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CRYSTAL UNITS IN METAL HOLDER, BASED ON TYPE T1507, FREQUENCY RANGE 2.5 - 50MHZ ESCC Detail Specification No. 3501/002

ISSUE 3 April 2007





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261, 290	Specification upissued to incorporate technical and editorial changes per DCRs.
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1. GENERAL

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 T1507, Frequency Range 2.5 - 50MHz.

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

1.2 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 Executive 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 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 <u>FUNCTIONAL DIAGRAM</u>

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

<u> </u>					
	Resonance	Load	Reference	Operating Temp.	Lead
Variant	Frequency	Capacitance	Temp.	Range	Finish
	(MHz) (C _L pF)		(T _o °C)	(T _{op} °C)	
01	3.317	19	+ 25	-20 to +60	2
02	2.496 & 2.5344	30	+ 25	-20 to +50	2
03	2.8	20	+ 25	-30 to +60	2
04	2.7 to 5.0	30	+ 25	-40 to +80	2
05	3.2768	∞	+ 25	-20 to +70	2
06	4.095	∞	+ 25	-30 to +60	2
07	5.0	30	+ 40	-10 to +70	2
08	5.105555	30	+ 25	-55 to +105	2
09	5.333 to 5.334	140	+ 15	-20 to +60	2
10	5.661448	22 to 33	+ 25	-30 to +60	2
11	8.7 to 10.7	∞	+ 25	-40 to +80	2
12	10.0	22	+ 60	-20 to +70	2
13	10.0	50	+ 25	-10 to +80	2
14	10.7	30	+ 25	-55 to +105	2
15	11.0	30	+ 25	-55 to +105	2
16	11.433333	20	+ 25	-20 to +80	2
17	12.8	30	+ 25	-55 to +105	2
18	14.7456	∞	+ 25	-20 to +70	2
19	12.0	∞	+ 25	-20 to +70	2
20	12.288	20 to 50	+60	-30 to +70	2
21	15.0	25	+ 25	-30 to +80	2
22	4.096	50	+ 25	-20 to +80	2
22	4.096	50	+ 25	-20 to +80	3 or 4
23	19.109567	00	+ 25	-30 to +60	2
24	6.4	00	+ 25	-20 to +60	2
25	7.0	00	+ 25	-20 to +60	2
26	12.0	30	+ 25	-20 to +60	2
27	15.0	20 to 50	+ 25	-20 to +70	2
28	6.4	30	+ 25	-20 to +60	2
29	7.0	30	+ 25	-20 to +60	2
30	12.0	50	+ 40	-20 to +80	2
31	4.608	30	+ 25	-35 to +70	2
32	10.0	50	+ 40	-20 to +80	2
33	13.3	30	+ 25	-35 to +70	2
34	3.2768	27 to 33	+ 27	-20 to +50	2
35	8.0	30	+ 27	-20 to +50	2
36	6.0	16	+ 25	-20 to +70	2
37	4.608	27 to 33	+ 25	-25 to +70	2
38	4.608	30	+ 25	-40 to +70	2
39	5.0	27	+ 25	-40 to +70	2
40	3.2768	20 to 50	+ 25	-20 to +70	2



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TABLE 1(a) - TYPE VARIANT SUMMARY (CONTINUED)

Variant Frequency (MHz) Capacitance (C _L pF) Temp. (To °C) Range (Top °C) Lead Finish 41 4.096 50 +25 -10 to +80 2 42 5.0 30 +40 -20 to +80 2 43 5.0 30 +40 -10 to +70 2 44 10.0 50 +25 -10 to +80 2 45 12.0 ∞ +25 -20 to +70 2 46 12.0 ∞ +25 -40 to +85 2 47 13.332 50 +40 -20 to +80 2 48 5.24288 22 +60 -40 to +85 2 49 3.2 30 +27 -20 to +70 2 50 4.0 30 +25 -40 to +86 2 49 3.2 32 +25 -40 to +80 2 51 4.194304 30 +30 -10 to +80 2 52 12.		Resonance	Load	Reference	Operating Temp.	
(MH2) (C _L pF) (T _o °C) (T _{op} °C) Finish 41 4.096 50 +25 -10 to +80 2 42 5.0 30 +40 -20 to +80 2 43 5.0 30 +40 -10 to +70 2 44 10.0 50 +25 -10 to +80 2 45 12.0 ∞ +25 -20 to +70 2 46 12.0 ∞ +25 -40 to +85 2 47 13.332 50 +40 -20 to +80 2 48 5.24288 22 +60 -40 to +85 2 49 3.2 30 +27 -20 to +70 2 50 4.0 30 +30 -10 to +80 2 51 4.194304 30 +30 -10 to +80 2 52 12.25 32 +25 -20 to +70 2 53 6.0 30 +25 <t></t>	Variant					Lead
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45 12.0 ∞ +25 -20 to +70 2 46 12.0 ∞ +25 -40 to +85 2 47 13.332 50 +40 -20 to +80 2 48 5.24288 22 +60 -40 to +85 2 49 3.2 30 +27 -20 to +70 2 50 4.0 30 +25 -40 to +80 2 51 4.194304 30 +30 -10 to +80 2 52 12.25 32 +25 -20 to +70 2 53 6.0 30 +25 -40 to +70 2 54 9.66 to 10.65 50 +25 -20 to +70 2 55 4.096 50 +25 -10 to +80 2 56 4.194304 22 +60 -20 to +70 2 58 8.0 22 +60 -20 to +70 2 59 13.332 50 +40	44	10.0	50	+ 25	-10 to +80	2
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64 5.24288 22 +25 -20 to +70 2 65 12.25 32 +25 -20 to +70 2 66 5.0 20 to 40 +25 -10 to +40 2 67 5.0 30 +27 -20 to +70 2 68 12.0 30 +27 -20 to +70 2 69 11.0 ∞ +25 -20 to +80 2 70 12.0 32 +25 -25 to +90 2 71 4.9152 30 +25 -20 to +60 2 72 15.0 30 +25 -20 to +50 2 73 7.5 30 +25 -20 to +50 2 74 8.194442 30 +25 -20 to +50 2 75 10.0 30 +25 -40 to +70 2 76 4.0 50 +25 -55 to +125 2 77 8.388 30 +25 -10 to +50 2 78 4.194304 30 +25 -30	62	4.096	00	+ 25	-30 to +80	2
65 12.25 32 +25 -20 to +70 2 66 5.0 20 to 40 +25 -10 to +40 2 67 5.0 30 +27 -20 to +70 2 68 12.0 30 +27 -20 to +70 2 69 11.0 ∞ +25 -20 to +80 2 70 12.0 32 +25 -25 to +90 2 71 4.9152 30 +25 -20 to +60 2 72 15.0 30 +25 -40 to +85 2 73 7.5 30 +25 -20 to +50 2 74 8.194442 30 +25 -20 to +50 2 75 10.0 30 +25 -40 to +70 2 76 4.0 50 +25 -40 to +70 2 77 8.388 30 +25 -10 to +50 2 78 4.194304 30 +25 -30 to +70 2 79 3.2768 30 +25 -30 to +70 2	63	4.194304	∞	+ 25	-30 to +80	2
66 5.0 20 to 40 +25 -10 to +40 2 67 5.0 30 +27 -20 to +70 2 68 12.0 30 +27 -20 to +70 2 69 11.0 ∞ +25 -20 to +80 2 70 12.0 32 +25 -25 to +90 2 71 4.9152 30 +25 -20 to +60 2 72 15.0 30 +25 -40 to +85 2 73 7.5 30 +25 -20 to +50 2 74 8.194442 30 +25 -20 to +50 2 75 10.0 30 +25 -40 to +70 2 76 4.0 50 +25 -55 to +125 2 77 8.388 30 +25 -10 to +50 2 78 4.194304 30 +25 -30 to +70 2 79 3.2768 30 +25 -30 to +70 2	64	5.24288	22	+ 25	-20 to +70	2
67 5.0 30 +27 -20 to +70 2 68 12.0 30 +27 -20 to +70 2 69 11.0 ∞ +25 -20 to +80 2 70 12.0 32 +25 -25 to +90 2 71 4.9152 30 +25 -20 to +60 2 72 15.0 30 +25 -40 to +85 2 73 7.5 30 +25 -20 to +50 2 74 8.194442 30 +25 -20 to +50 2 75 10.0 30 +25 -40 to +70 2 76 4.0 50 +25 -55 to +125 2 77 8.388 30 +25 -10 to +50 2 78 4.194304 30 +25 -30 to +70 2 79 3.2768 30 +25 -30 to +70 2	65	12.25	32	+ 25	-20 to +70	2
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	66	5.0	20 to 40	+ 25	-10 to +40	2
69 11.0 ∞ +25 -20 to +80 2 70 12.0 32 +25 -25 to +90 2 71 4.9152 30 +25 -20 to +60 2 72 15.0 30 +25 -40 to +85 2 73 7.5 30 +25 -20 to +50 2 74 8.194442 30 +25 -20 to +50 2 75 10.0 30 +25 -40 to +70 2 76 4.0 50 +25 -55 to +125 2 77 8.388 30 +25 -10 to +50 2 78 4.194304 30 +25 -30 to +70 2 79 3.2768 30 +25 -30 to +70 2	67	5.0	30	+ 27	-20 to +70	2
70 12.0 32 +25 -25 to +90 2 71 4.9152 30 +25 -20 to +60 2 72 15.0 30 +25 -40 to +85 2 73 7.5 30 +25 -20 to +50 2 74 8.194442 30 +25 -20 to +50 2 75 10.0 30 +25 -40 to +70 2 76 4.0 50 +25 -55 to +125 2 77 8.388 30 +25 -10 to +50 2 78 4.194304 30 +25 -30 to +70 2 79 3.2768 30 +25 -30 to +70 2	68	12.0	30	+27	-20 to +70	2
71 4.9152 30 +25 -20 to +60 2 72 15.0 30 +25 -40 to +85 2 73 7.5 30 +25 -20 to +50 2 74 8.194442 30 +25 -20 to +50 2 75 10.0 30 +25 -40 to +70 2 76 4.0 50 +25 -55 to +125 2 77 8.388 30 +25 -10 to +50 2 78 4.194304 30 +25 -30 to +70 2 79 3.2768 30 +25 -30 to +70 2	69	11.0	∞	+ 25	-20 to +80	2
72 15.0 30 +25 -40 to +85 2 73 7.5 30 +25 -20 to +50 2 74 8.194442 30 +25 -20 to +50 2 75 10.0 30 +25 -40 to +70 2 76 4.0 50 +25 -55 to +125 2 77 8.388 30 +25 -10 to +50 2 78 4.194304 30 +25 -30 to +70 2 79 3.2768 30 +25 -30 to +70 2	70	12.0	32	+ 25	-25 to +90	2
73 7.5 30 +25 -20 to +50 2 74 8.194442 30 +25 -20 to +50 2 75 10.0 30 +25 -40 to +70 2 76 4.0 50 +25 -55 to +125 2 77 8.388 30 +25 -10 to +50 2 78 4.194304 30 +25 -30 to +70 2 79 3.2768 30 +25 -30 to +70 2	71	4.9152	30	+ 25	-20 to +60	2
74 8.194442 30 +25 -20 to +50 2 75 10.0 30 +25 -40 to +70 2 76 4.0 50 +25 -55 to +125 2 77 8.388 30 +25 -10 to +50 2 78 4.194304 30 +25 -30 to +70 2 79 3.2768 30 +25 -30 to +70 2	72	15.0	30	+ 25	-40 to +85	2
75 10.0 30 +25 -40 to +70 2 76 4.0 50 +25 -55 to +125 2 77 8.388 30 +25 -10 to +50 2 78 4.194304 30 +25 -30 to +70 2 79 3.2768 30 +25 -30 to +70 2	73	7.5	30	+ 25	-20 to +50	2
76 4.0 50 +25 -55 to +125 2 77 8.388 30 +25 -10 to +50 2 78 4.194304 30 +25 -30 to +70 2 79 3.2768 30 +25 -30 to +70 2	74	8.194442	30	+ 25	-20 to +50	2
77 8.388 30 +25 -10 to +50 2 78 4.194304 30 +25 -30 to +70 2 79 3.2768 30 +25 -30 to +70 2	75	10.0	30	+ 25	-40 to +70	2
78 4.194304 30 +25 -30 to +70 2 79 3.2768 30 +25 -30 to +70 2	76	4.0	50	+ 25	-55 to +125	2
79 3.2768 30 +25 -30 to +70 2	77	8.388	30	+ 25	-10 to +50	2
	78	4.194304	30	+ 25	-30 to +70	2
80 16.0 30 +25 -30 to +70 2	79	3.2768	30	+ 25	-30 to +70	2
	80	16.0	30	+ 25	-30 to +70	2



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TABLE 1(a) - TYPE VARIANT SUMMARY (CONTINUED)

Variant	Resonance Frequency (MHz)	Load Capacitance (C _L pF)	Reference Temp. (T ₀ °C)	Operating Temp. Range (T _{op} °C)	Lead Finish
81	15.0	30	+ 25	-30 to +70	2
82	4.096	∞	+ 25	-30 to +80	2
83	10.0	30	+ 25	-55 to +100	2
84	18.0	30	+ 25	-10 to +70	2
85	25.0	∞	+ 25	-25 to +75	2
86	3.6864	00	+ 25	-25 to +80	2
87	5.24288	22	+ 60	-20 to +70	2
88	12.0	30	+ 25	-10 to +80	2
89	3.6864	30	+ 25	-10 to +80	2
90	12.136285	∞	+ 25	-30 to +65	2
91	18.0	50	+ 40	-20 to +80	2
92	8.388608	∞	+ 25	-40 to +75	2
93	10.0	30	+ 40	-20 to +90	2
94	6.0	30	+ 25	-45 to +75	2
95	12.5	30	+ 25	-40 to +85	2
96	11.059	50	+ 25	-35 to +70	2
97	7.3728	30	+ 25	-30 to +80	2
98	5.12	30	+ 40	-40 to +80	2
99	10.0	18 to 30	+ 72	-25 to +80	2

NOTES

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

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

NOTES

	<u></u>	
1.	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.

Na	Ole a vestovintie	Completel	Lin	nits	Unit	Remarks
No.	Characteristic	Symbol	Min.	Max	Onit	nemarks
1	Resonance Frequency	f _r or f _L			MHz	Note 1
2	Reference Temperature	To			°C	Note 2
3	Overtone Order	-				
4	Load Capacitance	CL			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 T _o °C Note 6
8	Frequency Variation with Temperature over Top	<u>Δ f</u> f			10 ⁻⁹	From frequency measured at T _o °C Note 7
9	Resistance Variation with Temperature over Top	<u>Δ R</u> R			%	From resistance measured at T _o °C Note 7
10	Operating Temperature Range	T _{op}			°C	
11	Frequency variation with Drive Level	<u>∆ f</u> f	:		10-6	From $P_{S1} = mW$ to $P_{S2} = mW$ Note 8
12	Resistance variation with Drive Level	<u>∆ R</u> R			%	$\begin{array}{ccc} \text{From} & \text{P}_{\text{S1}} = & \text{mW} \\ & \text{to} & & \\ & \text{P}_{\text{S2}} = & \text{mW} \\ & \text{Note 8} & & \end{array}$
13	Motional Inductance	L ₁			mH	Notes 9 and 10
14	Motional Capacitance	C ₁		1	fF	Note 9
15	Static Capacitance	C _o			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 IZ _p I/R				In the frequency range: f - kHz to f + kHz
18	Ageing	Δf f			10-6	Note 13
19	Lead Finish	-			-	
20	Intended Application					Note 15

NOTES: See Pages 10 and 11.

