2	26	11.250	30	+ 25	-50 to +100	XO	2
29 3.832 30 +25 -40 to +80 XO 2 30 3.072 30 +25 -40 to +80 XO 2 31 4.0 30 +25 -40 to +80 XO 2 32 16.0 30 +25 -55 to +125 XO 2 33 11.059200 30 +25 -55 to +100 XO 2 34 12.007125 30 +25 -40 to +90 TCXO 2 35 11.059300 50 +25 -55 to +100 XO 2	27	8.0	∞ .	+ 25	-30 to +70	XO	2
30 3.072 30 +25 -40 to +80 XO 2 31 4.0 30 +25 -40 to +80 XO 2 32 16.0 30 +25 -55 to +125 XO 2 33 11.059200 30 +25 -55 to +100 XO 2 34 12.007125 30 +25 -40 to +90 TCXO 2 35 11.059300 50 +25 -55 to +100 XO 2	28	3.494400	35	+ 25	-55 to +100	XO	2
31 4.0 30 +25 -40 to +80 XO 2 32 16.0 30 +25 -55 to +125 XO 2 33 11.059200 30 +25 -55 to +100 XO 2 34 12.007125 30 +25 -40 to +90 TCXO 2 35 11.059300 50 +25 -55 to +100 XO 2	29	3.832	30	+ 25	-40 to +80	ХО	2
32 16.0 30 +25 -55 to +125 XO 2 33 11.059200 30 +25 -55 to +100 XO 2 34 12.007125 30 +25 -40 to +90 TCXO 2 35 11.059300 50 +25 -55 to +100 XO 2	30	3.072	30	+ 25	-40 to +80	ХО	. 2
33 11.059200 30 +25 -55 to +100 XO 2 34 12.007125 30 +25 -40 to +90 TCXO 2 35 11.059300 50 +25 -55 to +100 XO 2	31	4.0	30	+ 25	-40 to +80	XO	2
34 12.007125 30 +25 -40 to +90 TCXO 2 35 11.059300 50 +25 -55 to +100 XO 2	32	16.0	30	+ 25	-55 to +125	XO	2
35 11.059300 50 +25 -55 to +100 XO 2	33	11.059200	30	+ 25	-55 to +100	XO	2
	34	12.007125	30	+ 25	-40 to +90	TCXO	2
36	35	11.059300	50	+ 25	-55 to +100	ХО	2
	36						

NOTES: See Page 8.



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TABLE 1(a) - TYPE VARIANT SUMMARY CONTINUED

Variant	Resonance Frequency (MHz)	Load Capacitance (C _L pF)	Reference Temp. (T _o °C)	Operating Temp. Range (Top °C)	Intended Application	Lead Finish
37						
38						
39						
40			:			
41			100			
42				·		
43		:				
44						
45						
46						
47	Carrier Constitution at the Constitution of th	N)s. re	end to 4	HE SECTION OF THE SEC	The state of the s	
48			e e			
49						
50	and the second					
51						
52			1.			
53						
54						
55	-			and the state of t		
56				r. ji		
57						
58						
59						
60				,		
61						
62						
63						
64						
65						
66						
67						
68						
69						
70					1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
71						
72						

NOTES: See Page 8.



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TABLE 1(a) - TYPE VARIANT SUMMARY CONTINUED

Variant	Resonance Frequency (MHz)	Load Capacitance (C _L pF)	Reference Temp. (T _o °C)	Operating Temp. Range (T _{op} °C)	Intended Applicat.	Lead Finish
73						
74		·				
75			·			
76						
77						
78						
79						
80						
81						
82						
83	and the second s		Magazini da	ক্ষাপ্ৰত কোৱাৰটিল লাভী পৰি ল্লাল কৰা তাল	Company of the property	
84					:	
85						
86						
87						<u> </u>
88						
89						
90						<u> </u>
91				and the first and the		
92						
93						
94						
95						
96						
97						
98						
99						

NOTES

1. Full electrical and physical characteristics are given in the individual Tables 1(a) at the end of this specification.



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TABLE 1(b) - MAXIMUM RATINGS

No.	Characteristic	Symbol	Values	Unit	Remarks
1	Nominal Frequency Range	f	2.5 to 20	MHz	Note 1
2	Drive Level Range	Р	0.01 to 0.2	mW	
3	Operating Temperature Range	T _{op}		°C	Note 2
4	Storage Temperature Range	T _{stg}	-65 to +125	°C	Note 3
5	Soldering Temperature	T _{sol}	+ 260	°C	Note 4

	•	_	•	_	3
•			_		•
٠					
1			_		
ı					

Fundamental and Overtone Order	Approx. Frequency Range (MHz)
Fundamental	2.5 to 20
3	10 to 30
5	15 to 50

- 2. See Table 1(a).
- 3. The duration at maximum storage temperature shall not exceed 16 hours.
- 4. Duration 10 seconds maximum at a distance of not less than 3.0mm from the device body and the same lead shall not be resoldered until 3 minutes have elapsed.



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TABLE 1(c) - FORMAT FOR INDIVIDUAL TABLES 1(a) TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION TYPE VARIANT NO.

1			d.			1
No.	Characteristic	Symbol	Lim	its	Unit	Remarks
INO.	Characteristic	Symbol	Min.	Max	Offic	riomarks
. 1	Resonance Frequency	f_r or f_L			MHz	Note 1
2	Reference Temperature	T _o			°C	Note 2
3	Overtone Order	- -				
4	Load Capacitance	CL	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		pF	Note 3
5	Rated Drive Level	Po			mW	Note 4
6	Frequency Adjustment Tolerance	<u>Δ f</u>			10 ⁻⁶	At T _o °C Note 5
7	Resonance Resistance	R _r or R _L			Ω	At To °C Note 6
8	Frequency Variation with Temperature over Top	∆f f	elje Seculomys och monetasis Seculomys	en desertar a sector su es	10-9	From frequency measured at T _o °C Note 7
9	Resistance Variation with Temperature over Top	ΔR R			%	From resistance measured at T _o °C Note 7
10	Operating Temperature Range	T _{op}			°C	·
11	Frequency variation with Drive Level	<u>Δ f</u> f			10-6	$\begin{array}{ccc} \text{From} & P_{S1} = & \text{mW} \\ & \text{to} & \\ & P_{S2} = & \text{mW} \\ & \text{Note 8} & \end{array}$
12	Resistance variation with Drive Level	ΔR R			%	From P _{S1} = mW to P _{S2} = mW Note 8
13	Motional Inductance	L ₁			mH	Notes 9 and 10
14	Motional Capacitance	C ₁			fF	Note 9
15	Static Capacitance	Co			pF	Note 9
16	Q Factor	Q			-	Notes 9 and 11
17	Ratio of unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	R _p /R or ıZ _p i/R				In the frequency range: f - kHz to f + kHz
18	Ageing	<u>Δ f</u> f			10-6	Note 13
19	Lead Finish				•	
20	Intended Application					Note 15

NOTES: See Pages 11 and 12.

	. 1	250000		
		, (Immun)	-	
		110 miles		

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NOTES TO TABLE 1(c)

- 1. (a) If C_L is not specified, Symbol and measurement shall be f_r.
 - (b) If C_I is specified, Symbol and measurement shall be f_L.

2. Reference Temperature To

- (a) For a crystal unit functioning in a non-controlled temperature environment, the reference temperature is normally +25 ±2 °C.
- (b) For a crystal unit functioning in a controlled temperature environment, the reference temperature shall normally be the mid-point of the temperature range of the controlled environment.

3. Load Capacitance CL

- (a) When a crystal unit must function at its series resonance frequency, C_L shall be infinite.
- (b) When a crystal must function with a load capacitance, the C_L value shall be specified. The standard values of load capacitance are as follows:
- Fundamental Frequency Operation: 20pF, 30pF, 50pF and 100pF.
- Overtone Operation: 8pF, 12pF, 15pF, 20pF and 30pF.

N.B

The tolerance on the load capacitance shall be that value which results in a frequency change not exceeding 10% of the frequency tolerance at T_0 or 1% of the nominal load capacitance, whichever is smaller.

4. Rated Drive Level Po

The rated drive level shall be selected from the standard drive levels specified below:

- Preferred values: 2mW, 1mW, 0.5mW, 0.2mW, 0.1mW, 0.05mW, 0.02mW, 0.01mW, 0.001mW or 0.0001mW at ±20%.
- Non-preferred values: 10mW, 5mW and 4mW all at ±20%.

5. Frequency Adjustment Tolerance

- (a) When a crystal must function at its series resonance frequency, the standard value of the adjustment tolerance shall be $\pm 10 \times 10^{-6}$.
- (b) When a crystal has to function with a load capacitance, the standard value of the adjustment tolerance shall also be ±10 x 10-6. However, if the load capacitance is adjustable, it is preferable to specify that the nominal frequency be obtained with a load capacitance value between the minimum and maximum value when the crystal is functioning in its fundamental mode.

6. Resonance Resistance

(a) Generally, the maximum value only is specified.

(b)
$$R_L$$
 may be calculated by $R_L = R_r \left(1 + \frac{C_o}{C_L}\right)^2$.



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NOTES TO TABLE 1(c) (Continued)

7. Frequency and Resistance Variation with Temperature

These values shall be specified such that they are consistent with the operating temperature range.

8. Frequency and Resistance Variation with Drive Level

These limits and the Drive Level range (PS1 to PS2) shall be specified for very special crystals only (i.e. crystals used in very high stability oscillators).

9. Electrical Values

The electrical values shall be specified only when required for the correct functioning of the equipment in which the crystal is used.

10. Motional Inductance L₁

Because the inductance value may be restricted by other chosen parameters, the Manufacturer shall propose the value of L₁ in accordance with the Customer's requirements.

11. 'Q' Factor

If 'R' and 'L' have been already specified, it will not be necessary to specify the minimum value of the 'Q' factor.

The maximum value of the 'Q' factor is never specified.

12. Ratio of Unwanted Response Resistance to Resonance Resistance

The standard minimum value is 2, but it is possible to obtain higher values.

The frequency range within which the minimum value of the ratio is required shall also be specified.

13. Ageing

Specify limits under appropriate column and ageing period under "Remarks".

14. Not applicable Items

For all items where limits are not specified, "Not applicable" shall be entered in the Limits column.

15. Intended Application

For definitions of the selected symbols to be added, see ESCC Generic Specification No. 3501, Para. 3.



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FIGURE 1 - PARAMETER DERATING INFORMATION

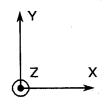
Not applicable.