	 1755		
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	 gers at	* Continue	

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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_L 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.

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 L_1 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 symbol to be added, see ESCC Generic Specification No. 3501, Para. 3.



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FIGURE 1 - PARAMETER DERATING INFORMATION

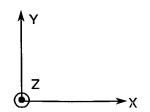
Not applicable.

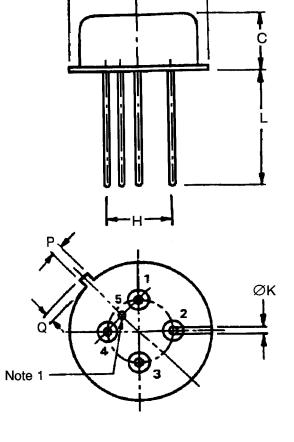
FIGURE 2 - PHYSICAL DIMENSIONS

SYMBOL	MILLIM	ETRES	REMARKS
STIMBUL	MIN.	MAX.	REWARKS
⊘A	-	15.75	
С	-	6.80	
Н	6.90	7.40	Pitch 7.16mm
⊘K	0.40	0.48	
L	12.70	_	
Р	-	0.90	Note 2
Q	_	0.95	Note 2

NOTES

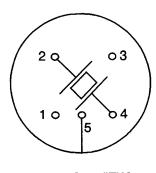
- 1. Lead No. 5 is grounded to case.
- 2. The tag's position or presence is optional.





ØΑ

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 $= f_r$ Load Resonance Frequency $= f_L$ Reference Temperature $= T_0$ $= R_r$ Resonance Resistance Load Resonance Resistance $= R_L$ Rated Drive Level $= P_0$ $= C_o$ Static Capacitance Load Capacitance $= C_L$ Motional Capacitance $= C_1$ Motional Inductance $= L_1$ Response Resistance $= R_P$ Response Impedance $= |Z_p|$ 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 <u>DEVIATIONS FROM GENERIC SPECIFICATION</u>

4.2.1 <u>Deviations from Special In-process Controls</u>

None.

4.2.2 Deviations from Final Production Tests (Chart II)

None.

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

None.

4.2.4 <u>Deviations from Qualification Tests (Chart IV)</u>

None.

4.2.5 Deviations from Lot Acceptance Tests (Chart V)

None.



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4.3 <u>MECHANICAL REQUIREMENTS</u>

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.



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4.5.2 The ESCC Component Number

Each component shall	bear the ES	SCC Componen	t Number,	which	shall	be c	constituted	and	marked
as follows:-						3	350100201	B T	

	ı	1 1
Detail Specification Number		
Type Variant (See Table 1(a))		
Testing Level (B or C, as applicable)		

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 <u>Manufacturer's Name, Symbol or Code</u>

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 Electrical Measurements at High and Low Temperatures

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 <u>Circuits for Electrical Measurements (Figure 4)</u>

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 <u>Electrical Circuits for Burn-in (Figure 5)</u>

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 _L	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 , ΔP)	Para. 9.2.1.1	Table 1(a), Item 11	10 ⁻⁶
4	Resistance variation with Drive Level	$\frac{\Delta R}{R}$ (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	Δf f	As per Table 2	As per Table 2	± 2.0	10 ⁻⁶
2	Resonance resistance drift	ΔR R	As per Table 2	As per Table 2	± 10 or (1) ± 1.0	% Ω

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	۰C

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 <u>Measurements and Inspections on Completion of Environmental Tests</u>

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 <u>Measurements and Inspections at Intermediate Points and on Completion of Endurance Tests</u>

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 <u>Conditions for Operating Life Test (Part of Endurance Testing)</u>

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

	ESCC GENERIC SPI	EC. NO. 3501	MEASUREMENTS AN	ND INSPECTIONS		LIM	ITS	UNIT
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	e 1(a)	
02	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 <u>ΔR</u> R ΔR		2 Item 1 2 Item 2 +1.0 +10 +1.0	10 ⁻⁶ % Ω
03	Vibration	Para. 9.4	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 Δf f ΔR R ΔR		2 Item 1 2 Item 2 +1.0 +10 +1.0	10 ⁻⁶ %
04	Seal Test	Para. 9.5	Fine Leak Gross Leak	Para. 9.5.1 Para. 9.5.2			i. 9.5.1 i. 9.5.2	
05	Permanence of Marking	Para. 9.8	Final Measurements Visual Examination	No corrosion or obliteration of marking	-	-	-	-
06	External Visual Inspection	Para. 9.9	Final Measurements Visual Inspection	ESCC No. 20500	-	-	_	-
07	Solderability	Para. 9.13	-	-		-		-

NOTES

- The tests in this table refer to either Chart IV or V, and shall be used as applicable.
 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		LIMITS			
NO.	ENVIRONMENTAL AND ENDURANCE TESTS (1)	TEST METHOD AND CONDITIONS	IDENTIFICATION	CONDITIONS	SYMBOL	Min.	Мах.	UNIT
	Climatic Sequence	Para. 9.14						
08	Dry Heat	Para. 9.14.1	Initial Measurements					ĺ
			Resonance Frequency	Table 2 Item 1	f		2 Item 1	
			Resonance Resistance Final Measurements	Table 2 Item 2	R	l able a	2 Item 2	1
			Resonance Frequency	Table 2 Item 1	<u>∆ f</u>	- 2.0	+ 2.0	10-6
			Drift	rabio 2 nom 1	<u></u>		- 2.0	"
			Resonance Resistance	Table 2 Item 2	<u>∆ R</u>	-10	+ 10	%
			Drift		ļ R	or (2)		
09	Cold	Dava 0.14.0	Initial Managements		ΔR	-1.0	+ 1.0	Ω
03	Cold	Para. 9.14.3	Initial Measurements Resonance Frequency	Table 2 Item 1	l f	Para (9.14.1.3	1
			Resonance Resistance	Table 2 Item 2	l 'n	1	surements	
			Final Measurements					
			Resonance Frequency	Table 2 Item 1	<u>∆ f</u>	-2.0	+ 2.0	10-6
			Drift	Table Olkana O	l f			۰,
			Resonance Resistance Drift	Table 2 Item 2	ΔR R	-10 or (2)	+10	%
					ΔR	-1.0	+1.0	$\mid \Omega \mid$
10	Damp Heat (Acclerated)	Para. 9.14.4	Initial Measurements					
	Remaining Cycles		Resonance Frequency	Table 2 Item 1	f		9.14.3.2	
			Resonance Resistance	Table 2 Item 2	R	Final Mea	surements	
			Final Measurements Resonance Frequency	Table 2 Item 1	A f	-2.0	+ 2.0	10-6
			Drift	1 able 2 item 1	$\frac{\Delta f}{f}$	2.0	' 2.0	'0
			Resonance Resistance	Table 2 Item 2	<u>Δ R</u>	-10	+10	%
			Drift		R	or (2)		
		İ	lasulation Desistance	Table Olders O	ΔR Ri	-1.0	+1.0	Ω
			Insulation Resistance	Table 2 Item 8	RI	500	<u> </u>	ΜΩ
11	Rapid Change of	Para. 9.15	Initial Measurements					
	Temperature		Resonance Frequency	Table 2 Item 1	f		9.14.4.2	
			Resonance Resistance Final Measurements	Table 2 Item 2 After minimum	R	Final Mea	asurements	
			I .	Recovery of 2 hours				
			Resonance Frequency	Table 2 Item 1	<u>∆ f</u>	- 2.0	+ 2.0	10-6
			Drift		f			
			Resonance Resistance	Table 2 Item 2	$\frac{\Delta R}{R}$	- 10	+10	%
			Drift		R ΔR	or (2) - 1.0	+ 1.0	Ω
12	Pohustness of	David 0.10	T"- Ot - "	0				
12	Robustness of Terminations	Para. 9.16	Tensile Strength	Gen. 3501 Para. 9.16.1				
	. S. miladono		Visual Examination	No visible damage				
:			Bending	Gen. 3501				
				Para. 9.16.2				
			Visual Examination	No visible damage		l		

NOTES

- 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.)

	ESA/SCC GENERIC S	PEC. NO. 3501	MEASUREMENTS AND INSPECTIONS			LIM	LINET	
NO.	NO. ENVIRONMENTAL AND TEST M AND COI		IDENTIFICATION	CONDITIONS	SYMBOL	Min.	Max.	UNIT
13	Life Test	Para. 9.17	Initial Measurements Resonance Frequency Resonance Resistance Intermediate Measurements	Table 2 Item 1 Table 2 Item 2 At 500 hours	f R	Table 2 Table 2		
			Resonance Frequency	Table 2 Item 1	<u>Δ f</u> f	-2.0	+2.0	10-6
			Resonance Resistance Drift	Table 2 Item 2	<u>Δ R</u> R	-10 or (2)	+10	%
			Intermediate Measurements (Chart IV) and Final	At 1000 hours	ΔR	-1.0	+ 1.0	Ω
			Measurements (Chart V) Resonance Frequency Drift	Table 2 Item 1	$\frac{\Delta f}{f}$	- 2.5	+2.5	10-6
			Resonance Resitance Drift	Table 2 Item 2	<u>Δ R</u> R	- 10 or (2)	+10	%
			Final Measurements	At 2000 hours	ΔR	-1.0	+1.0	Ω
			(Chart IV) Resonance Frequency Drift	Table 2 Item 1	Δf 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

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



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lin Min.	nits Max.	Unit	Remarks
1	Resonance Frequency	fL	3.317		MHz	
2	Reference Temperature	To	+	25	°C	
3	Overtone Order	-	Funda	mental		
4	Load Capacitance	C _L	_	19	pF	
5	Rated Drive Level	Po	0	.1	mW	
6	Frequency Adjustment Tolerance	<u>∆</u> f	-1000	+1000	10-6	At T _o °C
7	Resonance Resistance	R_L	-	50	Ω	Over T _{op} °C
8	Frequency Variation with Temperature over Top	<u>∆ f</u> f	-1000	+1000	10 ⁻⁶	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	<u>Δ R</u> R	Not applicable		%	
10	Operating Temperature Range	T _{op}	-20	+60	°C	
11	Frequency variation with Drive Level	<u>∆ f</u> f	-1000	+1000	10-6	From $P_{S1} = 0.05$ mW to $P_{S2} = 0.2$ mW
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	Not ap	plicable	pF	
16	Q Factor	Q	Not ap	plicable	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	Not applicable			
18	Ageing	$\frac{\Delta f}{f}$	Not ap	plicable	10-6	
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

			Limits			_
No.	Characteristics	Symbol	Min.	Max.	Unit	Remarks
1	Resonance Frequency	fL	2.496 & 2.5344		MHz	
2	Reference Temperature	То	+ 2	25	°C	
3	Overtone Order	-	Fundar	nental		
4	Load Capacitance	C _L	30	ס	pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	<u>Δ f</u> f	-15	+ 15	10 ⁻⁶	At T _o °C
7	Resonance Resistance	R_L	-	130	Ω	Over T _{op} °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	<u>Δ R</u> R	Not applicable		%	
10	Operating Temperature Range	T _{op}	-20	+ 50	°C	
11	Frequency variation with Drive Level	<u>Δ f</u> f	Not app	olicable	10-6	
12	Resistance variation with Drive Level	<u>Δ R</u> R	Not app	olicable	%	
13	Motional Inductance	L ₁	Not app	olicable	mH	
14	Motional Capacitance	C ₁	Not app	olicable	fF	
15	Static Capacitance	Co	-	3.5	pF	
16	Q Factor	Q	80 000	-		
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	2:1	-		In the frequency range: f _L -200kHz to f _L + 200kHz
18	Ageing	$\frac{\Delta f}{f}$	-5.0	+ 5.0	10 ⁻⁶	After burn-in and per year
19	Lead Finish	-	2	2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	nits Max.	Unit	Remarks
1	Resonance Frequency	fL	2.8		MHz	
2	Reference Temperature	To	+ :	25	°C	
3	Overtone Order		Funda	mental		
4	Load Capacitance	C _L	2	0	pF	
5	Rated Drive Level	Po	0.	.1	mW	
6	Frequency Adjustment Tolerance	<u>Δ f</u>	-20	+ 20	10-6	At T _o °C
7	Resonance Resistance	RL	-	50	Ω	Over T _{op} °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	Not applicable		%	
10	Operating Temperature Range	T _{op}	-30	+ 60	°C	
11	Frequency variation with Drive Level	<u>Δ f</u> f	Not ap	olicable	10 ⁻⁶	
12	Resistance variation with Drive Level	ΔR R	Not app	olicable	%	
13	Motional Inductance	L ₁	Not app	olicable	mH	
14	Motional Capacitance	C ₁	Not app	olicable	fF	
15	Static Capacitance	Co	-	5.0	pF	
16	Q Factor	Q	50 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	3:1	-		In the frequency range: f _L -200kHz to f _L +200kHz
18	Ageing	<u>∆</u> f	-5.0	+ 5.0	10-6	After burn-in and per year
19	Lead Finish	-	2	2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lin Min.	nits Max.	Unit	Remarks
1	Resonance Frequency	fL	2.7 t	2.7 to 5.0		
2	Reference Temperature	T _o	+	25	°C	
3	Overtone Order	_	Funda	mental		
4	Load Capacitance	CL	3	0	pF	
5	Rated Drive Level	Po	0	.1	mW	
6	Frequency Adjustment Tolerance	<u>∆</u> f	-10	+10	10-6	At T _o °C
7	Resonance Resistance	RL	-	100	Ω	Over T _{op} °C
8	Frequency Variation with Temperature over Top	<u>∆</u> f f	-40	+40	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	+ 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	Not ap	plicable	pF	
16	Q Factor	Q	Not ap	plicable	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	4:1	-		In the frequency range: f _L -10% to f _L +10%
18	Ageing	$\frac{\Delta f}{f}$	Not applicable		10-6	
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lin Min.	nits Max.	Unit	Remarks
1	Resonance Frequency	f _r	3.2	768	MHz	
2	Reference Temperature	To	+	25	°C	
3	Overtone Order		Funda	mental		
4	Load Capacitance	CL	C	×	pF	
5	Rated Drive Level	Po	0	.1	mW	
6	Frequency Adjustment Tolerance	<u>∆</u> f	-15	+ 15	10-6	At T _o °C
7	Resonance Resistance	R _r	_	100	Ω	Over T _{op} °C
8	Frequency Variation with Temperature over Top	∆ f f	Not applicable		10 ⁻⁶	
9	Resistance Variation with Temperature over Top	ΔR R	Not applicable		%	
10	Operating Temperature Range	T _{op}	-20	+ 70	°C	
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	Co	-	4.0	pF	
16	Q Factor	Q	80 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	2:1	-		In the frequency range: f _r -200kHz to f _r +200kHz
18	Ageing	$\frac{\Delta f}{f}$	Not applicable		10-6	
19	Lead Finish	-	2	2	-	



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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	4.0	95	MHz	
2	Reference Temperature	T _o	+;	25	°C	
3	Overtone Order	-	Funda	mental		
4	Load Capacitance	C _L	٥	0	pF	
5	Rated Drive Level	Po	0.	.1	mW	
6	Frequency Adjustment Tolerance	<u>Δ f</u> f	-5.0	+ 5.0	10-6	At T _o °C
7	Resonance Resistance	R _r	-	15	Ω	At T _o °C
8	Frequency Variation with Temperature over Top	<u>∆ f</u> f	-10	+10	10-6	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	<u>Δ R</u> R	-10 -1.5	+ 10 or + 1.5	% Ω	From resistance measured at T _o °C If R<10Ω
10	Operating Temperature Range	T _{op}	-30	+60	°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	157.5	192.5	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	Not ap	plicable	pF	
16	Q Factor	Q	Not ap	plicable	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	3:1	-		In the frequency range: f _r -10kHz to f _r + 10kHz
18	Ageing	$\frac{\Delta f}{f}$	-2.0	+2.0	10-6	After burn-in and per year
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	fL	5.	0	MHz	
2	Reference Temperature	To	+ 4	40	°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>Δ f</u> f	-10	+ 10	10-6	At To °C
7	Resonance Resistance	R _r	-	20	Ω	Over T _{op} °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	<u>Δ R</u> R	Not applicable		%	
10	Operating Temperature Range	T _{op}	-10	+70	°C	
11	Frequency variation with Drive Level	<u>Δ f</u> 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	76.5	103.5	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	-	4.0	pF	
16	Q Factor	Q	100 000	•	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	2:1	_		In the frequency range: f _L -500kHz to f _L +500kHz
18	Ageing	<u>Δ f</u> f	-10	+10	10 ⁻⁶	Over 5 years of storage and 3000 operating hours
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	nits Max.	Unit	Remarks
1	Resonance Frequency	fL	5.10	5555	MHz	
2	Reference Temperature	T _o	+	25	°C	
3	Overtone Order	-	Funda	mental		
4	Load Capacitance	CL	3	0	pF	
5	Rated Drive Level	Po	0.	.1	mW	
6	Frequency Adjustment Tolerance	<u>Δ f</u> f	-10	+10	10 ⁻⁶	At T _o °C
7	Resonance Resistance	R _r	-	15	Ω	Over T _{op} °C
8	Frequency Variation with Temperature over Top	<u>Δ f</u> f	-50	+50	10 ⁻⁶	From frequency measured at T ₀ °C
9	Resistance Variation with Temperature over Top	<u>∆R</u> R	Not applicable		%	
10	Operating Temperature Range	T _{op}	-55	+ 105	°C	
11	Frequency variation with Drive Level	<u>Δ f</u> 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	Rp/R iZpi/R	3:1	-		In the frequency range: f _L -200kHz to f _L +200kHz
18	Ageing	$\frac{\Delta f}{f}$	-2.0	+2.0	10 ⁻⁶	After burn-in and per year
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lin Min.	nits Max.	Unit	Remarks
1	Resonance Frequency	fL	5.333 t	o 5.334	MHz	
2	Reference Temperature	To	+	15	°C	
3	Overtone Order	-	Funda	mental		
4	Load Capacitance	C _L	14	40	pF	
5	Rated Drive Level	Po	0	.1	mW	
6	Frequency Adjustment Tolerance	<u>Δ f</u> f	-7.0	+7.0	10 ⁻⁶	At T _o °C
7	Resonance Resistance	R _r	-	15	Ω	Over T _{op} °C
8	Frequency Variation with Temperature over Top	<u>∆</u>	Not ap	Not applicable		
9	Resistance Variation with Temperature over Top	∆R R	Not applicable		%	
10	Operating Temperature Range	Тор	-20	+60	°C	
11	Frequency variation with Drive Level	<u>Δ f</u> 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	C _o	Not ap	plicable	pF	
16	Q Factor	Q	Not ap	plicable	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpl/R	Not applicable			
18	Ageing	$\frac{\Delta f}{f}$	Not ap	plicable	10-6	
19	Lead Finish	_		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

		1			T	
No.	Characteristics	Symbol	Lin Min.	nits Max.	Unit	Remarks
1	Resonance Frequency	fL	5.66	1448	MHz	
2	Reference Temperature	To	+	25	°C	
3	Overtone Order	-	Funda	mental		
4	Load Capacitance	C _L	22	33	pF	
5	Rated Drive Level	Po	0	.1	mW	
6	Frequency Adjustment Tolerance	<u>Δ f</u> f	Not ap	plicable	10-6	
7	Resonance Resistance	R _r	_	25	Ω	Over T _{op} °C
8	Frequency Variation with Temperature over Top	<u>∆</u> f	-5.0	+ 5.0	10 ⁻⁶	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	ΔR R	Not ap	Not applicable		
10	Operating Temperature Range	T _{op}	-30	+60	°C	
11	Frequency variation with Drive Level	<u>Δ f</u> 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	C _o	3.2	4.0	pF	
16	Q Factor	Q	Not ap	plicable	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	3:1	-		In the frequency range: f _L -200kHz to f _L + 200kHz
18	Ageing	∆f f	Not ap	Not applicable		
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lin Min.	nits Max.	Unit	Remarks
1	Resonance Frequency	fr	8.7 to	10.7	MHz	
2	Reference Temperature	T _o	+	25	°C	
3	Overtone Order	-	Funda	mental	- · · · · · · · · · · · · · · · · · · ·	
4	Load Capacitance	C _L	C	x o	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	_	15	Ω	Over T _{op} °C
8	Frequency Variation with Temperature over Top	<u>∆ f</u> f	-40	+ 40	10 ⁻⁶	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	<u>∆ R</u> R	Not applicable		%	
10	Operating Temperature Range	T _{op}	-40	+80	°C	
11	Frequency variation with Drive Level	<u>∆</u> 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	Not ap	plicable	pF	
16	Q Factor	Q	Not ap	plicable	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	4:1	-		In the frequency range: f _r -10% to f _r + 10%
18	Ageing	Δf f	Not ap	plicable	10 ⁻⁶	
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	f _r	10	.0	MHz	
2	Reference Temperature	To	+ (60	°C	
3	Overtone Order	•	Fundar	mental		
4	Load Capacitance	CL	ò		pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	<u>Δ f</u> f	-10	+10	10-6	At T _o °C
7	Resonance Resistance	R _r	-	20	Ω	Over T _{op} °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	<u>Δ R</u> R	Not applicable		%	
10	Operating Temperature Range	T _{op}	-20	+70	°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	-	4.5	pF	
16	Q Factor	Q	Not ap	plicable	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	3:1	-		In the frequency range: f _r -200kHz to f _r + 200kHz
18	Ageing	$\frac{\Delta f}{f}$	-3.0	+3.0	10-6	After burn-in and per year
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

		····				
No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	fL	10	.0	MHz	
2	Reference Temperature	T _o	+ 2	25	°C	
3	Overtone Order	-	Fundar	nental		
4	Load Capacitance	C _L	5	0	pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	<u>Δ f</u> f	-10	+10	10-6	At T _o °C
7	Resonance Resistance	RL	-	20	Ω	Over T _{op} °C
8	Frequency Variation with Temperature over Top	<u>∆ f</u> f	-10	+ 10	10 ⁻⁶	From frequency measured at T ₀ °C
9	Resistance Variation with Temperature over Top	<u>Δ R</u> R	Not applicable		%	
10	Operating Temperature Range	T _{op}	-10	+80	°C	
11	Frequency variation with Drive Level	∆ 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	12.15	16.45	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	-	5.0	pF	
16	Q Factor	Q	100 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpl/R	3:1	-		In the frequency range: f _L -500kHz to f _L +500kHz
18	Ageing	Δf f	-2.0	+2.0	10 ⁻⁶	After burn-in and per year
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	nits Max.	Unit	Remarks
1	Resonance Frequency	fL	10	.7	MHz	
2	Reference Temperature	T _o	+	25	°C	
3	Overtone Order		Funda	mental		
4	Load Capacitance	CL	3	0	pF	
5	Rated Drive Level	Po	0	.1	mW	
6	Frequency Adjustment Tolerance	Δf f	-10	+10	10-6	At T _o °C
7	Resonance Resistance	R_L	-	15	Ω	Over T _{op} °C
8	Frequency Variation with Temperature over Top	<u>Δ f</u> f	-50	+50	10 ⁻⁶	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	<u>Δ R</u> R	Not applicable		%	
10	Operating Temperature Range	T _{op}	-55	+ 105	°C	
11	Frequency variation with Drive Level	<u>Δ f</u> 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	Rp/R IZpI/R	3:1	-		In the frequency range: f _L -200kHz to f _L +200kHz
18	Ageing	<u>∆ f</u>	-2.0	+2.0	10-6	After burn-in and per year
19	Lead Finish	-	1	2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	nits Max.	Unit	Remarks
1	Resonance Frequency	fL	11	11.0		
2	Reference Temperature	T _o	+;	25	°C	
3	Overtone Order	-	Funda	mental		
4	Load Capacitance	C _L	3	0	pF	
5	Rated Drive Level	Po	0	.1	mW	
6	Frequency Adjustment Tolerance	<u>Δ f</u> f	-10	+ 10	10-6	At T _o °C
7	Resonance Resistance	RL	•	15	Ω	Over T _{op} °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 applicable		%	
10	Operating Temperature Range	T _{op}	-55	+ 105	°C	
11	Frequency variation with Drive Level	<u>∆ f</u> 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	Rp/R	3:1	-		In the frequency range: f _L -200kHz to f _L +200kHz
18	Ageing	Δf f	-2.0	+2.0	10-6	After burn-in and per year
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	fL	11.43	11.433333		
2	Reference Temperature	To	+2	25	°C	
3	Overtone Order	_	Fundar	nental		
4	Load Capacitance	C_{L}	20	0	рF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	∆f f	-5.0	+5.0	10-6	At To °C
7	Resonance Resistance	R_{L}	-	15	Ω	Over T _{op} °C
8	Frequency Variation with Temperature over Top	<u>∆ f</u> f	-8.0	+8.0	10-6	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	<u>Δ R</u> R	Not applicable		%	
10	Operating Temperature Range	T _{op}	-20	+ 80	°C	
11	Frequency variation with Drive Level	<u>Δ 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	Co	-	5.0	pF	
16	Q Factor	Q	Not ap	plicable	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/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	After burn-in and per year
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

	Characteristics	Symbol	Lin Min.	nits Max.	Unit	Remarks
1	Resonance Frequency	fL	12	12.8		
2	Reference Temperature	То	+	25	°C	
3	Overtone Order	-	Funda	mental		
4	Load Capacitance	C _L	3	80	pF	
5	Rated Drive Level	Po	0	.1	mW	
6	Frequency Adjustment Tolerance	Δf f	-10	+ 10	10 ⁻⁶	At To °C
7	Resonance Resistance	R_{L}	-	15	Ω	Over T _{op} °C
8	Frequency Variation with Temperature over Top	<u>Δ f</u> f	-50	+50	10 ⁻⁶	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	<u>∆ R</u> R	Not applicable		%	
10	Operating Temperature Range	T _{op}	-55	+ 105	°C	
11	Frequency variation with Drive Level	<u>Δ f</u> 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	Rp/R IZpI/R	3:1	-		In the frequency range: f _L -200kHz to f _L + 200kHz
18	Ageing	∆ f f	-2.0	+2.0	10-6	After burn-in and per year
19	Lead Finish			2	-	



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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	14.7	456	MHz	
2	Reference Temperature	To	+	25	°C	
3	Overtone Order	-	Funda	mental		
4	Load Capacitance	C _L	C	ю	pF	
5	Rated Drive Level	Po	0	.1	mW	
6	Frequency Adjustment Tolerance	<u>Δ f</u>	-10	+ 10	10-6	At To °C
7	Resonance Resistance	R _r	•	25	Ω	Over T _{op} °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	<u>Δ R</u> R	Not applicable		%	
10	Operating Temperature Range	T _{op}	-20	+ 70	°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	Rp/R IZpI/R	Not applicable			
18	Ageing	$\frac{\Delta f}{f}$	-5.0	+5.0	10-6	After burn-in and per year
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lin Min.	nits Max.	Unit	Remarks
1	Resonance Frequency	f _r	12	2.0	MHz	
2	Reference Temperature	To	+	25	°C	
3	Overtone Order	1	Funda	mental		
4	Load Capacitance	C _L	o	ю	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}	-	25	Ω	Over Top °C
8	Frequency Variation with Temperature over Top	<u>∆ f</u> 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}	-20	+ 70	°C	
11	Frequency variation with Drive Level	<u>Δ f</u> 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	50 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	Not applicable			
18	Ageing	∆ f f	-5.0	+ 5.0	10 ⁻⁶	After burn-in and per year
19	Lead Finish	+		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Cumbal	Limits		Unit	Remarks
INO.	Characteristics	Symbol	Min.	Max.	Offic	nemarks
1	Resonance Frequency	fL	12.	288	MHz	
2	Reference Temperature	To	+	60	°C	
3	Overtone Order	-	Funda	mental	_	
4	Load Capacitance	C _L	20	50	pF	
5	Rated Drive Level	Po	0	.1	mW	
6	Frequency Adjustment Tolerance	<u>Δ f</u>	-10	+ 10	10 ⁻⁶	At T _o °C
7	Resonance Resistance	RL	-	20	Ω	At To °C
8	Frequency Variation with Temperature over Top	∆ f f	-10	+10	10 ⁻⁶	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	<u>Δ R</u> R	-10 (-1.5	+ 10 or + 1.5	%	From resistance measured at T _o °C If R<10Ω
10	Operating Temperature Range	T _{op}	-30	+ 70	°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	4.76	6.44	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	-	7.0	pF	
16	Q Factor	Q	25 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	2:1	-		In the frequency range: f _L -200kHz to f _L +200kHz
18	Ageing	$\frac{\Delta f}{f}$	-10	+ 10	10-6	After burn-in and per year
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	fL	15	.0	MHz	
2	Reference Temperature	To	+ 2	25	°C	
3	Overtone Order	-	Fundar	nental		
4	Load Capacitance	C _L	2	5	рF	
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	RL	-	35	Ω	At T _o °C
8	Frequency Variation with Temperature over Top	<u>∆ f</u> f	-20	+20	10 ⁻⁶	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	∆R R	-10 c -1.5	+10 or +1.5	% Ω	From resistance measured at T_0 °C If $R < 10\Omega$
10	Operating Temperature Range	T _{op}	-30	+80	°C	
11	Frequency variation with Drive Level	Δf 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	-	8.5	fF	
15	Static Capacitance	Co	-	8.5	pF	
16	Q Factor	Q	65 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	2:1	-		In the frequency range: f _L -200kHz to f _L + 200kHz
18	Ageing	<u>∆</u> f	-10	+10	10-6	After burn-in and per year
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