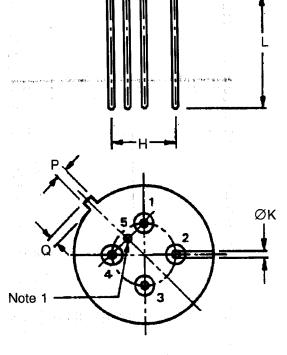
FIGURE 2 - PHYSICAL DIMENSIONS

SYMBOL	MILLIM	ETRES	REMARKS
STIVIBUL	MIN.	MAX.	REWIARRO
⊘A		15.75	
С	*****	6.80	
Н	6.90	7.40	Pitch 7.16mm
⊘K	0.40	0.48	
L	12.70	e years and specification	- 17 - 17 - 17 - 17 相 真 (2種型) - 17 - 17 - 17 - 17 - 17 - 17 - 17 - 17
Р	_	0.90	Note 2
Q	_	0.95	Note 2

NOTES

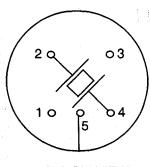
- Lead No. 5 is grounded to case.
 The tag's position or presence is optional.





ØA

FIGURE 3 - FUNCTIONAL DIAGRAM



(BOTTOM VIEW)



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2. APPLICABLE DOCUMENTS

The following documents form part of this specification and shall be read in conjunction with it:-

(a) ESCC Generic Specification No. 3501 for Quartz Crystal Units.

3. TERMS, DEFINITIONS, ABBREVIATIONS, SYMBOLS AND UNITS

For the purpose of this specification, the terms, definitions, abbreviations, symbols and units specified in ESCC Basic Specification No. 21300 shall apply. In addition, the following symbols are used:-

Resonance Frequency $= f_L$ Load Resonance Frequency Reference Temperature Resonance Resistance = Ri Load Resonance Resistance Rated Drive Level Static Capacitance = CL Load Capacitance $= C_1$ Motional Capacitance Motional Inductance $= L_1$ Response Resistance $= R_P$ = IZpI Response Impedance Insulation Resistance = Ri

4. REQUIREMENTS

4.1 GENERAL

The complete requirements for procurement of the crystal units specified herein shall be as stated in this specification and ESCC Generic Specification No. 3501 for Quartz Crystal Units. Deviations from the Generic Specification applicable to this specification only, are detailed in Para. 4.2.

Deviations from the applicable Generic Specification and this Detail Specification, formally agreed with specific Manufacturers on the basis that the alternative requirements are equivalent to the ESCC requirements and do not affect the components' reliability, are listed in the appendices attached to this specification.

4.2 DEVIATIONS FROM GENERIC SPECIFICATION

4.2.1 Deviations from Special In-process Controls

None.

4.2.2 Deviations from Final Production Tests (Chart Π)

None.

4.2.3 <u>Deviations from Burn-in Tests (Chart III)</u>

None.

4.2.4 Deviations from Qualification Tests (Chart IV)

None.

4.2.5 Deviations from Lot Acceptance Tests (Chart V)

None.



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4.3 MECHANICAL REQUIREMENTS

4.3.1 Dimension Check

The dimensions of the crystal units specified herein shall be checked. They shall conform to those shown in Figure 2.

4.3.2 Weight

The maximum weight of the crystal units specified herein shall be 3.0 grammes.

4.3.3 Robustness of Terminations

The requirements for robustness of termination testing are specified in Section 9 of ESCC Generic Specification No. 3501.

4.4 MATERIALS AND FINISHES

The materials and finishes shall be as specified herein. Where a definite material is not specified, a material which will enable the crystal units specified herein to meet the performance requirements of this specification shall be used. Acceptance or approval of any constituent material does not guarantee acceptance of the finished product.

4.4.1 <u>Case</u>

4.4.1.1 Cap

Copper, nickel plated or nickel and gold plated.

4.4.1.2 Base

Kovar, nickel plated or nickel and gold plated.

4.4.2 Lead Material and Finish

The lead material shall be Type 'D' with either Type '2' or Type '3 or 4' finish in accordance with the requirements of ESCC Basic Specification No. 23500. (See Tables 1(a) for Type Variants).

4.5 MARKING

4.5.1 General

The marking of all components delivered to this specification shall be in accordance with the requirements of ESCC Basic Specification No. 21700 and the following paragraphs. When the component is too small to accommodate all of the marking specified, as much as space permits shall be marked and the marking information, in full, shall accompany the component in its primary package.

The information to be marked and the order of precedence, shall be as follows:-

- (a) The ESCC Component Number.
- (b) Characteristics.
- (c) Traceability Information.

4.5.2 The ESCC Component Number

Each component shall bear the SCC Component Number, which shall be constituted and marked as follows:-

Detail Specification Number	
Type Variant (see Table 1(a))	
Testing Level (B or C, as appli	icable) —



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4.5.3 Characteristics

The resonance frequency of the crystal units shall be clearly specified in MHz. Where necessary, it shall be specified to 6 decimal places.

4.5.4 Traceability Information

Each component shall be marked in respect of traceability information in accordance with the requirements of ESCC Basic Specification No. 21700.

4.5.5 Manufacturer's Name, Symbol or Code

The Manufacturer's marking shall be in accordance with the requirements of ESCC Basic Specification No. 21700.

4.6 <u>ELECTRICAL MEASUREMENTS</u>

4.6.1 <u>Electrical Measurements at Reference Temperature</u>

The parameters to be measured in respect of electrical characteristics are scheduled in Table 2. The measurements shall be performed at the temperatures specified in the individual Tables 1(a), Item 2.

4.6.2 <u>Electrical Measurements at High and Low Temperatures</u>

The parameters to be measured at high and low temperatures are scheduled in Table 3. These measurements shall only be performed if values are specified in Table 1(a) Items 8 and/or 9.

4.6.3 Circuits for Electrical Measurements (Figure 4)

Not applicable.

4.7 BURN-IN TESTS

4.7.1 Parameter Drift Values

The parameter drift values applicable to burn-in are specified in Table 4 of this specification. Unless otherwise stated, measurements shall be performed at $T_{amb} = T_0 \pm 2$ °C. The parameter drift values (Delta) applicable to the scheduled parameters shall not be exceeded. In addition to these drift value requirements for a given parameter, the appropriate limit value specified in Table 2 shall not be exceeded.

4.7.2 Conditions for Burn-in

The requirements for burn-in are specified in Section 7 of ESCC Generic Specification No. 3501. The conditions for burn-in shall be as specified in Table 5 of this specification.

4.7.3 Electrical Circuits for Burn-in (Figure 5)

Not applicable.



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TABLE 2 - ELECTRICAL MEASUREMENTS AT REFERENCE TEMPERATURE

No.	Characteristics	Symbol	ESCC 3501 Test Method	Limits	Unit
1	Resonance frequency at reference temperature and rated drive level - with C _O - with C _I	f _r (T _o , P _o) f _L (T _o , P _o)	Para. 9.2.1.1	Table 1(a), Item 1 ± Item 6	MHz
2	Resonance resistance at reference temperature and rated drive level - with C _O - with C _L	R _r (T _o , P _o) R _L (T _o , P _o)	Para. 9.2.1.1	Table 1(a), Item 7	Ω
3	Frequency variation with Drive Level	$\frac{\Delta f}{f}$ (T _o , Δ P)	Para. 9.2.1.1	Table 1(a), Item 11	10-6
4	Resistance variation with Drive Level	<u>Δ R</u> (T _o , ΔP)	Para. 9.2.1.1	Table 1(a), Item 12	%
5	Motional Inductance	L ₁	Para. 9.2.1.3	Table 1(a), Item 13	mH
6	Static Capacitance	Co	Para. 9.2.1.4	Table 1(a), Item 15	pF
7	Unwanted response	R _P /R or IZ _P I/R	Para. 9.2.1.5	Table 1(a), Item 17	-
8	Insulation Resistance	Ri	Para. 9.2.1.6	500 Min.	МΩ



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TABLE 3 - ELECTRICAL MEASUREMENTS AT HIGH AND LOW TEMPERATURES

No.	Characteristics	Symbol	ESCC 3501 Test Method	Limits	Unit
9	Frequency variation with Temperature over Top	Δ f (ΔT, P _o)	Para. 9.2.1.2	Table 1(a) Item 8	10-6
10	Resistance variation with Temperature over Top	Δ R (ΔT, P _o)	Para. 9.2.1.2	Table 1(a) Item 9	%

FIGURE 4 - CIRCUITS FOR ELECTRICAL MEASUREMENTS

Not applicable.

TABLE 4 - PARAMETER DRIFT VALUES

No.	Characteristics	Symbol	Spec. and/or Test Method	Test Conditions	Change Limits (Δ)	Unit
1	Resonance frequency drift	<u>Δ f</u>	As per Table 2	As per Table 2	± 2.0	10-6
2	Resonance resistance drift	AR R	As per Table 2	As per Table 2	± 10 or (1) ± 1.0	%

NOTES 1. Whichever is the highest value.

TABLE 5 - CONDITIONS FOR BURN-IN AND LIFE TEST

No.	Characteristics	Symbol	Condition	Unit
1	Ambient Temperature	T _{amb}	+85 ±5	°C

FIGURE 5 - ELECTRICAL CIRCUIT FOR BURN-IN AND LIFE TEST

Not applicable.



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4.8 <u>ENVIRONMENTAL AND ENDURANCE TESTS (CHARTS IV AND V OF ESCC GENERIC SPECIFICATION NO. 3501)</u>

4.8.1 Measurements and Inspections on Completion of Environmental Tests

The parameters to be measured and inspections to be performed on completion of environmental tests are scheduled in Table 6. Unless otherwise stated, the measurements shall be performed at $T_{amb} = T_0 \pm 2$ °C.

4.8.2 Measurements and Inspections at Intermediate Points and on Completion of Endurance Tests

The parameters to be measured and inspections to be performed at intermediate points and on completion of endurance tests are scheduled in Table 6. Unless otherwise stated, the measurements shall be performed at $T_{amb} = T_0 \pm 2$ °C.

4.8.3 Conditions for Operating Life Test (Part of Endurance Testing)

The requirements for the operating life test are specified in Section 9 of ESCC Generic Specification No. 3501. The test shall be performed as a high temperature storage test and the temperature to be applied shall be the maximum operating temperature specified in the individual Tables 1(a) given in this specification.