	Characteristics	Symbol	Lim Min.	iits Max.	Unit	Remarks
1	Resonance Frequency	f∟	4.0	96	MHz	
2	Reference Temperature	To	+ 2	25	°C	
3	Overtone Order	-	Fundar	mental		
4	Load Capacitance	C _L	5	0	pF	
5	Rated Drive Level	Po	0.	.1	mW	
6	Frequency Adjustment Tolerance	Δf f	-10	+ 10	10-6	At T _o °C
7	Resonance Resistance	R_{L}	-	20	Ω	At T _o °C
8	Frequency Variation with Temperature over Top	<u>∆</u> f	-10	+ 10	10-6	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	ΔR R	-10 c -1.5	+10 or +1.5	% Ω	From resistance measured at T_0 °C If R < 10Ω
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	ΔR R	Not ap	plicable	%	
13	Motional Inductance	L ₁	131.75	178.25	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	Rp/R IZpI/R	3:1	-		In the frequency range: f _L -200kHz to f _L + 200kHz
18	Ageing	∆ f f	-5.0	+5.0	10 ⁻⁶	After burn-in and per year
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

	Characteristics	Symbol	Lim Min.	nits Max.	Unit	Remarks
1	Resonance Frequency	fL	4.096		MHz	
2	Reference Temperature	To	+ ;	25	°C	
3	Overtone Order	-	Fundar	mental		
4	Load Capacitance	C _L	5	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	-	20	Ω	At To °C
8	Frequency Variation with Temperature over Top	∆f f	-10	+10	10 ⁻⁶	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	<u>Δ R</u> R	-10 +10 or -1.5 +1.5		% Ω	From resistance measured at T $_{o}$ °C If R<10 Ω
10	Operating Temperature Range	T _{op}	-20	+ 80	°C	
11	Frequency variation with Drive Level	Δf 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	131.75	178.25	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	Rp/R IZpI/R	3:1	-		In the frequency range: f _L -200kHz to f _L + 200kHz
18	Ageing	∆ f f	-5.0	+5.0	10 ⁻⁶	After burn-in and per year
19	Lead Finish	-	3 (or 4	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

						
No.	Characteristics	Symbol	Lin Min.	nits Max.	Unit	Remarks
1	Resonance Frequency	f _r	19.10	19.109567		
2	Reference Temperature	To	+	25	°C	
3	Overtone Order		Funda	mental		
4	Load Capacitance	C _L		×	pF	
5	Rated Drive Level	Po	0	.1	mW	
6	Frequency Adjustment Tolerance	∆ f f	-5.0	+5.0	10-6	At To °C
7	Resonance Resistance	R _r	-	15	Ω	At T _o °C
8	Frequency Variation with Temperature over Top	<u>∆</u> f	-10	+10	10 ⁻⁶	From frequency measured at T ₀ °C
9	Resistance Variation with Temperature over Top	<u>Δ R</u> R	-10 +10 or -1.5 +1.5		% Ω	From resistance measured at T _o °C If R<10Ω
10	Operating Temperature Range	T _{op}	-30	+60	°C	
11	Frequency variation with Drive Level	<u>Δ 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	2.25	2.75	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	Not ap	plicable	pF	
16	Q Factor	Q	Not ap	plicable	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R	Not applicable			
18	Ageing	$\frac{\Delta f}{f}$	-1.0	+1.0	10-6	After burn-in and per year
19	Lead Finish	-		2	_	



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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	6.	6.4		
2	Reference Temperature	T _o	+;	25	۰C	
3	Overtone Order	-	Fundar	mental	,	
4	Load Capacitance	C_L	٥	0	pF	
5	Rated Drive Level	Po	0.	.1	mW	
6	Frequency Adjustment Tolerance	Δf f	-10	+ 10	10-6	At T _o °C
7	Resonance Resistance	R_r	-	180	Ω	At T _o °C
8	Frequency Variation with Temperature over Top	<u>∆ f</u> f	-40	+ 40	10-6	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	ΔR R	-10 +10 or -1.5 +1.5		% Ω	From resistance measured at T_o °C If R < 10 Ω
10	Operating Temperature Range	T _{op}	-20	+60	°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	Not ap	plicable	pF	
16	Q Factor	Q	Not ap	plicable	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	Not applicable			
18	Ageing	∆ f f	-3.0	+3.0	10-6	After burn-in and per year
19	Lead Finish	-		2	-	

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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	7.0		MHz	
2	Reference Temperature	To	+	25	°C	
3	Overtone Order	-	Funda	mental		
4	Load Capacitance	CL	C	0	pF	
5	Rated Drive Level	Po	0	.1	mW	
6	Frequency Adjustment Tolerance	Δf f	-10	+ 10	10-6	At T _o °C
7	Resonance Resistance	R _r	•	180	Ω	At To °C
8	Frequency Variation with Temperature over Top	$\frac{\Delta f}{f}$	-40	+ 40	10-6	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	<u>Δ R</u> R	-10 +10 or -1.5 +1.5		% Ω	From resistance measured at T _o °C If R<10Ω
10	Operating Temperature Range	T _{op}	-20	+ 60	°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	Not ap	plicable	pF	
16	Q Factor	Q	Not a	pplicable	<u>-</u>	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R	Not applicable			
18	Ageing	$\frac{\Delta f}{f}$	-3.0	+3.0	10-6	After burn-in and per year
19	Lead Finish	-		2	-	

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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

				T		
No.	Characteristics	Symbol	Lim Min.	nits Max.	Unit	Remarks
1	Resonance Frequency	fL	12.0		MHz	
2	Reference Temperature	To	+;	25	°C	
3	Overtone Order	-	Funda	mental		
4	Load Capacitance	C _L	3	0	pF	
5	Rated Drive Level	Po	0.	.1	mW	
6	Frequency Adjustment Tolerance	Δf f	-10	+ 10	10-6	At T _o °C
7	Resonance Resistance	RL		180	Ω	At T _o °C
8	Frequency Variation with Temperature over Top	<u>∆ f</u> f	-40	+40	10-6	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	<u>Δ R</u> R	-10 (-1.5	+10 or +1.5	%	From resistance measured at T_o °C If R < 10 Ω
10	Operating Temperature Range	T _{op}	-20	+60	°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	Not ap	plicable	pF	
16	Q Factor	Q	Not ap	plicable	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R	Not applicable			
18	Ageing	$\frac{\Delta f}{f}$	-3.0	+3.0	10-6	After burn-in and per year
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

	Characteristics	Symbol	Lim Min.	nits Max.	Unit	Remarks
1	Resonance Frequency	fլ	15	5.0	MHz	
2	Reference Temperature	T _o	+	25	°C	
3	Overtone Order	-	Funda	mental		
4	Load Capacitance	C_L	20	50	pF	
5	Rated Drive Level	Po	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}	-	20	Ω	Over T _{op} °C
8	Frequency Variation with Temperature over Top	<u>∆ f</u> f	-40	+40	10-6	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	ΔR R	Not applicable		%	
10	Operating Temperature Range	Тор	-20	+ 70	°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	Not ap	plicable	pF	
16	Q Factor	Q	Not ap	plicable	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	Not applicable			
18	Ageing	$\frac{\Delta f}{f}$	-3.0	+3.0	10-6	After burn-in and per year
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim		Unit	Remarks
			Min.	Max.		
1	Resonance Frequency	f∟	6.	4	MHz	
2	Reference Temperature	To	+ 2	25	°C	
3	Overtone Order	-	Fundar	nental		
4	Load Capacitance	C _L	3	0	pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	Δf f	-10	+ 10	10-6	At To °C
7	Resonance Resistance	R_{L}	-	20	Ω	At T _o °C
8	Frequency Variation with Temperature over Top	<u>∆</u>	-10	+10	10 ⁻⁶	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	ΔR R	-10 +10 or -1.5 +1.5		% Ω	From resistance measured at T _o °C If R<10Ω
10	Operating Temperature Range	Тор	-20	+ 60	°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	-	50	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	-	7.0	pF	
16	Q Factor	Q	150 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	3:1	-		In the frequency range: f _L -200kHz to f _L +200kHz
18	Ageing	<u>∆</u> f	-3.0	+3.0	10-6	After burn-in and per year
19	Lead Finish	-		2	-	

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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	fL	7.0		MHz	
	Reference Temperature	T _o	+ 2	25	°C	
	Overtone Order	-	Fundan			
4	Load Capacitance	CL	30		pF	
	Rated Drive Level	Po	0.		mW	
	Frequency Adjustment Tolerance	Δ 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>Δ f</u> f	-10	+ 10	10 ⁻⁶	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	<u>Δ R</u> R	-10 o -1.5	+10 r +1.5	% Ω	From resistance measured at T _o °C If R<10Ω
10	Operating Temperature Range	T _{op}	-20	+60	°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 app	olicable	%	
13	Motional Inductance	L ₁	-	40	mH	
14	Motional Capacitance	C ₁	Not app	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 IZpl/R	3:1	-		In the frequency range: f _L -200kHz to f _L +200kHz
18	Ageing	$\frac{\Delta f}{f}$	-3.0	+3.0	10 ⁻⁶	After burn-in and per year
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	nits Max.	Unit	Remarks
1	Resonance Frequency	fL	12	.0	MHz	
2	Reference Temperature	To	+ 4	40	°C	
3	Overtone Order	-	Funda	mental		
4	Load Capacitance	CL	5	0	pF	
5	Rated Drive Level	Po	0.	.1	mW	
6	Frequency Adjustment Tolerance	Δf f	-10	+10	10-6	At T _o °C
7	Resonance Resistance	R_L		13	Ω	At T _o °C
8	Frequency Variation with Temperature over Top	<u>∆</u> f	-15	+ 15	10-6	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	<u>Δ R</u> R	-10 (-1.5	+ 10 or + 1.5	% Ω	From resistance measured at To $^{\circ}$ C If R < 10 Ω
10	Operating Temperature Range	T _{op}	-20	+80	°C	
11	Frequency variation with Drive Level	Δf 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	6.97	9.43	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	-	7.0	pF	
16	Q Factor	Q	75 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	3:1	-		In the frequency range: f _L -200kHz to f _L +200kHz
18	Ageing	$\frac{\Delta f}{f}$	-3.0	+3.0	10-6	After burn-in and per year
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	nits Max.	Unit	Remarks
	December 5		4.6	00	MHz	
1	Resonance Frequency	f _L				
2	Reference Temperature	T _o		25	°C	
3	Overtone Order	•	Funda	mental		
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	RL	-	20	Ω	At T _o °C
8	Frequency Variation with Temperature over Top	∆ f f	-12	+12	10 ⁻⁶	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	ΔR R	-10 -1.5	or		From resistance measured at T _o °C If R<10Ω
10	Operating Temperature Range	T _{op}	-35	+70	°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	-20	+20	%	From $P_{S1} = 0.05$ mW to $P_{S2} = 0.2$ mW
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	800 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R	Not applicable			
18	Ageing	$\frac{\Delta f}{f}$	-10	+10	10-6	After burn-in, after 5 years
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

l I									
	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks			
1 R	Resonance Frequency	fL	10	.0	MHz				
2 R	Reference Temperature	To	+ 4	10	°C				
3 C	Overtone Order	-	Fundar	nental					
4 L	oad Capacitance	C _L	5	0	pF				
5 F	Rated Drive Level	Po	0.	1	mW				
	Frequency Adjustment Folerance	∆ f f	-10	+ 10	10 ⁻⁶	At T _o °C			
7 F	Resonance Resistance	R_{L}	-	13	Ω	At T _o °C			
l v	Frequency Variation with Temperature over T _{op}	∆ f f	-15	+ 15	10 ⁻⁶	From frequency measured at T _o °C			
w	Resistance Variation with Temperature over Top	<u>Δ R</u> R	-10 o -1.5	+ 10 or + 1.5	% Ω	From resistance measured at T ₀ °C If R<10Ω			
	Operating Temperature Range	T _{op}	-20	+80	°C				
	Frequency variation with Drive Level	$\frac{\Delta f}{f}$	Not ap	olicable	10 ⁻⁶				
	Resistance variation with Drive Level	<u>Δ R</u> R	Not ap	plicable	%				
13 N	Motional Inductance	L ₁	Not ap	plicable	mΗ				
14 N	Motional Capacitance	C ₁	Not ap	plicable	fF				
15 8	Static Capacitance	Co	-	10	pF				
16	Q Factor	Q	50 000	-	-				
F F	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	3:1	-		In the frequency range: f _L -200kHz to f _L +200kHz			
18 A	Ageing	<u>∆ f</u> f	-3.0	+3.0	10-6	After burn-in and per year			
19 L	Lead Finish	-		2	-				



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

				·····		
No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	fL	13.3		MHz	
2	Reference Temperature	To	+2	25	°C	
3	Overtone Order	_	Fundar	nental		
4	Load Capacitance	C _L	3()	pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	Δf f	-10	+10	10 ⁻⁶	At T _o °C
7	Resonance Resistance	R_L	-	20	Ω	At T _o °C
8	Frequency Variation with Temperature over Top	∆ f f	-10	+ 10	10 ⁻⁶	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	<u>Δ R</u> R	-10 c -1.5	+ 10 or + 1.5	% Ω	From resistance measured at T $_0$ °C If R < 10 Ω
10	Operating Temperature Range	T _{op}	-35	+70	°C	
11	Frequency variation with Drive Level	∆ f f	Not ap	plicable	10-6	
12	Resistance variation with Drive Level	ΔR R	-20	+20	%	From $P_{S1} = 0.05 \text{mW}$ to $P_{S2} = 0.2 \text{mW}$
13	Motional Inductance	L ₁	Not ap	plicable	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	-	10	pF	
16	Q Factor	Q	100 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R iZpi/R	Not applicable			
18	Ageing	<u>∆</u> f	-10	+10	10-6	After burn-in, after 5 years
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

						1
No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	fL	3.2768		MHz	
2	Reference Temperature	To	+2	27	°C	
3	Overtone Order	-	Fundar	nental		
4	Load Capacitance	C _L	27	33	pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	Δf f	-10	+10	10-6	At T _o °C
7	Resonance Resistance	R_L	-	180	Ω	At T _o °C
8	Frequency Variation with Temperature over Top	∆ f f	-5.0	+5.0	10 ⁻⁶	From frequency measured at T ₀ °C
9	Resistance Variation with Temperature over Top	ΔR R	-10 o -1.5	+10 r +1.5	% Ω	From resistance measured at T_0 °C If R<10 Ω
10	Operating Temperature Range	T _{op}	-20	+ 50	°C	
11	Frequency variation with Drive Level	<u>Δ f</u> f	Not app	olicable	10-6	
12	Resistance variation with Drive Level	ΔR R	Not ap	plicable	%	
13	Motional Inductance	L ₁	300	400	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	Rp/R	2:1	-		In the frequency range: f _L -200kHz to f _L + 200kHz
18	Ageing	<u>∆</u> f	-3.0	+3.0	10-6	After burn-in and per year
19	Lead Finish ·	-		2	-	
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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol -	Lim Min.	nits Max.	Unit	Remarks
1	Resonance Frequency	fL	8.0		MHz	
2	Reference Temperature	T _o	+ 25	+ 29	°C	
3	Overtone Order		Funda	mental		
4	Load Capacitance	C _L	3	0	pF	
5	Rated Drive Level	Po	0	.1	mW	
6	Frequency Adjustment Tolerance	<u>Δ f</u> f	-20	+20	10 ⁻⁶	At To °C
7	Resonance Resistance	RL		13	Ω	Over T _{op} °C
8	Frequency Variation with Temperature over Top	<u>∆ f</u> 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}	-20	+50	°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	23	30	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	Not applicable			
18	Ageing	<u>∆</u> f	-5.0	+5.0	10-6	After burn-in and per year
19	Lead Finish	-		2		



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

			1			
No.	Characteristics	Symbol	Lim Min.	Max.	Unit	Remarks
1	Resonance Frequency	fL	6.0		MHz	
2	Reference Temperature	T _o	+ 2	25	°C	
3	Overtone Order	-	Fundar	nental		
4	Load Capacitance	CL	11	6	pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	Δf f	-10	+ 10	10 ⁻⁶	At T _o °C
7	Resonance Resistance	R_L	-	50	Ω	At To °C
8	Frequency Variation with Temperature over Top	<u>Δ f</u> f	-50	+50	10-6	From frequency measured at T ₀ °C
9	Resistance Variation with Temperature over Top	ΔR R	-10 +10 or -1.5 +1.5		%	From resistance measured at T_0 °C If R < 10 Ω
10	Operating Temperature Range	T _{op}	-20	+ 70	°C	
11	Frequency variation with Drive Level	Δf 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	Not ap	plicable	pF	
16	Q Factor	Q	Not ap	plicable	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	Not applicable			
18	Ageing	$\frac{\Delta f}{f}$	-3.0	+3.0	10-6	After burn-in and per year
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

	Characteristics	Symbol	Lim M in.	nits Max.	Unit	Remarks
1	Resonance Frequency	fL	4.608		MHz	
2	Reference Temperature	To	+ ;	25	°C	
3	Overtone Order	-	Funda	mental		
4	Load Capacitance	C _L	27	33	pF	
5	Rated Drive Level	Po	0	.1	mW	
6	Frequency Adjustment Tolerance	<u>Δ f</u>	-10	+ 10	10 ⁻⁶	At To °C
7	Resonance Resistance	R_{L}	-	20	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	-10 +10 or -1.5 +1.5		% Ω	From resistance measured at T_0 °C If R < 10Ω
10	Operating Temperature Range	T _{op}	-35	+ 70	°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	Not ap	oplicable	pF	
16	Q Factor	Q	70 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	Not applicable			
18	Ageing	$\frac{\Delta f}{f}$	-3.0	+3.0	10 ⁻⁶	After burn-in and per year
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

		т				
No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	fL	4.608		MHz	
2	Reference Temperature	To	+2	25	°C	
3	Overtone Order	-	Fundar	nental		
4	Load Capacitance	C _L	30	0	pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	∆f f	-8.0	+8.0	10-6	At T _o °C
7	Resonance Resistance	R_L	-	10	Ω	At To °C
8	Frequency Variation with Temperature over Top	<u>∆ f</u> f	-15	+ 15	10 ⁻⁶	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	ΔR R	-10 o -1.5	+ 10 or + 1.5	% Ω	From resistance measured at T_0 °C If $R < 10\Omega$
10	Operating Temperature Range	T _{op}	-40	+ 70	°C	
11	Frequency variation with Drive Level	$\frac{\Delta f}{f}$	Not ap	olicable	10-6	
12	Resistance variation with Drive Level	ΔR R	-20	+20	%	From $P_{S1} = 0.05$ mW to $P_{S2} = 0.2$ mW
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	400 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	Not ap	plicable		
18	Ageing	$\frac{\Delta f}{f}$	-10	+10	10-6	After burn-in over 5 years
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

			Limits			
No.	Characteristics	Symbol	Min.	Max.	Unit	Remarks
1	Resonance Frequency	fL	5.	5.0		
2	Reference Temperature	To	+;	25	°C	
3	Overtone Order	-	Funda	mental		
4	Load Capacitance	C _L	2	7	pF	
5	Rated Drive Level	Po	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	-	200	Ω	Over T _o °C
8	Frequency Variation with Temperature over Top	<u>Δ f</u> f	-50	+50	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	+ 70	°C	
11	Frequency variation with Drive Level	Δf f	Not ap	Not applicable		
12	Resistance variation with Drive Level	<u>Δ R</u> R	Not ap	plicable	%	From $P_{S1} = 0.05 \text{mW}$ to $P_{S2} = 0.2 \text{mW}$
13	Motional Inductance	L ₁	Not ap	plicable	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	Not ap	plicable	pF	
16	Q Factor	Q	Not ap	plicable	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	Not applicable			
18	Ageing	<u>∆</u> f	-50	+50	10-6	Over 6 years
19	Lead Finish			2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

			Limits			
No.	Characteristics	Symbol	Min.	Max.	Unit	Remarks
1	Resonance Frequency	fL	3.27	'68	MHz	
2	Reference Temperature	T _o	+ 2	25	°C	
3	Overtone Order	-	Fundar	nental		
4	Load Capacitance	C _L	20	50	pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	Δf f	-10	+10	10-6	At To °C
7	Resonance Resistance	R_{L}	-	12	Ω	Over T _{op} °C
8	Frequency Variation with Temperature over Top	<u>∆ f</u> f	-5.0	+ 5.0	10-6	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	<u>Δ R</u> R	Not applicable		%	
10	Operating Temperature Range	T _{op}	-20	+70	°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	200	-	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	-	2.7	pF	
16	Q Factor	Q	400 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	2:1	<u>-</u>		In the frequency range: f _L -300kHz to f _L +300kHz
18	Ageing	$\frac{\Delta f}{f}$	-5.0	+ 5.0	10-6	After burn-in, per year
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

		1				
No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	f∟	4.096		MHz	
2	Reference Temperature	To	+ ;	25	°C	
3	Overtone Order	-	Fundar	nental		
4	Load Capacitance	C _L	5	0	pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	Δf f	-10	+ 10	10-6	At T _o °C
7	Resonance Resistance	R_{L}	-	20	Ω	Over Top °C
8	Frequency Variation with Temperature over Top	<u>∆</u> f	-10	+10	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}	-10	+ 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	78	-	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	_	5.0	pF	
16	Q Factor	Q	100 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	3:1	-		In the frequency range: f _L -400kHz to f _L + 400kHz
18	Ageing	$\frac{\Delta f}{f}$	-3.0	+3.0	10-6	After burn-in, per year
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

						T T
	Characteristics	Symbol	Lim Min.	nits Max.	Unit	Remarks
1	Resonance Frequency	fL	5.0		MHz	
2	Reference Temperature	T _o	+.	40	°C	
3	Overtone Order	-	Fundai	mental		
4	Load Capacitance	CL	3	0	pF	
5	Rated Drive Level	Po	0.	.1	mW	
6	Frequency Adjustment Tolerance	Δf f	-5.0	+ 5.0	10-6	At T _o °C
7	Resonance Resistance	RL	-	20	Ω	Over T _{op} °C
8	Frequency Variation with Temperature over Top	<u>∆ f</u> f	-8.0	+8.0	10 ⁻⁶	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	∆R R	Not applicable		%	
10	Operating Temperature Range	T _{op}	-20	+80	°C	
11	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	64	-	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	-	4.0	pF	
16	Q Factor	Q	100 000	-	<u>-</u>	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	2:1	-		In the frequency range: f _L -500kHz to f _L +500kHz
18	Ageing	Δf f	-3.0	+3.0	10-6	After burn-in, per year
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	fL	5.0		MHz	
2	Reference Temperature	To	+4	ŀ0	°C	
3	Overtone Order	-	Fundan	nental		
4	Load Capacitance	C _L	30)	pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	Δf f	-10	+ 10	10 ⁻⁶	At T _o °C
7	Resonance Resistance	RL	-	20	Ω	Over T _{op} °C
8	Frequency Variation with Temperature over Top	<u>∆</u> f	-10	+10	10 ⁻⁶	From frequency measured at T ₀ °C
9	Resistance Variation with Temperature over Top	ΔR R	Not applicable		%	
10	Operating Temperature Range	T _{op}	-10	+ 70	°C	
11	Frequency variation with Drive Level	$\frac{\Delta f}{f}$	Not app	olicable	10-6	
12	Resistance variation with Drive Level	ΔR R	Not ap	plicable	%	
13	Motional Inductance	L ₁	64	_	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	-	4.0	pF	
16	Q Factor	Q	100 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R	2:1	-		In the frequency range: f _L -300kHz to f _L +300kHz
18	Ageing	$\frac{\Delta f}{f}$	-10	+10	10-6	After burn-in, per year
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks				
1	Resonance Frequency	fL	10.0		MHz					
2	Reference Temperature	To	+ 2	25	°C					
3	Overtone Order	-	Fundar	nental						
4	Load Capacitance	C _L	50)	pF					
5	Rated Drive Level	Po	0.	1	mW					
6	Frequency Adjustment Tolerance	Δf f	-10	+10	10-6	At T _o °C				
7	Resonance Resistance	R_{L}	-	20	Ω	Over T _{op} °C				
8	Frequency Variation with Temperature over Top	<u>∆ f</u> f	-10	+ 10	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}	-10	+ 80	°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	plicable	%					
13	Motional Inductance	L ₁	32	_	mH					
14	Motional Capacitance	C ₁	Not ap	plicable	fF					
15	Static Capacitance	Co	-	5.0	pF					
16	Q Factor	Q	100 000	•	-					
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	3:1	-		In the frequency range: f _L -500kHz to f _L +500kHz				
18	Ageing	$\frac{\Delta f}{f}$	-3.0	+3.0	10-6	After burn-in, per year				
19	Lead Finish	-		2	-					



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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	12.0		MHz	
2	Reference Temperature	To	+ 23	+ 27	°C	
3	Overtone Order	-	Fundar	mental		
4	Load Capacitance	CL	0	0	pF	
5	Rated Drive Level	Po	0.	.1	mW	
6	Frequency Adjustment Tolerance	<u>Δ f</u>	-10	+10	10-6	At T _o °C
7	Resonance Resistance	R _r	•	20	Ω	At To °C
8	Frequency Variation with Temperature over Top	∆ f f	-10	+ 10	10-6	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	<u>Δ R</u> R	-10 +10 or -1.5 +1.5		% Ω	From resistance measured at T_o °C If $R < 10\Omega$
10	Operating Temperature Range	T _{op}	-20	+ 70	°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	24	-	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	Not ap	plicable	pF	
16	Q Factor	Q	90 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	2:1	-		In the frequency range: f _r -300kHz to f _r +300kHz
18	Ageing	$\frac{\Delta f}{f}$	-3.0	+3.0	10 ⁻⁶	After burn-in, per year
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lin Min.	nits Max.	Unit	Remarks
1	Resonance Frequency	f _r	12	12.0		
2	Reference Temperature	To	+ 23	+ 27	°C	
3	Overtone Order	-	Funda	mental		
4	Load Capacitance	C _L	C	o	pF	
5	Rated Drive Level	Po	0	.1	mW	
6	Frequency Adjustment Tolerance	Δf f	-10	+ 10	10-6	At T _o °C
7	Resonance Resistance	R _r	-	20	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 +10 or -1.5 +1.5		%	From resistance measured at T _o °C If R<10Ω
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	<u>Δ R</u> R	Not ap	plicable	%	
13	Motional Inductance	L ₁	8.0	-	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	-	5.0	pF	
16	Q Factor	Q	80 000	-	_	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	2:1	-		In the frequency range: f _r -300kHz to f _r +300kHz
18	Ageing	$\frac{\Delta f}{f}$	-3.0	+ 3.0	10-6	After burn-in, per year
19	Lead Finish	_		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

	Characteristics	Symbol -	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	fL	13.332		MHz	
2	Reference Temperature	To	+ 4	10	°C	
3	Overtone Order	_	Fundar	mental		
4	Load Capacitance	C _L	5	0	pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	Δf f	-5.0	+5.0	10-6	At To °C
7	Resonance Resistance	R_{L}	-	13	Ω	Over T _{op} °C
8	Frequency Variation with Temperature over Top	<u>∆</u> f f	-8.0	+8.0	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}	-20	+ 80	°C	
11	Frequency variation with Drive Level	Δf 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	8.0	-	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	-	5.0	pF	
16	Q Factor	Q	50 000	_	_	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpl/R	3:1	-		In the frequency range: f _L -1.0MHz to f _L + 1.0MHz
18	Ageing	<u>∆ f</u>	-3.0	+3.0	10-6	After burn-in, per year
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	fL	5.24288		MHz	
2	Reference Temperature	T _o	+ (60	°C	
3	Overtone Order	-	Fundar	nental		
4	Load Capacitance	CL	2:	2	pF	
5	Rated Drive Level	Po	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	-	13	Ω	Over T _{op} °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	<u>∆R</u> R	Not applicable		%	
10	Operating Temperature Range	T _{op}	-40	+ 85	°C	
11	Frequency variation with Drive Level	<u>Δ f</u> 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	20	-	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	-	5.0	pF	
16	Q Factor	Q	50 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	3:1	-		In the frequency range: f _L -525kHz to f _L + 525kHz
18	Ageing	∆ f f	-3.0	+3.0	10 ⁻⁶	After burn-in, per year
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	nits Max.	Unit	Remarks
1	Resonance Frequency	fL	3.2		MHz	
2	Reference Temperature	To	+ 25	+29	۰C	
3	Overtone Order	-	Funda	mental		
4	Load Capacitance	C_{L}	3	0	pF	
5	Rated Drive Level	Po	0	.1	mW	
6	Frequency Adjustment Tolerance	Δf f	-10	+10	10-6	At T _o °C
7	Resonance Resistance	R_L	-	50	Ω	Over T _{op} °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	<u>Δ R</u> R	Not applicable		%	
10	Operating Temperature Range	T _{op}	-20	+ 70	°C	
11	Frequency variation with Drive Level	<u>Δ f</u> f	Not ap	plicable	10-6	
12	Resistance variation with Drive Level	<u>∆ 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	Not ap	plicable	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/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	After burn-in and per year
19	Lead Finish	-	:	2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