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TABLE 6 - MEASUREMENTS AND INSPECTIONS ON COMPLETION OF ENVIRONMENTAL TESTS AND AT INTERMEDIATE POINTS AND ON COMPLETION OF ENDURANCE TESTING

		the state of the s	14			1.	f ₀ − δ0	
	ESCC GENERIC SP	EC. NO. 3501	MEASUREMENTS AN	ID INSPECTIONS		LIM	тѕ	
NO.	ENVIRONMENTAL AND ENDURANCE TESTS (1)	TEST METHOD AND CONDITIONS	IDENTIFICATION	CONDITIONS	SYMBOL	Min.	Max.	UNIT
01	Electrical Measurements at Reference Temperature	Para. 9.2.4	Electrical Measurements	Table 2		Table	1(a)	
2	Shock	Para. 9.3	Initial Measurements Resonance Frequency Resonance Resistance Final Measurements Resonance Frequency Drift Resonance Resistance Drift	Table 2 Item 1 Table 2 Item 2 Table 2 Item 1 Table 2 Item 2	f R <u>Δf</u> f ΔR R ΔR	Table 2 Table 2 -1.0 -1.0 or (2) -1.0	+ 1.0 + 1.0 + 1.0 + 1.0	10 ⁻⁶ % Ω
03	Vibration	Para. 9.4	Initial Measurements Resonance Frequency Resonance Resistance Final Measurements Resonance Frequency	Table 2 Item 1 Table 2 Item 2 Table 2 Item 1	f R		2 Item 1 2 Item 2 + 1.0	10-6
			Drift Resonance Resistance Drift	Table 2 Item 2	<u>Δ f</u> f <u>Δ R</u> R ΔR	-10 or (2) -1.0	+ 10 + 1.0	% Ω
04	Seal Test	Para. 9.5	Fine Leak Gross Leak	Para. 9.5.1 Para. 9.5.2			. 9.5.1 . 9.5.2	
05	Permanence of Marking	Para. 9.8	Final Measurements Visual Examination	No corrosion or obliteration of marking			- 144 (1) - 144	-
06	External Visual Inspection	Para. 9.9	Final Measurements Visual Inspection	ESCC No. 20500	<u>-</u>	-	- -	-
07	Solderability	Para. 9.13		-	-	_	-	
	I							

- 1. The tests in this table refer to either Chart IV or V, and shall be used as applicable.
- 2. Whichever is the highest value.



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TABLE 6 - MEASUREMENTS AND INSPECTIONS ON COMPLETION OF ENVIRONMENTAL TESTS AND AT INTERMEDIATE POINTS AND ON COMPLETION OF ENDURANCE TESTING (Cont.)

	ESCC GENERIC SP	EC. NO. 3501	MEASUREMENTS AN	D INSPECTIONS		LIM	TS		
NO.	ENVIRONMENTAL AND ENDURANCE TESTS (1)	TEST METHOD AND CONDITIONS	IDENTIFICATION	CONDITIONS	SYMBOL	Min.	Max.	UNIT	
	Climatic Sequence	Para. 9.14	¥.						
08	Dry Heat	Para. 9.14.1	Initial Measurements	Table 2 Item 1		Table 2	Utom 4		1
		: 1	Resonance Frequency Resonance Resistance	Table 2 Item 2	l f R		Item 2		l
		* .	Final Measurements	Table 2 Herri 2		1 4010 2	. 116111 2		١
		•	Resonance Frequency Drift	Table 2 Item 1	∆ f f	- 2.0	+2.0	10-6	
			Resonance Resistance	Table 2 Item 2	ΔR	-10	+10	%	ı
,			Drift		R	or (2)			١
					ΔR	-1.0	+1.0	Ω	1
09	Cold	Para. 9.14.3	Initial Measurements			•			۱
			Resonance Frequency	Table 2 Item 1	f		0.14.1.3		ļ
	and the first of the second	Andrea Andreas Carlos Carlos Company (1994)	Resonance Resistance	Table 2 Item 2	Real	Final Mea	surements	ita a sanaje s S	1
			Final Measurements	Table Olton 1	1 , .	-2.0	+ 2.0	10-6	١
			Resonance Frequency Drift	Table 2 Item 1	$\frac{\Delta f}{f}$		T 2.0	10.0	1
	·		Resonance Resistance	Table 2 Item 2	ΔR	-10	+ 10	%	١
		,	Drift		R	or (2)		'	ł
					ΔR	- 1.0	+ 1.0	Ω	١
10	Damp Heat (Acclerated)	Para. 9.14.4	Initial Measurements		1		l		Ì
1	Remaining Cycles		Resonance Frequency	Table 2 Item 1	f	1	9.14.3.2		l
. 1			Resonance Resistance	Table 2 Item 2	R	Final Mea	asurements	}	Ì
			Final Measurements	Table 2 Item 1	1 1	-2.0	+ 2.0	10-6	ı
			Resonance Frequency Drift	1 able 2 item i	$\frac{\Delta f}{f}$	2.0	1 2.0	10 5	1
			Resonance Resistance	Table 2 Item 2	<u>Δ R</u>	-10	+10	%	١
1			Drift			or (2)			ļ
l			w .		ΔR	1.0	+ 1.0	Ω	Ì
			Insulation Resistance	Table 2 Item 8	Ri	500	-	MΩ	╛
11	Rapid Change of	Para. 9.15	Initial Measurements						
	Temperature		Resonance Frequency	Table 2 Item 1	f	Para.	9.14.4.2		١
1		100	Resonance Resistance		R	Final Me	asurements		-
		1000	Final Measurements	After minimum		:			1
				Recovery of 2 hour Table 2 Item 1		-2.0	+ 2.0	10-6	
1		: 1	Resonance Frequency Drift	I AUIC Z HEIII I	$\frac{\Delta f}{f}$	-2.0	1 2.0	10.0	
	+		Resonance Resistance	Table 2 Item 2	ΔR	-10	+10	%	١
			Drift		R	or (2)			-
					ΔR	- 1.0	+ 1.0	Ω	١
12	Robustness of	Para. 9.16	Tensile Strength	Gen. 3501				Ī	٦
'-	Terminations	1 4 4 5 1 6	1. Shore Guorigan	Para. 9.16.1					- [
			Visual Examination	No visible damage	e				
		:	Bending	Gen. 3501					
			Ver all management	Para. 9.16.2	_				ļ
			Visual Examination	No visible damag	е		,		1

- 1. The tests in this table refer to either Chart IV or V, and shall be used as applicable.
- 2. Whichever is the highest value.



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TABLE 6 - MEASUREMENTS AND INSPECTIONS ON COMPLETION OF ENVIRONMENTAL TESTS AND AT INTERMEDIATE POINTS AND ON COMPLETION OF ENDURANCE TESTING (Cont.)

	ESCC GENERIC SP			SPECTIONS		LIMITS		
NO.	ENVIRONMENTAL AND ENDURANCE TESTS (1)			CONDITIONS	SYMBOL	M in.	Max.	UNIT
13	Life Test	Para. 9.17	Initial Measurements Resonance Frequency Resonance Resistance	Table 2 Item 1 Table 2 Item 2	f R	Table 2 Table 2		
			Intermediate Measurements Resonance Frequency Drift	Table 2 Item 1	<u>Δ f</u>	- 2.0	+ 2.0	10-6
			Resonance Resistance Drift	Table 2 Item 2	<u>Δ R</u> R ΔR	-10 or (2) -1.0	+10	% Ω
			Intermediate Measurements (Chart IV) and Final Measurements (Chart V)	At 1000 hours				
	garagas de la bida e e e como code gada sobre e en distra elemente e e comercia e co	இது இது நிருந்தின் இது நிருந்தின் நிருந்தின் இது	Resonance Frequency Drift	Table 2 Item 1	Δ <u>·f</u>	- 2.5	+2.5	10-6
			Resonance Resitance Drift	Table 2 Item 2	∆R R	-10 or (2)	+10	%
	i jangangan sere		Final Measurements (Chart IV)	At 2000 hours	ΔR	-1.0	+1.0	Ω
		10 10 10 10 10 10 10 10 10 10 10 10 10 1	Resonance Frequency Drift	Table 2 Item 1	$\frac{\Delta f}{f}$	-3.0	+3.0	10-6
			Resonance Resistance Drift	Table 2 Item 2	ΔR R	-10 or (2)	+10	%
					ΔR	-1.0	+1.0	Ω

- 1. The tests in this table refer to either Chart IV or V, and shall be used as applicable.
- 2. Whichever is the highest value.

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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	- f _L	4.194		MHz	
2	Reference Temperature	T _o	+ 28	+ 32		
3	Overtone Order	-	Fundar			
4	Load Capacitance	CL		30	pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	$\frac{\Delta f}{f}$	-10	+ 10	10-6	At T _o °C
7	Resonance Resistance	R_{L}	<u>.</u>	10	Ω	Over T _{op} °C
8	Frequency Variation with Temperature	∆ f f	-10	+ 10	10 ⁻⁶	From frequency measured at T _o °C
and the state of the	over Top				Malia saga tan innegéter menéréri nyint.	Same tale address and a same transfer and a sa
9	Resistance Variation with Temperature	ΔR R	-20	+20 r	%	
	over T _{op}		-2.0	+ 2.0	Ω	If R ≤ 10Ω
10	Operating Temperature Range	T _{op}	-10	+ 80	°C	
11	Frequency Variation with Drive Level	$\frac{\Delta f}{f}$	Not ap	olicable	10 ⁻⁶	
12	Resistance Variation with Drive Level	ΔR R	Not ap	plicable	%	
13	Motional Inductance	L ₁	Not ap	plicable	mH	. · · ·
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	0	4.0	pF	
16	Q Factor	Q	200 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R or IZpI/R	2:1	- -		In the frequency range: fL -200kHz to fL +200kHz
18	Ageing	Δf	-10	+10	10-6	5 years after Burn-in
19	Lead Finish	<u>'</u>	Tvr	e 2		
20	Intended Application		+	plicable		