				<u> </u>		
No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	f∟	4.0		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	Δf f	-10	+ 10	10-6	At T _o °C
7	Resonance Resistance	RL	-	25	Ω	Over T _{op} °C
8	Frequency Variation with Temperature over Top	<u>∆ f</u> f	-12	+12	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	+80	°C	
11	Frequency variation with Drive Level	∆ f f	Not ap	plicable	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	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	Rp/R IZpI/R	2:1	-		In the frequency range: f _L -500kHz to f _L +500kHz
18	Ageing	$\frac{\Delta f}{f}$	-3.0	+3.0	10-6	After burn-in, per year
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

F				I		
No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	fL	4.194	4.194304		At cut
2	Reference Temperature	T _o	+ 3	30	°C	
3	Overtone Order	-	Fundar	nental		
4	Load Capacitance	C _L	30	ס	pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	Δf f	-10	+10	10-6	At T _o °C
7	Resonance Resistance	R_L	-	10	Ω	At To °C
8	Frequency Variation with Temperature over Top	∆ f f	-10	+ 10	10-6	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	ΔR R	-10 o -1.5	+ 10 r + 1.5	% Ω	From resistance measured at T_0 °C If $R < 10\Omega$
10	Operating Temperature Range	T _{op}	-10	+ 80	°C	
11	Frequency variation with Drive Level	∆ f f	Not app	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	4
15	Static Capacitance	C _o	_	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 IZpI/R	2:1	-		In the frequency range: f _L -200kHz to f _L + 200kHz
18	Ageing	$\frac{\Delta f}{f}$	-10	+10	10-6	Over 5 years of storage and 3000 hours operating
19	Lead Finish	-		2	-	

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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	fL	12.25		MHz	
2	Reference Temperature	T _o	+2	25	°C	
3	Overtone Order	-	Fundar	nental		
4	Load Capacitance	C _L	3:	2	pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	<u>Δ f</u>	-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	<u>∆ f</u> f	-10	+10	10-6	From frequency measured at T ₀ °C
9	Resistance Variation with Temperature over Top	<u>Δ R</u> R	-10 +10 or -1.5 +1.5		% Ω	From resistance measured at T_0 °C If R < 10Ω
10	Operating Temperature Range	T _{op}	-20	+ 70	°C	
11	Frequency variation with Drive Level	∆ 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	12.6	15.4	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	-	3.0	pF	
16	Q Factor	Q	100 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R	25:1 4:1	-		In the frequency range: fL ±30kHz fL - 50 to fL -500kHz and fL +50 to fL +500kHz
18	Ageing	$\frac{\Delta f}{f}$	-10	+10	10-6	After burn-in, over 5 years
19	Lead Finish	-		2	-	
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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	nits Max.	Unit	Remarks
1	Resonance Frequency	fL	6.0		MHz	
2	Reference Temperature	T _o	+;	25	۰C	
3	Overtone Order	-	Funda	mental		
4	Load Capacitance	CL	3	0	pF	
5	Rated Drive Level	Po	0.	.1	mW	
6	Frequency Adjustment Tolerance	<u>Δ f</u> f	-5.0	+ 5.0	10 ⁻⁶	At To °C
7	Resonance Resistance	R_{L}	ŀ	50	Ω	At To °C
8	Frequency Variation with Temperature over Top	∆ f f	-10	+10	10-6	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	∆R R	-10 +10 or -1.5 +1.5		% Ω	From resistance measured at T_0 °C If $R < 10\Omega$
10	Operating Temperature Range	T _{op}	-40	+70	°C	
11	Frequency variation with Drive Level	Δf 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	Not ap	plicable	pF	
16	Q Factor	Q	600 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	Not applicable			
18	Ageing	∆ f f	-10	+10	10 ⁻⁶	After burn-in, over 5 years
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
			IVIIII. IVIAX.			
1	Resonance Frequency	f∟	9.66 to	9.66 to 10.65		
2	Reference Temperature	T _o	+ ;	25	°C	
3	Overtone Order	-	Fundai	mental		
4	Load Capacitance	C _L	5	0	pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	Δf f	-10	+ 10	10 ⁻⁶	At To °C
7	Resonance Resistance	R_L	-	15	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 applicable		%	
10	Operating Temperature Range	T _{op}	-20	+ 70	°C	
11	Frequency variation with Drive Level	<u>Δ f</u>	Not ap	olicable	10 ⁻⁶	
12	Resistance variation with Drive Level	<u>Δ R</u> R	Not ap	olicable	%	
13	Motional Inductance	L ₁	Not ap	olicable	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	Not ap	plicable	pF	
16	Q Factor	Q	Not ap	plicable	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	4:1	-		In the frequency range: f _L -500kHz to f _L + 500kHz
18	Ageing	Δf f	-2.0	+ 2.0	10-6	After burn-in and per year
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	iits Max.	Unit	Remarks
1	Resonance Frequency	fL	4.096		MHz	
2	Reference Temperature	To	+ 2	25	°C	
3	Overtone Order	_	Fundar	mental		
4	Load Capacitance	C _L	5	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}	-	20	Ω	Over T _{op} °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	Not applicable		%	
10	Operating Temperature Range	Тор	-10	+ 80	°C	
11	Frequency variation with Drive Level	∆ 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	-	5.0	pF	
16	Q Factor	Q	100 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	3:1	-		In the frequency range: f _L -200kHz to f _L + 200kHz
18	Ageing	$\frac{\Delta f}{f}$	Not ap	plicable	10-6	
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	fL	4.194304		MHz	
2	Reference Temperature	То	+ 6	60	°C	
3	Overtone Order	-	Fundar	nental		
4	Load Capacitance	C _L	22	2	pF	
5	Rated Drive Level	Po	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	-	13	Ω	Over Top °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	<u>Δ R</u> R	Not applicable		%	
10	Operating Temperature Range	T _{op}	-20	+ 70	°C	
11	Frequency variation with Drive Level	<u>Δ f</u> 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	Not ap	plicable	pF	
16	Q Factor	Q	50 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	3:1	-		In the frequency range: f _L -200kHz to f _L + 200kHz
18	Ageing	$\frac{\Delta f}{f}$	-3.0	+3.0	10 ⁻⁶	After burn-in and per year
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

	Characteristics	Symbol	Lim Min.	nits Max.	Unit	Remarks
1	Resonance Frequency	fL	5.24288		MHz	
2	Reference Temperature	To	+(60	°C	
3	Overtone Order	-	Fundai	mental		
4	Load Capacitance	CL	2	2	pF	
5	Rated Drive Level	Po	0.	.1	mW	
6	Frequency Adjustment Tolerance	Δf f	-10	+ 10	10-6	At T _o °C
7	Resonance Resistance	R_L	-	13	Ω	Over T _{op} °C
8	Frequency Variation with Temperature over Top	<u>∆ f</u> 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}	-20	+ 70	°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	Not ap	plicable	pF	
16	Q Factor	Q	50 000	_	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	3:1	_		In the frequency range: f _L -200kHz to f _L + 200kHz
18	Ageing	<u>∆</u> f	-3.0	+3.0	10-6	After burn-in and per year
19	Lead Finish	-		2	+	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	fL	8.	0	MHz	
2	Reference Temperature	To	+ (60	°C	
3	Overtone Order	-	Fundar	nental		
4	Load Capacitance	CL	2:	2	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	-	13	Ω	Over T _{op} °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	<u>∆</u> R R	Not applicable		%	
10	Operating Temperature Range	T _{op}	-20	+ 70	°C	
11	Frequency variation with Drive Level	Δf 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	Not ap	plicable	pF	
16	Q Factor	Q	50 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpl/R	3:1	-		In the frequency range: f _L -200kHz to f _L +200kHz
18	Ageing	∆ f f	-3.0	+3.0	10-6	After burn-in and per year
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	nits Max.	Unit	Remarks
			win.	IVIII). IVIAX.		
1	Resonance Frequency	fL	13.3	13.332		
2	Reference Temperature	To	+ 4	40	°C	
3	Overtone Order	-	Fundar	mental		
4	Load Capacitance	C _L	5	0	pF	
5	Rated Drive Level	Po	0.	.1	mW	
6	Frequency Adjustment Tolerance	<u>Δ f</u>	-10	+ 10	10-6	At To °C
7	Resonance Resistance	R_{L}	-	13	Ω	Over T _{op} °C
8	Frequency Variation with Temperature over Top	<u>∆</u> 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}	-20	+ 80	°C	
11	Frequency variation with Drive Level	<u>Δ f</u> 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	Not ap	plicable	pF	
16	Q Factor	Q	50 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R	3:1	-		In the frequency range: f _L -200kHz to f _L +200kHz
18	Ageing	$\frac{\Delta f}{f}$	-3.0	+3.0	10-6	After burn-in and per year
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

			Limits			
No.	Characteristics	Symbol	Min.	Max.	Unit	Remarks
1	Resonance Frequency	fL	4.194304		MHz	
2	Reference Temperature	To	+;	25	°C	
3	Overtone Order	-	Funda	mental		
4	Load Capacitance	C _L	3	0	pF	
5	Rated Drive Level	Po	0.	.1	mW	
6	Frequency Adjustment Tolerance	<u>Δ f</u> f	-10	+10	10-6	At T _o °C
7	Resonance Resistance	RL	-	40	Ω	At T _o °C
8	Frequency Variation with Temperature over Top	∆f f	-10	+ 10	10 ⁻⁶	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	<u>Δ R</u> R	-10 +10 or -1.5 +1.5		%	From resistance measured at T_o °C If $R < 10\Omega$
10	Operating Temperature Range	T _{op}	-30	+70	°C	
11	Frequency variation with Drive Level	<u>Δ 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	120	_	mH	
14	Motional Capacitance	C ₁	-	-	fF	
15	Static Capacitance	Co	-	4.0	pF	
16	Q Factor	Q	300 000	-		
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	Not applicable			
18	Ageing	∆ f f	-3.0	+3.0	10-6	After burn-in, over 5 years
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	fL	12.25		MHz	
2	Reference Temperature	To	+ 2	25	°C	
3	Overtone Order	-	Fundar	mental		
4	Load Capacitance	C _L	3	2	pF	
5	Rated Drive Level	Po	0.	.1	mW	
6	Frequency Adjustment Tolerance	$\frac{\Delta f}{f}$	-8.0	+8.0	10-6	At T _o °C
7	Resonance Resistance	RL		100	Ω	At To °C
8	Frequency Variation with Temperature over Top	$\frac{\Delta f}{f}$	-10	+10	10-6	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	ΔR R	-10 (-1.5	+ 10 or + 1.5	% Ω	From resistance measured at T ₀ °C If R<10Ω
10	Operating Temperature Range	T _{op}	-20	+ 70	°C	
11	Frequency variation with Drive Level	∆ 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	4.5	5.5	mH	
14	Motional Capacitance	C ₁	-	-	fF	
15	Static Capacitance	Co	-	3.0	pF	
16	Q Factor	Q	30 000	-	-	
17	Unwanted Response Resistance	Rp	25	-	kΩ	In the frequency range: f _L -30kHz to f _L +30kHz
18	Ageing	$\frac{\Delta f}{f}$	-10	+10	10-6	After burn-in, over 5 years
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

	Characteristics	Symbol	Lim Min.	nits Max.	Unit	Remarks
1	Resonance Frequency	f _r	4.096		MHz	
2	Reference Temperature	To	+;	25	°C	
3	Overtone Order	•	Fundar	mental		
4	Load Capacitance	C_L	0	0	pF	
5	Rated Drive Level	Po	0.	.1	mW	
6	Frequency Adjustment Tolerance	<u>Δ f</u> f	-10	+10	10-6	At T _o °C
7	Resonance Resistance	R _r	•	50	Ω	Over T _{op} °C
8	Frequency Variation with Temperature over Top	<u>∆ f</u> 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}	-30	+80	°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	Not ap	plicable	pF	
16	Q Factor	Q	75 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	3:1	-		In the frequency range: f _r -200kHz to f _r + 200kHz
18	Ageing	<u>∆</u> f	-3.0	+3.0	10-6	After burn-in and per year
19	Lead Finish			2	-	



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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	4.194	304	MHz	
2	Reference Temperature	To	+ 2	25	°C	
3	Overtone Order	-	Fundar	nental		
4	Load Capacitance	CL	α		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	-	50	Ω	Over T _{op} °C
8	Frequency Variation with Temperature over Top	<u>∆</u> 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}	-30	+80	°C	
11	Frequency variation with Drive Level	∆ 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	Not ap	plicable	pF	
16	Q Factor	Q	75 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	3:1	-		In the frequency range: f _r -10% to f _r +10%
18	Ageing	$\frac{\Delta f}{f}$	-3.0	+3.0	10-6	After burn-in and per year
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol -	Lim Min.	nits Max.	Unit	Remarks
1	Resonance Frequency	fL	5.24288		MHz	
2	Reference Temperature	То	+20	+ 30	°C	
3	Overtone Order	-	Fundar	mental		
4	Load Capacitance	CL	2	2	pF	
5	Rated Drive Level	Po	0.	.1	mW	
6	Frequency Adjustment Tolerance	Δf f	-10	+ 10	10 ⁻⁶	At T _o °C
7	Resonance Resistance	RL	-	13	Ω	Over T _{op} °C
8	Frequency Variation with Temperature over Top	<u>Δ f</u> f	-15	+ 15	10 ⁻⁶	From frequency measured at T ₀ °C
9	Resistance Variation with Temperature over Top	ΔR R	Not applicable		%	
10	Operating Temperature Range	T _{op}	-20	+ 70	°C	
11	Frequency variation with Drive Level	∆ 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	Not ap	plicable	pF	
16	Q Factor	Q	50 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	3:1	-		In the frequency range: f _L -200kHz to f _L + 200kHz
18	Ageing	$\frac{\Delta f}{f}$	-3.0	+3.0	10-6	After burn-in and per year
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	nits Max.	Unit	Remarks
1	Resonance Frequency	fL	12.25		MHz	
2	Reference Temperature	To	+ 2	25	°C	
3	Overtone Order	-	Fundar	mental		
4	Load Capacitance	CL	3	2	pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	<u>Δ f</u> f	-8.0	+ 8.0	10-6	At T _o °C
7	Resonance Resistance	R_L	-	10	Ω	At T ₀ °C
8	Frequency Variation with Temperature over Top	∆ f f	-10	+10	10-6	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	ΔR R	-50	+50	%	From resistance measured at T _o °C
10	Operating Temperature Range	T _{op}	-20	+ 70	°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	9.0	11	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	-	3.0	pF	
16	Q Factor	Q	80 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	10:1	-		In the frequency range: f _L -300kHz to f _L + 200kHz
18	Ageing	Δf f	-10	+ 10	10-6	After burn-in, over 5 years
19	Lead Finish	_		2		



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No. Characteristics Symbol Limits Max. Max. Max. Max.							
2 Reference Temperature	No.	Characteristics	Symbol			Unit	Remarks
3 Overtone Order - Fundamental - Fundament	1	Resonance Frequency	fL	5.	0	MHz	
4 Load Capacitance	2	Reference Temperature	To	+ ;	25	°C	
5 Rated Drive Level P₀ 0.1 mW At T₀ °C 6 Frequency Adjustment Tolerance Δf f -10 +10 10-6 At T₀ °C 7 Resonance Resistance RL - 10 Ω At T₀ °C 8 Frequency Variation with Temperature over T₀p Δf f -2.5 +2.5 10-6 From frequency measured at T₀ °C 9 Resistance Variation with Temperature over T₀p ΔR R -10 +10 % From resistance measured at T₀ °C 10 Operating Temperature Range T₀p -10 +40 °C 11 Frequency variation with Drive Level Δf f Not applicable 10-6 12 Resistance variation with Drive Level ΔR R Not applicable % 13 Motional Inductance L₁ 70 120 mH 14 Motional Capacitance C₁ Not applicable fF 15 Static Capacitance C₀ 3.0 5.0 pF 16 Q Factor Q 350 000 - </td <td>3</td> <td>Overtone Order</td> <td>-</td> <td>Fundai</td> <td>mental</td> <td></td> <td></td>	3	Overtone Order	-	Fundai	mental		
Frequency Adjustment Tolerance Δf 10 10 10 10 10 10 10 1	4	Load Capacitance	C _L	20	40	pF	
Tolerance F	5	Rated Drive Level	Po	0.	1	mW	
Frequency Variation with Temperature over Top Passistance Variation with Temperature over Top Resistance Variation with Temperature over Top Resistance Variation with Temperature over Top Operating Temperature Range Top -10 +40 °C Frequency variation with Drive Level Resistance variatio	6		<u>Δ f</u> f	-10	+ 10	10-6	At T _o °C
with Temperature over Top f L measured at To °C 9 Resistance Variation with Temperature over Top ΔR/R -10 +10 or -1.5 +1.5 Ω From resistance measured at To °C if R<10Ω	7	Resonance Resistance	R_L	-	10	Ω	At T _o °C
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	8	with Temperature	∆ f f	-2.5	+ 2.5	10 ⁻⁶	
Range Ra	9	with Temperature	<u>∆R</u> R	or			measured at To °C
with Drive Level \overline{f} Not applicable%12Resistance variation with Drive Level \overline{A} R RNot applicable%13Motional Inductance L_1 70 120 mH 1414Motional Capacitance C_1 Not applicable fF 15Static Capacitance C_0 3.0 5.0 pF 16Q FactorQ 350 000 - - 17Ratio of Unwanted: Response Resistance or Resonance Resistance or Resonance Resistance or Resonance ResistanceRp/R 18Ageing $\Delta f_{\overline{f}}$ -65 +65 10-6 After burn-in, per year	10		T _{op}	-10	+ 40	°C	
With Drive Level R	11		<u>Δ f</u> f	Not ap	plicable	10 ⁻⁶	
14 Motional Capacitance C ₁ Not applicable fF 15 Static Capacitance C ₀ 3.0 5.0 pF 16 Q Factor Q 350 000 17 Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance Or Response Resistance 18 Ageing Ageing Ageing After burn-in, per year	12		<u>Δ R</u> R	Not ap	plicable	%	
15 Static Capacitance C_0 3.0 5.0 pF 16 Q Factor Q 350 000 - - 17 Ratio of Unwanted: Response Resistance or Resonance Resistance or Resonance Resistance Rp/R IZpl/R Not applicable 18 Ageing $\frac{\Delta f}{f}$ -65 +65 10-6 After burn-in, per year	13	Motional Inductance	L ₁	70	120	mH	
16 Q Factor Q 350 000 - - 17 Ratio of Unwanted: Response Resistance to Resonance Resistance or Resonance Resistance Rp/R IZpl/R Not applicable 18 Ageing $\frac{\Delta f}{f}$ -65 +65 10-6 After burn-in, per year	14	Motional Capacitance	C ₁	Not ap	plicable	fF	
17 Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance 18 Ageing Δ f f f -65 +65 10-6 After burn-in, per year	15	Static Capacitance	Co	3.0	5.0	pF	
Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance 18 Ageing $ \frac{\Delta f}{f} = -65 + 65 $ Not applicable $ \frac{\Delta f}{f} = -65 + 65 $ After burn-in, per year	16	Q Factor	Q	350 000	-		
f year	17	Response Resistance to Resonance Resistance or Response Impedance to	•	Not applicable			
19 Lead Finish - 2	18	Ageing	$\frac{\Delta f}{f}$	-65	+ 65	10 ⁻⁶	•
	19	Lead Finish	-		2	•	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

	Characteristics	Symbol	Lim Min.	iits Max.	Unit	Remarks
1	Resonance Frequency	fL	5.0		MHz	
2	Reference Temperature	T _o	+ 25	+29	۰C	
3	Overtone Order	-	Fundar	mental		
4	Load Capacitance	CL	3	0	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}	-	30	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 over Top	<u>Δ R</u> R	-10 +10 or -1.5 +1.5		% Ω	From resistance measured at T_0 °C If $R < 10\Omega$
10	Operating Temperature Range	Тор	-20	+ 70	°C	
11	Frequency variation with Drive Level	<u>∆ f</u> 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	Not ap	plicable	pF	
16	Q Factor	Q	200 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	2:1	-		In the frequency range: f _L -200kHz to f _L + 200kHz
18	Ageing	$\frac{\Delta f}{f}$	-3.0	+3.0	10-6	After burn-in, per year
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	nits Max.	Unit	Remarks
1	Resonance Frequency	fL	12	12.0		
2	Reference Temperature	T _o	+ 25	+ 29	°C	
3	Overtone Order	-	Funda	mental		
4	Load Capacitance	CL	3	0	pF	
5	Rated Drive Level	Po	0.	.1	mW	
6	Frequency Adjustment Tolerance	<u>Δ f</u>	-10	+10	10-6	At To °C
7	Resonance Resistance	R_L	-	30	Ω	At T _o °C
8	Frequency Variation with Temperature over Top	$\frac{\Delta f}{f}$	-10	+10	10-6	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	ΔR R	-10 (-1.5	+ 10 or + 1.5	% Ω	From resistance measured at T _o °C If R<10Ω
10	Operating Temperature Range	T _{op}	-20	+ 70	°C	
11	Frequency variation with Drive Level	Δf 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	Not ap	plicable	pF	
16	Q Factor	Q	80 000	-	_	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R	2:1	-		In the frequency range: f _L -200kHz to f _L + 200kHz
18	Ageing	$\frac{\Delta f}{f}$	-3.0	+3.0	10-6	After burn-in, per year
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	iits Max.	Unit	Remarks
1	Resonance Frequency	f _r	11.0		MHz	
2	Reference Temperature	T _o	+ 23	+ 27	°C	
3	Overtone Order	**	Fundar	mental		
4	Load Capacitance	C _L	٥	0	pF	
5	Rated Drive Level	Po	0.	.1	mW	
6	Frequency Adjustment Tolerance	<u>Δ f</u> f	-10	+ 10	10-6	At T _o °C
7	Resonance Resistance	R _r	-	15	Ω	At To °C
8	Frequency Variation with Temperature over Top	<u>∆ f</u> f	-12	+ 12	10 ⁻⁶	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	ΔR R	-10 +10 or -1.5 +1.5		% Ω	From resistance measured at T_0 °C If R<10 Ω
10	Operating Temperature Range	T _{op}	-20	+ 80	°C	
11	Frequency variation with Drive Level	<u>Δ f</u> 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	11.2	16.8	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	Rp/R IZpI/R	2:1	-		In the frequency range: f _r -200kHz to f _r + 200kHz
18	Ageing	Δf f	-3.0	+3.0	10-6	After burn-in, per year
19	Lead Finish	_		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	nits Max.	Unit	Remarks
1	Resonance Frequency	f∟	12	12.0		Swept
2	Reference Temperature	To	+ 23	+ 27	°C	
3	Overtone Order	-	Fundai	mental		
4	Load Capacitance	CL	31.7	32.3	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_{L}	•	20	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	<u>Δ R</u> R	-20 +20 or -2.0 +2.0 whichever is greater		%	From resistance measured at T _o °C
10	Operating Temperature Range	T _{op}	-25	+90	°C	
11	Frequency variation with Drive Level	Δf 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	7.0	-	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	Not ap	plicable	pF	
16	Q Factor	Q	90 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpl/R	2:1	-		In the frequency range: f _L -300kHz to f _L + 300kHz
18	Ageing	<u>∆</u> f	-3.0	+3.0	10-6	After burn-in, per year over 3 years
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	nits Max.	Unit	Remarks
1	Resonance Frequency	fL	4.9	4.9152		
2	Reference Temperature	To	+ 23	+ 27	°C	
3	Overtone Order	-	Funda	mental		
4	Load Capacitance	CL	3	0	pF	
5	Rated Drive Level	Po	0.	.1	mW	
6	Frequency Adjustment Tolerance	Δf f	-10	+ 10	10-6	At T _o °C
7	Resonance Resistance	R_{L}	-	40	Ω	At To °C
8	Frequency Variation with Temperature over Top	<u>∆ f</u> f	-20	+20	10-6	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	<u>Δ R</u> R	-10 c -2.0	+ 10 or + 2.0	%	From resistance measured at T _o °C
10	Operating Temperature Range	Тор	-20	+60	°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	250 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpl/R	2:1	-		In the frequency range: f _L -200kHz to f _L + 200kHz
18	Ageing	Δf f	-2.0	+2.0	10-6	Per year after burn-in
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	nits Max.	Unit	Remarks
1	Resonance Frequency	fL	15	15.0		
2	Reference Temperature	To	+ 23	+ 27	°C	
3	Overtone Order	-	Fundai	mental		
4	Load Capacitance	CL	3	0	pF	
5	Rated Drive Level	Po	0.	.1	mW	
6	Frequency Adjustment Tolerance	Δf f	-10	+10	10 ⁻⁶	At T ₀ °C
7	Resonance Resistance	R_{L}	-	20	Ω	Over T _{op} °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	Not applicable		%	
10	Operating Temperature Range	T _{op}	-40	+ 85	°C	
11	Frequency variation with Drive Level	∆ 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	65 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	2:1	-		In the frequency range: f _L -200kHz to f _L + 200kHz
18	Ageing	$\frac{\Delta f}{f}$	-1.0	+ 1.0	10-6	Per year after burn-in
19	Lead Finish	-		2	-	

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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

					·····	
No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	fL	7.5		MHz	
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	Δf f	-50	+50	10-6	At To °C
7	Resonance Resistance	R_L	-	30	Ω	At To °C
8	Frequency Variation with Temperature over Top	<u>Δ f</u> f	-50	+50	10-6	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	ΔR R	-10 +10 or -1.5 +1.5		% Ω	From resistance measured at T _o °C If R<10Ω
10	Operating Temperature Range	Тор	-20	+ 50	°C	
11	Frequency variation with Drive Level	∆ 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	-	5.0	pF	
16	Q Factor	Q	80 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	2:1	-		In the frequency range: f _L -200kHz to f _L + 200kHz
18	Ageing	<u>∆ f</u>	-10	+10	10-6	Over 10 years
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

				T		
No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	fL	8.194	442	MHz	
2	Reference Temperature	To	+23	+ 27	°C	
3	Overtone Order	-	Fundar	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 To °C
7	Resonance Resistance	R_L	-	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	-10 o -1.5	+10 r +1.5	% Ω	From resistance measured at T_0 °C If R<10 Ω
10	Operating Temperature Range	T _{op}	-20	+ 50	°C	
11	Frequency variation with Drive Level	Δf 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	80 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	2:1	-		In the frequency range: f _L -200kHz to f _L + 200kHz
18	Ageing	<u>∆</u> f	-5.0 -10	+5.0 +10	10-6	After burn-in. Over 10 years
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	nits Max.	Unit	Remarks
1	Resonance Frequency	fL	10.0		MHz	
2	Reference Temperature	To	+ 2	5	°C	
3	Overtone Order	-	Funda	mental		
4	Load Capacitance	C _L	3	0	pF	
5	Rated Drive Level	Po	0	.1	mW	
6	Frequency Adjustment Tolerance	Δf 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	<u>∆ f</u>	-50	+ 50	10 ⁻⁶	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	<u>Δ R</u> R	Not applicable		%	
10	Operating Temperature Range	T _{op}	-40	+70	°C	
11	Frequency variation with Drive Level	$\frac{\Delta f}{f}$	Not applicable		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	Not ap	plicable	pF	
16	Q Factor	Q	Not ap	plicable	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	Not applicable			
18	Ageing	<u>∆ f</u>	-50	+ 50	10-6	Over 5 years
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	nits Max.	Unit	Remarks
1	Resonance Frequency	fL	4.	.0	MHz	Synthetic swept
2	Reference Temperature	T _o	+	25	°C	High temperature cured
3	Overtone Order	-	Funda	Fundamental		AT cut
4	Load Capacitance	CL	5	0	pF	
5	Rated Drive Level	Po	0	.1	mW	
6	Frequency Adjustment Tolerance	Δf f	-10	+ 10	10 ⁻⁶	At T _o °C
7	Resonance Resistance	R_{L}	-	20	Ω	Over T _{op} °C
8	Frequency Variation with Temperature over Top	<u>∆</u> f	-15	+ 15	10 ⁻⁶	From frequency measured at T _o °C measured each 2.5°C
9	Resistance Variation with Temperature over Top	<u>Δ R</u> R	Not applicable		%	
10	Operating Temperature Range	T _{op}	-35	+70	°C	
11	Frequency variation with Drive Level	$\frac{\Delta f}{f}$	Not ap	Not applicable		
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	100 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R	Not applicable			
18	Ageing	Δf f	-5.0	+5.0	10-6	After burn-in and per year
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

1 Resonance Frequency f _L 8.388 MHz	narks
Theodiano Trequency	
2 Reference Temperature T ₀ +23 +27 °C	
3 Overtone Order - Fundamental	
4 Load Capacitance C _L 30 pF	
5 Rated Drive Level P ₀ 0.1 mW	
6 Frequency Adjustment Δf f -20 +20 10-6 At T ₀ °C	
7 Resonance Resistance R _L - 40 Ω At T ₀ °C	
8 Frequency Variation with Temperature over T_{op} $\frac{\Delta f}{f}$ $\frac{-50}{f}$ $\frac{+50}{f}$ $\frac{10^{-6}}{measured}$ From frequence $\frac{\Delta f}{f}$ $\frac{-50}{f}$ $\frac{+50}{f}$ $\frac{10^{-6}}{measured}$	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	at T _o °C
10 Operating Temperature T _{op} -10 +50 °C Range	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	
12 Resistance variation ΔR Not applicable % with Drive Level R	
13 Motional Inductance L ₁ Not applicable mH	
14 Motional Capacitance C ₁ Not applicable fF	
15 Static Capacitance C ₀ - 7.0 pF	
16 Q Factor Q 80 000	
Resonance Resistance Rp/R	quency f _L -200kHz to f _L +200kHz
18 Ageing Δ f	after burn-in
19 Lead Finish - 2	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