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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	nits Max.	Unit	Remarks
1	Resonance Frequency	fL	8.1	8.192		
2	Reference Temperature	T _o	+ 23	+ 27	°C	
3	Overtone Order	- -	Fundar	nental	in april on	
4	Load Capacitance	CL	5	0	рF	
5	Rated Drive Level	P _o	0.	1	mW	
6	Frequency Adjustment Tolerance	$\frac{\Delta f}{f}$	-10	+ 10	10-6	At To °C
7	Resonance Resistance	R_{L}	-	13	Ω	At T _o °C
8	Frequency Variation with Temperature over Top	<u>Δ f</u> f	-15	+ 15	10-6	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	ΔR R	Not ar	pplicable	%	
10	Operating Temperature Range	T _{op}	-25	+80	°C	
11	Frequency Variation with Drive Level	$\frac{\Delta f}{f}$	Not ap	plicable	10-6	
12	Resistance Variation with Drive Level	<u>Δ R</u> R	Not ap	plicable	%	
13	Motional Inductance	L ₁	36.5	49.5	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	C _o	0	4.0	pF	٠.
16	Q Factor	Q	50 000	+		
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	R _p /R or IZ _p I/R	3:1			In the frequency range: f _L -100kHz to f _L +100kHz
18	Ageing	$\frac{\Delta f}{f}$	-30	+30	10-6	
19	Lead Finish	- N	Туре	'3 or 4'		
20	Intended Application		Not ap	plicable		

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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	f _r	26	.0	MHz	
2	Reference Temperature	To	+ 20	+ 30	°C	
3	Overtone Order	.	. 3	3	-	
4	Load Capacitance	CŁ	α	o .	pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	$\frac{\Delta f}{f}$	-10	+ 10	10-6	At T _o °C
7	Resonance Resistance	R _r	-	40	Ω	At T _o °C
8	Frequency Variation with Temperature over Top	∆ f f	0 -10 -10	+ 10 + 10 	10-6	From T -20 to +10 °C From T +10 to +50 °C From T +50 to +80 °C
9	Resistance Variation with Temperature over Top	ΔR R	-20	+20	%	
10	Operating Temperature Range	T _{op}	-25	+80	°C	
11	Frequency Variation with Drive Level	$\frac{\Delta f}{f}$	0.5	0.5	10-6	From P _{S1} = 0mW to P _{S2} = 0.1mW
12	Resistance Variation with Drive Level	ΔR R	-10	+ 10	% 	From $P_{S1} = 0$ mW to $P_{S2} = 0.1$ mW
13	Motional Inductance	L ₁	20	-	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	0	7.0	pF	
16	Q Factor	Q	100 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	R _p /R or IZ _p I/R	10:1	_		In the frequency range: f _r -2600kHz to f _r +2600kHz
18	Ageing	$\frac{\Delta}{f}$	-2.0	+2.0	10 ⁻⁶	10 years after Burn-in and ageing
19	Lead Finish		Ту	pe 2		
20	Intended Application		Not ap	plicable		
						and the second s

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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	nits Max.	Unit	Remarks
1	Resonance Frequency	fL	7.1	98	MHz	
2	Reference Temperature	To	+ 23	+ 27	°C	
3	Overtone Order	- , -	Fundar	mental	-	
4	Load Capacitance	CL	29.7	30.3	pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	$\frac{\Delta f}{f}$	-50	+ 50	10-6	At T _o °C
7	Resonance Resistance	RL	-	30	Ω	At T _o °C
8	Frequency Variation with Temperature over Top	∆ f f	-50	+ 50	10-6	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	ΔR R	Not ap	olicable	%	
10	Operating Temperature Range	T _{op}	-55	+ 105	°C	
11	Frequency Variation with Drive Level	<u>∆ f</u>	Not ap	plicable	10-6	
12	Resistance Variation with Drive Level	ΔR R	Not ap	plicable	%	
13	Motional Inductance	L ₁	Not ap	plicable	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	0	7.0	pF	
16	Q Factor	Q	Not ap	plicable	•	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	R _p /R or IZ _p I/R	7:1	<u>.</u>		In the frequency range: fL -500kHz to fL +500kHz
18	Ageing	$\frac{\Delta f}{f}$	-7.5	+ 7.5	10-6	Over 5 years after Burn-in
19	Lead Finish		Ту	pe 2		
20	Intended Application		Not ap	plicable		

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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

	the second secon				·	
No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	fL	5.	0	MHz	
2	Reference Temperature	To	+ 23	+ 27	°C	
3	Overtone Order		Fundar	nental	-	
4	Load Capacitance	C _L	29.7	30.3	pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	$\frac{\Delta f}{f}$	-10	+ 10	10 ⁻⁶	At T _o °C
7	Resonance Resistance	RL		100	Ω	At To °C
8	Frequency Variation with Temperature over Top	$\frac{\Delta f}{f}$	-40	+ 40	10-6	From frequency measured at To °C
9	Resistance Variation with Temperature over Top	ΔR R	Not applicable		%	
10	Operating Temperature Range	T _{op}	-40	+80	°C	
11	Frequency Variation with Drive Level	$\frac{\Delta f}{f}$	Not ap	plicable	10-6	·
12	Resistance Variation with Drive Level	∆R R	Not ap	plicable	%	
13	Motional Inductance	L ₁	Not ap	plicable	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	:	7.0	pF	
16	Q Factor	Q	Not ap	plicable	•	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	R _p /R or IZ _p I/R	4:1			In the frequency range: fL -500kHz to fL +500kHz
18	Ageing	$\frac{\Delta f}{f}$	Not applicable		10-6	
19	Lead Finish		Ту	ре 2		A
20	Intended Application		Not ap	plicable		

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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	fL	18.0		MHz	
2	Reference Temperature	To	+ 23	+ 27	°C	
3	Overtone Order	-	Fundar	nental	-	
4	Load Capacitance	CL	29.7	30.3	pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	∆ f f	-10	+10	10 ⁻⁶	At T _o °C
7	Resonance Resistance	RL	-	20	Ω	At T _o °C
8	Frequency Variation with Temperature over Top	Δf f	-20	+20	10-6	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	ΔR R	-20 c -2.0	+20 r +2.0	%	From resistance measured at T_0 °C If $R \le 10\Omega$
10	Operating Temperature Range	T _{op}	-45	+ 80	Ç	1
11	Frequency Variation with Drive Level	$\frac{\Delta f}{f}$	Not ap	olicable	10-6	
12	Resistance Variation with Drive Level	<u>Δ R</u> R	Not ap	plicable	%	
13	Motional Inductance	L ₁	Not ap	plicable	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	-	7.0	pF	
16	Q Factor	Q	70 000		-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	R _p /R or IZ _p I/R	2:1	-		In the frequency range: fL -200kHz to fL +200kHz
18	Ageing	$\frac{\Delta f}{f}$	-3.0	+3.0	10-6	Over 5 years after Burn-in
19	Lead Finish	-1	Ту	oe 2		N 1
20	Intended Application		Not ap	plicable		

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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim	nits	Unit	Remarks	
140.	Onaracteristics	Symbol	Min.	Max.	Offic	rtemarks	
1	Resonance Frequency	γ _i f∟	1	0	MHz		
2	Reference Temperature	T _o	+ 23	+ 27	: °C		
3	Overtone Order	-	Funda	mental	•	i.	
4	Load Capacitance	CL	3	0	pF		
5	Rated Drive Level	Po	0.	.1	mW		
6	Frequency Adjustment Tolerance	$\frac{\Delta f}{f}$	-10	+10	10-6	At T _o °C	
.7	Resonance Resistance	RL	-	20	Ω	At To °C	
8	Frequency Variation with Temperature over Top	<u>∆</u> f	-25	+ 25	10 ⁻⁶	From frequency measured at T _o	,C
9	Resistance Variation with Temperature over Top	ΔR R	Not ap	plicable	%		
10	Operating Temperature Range	T _{op}	-55	+ 100	°C		1
11	Frequency Variation with Drive Level	<u>∆ f</u>	Not ap	plicable	10-6	·	
12	Resistance Variation with Drive Level	<u>Δ R</u> R	Not ap	plicable	%		
13	Motional Inductance	L ₁	Not ap	plicable	mH		
14	Motional Capacitance	C ₁	Not ap	plicable	fF		
15	Static Capacitance	, C _o	- :-	7.0	pF		
16	Q Factor	Q	80 000	,	-		
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	R _p /R or IZ _p I/R	2:1	- -		In the frequency f _L -500kHz to f _L +500kHz	
18	Ageing	Δ f	-5.0	+ 5.0	10-6	Over 5 years aft Burn-in	er
19	Lead Finish		Тур	pe 2			
20	Intended Application		Not ap	plicable			

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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

		TYPE VARIANT NO. 00			<u> </u>	
No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	∯ f∟	10	.0	MHz	
2	Reference Temperature	Τ _ο	+ 23	+ 27	°C	
3	Overtone Order	- 14	Fundar	nental	_	
4	Load Capacitance	CL	3	0	pF	
5	Rated Drive Level	∛P _o	0.	1	mW	
6	Frequency Adjustment Tolerance	<u>Δ f</u>	-10	+ 10	10 ⁻⁶	At T _o °C
7	Resonance Resistance	RL	1 st	30	Ω	At To °C
8	Frequency Variation with Temperature over Top	<u>∆ f</u> f	-30	+30	10-6	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	ΔR R	- 10 o - 2.0	+ 10 + 2.0	%	From resistance measured at T_0 °C If $R < 10\Omega$
10	Operating Temperature Range	T _{op}	-55	+ 100	°C	
11	Frequency Variation with Drive Level	$\frac{\Delta f}{f}$	Not ap	plicable	10 ⁻⁶	
12	Resistance Variation with Drive Level	ΔR R	Not ap	plicable	%	
13	Motional Inductance	L ₁	Not ap	plicable	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF .	
15	Static Capacitance	Co	,	7.0	pF	L.
16	Q Factor	Q	100 000	e per e e	. .	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	R _p /R or IZ _p I/R	2:1			In the frequency range: fL - 200kHz to fL + 200kHz
18	Ageing	$\frac{\Delta f}{f}$	-2.0	+2.0	10-6	Per year after Burn-in
19	Lead Finish		Ту	pe 2		
20	Intended Application		>	(O		

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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

			Lim	its		
No.	Characteristics	Symbol	Min.	Max.	Unit	Remarks
. 1	Resonance Frequency	f∟	5(0	MHz	
2	Reference Temperature	To	+ 23	+ 27	°C	
3	Overtone Order	•	3	3	•	
4	Load Capacitance	CL	11.9	12.1	pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	$\frac{\Delta f}{f}$	-5.0	+5.0	10-6	At T _o °C
7	Resonance Resistance	, R _L	-	40	Ω	Over T _{op} °C
8	Frequency Variation with Temperature over Top	Δf f	-5.0 -10	+5.0 +10	10 ⁻⁶	From T -20°C to +70°C From T -20°C to +80°C
9	Resistance Variation with Temperature over Top	ΔR R	Not ap	plicable	%	
10	Operating Temperature Range	T _{op}	-20	+80	°C	
11	Frequency Variation with Drive Level	$\frac{\Delta f}{f}$	Not ap	plicable	10-6	
12	Resistance Variation with Drive Level	<u>Δ R</u> R	Not ap	plicable	%	
13	Motional Inductance	L ₁	Not ap	plicable	mH	
14	Motional Capacitance	C ₁	1.7	-	fF	
15	Static Capacitance	Co	-	6.0	pF	
16	Q Factor	Q	50 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R or IZpI/R	2.5:1	· •		In the frequency range: fL -200kHz to fL + 200kHz
18	Ageing	$\frac{\Delta f}{f}$	-6.0	+6.0	10-6	Over 5 years
19	Lead Finish		Ту	pe 2		
20	Intended Application	·	VC	CXO		

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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	iits Max.	Unit	Remarks
1	Resonance Frequency	fL	4.	0	MHz	
2	Reference Temperature	T _o	+ 23	+ 27	°C.	
3	Overtone Order	-	Fundar	nental	-	
4	Load Capacitance	CL	3	0	pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	<u>∆ f</u> f	-10	+ 10	10 ⁻⁶	At T _o °C
7	Resonance Resistance	R_L	: :-	25	Ω	At To °C
8	Frequency Variation with Temperature over Tob	<u>Δ f</u> f	-30	+30	10 ⁻⁶	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	ΔR R	Not ap	olicable	%	
10	Operating Temperature Range	T _{op}	-40	+ 80	°C	
11	Frequency variation with Drive Level	$\frac{\Delta f}{f}$	Not ap	olicable	10 ⁻⁶	
12	Resistance variation with Drive Level	<u>Δ R</u> R	Not ap	plicable	%	
13	Motional Inductance	L ₁	Not ap	plicable	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	C _o	Not ap	plicable	pF	
16	Q Factor	Q	125 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	R _p /R or IZ _p I/R	2:1			In the frequency range: fL -500kHz to fL +500kHz
18	Ageing	$\frac{\Delta f}{f}$	-3.0	+3.0	10-6	1 year after Burn-in
19	Lead Finish		Тур	pe 2		
20	Intended Application		×	O		With 54HC04

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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

	the second of th	TIFE VARIANT NO. 11				
No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	fL	10	.0	MHz	
2	Reference Temperature	To	+ 23	+ 27	°C	
3	Overtone Order	-	Fundar	nental		
4	Load Capacitance	CL	3	0	pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	$\frac{\Delta f}{f}$	-10	+ 10	10-6	At T _o °C
7	Resonance Resistance	R_{L}		30	Ω	At To °C
8	Frequency Variation with Temperature over Top	∆f f	-30	+30	10-6	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	ΔR R	-2.0	+2.0	Ω	From resistance measured at T _o °C
10	Operating Temperature Range	T _{op}	-55	+ 100	°C	
11	Frequency Variation with Drive Level	$\frac{\Delta f}{f}$	Not ap	plicable	10 ⁻⁶	
12	Resistance Variation with Drive Level	<u>Δ R</u> R	Not ap	plicable	%	
13	Motional Inductance	L ₁	Not ap	plicable	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	-	7.0	pF	
16	Q Factor	Q	100 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	R _p /R or IZ _p I/R	2:1			In the frequency range: f _L -200kHz to f _L +200kHz
18	Ageing	$\frac{\Delta f}{f}$	-2.0	+ 2.0	10-6	Per year after Burn-in at To
19	Lead Finish		Ту	pe 2		
20	Intended Application		>	(0		



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
- 1	Resonance Frequency	f _r	8.	0	MHz	
2	Reference Temperature	T _o	+ 20	+30	°C	
3	Overtone Order	-	Fundar	nental	·	
4	Load Capacitance	CL	α)	. pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	$\frac{\Delta f}{f}$	-10	+ 10	10-6	At T _o °C
7	Resonance Resistance	R _r	-	40	Ω	At To °C
8	Frequency Variation with Temperature over Top	<u>∆ f</u>	0 - 9.0 - 9.0	+ 9.0 + 9.0	10-6	From T -20 to +10 °C From T +10 to +50 °C From T +50 to +80 °C
9	Resistance Variation with Temperature over Top	ΔR R	-2.0	+2.0	Ω	From resistance measured at T _o °C
10	Operating Temperature Range	T _{op}	-20	+ 80	°C	
11	Frequency Variation with Drive Level	$\frac{\Delta f}{f}$	Not ap	olicable	10-6	
12	Resistance Variation with Drive Level	<u>Δ R</u> R	Not ap	plicable	%	
13	Motional Inductance	L ₁	2.0	-	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	-	5.0	pF	
16	Q Factor	Q	70 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	R _p /R or IZ _p I/R	2:1	<u>.</u>		In the frequency range: f _r - 10% to f _r + 10%
18	Ageing	$\frac{\Delta f}{f}$	-5.0	+ 5.0	10-6	12 years after Burn-in
19	Lead Finish		Туј	oe 2		4
20	Intended Application		×	(O		The state of the s

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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	f _r	10	10.0		AT cut
2	Reference Temperature	To	+20	+ 30	°C	* · · · · · · · · · · · · · · · · · · ·
3	Overtone Order		3	3:	-	
4	Load Capacitance	CL	α	9	pF	A.
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	$\frac{\Delta f}{f}$	-10	+ 10	10-6	At T _o °C
7	Resonance Resistance	R _r	-	40	Ω	At To °C
8	Frequency Variation with Temperature over Top	<u>Δ f</u> f	– 10	+10	10-6	From frequency measured at T ₀ °C
9	Resistance Variation with Temperature over Top	ΔR R	-2.0	+ 2.0	Ω	From resistance measured at T _o °C
10	Operating Temperature Range	T _{op}	-20	+80	°C	
11	Frequency Variation with Drive Level	∆ f f	- 0.5	+ 0.5	10-6	From P _{S1} = 0.01mW to P _{S2} = 0.1mW
12	Resistance Variation with Drive Level	<u>Δ R</u> R	-20	+20	%	From P _{S1} = 0.01mW to P _{S2} = 0.1mW
13	Motional Inductance	L ₁	3.0	-	mH	
14	Motional Capacitance	, C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	-	5.0	pF	
16	Q Factor	Q	70 000	-	- "	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	R _p /R or IZ _p I/R	3:1			In the frequency range: f _r -10% to f _r +10%
18	Ageing	$\frac{\Delta f}{f}$	- 10	+ 10	10-6	12 years after Burn-in
19	Lead Finish		Ту	oe 2		
20	Intended Application		TC	XO		

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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

		,				
No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	fL	6.	6.4		
2	Reference Temperature	T _o	+ 23	+ 27	°C	
3	Overtone Order	-	Fundar	nental	1	1 · · · · · · · · · · · · · · · · · · ·
4	Load Capacitance	CL	3	0	pF	
5	Rated Drive Level	Po	0.	1	mW	·
6	Frequency Adjustment Tolerance	$\frac{\Delta f}{f}$	-10	+ 10	10 ⁻⁶	At To °C
7	Resonance Resistance	RL	-	20	Ω	At To °C
8	Frequency Variation with Temperature over Top	∆ f f	-20	+ 20	10-6	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	ΔR R	-20 -2.0	+20 or +2.0	% Ω	From resistance measured at T _o °C If R<10Ω
10	Operating Temperature Range	T _{op}	-45	+80	°C	
11	Frequency Variation with Drive Level	$\frac{\Delta f}{f}$	Not ap	plicable	10 ⁻⁶	
12	Resistance Variation with Drive Level	<u>Δ R</u> R	Not ap	plicable	%	
13	Motional Inductance	L ₁	Not ap	plicable	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	-	7.0	pF	
16	Q Factor	Q	70 000	-	. -	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	R _p /R or IZ _p I/R	2:1			In the frequency range: fL -200kHz to fL +200kHz
18	Ageing	$\frac{\Delta f}{f}$	-3.0	+ 3.0	10-6	Per year after Burn-in
19	Lead Finish		Ту	oe 4		
20	Intended Application	-	>	(0		

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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	nits Max.	Unit	Remarks
1	Resonance Frequency	f _r	12.0	12.605		AT cut
2	Reference Temperature	To	+ 20	+ 30	°C	
3	Overtone Order	-	Funda	mental	-	
4	Load Capacitance	CL	.0	0	рF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	$\frac{\Delta f}{f}$	- 10	+ 10	10-6	At T _o °C
7	Resonance Resistance	R _r	· -	40	Ω	At To °C
8	Frequency Variation with Temperature over Top	∆ f f	- 10	+ 10	10-6	From frequency measured at T ₀ °C
9	Resistance Variation with Temperature over Top	ΔR R	-20	+ 20 or + 2.0	%	From resistance measured at T ₀ °C
10	Operating Temperature Range	T _{op}	-20	+60	°C	
111	Frequency Variation with Drive Level	$\frac{\Delta f}{f}$	Not ap	plicable	10 ⁻⁶	
12	Resistance Variation with Drive Level	<u>Δ R</u> R	Not ap	plicable	%	
13	Motional Inductance	L ₁	2.0		mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	-	7.0	pF	
16	Q Factor	Q	70 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	R _p /R or IZ _p 1/R	2:1	<u>.</u>		In the frequency range: f _r - 10% to f _r + 10%
18	Ageing	$\frac{\Delta f}{f}$	-5.0	+5.0	10-6	Operation 12 years
19	Lead Finish		Тур	pe 2		
20	Intended Application		тс	XO		

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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

	·					
No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	fL	7.	7.0		AT cut
2	Reference Temperature	T _o	+ 23	+ 27	°C	1
3	Overtone Order	-	Fundar	nental		i i i i i i i i i i i i i i i i i i i
4	Load Capacitance	CL	30)	pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	$\frac{\Delta f}{f}$	- 10	+ 10	10-6	At To °C
7	Resonance Resistance	RL	-	20	Ω	At To °C
8	Frequency Variation with Temperature over Top	Δ f f	– 12	+ 12	10-6	From frequency measured at T _o °C
9	Resistance Variation with Temperature	<u>Δ R</u> R	-20 0		%	From resistance measured at T ₀ °C
	over T _{op}		-2.0	+2.0	Ω	
10	Operating Temperature Range	T _{op}	-35	+ 70	°C	
11	Frequency Variation with Drive Level	$\frac{\Delta f}{f}$	Not ap	olicable	10-6	N. 3
12	Resistance Variation with Drive Level	<u>Δ R</u> R	Not ap	olicable	%	
13	Motional Inductance	L ₁	40	e pulja i c	mH	
14	Motional Capacitance	C ₁	Not ap	olicable	fF	
15	Static Capacitance	Co	-	7.0	pF	:
16	Q Factor	Q	100 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	R _p /R or IZ _p I/R	3:1	: " : " : .		In the frequency range: f _L -10% to f _L +10%
18	Ageing	$\frac{\Delta f}{f}$	-3.0	+3.0	10-6	Per year after Burn-in
19	Lead Finish		Ту	pe 2		
20	Intended Application		×	O		

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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

			MUMILI			
No.	Characteristics	Symbol	Lim Min.	nits Max.	Unit	Remarks
1	Resonance Frequency	fr	12.6	665	MHz	AT cut
2	Reference Temperature	To	+20	+ 30	°C	
3	Overtone Order	-	Fundai	mental	-	12.5
4	Load Capacitance	CL	0	0	pF	
5	Rated Drive Level	Po	0.	.1	mW	
6	Frequency Adjustment Tolerance	$\frac{\Delta f}{f}$	-10	+ 10	10-6	At To °C
7	Resonance Resistance	R _r		40	Ω	At To °C
8	Frequency Variation with Temperature over Top	<u>∆</u> f	- 12	+ 12	10-6	From frequency measured at T ₀ °C
9	Resistance Variation with Temperature over Top	ΔR R	-20 0 -2.0	+20 r +2.0	% Ω	From resistance measured at T ₀ °C
10	Operating Temperature Range	T _{op}	-20	+80	°C	
111	Frequency variation with Drive Level	<u>Δ f</u>	Not ap	plicable	10-6	
12	Resistance variation with Drive Level	ΔR R	Not ap	plicable	%	
13	Motional Inductance	L ₁	2.0	:	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	-	7.0	pF	
16	Q Factor	Q	70 000		-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	R _p /R or IZ _p I/R	2:1	2 2 3 3 4		In the frequency range: f _r -10% to f _r +10%
18	Ageing	∆ f f	-5.0	+ 5.0	10-6	Over 12 years after 240 hours Burn-in
19	Lead Finish		Туј	oe 2		
20	Intended Application		TC	XO		

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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

	! コイナス - 製造 :	· · · · · ·	7 11 117 11 1	10: 10		
No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	₩ fL	5.7	60	MHz	AT cut
2	Reference Temperature	T _o	+ 23	+ 27	°C	*
3	Overtone Order		Fundar	nental	•	
4	Load Capacitance	CL	29.5	30.5	pF	
5	Rated Drive Level	P_{o}	0.	1	mW	
6	Frequency Adjustment Tolerance	<u>Δ f</u> f	-10	+ 10	10-6	At T _o °C
7	Resonance Resistance	R_{L}	4.0	15	Ω	At T _o °C
8	Frequency Variation with Temperature over Top	<u>Δ f</u> f	-15	+ 15	10-6	From frequency measured at To °C
9	Resistance Variation with Temperature over Top	ΔR R	Not app	icable	%	
10	Operating Temperature Range	T _{op}	-40	+90	°C	14.4 1
11	Frequency Variation with Drive Level	$\frac{\Delta f}{f}$	Not ap	olicable	10-6	
12	Resistance Variation with Drive Level	Δ <u>R</u> R	Not ap	plicable	%	1
13	Motional Inductance	L ₁	Not ap	plicable	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	-	7.0	pF	
16	Q Factor	Q	100 000		- · ·	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R or IZpI/R	3:1	-		In the frequency range: fL -200kHz to fL +200kHz
18	Ageing	∆ f f	-15	+ 15	10-6	Over 10 years after 240 hours Burn-in
19	Lead Finish			pe 2		
20	Intended Application		<u> </u>	(O		
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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lin Min.	nits Max.	Unit	Remarks
1	Resonance Frequency	fL	5.7	5.760		AT cut
2	Reference Temperature	To	+ 23	+ 27	°C	
3	Overtone Order		Fundai	mental	-	
4	Load Capacitance	C _L	29.5	30.5	pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	$\frac{\Delta f}{f}$	-10	+ 10	10 ⁻⁶	At T _o °C
7	Resonance Resistance	RL	4.0	15	Ω	At To °C
8	Frequency Variation with Temperature over Top	∆f f	-15	+ 15	10-6	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	ΔR R	Not applicable		%	
10	Operating Temperature Range	T _{op}	-40	+ 90	°C) A 91
11	Frequency Variation with Drive Level	$\frac{\Delta f}{f}$	Not ap	olicable	10-6	
12	Resistance Variation with Drive Level	<u>Δ R</u> R	Not ap	plicable	%	
13	Motional Inductance	L ₁	Not ap	plicable	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	•	7.0	pF	
16	Q Factor	Q	100 000	•	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R or IZpI/R	3:1	<u>-</u>		In the frequency range: fL -200kHz to fL +200kHz
18	Ageing	$\frac{\Delta f}{f}$	-15	+ 15	10-6	Over 10 years after 240 hours Burn-in
19	Lead Finish		Тур	pe 2		
20	Intended Application		×	O		

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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	nits Max.	Unit	Remarks
1	Resonance Frequency	fL	8.602	8.602893		AT cut
2	Reference Temperature	T _o	+ 55	+ 65	°C	
3	Overtone Order		Fundar	mental		
4	Load Capacitance	CL	3	0	pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	$\frac{\Delta f}{f}$	-10	+ 10	10-6	At T _o °C
7	Resonance Resistance	R_{L}	-	30	Ω	At To °C
8	Frequency Variation with Temperature over Top	Δf f	-12	+ 12	10-6	From frequency measured at T ₀ °C
9	Resistance Variation with Temperature over Top	ΔR R	-20 0 -2.0	+20 or I +2.0	% Ω	From resistance measured at T ₀ °C
10	Operating Temperature Range	T _{op}	-40	+ 85	°C	
11	Frequency Variation with Drive Level	<u>Δ f</u>	Not ap	plicable	10-6	
12	Resistance Variation with Drive Level	ΔR R	-20	+20	%	From $P_{S1} = 0.01 \text{mW}$ to $P_{S2} = 0.1 \text{mW}$
13	Motional Inductance	L ₁	2.0	: -	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co		5.0	pF	
16	Q Factor	Q	100 000	_	; -	A contract of
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	R _p /R or IZ _p I/R	2:1			In the frequency range: f _L -10% to f _L +10%
18	Ageing	$\frac{\Delta f}{f}$	-5.0	+ 5.0	10 ⁻⁶	Over 10 years after 240 hours Burn-in
19	Lead Finish		Ту	Type 2		
20	Intended Application		×	O		



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	f _r	15.104893		MHz	AT cut
2	Reference Temperature	To	+ 20	+ 30	°C	
3	Overtone Order	-	Fundar	nental	-	
4	Load Capacitance	CL	ο ο	D	pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	∆ f f	-10	+ 10	10-6	At T _o °C
7	Resonance Resistance	R _r		40	Ω	At To °C
8	Frequency Variation with Temperature over Top	Δf f	-10	+ 10	10-6	From frequency measured at T _o °C
9	Resistance Variation with Temperature	ΔR R	-20 0	+20 r +2.0	% Ω	From resistance measured at T _o °C
	over T _{op}		- 2.0			
10	Operating Temperature Range	T _{op}	-20	+ 80	°C	
11.	Frequency Variation with Drive Level	$\frac{\Delta f}{f}$	Not ap	olicable	10-6	
12	Resistance Variation with Drive Level	ΔR R	Not ap	plicable	%	
13	Motional Inductance	L ₁	2.0		mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	-	7.0	pF	:
16	Q Factor	Q	70 000			
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	R _p /R or IZ _p l/R	2:1	- -		In the frequency range: f _r -10% to f _r +10%
18	Ageing	Δf f	- 5.0	+ 5.0	10-6	Over 12 years after 240 hours Burn-in
19	Lead Finish	-	Туг	e 2		
20	Intended Application		×	(O		

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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	fL	20.	20.0		AT cut
2	Reference Temperature	To	+ 23	+ 27	• °C	
3	Overtone Order		Fundan	nental	-	
4	Load Capacitance	CL	30)	pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	$\frac{\Delta f}{f}$	-10	+ 10	10-6	At T _o °C
7	Resonance Resistance	R_L	-	30	Ω	At To °C
8	Frequency Variation with Temperature over Top	∆ f f	– 15	+ 15	10-6	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	∆R R	-20 o -2.0	+20 r +2.0	% Ω	From resistance measured at T ₀ °C
10	Operating Temperature Range	T _{op}	-30	+ 70	°C	
11	Frequency Variation with Drive Level	$\frac{\Delta f}{f}$	Not app	olicable	10-6	
12	Resistance Variation with Drive Level	<u>∆ R</u> R	Not ap	olicable	%	
13	Motional Inductance	L ₁	Not app	olicable	mH	
14	Motional Capacitance	C ₁	Not ap	olicable	fF	
15	Static Capacitance	Co	-	7.0	pF	
16	Q Factor	Q	70 000	_	<u>-</u>	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	R _p /R or IZ _p I/R	2:1	- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1		In the frequency range: f _L -200kHz to f _L +200kHz
18	Ageing	<u>Δ f</u>	-1.0	+ 1.0	10-6	Per year after Burn-in
19	Lead Finish		Type 2			
20	Intended Application		×	0		

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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	f _L	13.	0	MHz	AT cut
2	Reference Temperature	To	+ 23	+ 27	°C	
3	Overtone Order	-	Fundar	nental	-	
4	Load Capacitance	C _L	30)	pF	
5	Rated Drive Level	P _o	0.	1	mW	
6	Frequency Adjustment Tolerance	$\frac{\Delta f}{f}$	-10	+10	10-6	At T _o °C
7	Resonance Resistance	R_{L}	· :-	20	Ω	At To °C
8	Frequency Variation with Temperature over Top	∆ f f	- 20	+20	10-6	From frequency measured at T ₀ °C
9	Resistance Variation with Temperature over Top	ΔR R	-20 0 -2.0		% Ω	From resistance measured at T _o °C
10	Operating Temperature Range	T _{op}	-40	+80	°C	
11	Frequency Variation with Drive Level	$\frac{\Delta f}{f}$	Not ap	olicable	10-6	
12	Resistance Variation with Drive Level	ΔR R	Not app	olicable	%	
13	Motional Inductance	L ₁	Not ap	plicable	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	_	7.0	pF	
16	Q Factor	Q	70 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	R _p /R or IZ _p I/R	2:1	 		In the frequency range: f _L -200kHz to f _L +200kHz
18	Ageing	∆ f f	-2.0	+2.0	10 ⁻⁶	Per year after Burn-in
19	Lead Finish		Туј	oe 2		
20	Intended Application		>	O		

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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

						· · · · · · · · · · · · · · · · · · ·
No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	f∟	10	10.0		AT cut
2	Reference Temperature	To	+ 23	+ 27	°C	
3	Overtone Order	-	Fundar	nental	-	
4	Load Capacitance	CL	30	0	pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	$\frac{\Delta f}{f}$	-10	+ 10	10 ⁻⁶	At T _o °C
7	Resonance Resistance	RL	.: •	30	Ω	At To °C
8	Frequency Variation with Temperature over Top	$\frac{\Delta f}{f}$	-30	+30	10 ⁻⁶	From frequency measured at T ₀ °C
9	Resistance Variation with Temperature	<u>Δ R</u> R	-20 o		%	From resistance measured at T ₀ °C
	over T _{op}		-2.0	+ 2.0	Ω	
10	Operating Temperature Range	T _{op}	-55	+ 100	°C	
11	Frequency variation with Drive Level	$\frac{\Delta f}{f}$	Not ap	olicable	10 ⁻⁶	
12	Resistance variation with Drive Level	<u>Δ R</u> R	Not ap	plicable	%	
13	Motional Inductance	L ₁	Not ap	plicable	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	-	7.0	pF	
16	Q Factor	Q	100 000			i de la companya de
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	R _p /R or IZ _p I/R	2:1	: <u>-</u>		In the frequency range: f _L -200kHz to f _L +200kHz
18	Ageing	$\frac{\Delta f}{f}$	- 2.0	+2.0	10-6	Per year after Burn-in
19	Lead Finish		Тур	pe 2		
20	Intended Application		×	O		

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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

· · · · · · · · · · · · · · · · · · ·						
No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	f∟	5.242	2880	MHz	AT cut
2	Reference Temperature	Τ _o	+ 60	+ 60	°C	
3	Overtone Order	-	Fundar	nental	-	and the second of the second o
4	Load Capacitance	CL	30	0	рF	
5	Rated Drive Level	P _o	0.	1	mW	
6	Frequency Adjustment Tolerance	$\frac{\Delta f}{f}$	– 10	+ 10	10 ⁻⁶	At T _o °C
7	Resonance Resistance	RL	-	13	Ω	At To °C
8	Frequency Variation with Temperature over T_{00}	Δf f	- 15	+ 15	10-6	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	ΔR R	Not ap	olicable	%	
10	Operating Temperature Range	T _{op}	-40	+ 85	°C	
11	Frequency variation with Drive Level	$\frac{\Delta f}{f}$	Not ap	plicable	10 ⁻⁶	
12	Resistance variation with Drive Level	ΔR R	Not ap	plicable	%	
13	Motional Inductance	L ₁	20	<u> </u>	mΗ	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	-	5.0	pF	
16	Q Factor	, Q	50 000	<u>-</u>		
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	R _p /R or IZ _p I/R	3:1			In the frequency range: f _L - 525kHz to f _L + 525kHz
18	Ageing	Δ f f	-3.0	+3.0	10-6	Per year after Burn-in
19	Lead Finish		Ту	pe 2		
20	Intended Application		>	(O		

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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

			7 (1 (1) (1 (1)	<u></u>		
No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	fL	5.62	250	MHz	AT cut
2	Reference Temperature	T _o	+ 20	+ 30	°C	
3	Overtone Order	: · · •	Fundar	nental		
4	Load Capacitance	CL	- 30	0	pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	∆ f f	- 10	+ 10	10-6	At T _o °C
7	Resonance Resistance	RL	-	25	Ω	At T _o °C
8	Frequency Variation with Temperature over Top	Δf f	- 14	+14	10-6	From frequency measured at T _o °C
9	Resistance Variation with Temperature	ΔR R	-20 0		%	From resistance measured at T _o °C
ļ	over T _{op}		-2.0	+ 2.0	Ω	
10	Operating Temperature Range	T _{op}	-40	+ 85	°C	
11	Frequency variation with Drive Level	$\frac{\Delta f}{f}$	- 0.5	+ 0.5	10-6	From P _{S1} = .01mW to P _{S2} = 0.1mW
12	Resistance variation with Drive Level	ΔR R	-20	+20	. % 	From P _{S1} = .01mW to P _{S2} = 0.1mW
13	Motional Inductance	L ₁	2.0	# 2 15 M	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	-	5.0	pF	
16	Q Factor	Q	10 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	R _p /R or IZ _p I/R	3:1			In the frequency range: f10% to f_ +10%
18	Ageing	$\frac{\Delta f}{f}$	- 5.0	+ 5.0	10-6	Over 10 years after Burn-in
19	Lead Finish		Тур	oe 2		
20	Intended Application		×	O		

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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

$ \begin{array}{ c c c c c c c c c } \hline No. & Characteristics & Symbol & \frac{Limits}{Min.} & Unit & Remarks \\ \hline 1 & Resonance Frequency & f_L & 11.250 & MHz & AT cut \\ \hline 2 & Reference Temperature & T_o & +23 & +27 & ^{\circ}C \\ \hline 3 & Overtone Order & - & Fundamental & - & \\ \hline 4 & Load Capacitance & C_L & 29.7 & 30.3 & pF \\ \hline 5 & Rated Drive Level & P_o & 0.1 & mW \\ \hline 6 & Frequency Adjustment & \frac{\Delta f}{f} & -10 & +10 & 10^{-6} & At T_o ^{\circ}C \\ \hline 7 & Resonance Resistance & R_L & - & 20 & \Omega & At T_o ^{\circ}C \\ \hline 8 & Frequency Variation & \frac{\Delta f}{f} & -20 & +20 & 10^{-6} & From frequency measured at T_o ^{\circ} \\ \hline 9 & Resistance Variation & \frac{\Delta R}{R} & Not applicable & \% \\ \hline \end{array} $	C
2 Reference Temperature T_0 +23 +27 °C 3 Overtone Order - Fundamental - 4 Load Capacitance C_L 29.7 30.3 pF 5 Rated Drive Level P_0 0.1 mW 6 Frequency Adjustment Δf -10 +10 10-6 At T_0 °C 7 Resonance Resistance R_L - 20 Ω At T_0 °C 8 Frequency Variation with Temperature over T_{op} Δf Not applicable %	C
3 Overtone Order - Fundamental - 4 Load Capacitance C_L 29.7 30.3 pF 5 Rated Drive Level P_o 0.1 mW 6 Frequency Adjustment $\Delta f = -10 + 10 + 10 = -10 + 10 = -10 = $	C
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	C
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	C
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	C
	C
8 Frequency Variation with Temperature over T_{op}	C
with Temperature over Top measured at To ° measured at T	C
9 Resistance Variation ΔR Not applicable %	
over Top	
10 Operating Temperature T _{op} -50 +100 °C Range	
Frequency variation Δf Not applicable 10-6 with Drive Level	
12 Resistance variation ΔR Not applicable % with Drive Level	. ·
13 Motional Inductance L ₁ Not applicable mH	
14 Motional Capacitance C ₁ Not applicable fF	
15 Static Capacitance C _o - 7.0 pF	
16 Q Factor Q 50 000	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	range:
18 Ageing $\frac{\Delta f}{f}$ -20 +20 10-6 Over 15 years at 240 hours Burn-	
19 Lead Finish Type 2	
20 Intended Application XO	

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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

						·
No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	f _r	8.0	0	MHz	AT cut
2	Reference Temperature	T _o	+ 23	+27	°C	
3	Overtone Order	-	Fundan	nental	-	
4	Load Capacitance	. C _L	∞)	pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	$\frac{\Delta f}{f}$	- 10	+ 10	10-6	At To °C
7	Resonance Resistance	R _r	-	30	Ω	At T _o °C
8	Frequency Variation with Temperature over Top	<u>Δ f</u> f	- 10	+ 10	10-6	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	ΔR R	-20 0 -1.0	+ 20 r + 1.0	% Ω	From resistance measured at T _o °C
10	Operating Temperature Range	T _{op}	-30	+ 70	°C	
111	Frequency variation with Drive Level	∆ f f	Not ap	olicable	10 ⁻⁶	
12	Resistance variation with Drive Level	ΔR R	Not ap	plicable	%	
13	Motional Inductance	L ₁	Not ap	plicable	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	•	7.0	pF	
16	Q Factor	Q	80 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	R _p /R or IZ _p I/R	2:1	- -		In the frequency range: f _r -200kHz to f _r +200kHz
18	Ageing	Δf f	-3.0	+3.0	10-6	Per year after Burn-in
19	Lead Finish		Tyl	pe 2		
20	Intended Application		>	(O		

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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

	:		1			
No.	Characteristics	Symbol	Lim Min.	Max.	Unit	Remarks
1	Resonance Frequency	f∟	3.494	1400	MHz	AT cut
2	Reference Temperature	To	+ 23	+ 27	°C	
3	Overtone Order	-	Fundar	mental	-	
4	Load Capacitance	CL	20	50	pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	$\frac{\Delta f}{f}$	- 10	+ 10	10 ⁻⁶	At T _o °C
7	Resonance Resistance	RL	: -	12	Ω	At To °C
8	Frequency Variation with Temperature over Top	<u>∆</u> f	-20	+20	10 ⁻⁶	From frequency measured at T ₀ °C
9	Resistance Variation with Temperature over Top	ΔR R	Not a	oplicable	%	
10	Operating Temperature Range	T _{op}	- 55	+ 100	°C	
11	Frequency variation with Drive Level	$\frac{\Delta f}{f}$	Not ap	plicable	10-6	
12	Resistance variation with Drive Level	<u>Δ R</u>	Not ap	plicable	%	
13	Motional Inductance	L ₁	200	- 1 · 1 · 1 · 1	mH	
14	Motional Capacitance	⁻ C ₁	Not ap	plicable	fF	
15	Static Capacitance	C _o	_	2.7	pF	
16	Q Factor	Q	400 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	R _p /R or IZ _p I/R	2:1	100 mg/m		In the frequency range: fL -300kHz to fL +300kHz
18	Ageing	$\frac{\Delta f}{f}$	-5.0	+ 5.0	10 ⁻⁶	Per year after Burn-in
19	Lead Finish	* 3	Туј	pe 2		
20	Intended Application		>	O		

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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

			7 11 117 11 11 1			
No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	f∟	3.8	32	MHz	
2	Reference Temperature	To	+ 23	+27	°C	
3	Overtone Order	-	Fundar	mental		#
4	Load Capacitance	CL	3	0	pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	∆ f f	- 10	+ 10	10-6	At T _o °C
7	Resonance Resistance	R_{L}	-	45	Ω	Over T _{op} °C
8	Frequency Variation with Temperature over Top	Δf f	– 17	+ 17	10-6	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	ΔR R	Not ap	oplicable	%	
10	Operating Temperature Range	T _{op}	- 40	+80	°C	
11	Frequency Variation with Drive Level	$\frac{\Delta f}{f}$	Not ap	plicable	10 ⁻⁶	
12	Resistance Variation with Drive Level	<u>Δ R</u> R	Not ap	plicable	%	
13	Motional Inductance	L ₁	230	-	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	_	5.0	pF	
16	Q Factor	Q	125 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	R _p /R or IZ _p I/R	2:1	-		In the frequency range: f _L -500kHz to f _L +500kHz
18	Ageing	∆ f f	-3.0	+3.0	10-6	Per year after Burn-in
19	Lead Finish		Ту	pe 2		
20	Intended Application		>	(O		

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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	fL	3.0	72	MHz	
2	Reference Temperature	T _o	+ 23	+ 27	°C	
3	Overtone Order	-	Fundar	nental		
4	Load Capacitance	CL	30	0	pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	$\frac{\Delta f}{f}$	– 10	+ 10	10-6	At T _o °C
7	Resonance Resistance	RL	-	50	Ω	Over T _{op} °C
8	Frequency Variation with Temperature over Top	<u>∆</u> f	-20	+ 20	10-6	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	ΔR R	Not ap	plicable	%	
10	Operating Temperature Range	T _{op}	- 40	+ 80	°C	
11	Frequency Variation with Drive Level	$\frac{\Delta f}{f}$	Not ap	olicable	10-6	
12	Resistance Variation with Drive Level	ΔR R	Not ap	plicable	%	
13	Motional Inductance	L ₁	230	-	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	C _o	-	5.0	pF	
16	Q Factor	Q	125 000	-	. -	·
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	R _p /R or IZ _p I/R	2:1	-		In the frequency range: f _L - 500kHz to f _L + 500kHz
18	Ageing	∆ f f	-3.0	+3.0	10-6	Per year after Burn-in
19	Lead Finish		Ту	pe 2		
20	Intended Application		>	(O		



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	f∟	4.0		MHz	
2	Reference Temperature	··· T _o	+ 23	+ 27	°C	
3	Overtone Order	•	Fundar	Fundamental		
4	Load Capacitance	C _L	3(0	pF	
5	Rated Drive Level	Po	0.	1.	mW	
6	Frequency Adjustment Tolerance	$\frac{\Delta f}{f}$	- 10	+10	10-6	At T _o °C
7	Resonance Resistance	R_{L}	-	25	Ω	Over T _{op} °C
8	Frequency Variation with Temperature over Tob	<u>Δ</u> f f	- 17	+17	10-6	From frequency measured at To °C
9	Resistance Variation with Temperature over Top	<u>Δ R</u> R	Not ap	pplicable	%	
10	Operating Temperature Range	T _{op}	- 40	+80	°C	
11	Frequency Variation with Drive Level	<u>∆ f</u> f	Not ap	olicable	10 ⁻⁶	
12	Resistance Variation with Drive Level	<u>Δ R</u> R	Not ap	plicable	%	
13	Motional Inductance	L ₁	230		mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	√ C _o	-	5.0	pF	
16	Q Factor	Q	125 000	•		
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	R _p /R or IZ _p I/R	2:1			In the frequency range: f _L - 500kHz to f _L + 500kHz
18	Ageing	Δ f f	-3.0	+3.0	10 ⁻⁶	Per year after Burn-in
19	Lead Finish		Тур	pe 2		
20	Intended Application		×	O		

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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

						<u> Paramatan di Par</u>
No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	f∟	16	.0	MHz	AT cut
2	Reference Temperature	To	+ 23	+ 27	°C	
3	Overtone Order	-	Fundar	nental		
4	Load Capacitance	CL	30	0	pF	
5	Rated Drive Level	Po	0.	1	mW	i
6	Frequency Adjustment Tolerance	$\frac{\Delta f}{f}$	- 10	+ 10	10-6	At T _o °C
7	Resonance Resistance	RL	-	30	Ω	At To °C
8	Frequency Variation with Temperature over Top	∆ f f	- 50	+ 50	10-6	From frequency measured at T ₀ °C
9	Resistance Variation with Temperature over Top	ΔR R	Not ap	plicable	%	
10	Operating Temperature Range	T _{op}	- 55	+ 125	°C	:
11	Frequency Variation with Drive Level	$\frac{\Delta f}{f}$	Not ap	plicable	10-6	
12	Resistance Variation with Drive Level	ΔR R	Not ap	plicable	%	
13	Motional Inductance	L ₁	Not ap	plicable	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	-	7.0	pF	
16	Q Factor	Q	50 000	-	_	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	R _p /R or IZ _p I/R	2:1	-		In the frequency range: fL -100kHz to fL +200kHz
18	Ageing	$\frac{\Delta f}{f}$	-3.0	+3.0	10-6	Per year after Burn-in
19	Lead Finish		Ту	pe 2		
20	Intended Application		>	(O		• • •

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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

			Lim	its		<u> </u>
No.	Characteristics	Symbol	Min.	Max.	Unit	Remarks
1	Resonance Frequency	fL	11.05	11.059200		AT cut
2	Reference Temperature	T _o	+ 23	+ 27	°C	
3	Overtone Order	-	Fundar	nental	-	
4	Load Capacitance	CL	3	0	pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	∆ f f	- 10	+ 10	10 ⁻⁶	At To °C
7	Resonance Resistance	RL	., -	15	Ω	At T _o °C
8	Frequency Variation with Temperature over Top	<u>Δ</u> f	- 25	+ 25	10-6	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	ΔR R	-20 -2.0	+20 or +2.0	%	From resistance measured at T _o °C
10	Operating Temperature Range	Тор	- 55	+ 100	°C	
11	Frequency Variation with Drive Level	$\frac{\Delta f}{f}$	Not ap	plicable	10 ⁻⁶	
12	Resistance Variation with Drive Level	ΔR R	Not ap	plicable	%	
13	Motional Inductance	L ₁	Not ap	plicable	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	-	7.0	pF	
16	Q Factor	Q	70 000	-		4,
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	R _p /R or IZ _p l/R	2:1	- · · · · -		In the frequency range: fL -200kHz to fL +200kHz
18	Ageing	$\frac{\Delta f}{f}$	- 1.0	+ 1.0	10-6	Per year after Burn-in
19	Lead Finish		Тур	pe 2		
20	Intended Application		×	O		

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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

			Lim	its		
No.	Characteristics	Symbol	Min.	Max.	Unit	Remarks
1	Resonance Frequency	f∟	12.00	7125	MHz	AT cut
2	Reference Temperature	T _o	+ 20	+ 30	•C	
3	Overtone Order	-	Fundar	mental	-	
4	Load Capacitance	CL	3	0	pF	
5	Rated Drive Level	P _o	0.	1	mW	
6	Frequency Adjustment Tolerance	$\frac{\Delta f}{f}$	- 10	+ 10	10 ⁻⁶	At T _o °C
7	Resonance Resistance	RL	-	15	Ω	At To °C
8	Frequency Variation with Temperature	Δf f	- 20	+ 20	10 ⁻⁶	From frequency measured at T ₀ °C
	ото. Тор	<u> </u>		. 00	<u> </u>	F
9	Resistance Variation with Temperature	ΔR R	-20 c	+ 20 or	%	From resistance measured at To °C
	over T _{op}		-2.0	+ 2.0	Ω	•
10	Operating Temperature Range	T _{op}	- 40	+90	°C	
11	Frequency Variation with Drive Level	$\frac{\Delta f}{f}$	- 0.5	+ 0.5	10-6	
12	Resistance Variation with Drive Level	ΔR R	- 10	+10	%	
13	Motional Inductance	L ₁	5.0	-	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	-	5.5	pF	
16	Q Factor	Q	70 000		-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance	R _p /R	6-4			In the frequency range: f _L -10% to
:	or Response Impedance to Resonance Resistance	or IZ _p I/R	3:1	-	271	f _L +10%
18	Ageing	$\frac{\Delta f}{f}$	- 5.0	+ 5.0	10-6	Over 10 years after Burn-in
19	Lead Finish		Ту	pe 2		
20	Intended Application		TO	CXO		

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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min,	its Max.	Unit	Remarks
1	Resonance Frequency	fL	11.0	592	MHz	AT cut
2	Reference Temperature	To	+ 23	+27	°C	
3	Overtone Order		Fundan	nental	-	
4	Load Capacitance	CL	<u></u> 50)	pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	<u>Δ f</u> f	- 10	+ 10	10-6	At To °C
7	Resonance Resistance	R_L		20	Ω	At To °C
8	Frequency Variation with Temperature over Top	<u>Δ f</u> f	- 30	+30	10-6	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	ΔR R	-20 -2.0	+20 r +2.0	%	From resistance measured at T _o °C If R<10Ω
10	Operating Temperature Range	T _{op}	- 55	+ 100	°C	
11	Frequency Variation with Drive Level	$\frac{\Delta f}{f}$	Not app	olicable	10 ⁻⁶	
12	Resistance Variation with Drive Level	<u>Δ R</u> R	Not ap	olicable	%	
13	Motional Inductance	L ₁	7.0	-	mΗ	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	- "	7.0	pF	
16	Q Factor	Q	100 000		-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	R _p /R or IZ _p I/R	2:1			In the frequency range: f _L -200kHz to f _L +200kHz
18	Ageing	Δ f	-5.0	+ 5.0	10 ⁻⁶	Per year after 240 Hour Burn-in
19	Lead Finish		Тур	oe 2		
20	Intended Application		×	(0		



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APPENDIX 'A'

Page 1 of 1

AGREED DEVIATIONS FOR RAKON (F)

ITEN	IS AFFECTED	DESCRIPTION OF DEVIATION	
Para. 4.2.2	alita ja kanga	Para 9.3, Shock: Shall not be performed.	
Para. 4.2.3		Para 9.11, Radiographic Inspection: Shall not be performed.	