				· · · · · · · · · · · · · · · · · · ·	·	
No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	fL	4.194	4.194304		
2	Reference Temperature	To	+ 23	+ 27	°C	
3	Overtone Order	_	Fundar	nental		
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}	-	40	Ω	At T _o °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	<u>∆ R</u> R	-10 +10 or -1.5 +1.5		% Ω	From resistance measured at T_0 °C If $R < 10\Omega$
10	Operating Temperature Range	T _{op}	-30	+70	°C	
11	Frequency variation with Drive Level	Δf 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	200 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpi/R	2:1	-		In the frequency range: f _L -200kHz to f _L + 200kHz
18	Ageing	$\frac{\Delta f}{f}$	-3.0	+3.0	10-6	Per year after burn-in at To
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

			· · · · · · · · · · · · · · · · · · ·			
No.	Characteristics	Symbol	Lin Min.	nits Max.	Unit	Remarks
1	Resonance Frequency	fL	3.2	768	MHz	
2	Reference Temperature	To	+23	+ 27	°C	
3	Overtone Order	-	Funda	mental		
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 To °C
7	Resonance Resistance	R_L	-	50	Ω	At To °C
8	Frequency Variation with Temperature over Top	<u>∆</u> f	-20	+20	10 ⁻⁶	From frequency measured at To °C
9	Resistance Variation with Temperature over Top	ΔR R	-20 or -1.0	+ 20 or + 1.0	% Ω	From resistance measured at To °C
10	Operating Temperature Range	T _{op}	-30	+ 70	°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	200 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	2:1	-		In the frequency range: f _L -200kHz to f _L + 200kHz
18	Ageing	∆ f f	-1.0	+ 1.0	10 ⁻⁶	Per year after burn-in
19	Lead Finish	-	2	2	-	
						



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	nits Max.	Unit	Remarks
1	Resonance Frequency	fL	16.0		MHz	
2	Reference Temperature	To	+ 23	+ 27	°C	
3	Overtone Order	-	Fundai	mental	-	
4	Load Capacitance	C _L	3	0	pF	
5	Rated Drive Level	Po	0.	.1	mW	
6	Frequency Adjustment Tolerance	Δf f	-10	+ 10	10-6	At T _o °C
7	Resonance Resistance	R_L	-	30	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	-10 + 10 or -1.5 + 1.5		% Ω	From resistance measured at T_0 °C If $R < 10\Omega$
10	Operating Temperature Range	T _{op}	-30	+70	°C	
11	Frequency variation with Drive Level	Δf 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	80 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R	2:1	-		In the frequency range: f _L -200kHz to f _L + 200kHz
18	Ageing	$\frac{\Delta f}{f}$	-1.0	+ 1.0	10 ⁻⁶	Per year after burn-in at T ₀
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

				···		
No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	fL	15.0		MHz	
2	Reference Temperature	To	+23	+ 27	°C	
3	Overtone Order	-	Fundar	nental		
4	Load Capacitance	C _L	30)	pF	
5	Rated Drive Level	Po	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	-	30	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	<u>∆ R</u> R	-10 +10 or -1.5 +1.5		% Ω	From resistance measured at T_0 °C If $R < 10\Omega$
10	Operating Temperature Range	T _{op}	-30	+70	°C	
11	Frequency variation with Drive Level	∆ 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	80 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R iZpi/R	2:1	-		In the frequency range: f _L -200kHz to f _L + 200kHz
18	Ageing	$\frac{\Delta f}{f}$	-1.0	+ 1.0	10-6	Per year after burn-in
19	Lead Finish	-		2		



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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	4.096		MHz	
2	Reference Temperature	To	+23	+27	°C	
3	Overtone Order	-	Fundar	nental		
4	Load Capacitance	C _L	α)	pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	Δf f	-10	+10	10-6	At T _o °C
7	Resonance Resistance	R _r	-	50	Ω	At T _o °C
8	Frequency Variation with Temperature over Top	<u>∆</u> f	-15	+ 15	10 ⁻⁶	From frequency measured at To °C
9	Resistance Variation with Temperature over Top	<u>Δ R</u> R	-20 or -2.0	+ 20 or + 2.0	% Ω	From resistance measured at To °C
10	Operating Temperature Range	T _{op}	-30	+80	°C	
11	Frequency variation with Drive Level	Δf f	Not ap	Not applicable		
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	Not ap	plicable	pF	
16	Q Factor	Q	70 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	3:1	-		In the frequency range: f _r -10% to f _r + 10%
18	Ageing	$\frac{\Delta f}{f}$	-3.0	+3.0	10-6	
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	f∟	10.0		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	∆f f	-10	+10	10-6	At To °C
7	Resonance Resistance	R_L	-	30	Ω	At To °C
8	Frequency Variation with Temperature over Top	<u>∆ f</u> f	-30	+30	10 ⁻⁶	From frequency measured at To °C
9	Resistance Variation with Temperature over Top	ΔR R	-20 or -2.0	+ 20 or + 2.0	% Ω	From resistance measured at T_0 °C If $R \le 10\Omega$
10	Operating Temperature Range	T _{op}	-55	+100	°C	
11	Frequency variation with Drive Level	Δf 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	100 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/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 T ₀
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	C C equency
2 Reference Temperature T ₀ +23 +27 °C 3 Overtone Order - Fundamental 4 Load Capacitance C _L 28 32 pF 5 Rated Drive Level P ₀ 0.2 mW 6 Frequency Adjustment Tolerance 7 Resonance Resistance R _L - 20 Ω At T ₀ °C 7 Resonance Resistance R _L - 20 Ω At T ₀ °C 8 Frequency Variation with Temperature over T _{0p} 9 Resistance Variation with Temperature with Temperature Or From resistance measured at T ₀ °C	C
3 Overtone Order - Fundamental 4 Load Capacitance C _L 28 32 pF 5 Rated Drive Level P ₀ 0.2 mW 6 Frequency Adjustment Tolerance 7 Resonance Resistance R _L - 20 Ω At T ₀ °C 8 Frequency Variation with Temperature over T _{0p} 9 Resistance Variation with Temperature with Temperature O AR R -10 Fundamental - DF (a) 32 pF (b) -8.0 +5.0 10-6 From frequency measured at T ₀ °C From resistance measured at T ₀ °C	C
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	C
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	C
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	C
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	C
8 Frequency Variation with Temperature over T_{op} 9 Resistance Variation with Temperature with Temperature over T_{op} 9 Resistance Variation with Temperature $T_{o} = T_{o} = T_$	equency
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	
with Temperature R or measured at To °C	
	red at To °C
10 Operating Temperature T _{op} (a) 0 +60 °C (b) -10 +70	
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	
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 70 000	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	f _L -10% to
18 Ageing $\frac{\Delta f}{f}$ -2.0 +2.0 10-6 Per year	ar
19 Lead Finish - 2	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Limi Min.	ts Max.	Unit	Remarks
1	Resonance Frequency	f _r	25.	0	MHz	Swept
2	Reference Temperature	T _o	+ 2	5	°C	
3	Overtone Order	-	3			
4	Load Capacitance	C _L	00		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	-	15	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	<u>Δ R</u> R	-20	+20	%	From resistance measured at T _o °C
10	Operating Temperature Range	T _{op}	-25	+ 75	°C	
11	Frequency variation with Drive Level	$\frac{\Delta f}{f}$	-10	+10	10-6	From $P_{S1} = 0.05 \text{mW}$ to $P_{S2} = 0.2 \text{mW}$
12	Resistance variation with Drive Level	ΔR R	-10	+ 10	%	From $P_{S1} = 0.05 \text{mW}$ to $P_{S2} = 0.2 \text{mW}$
13	Motional Inductance	L ₁	17	21	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	-	5.0	pF	
16	Q Factor	Q	300 000	-	-	
17	Unwanted Response Resistance	Rp	500 1.0 3.5 35.0	-	Ω kΩ kΩ kΩ	In the frequency range: f_r to f_r + 200kHz f_r + 200 to f_r + 300kHz f_r + 300 to f_r + 500kHz f_r + 500 to f_r + 2000kHz
18	Ageing	∆ f	-10	+10	10-6	After burn-in and per year
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	f _r	3.6864		MHz	
2	Reference Temperature	To	+	25	°C	
3	Overtone Order	-	Fundar	mental		
4	Load Capacitance	C _L	α		pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	<u>Δ f</u> f	-10	+10	10-6	At T _o °C
7	Resonance Resistance	R _r	-	50	Ω	Over T _{op} °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	<u>Δ R</u> R	Not applicable		%	
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	Not ap	plicable	mH	
14	Motional Capacitance	C ₁	Not ap	plicable	fF	
15	Static Capacitance	Co	Not ap	plicable	pF	
16	Q Factor	Q	75 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	5:1	-		In the frequency range: f _r -10% to f _r + 10%
18	Ageing	$\frac{\Delta f}{f}$	-3.0	+3.0	10-6	After burn-in and per year
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

		· · ·				
No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	fL	5.24	288	MHz	
2	Reference Temperature	To	+ (60	°C	
3	Overtone Order	_	Fundar	nental		
4	Load Capacitance	C _L	2:	2	pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	Δf f	-10	+10	10 ⁻⁶	At To °C
7	Resonance Resistance	R_{L}	-	13	Ω	Over T _{op} °C
8	Frequency Variation with Temperature over Top	<u>∆</u> f	-15	+ 15	10 ⁻⁶	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	<u>Δ R</u> R	Not applicable		%	
10	Operating Temperature Range	T _{op}	-20	+ 70	°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	Not ap	plicable	pF	
16	Q Factor	Q	50 000	<u>-</u>	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	3:1	-		In the frequency range: f _L -200kHz to f _L + 200kHz
18	Ageing	$\frac{\Delta f}{f}$	-3.0	+3.0	10-6	After burn-in and per year
19	Lead Finish	_		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	fL	12.0		MHz	
2	Reference Temperature	To	+ 23	+27	°C	
3	Overtone Order	-	Fundar	nental		
4	Load Capacitance	C _L	28	32	pF	
5	Rated Drive Level	Po	0.	2	mW	
6	Frequency Adjustment Tolerance	Δf 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 Top	Δf f	-25	+ 25	10-6	From frequency measured at To °C
9	Resistance Variation with Temperature over Top	ΔR R	-10 +10 or -1.5 +1.5		% Ω	From resistance measured at T_0 °C If R<10 Ω
10	Operating Temperature Range	Тор	-10	+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	50 000	-	•	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	3:1	-		In the frequency range: f _L -10% to f _L + 10%
18	Ageing	Δf f	-3.0	+3.0	10-6	Per year
19	Lead Finish	-		2	-	

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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

					!	
No.	Characteristics	Symbol		nits	Unit	Remarks
	Criditationstics	Cymbol	Min.	Max.	Offic	nemarks
1	Resonance Frequency	fL	3.6	3.6864		
2	Reference Temperature	To	+ 23	+ 27	°C	
3	Overtone Order	_	Funda	mental		
4	Load Capacitance	CL	28	32	pF	
5	Rated Drive Level	Po	0	.2	mW	
6	Frequency Adjustment Tolerance	<u>∆ f</u>	-10	+10	10-6	At To °C
7	Resonance Resistance	RL	-	100	Ω	At T _o °C
8	Frequency Variation with Temperature over Top	<u>∆ f</u> f	-25	+ 25	10 ⁻⁶	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	ΔR R	-20 or -2.0	+20 or +2.0	% Ω	From resistance measured at T_0 °C If $R \le 10\Omega$
10	Operating Temperature Range	T _{op}	-10	+80	°C	
11	Frequency variation with Drive Level	<u>Δ f</u> 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	75 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	5:1	-		In the frequency range: f _L -10% to f _L + 10%
18	Ageing	<u>∆ f</u> f	-3.0	+3.0	10-6	Per year
19	Lead Finish	-	2	2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

						T and the second
No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	f _r	12.13	12.136285		Synthetic swept
2	Reference Temperature	То	+23	+27	°C	High temperature cured
3	Overtone Order	-	Fundar	nental		AT cut
4	Load Capacitance	C _L	α		pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	Δf f	-5.0	+5.0	10-6	At T _o °C
7	Resonance Resistance	R _r	-	20	Ω	At To °C
8	Frequency Variation with Temperature over Top	∆ f f	-10	+10	10 ⁻⁶	From frequency measured at To °C measured each 2.5°C
9	Resistance Variation with Temperature over Top	ΔR R	-10 (-1.5	+ 10 or + 1.5	% Ω	From resistance measured at T _o °C If R<10Ω
10	Operating Temperature Range	T _{op}	-30	+ 65	°C	
11	Frequency variation with Drive Level	∆ f f	-5.0	+5.0	10 ⁻⁶	From $P_{s1} = 0.05 \text{mW}$ to $P_{s2} = 0.1 \text{mW}$
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	Not ap	plicable	pF	
16	Q Factor	Q	150 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	5:1	-		In the frequency range: f _r -10% to f _r +10%
18	Ageing	$\frac{\Delta f}{f}$	-10	+ 10	10-6	Over 10 years after burn-in
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Limi Min.	its Max.	Unit	Remarks
1	Resonance Frequency	fL	18.0		MHz	
2	Reference Temperature	To	+38	+ 42	°C	
3	Overtone Order	-	Fundan	nental		
4	Load Capacitance	CL	50)	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}	-	20	Ω	At T _o °C
8	Frequency Variation with Temperature over Top	∆f f	-15	+ 15	10 ⁻⁶	From frequency measured at To °C
9	Resistance Variation with Temperature over Top	ΔR R	-10 c -1.5	+10 or +1.5	% Ω	From resistance measured at T _o °C If R<10Ω
10	Operating Temperature Range	T _{op}	-20	+80	°C	
11	Frequency variation with Drive Level	∆ 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	75 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R	2:1	-		In the frequency range: f _L -200kHz to f _L + 200kHz
18	Ageing	$\frac{\Delta f}{f}$	-3.0	+3.0	10-6	After burn-in and per year
19	Lead Finish			2	-	



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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	8.388608		MHz	
2	Reference Temperature	To	+ 23	+ 27	°C	
3	Overtone Order	-	Fundai	mental		
4	Load Capacitance	CL	0	0	pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	Δf f	-5.0	+5.0	10-6	At T _o °C
7	Resonance Resistance	R _r	-	20	Ω	At T _o °C
8	Frequency Variation with Temperature over Top	<u>∆ f</u> f	(a) -12 (b) -20	+20 +12	10 ⁻⁶	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	<u>Δ R</u> R	-10 or -2.0	+ 10 or + 2.0	% Ω	From resistance measured at T _o °C
10	Operating Temperature Range	T _{op}	(a) -30 (b) -40	+ 75 + 30	°C	
11	Frequency variation with Drive Level	<u>∆ f</u> f	-5.0	+5.0	10-6	From $P_{s1} = 0.05 \text{mW}$ to $P_{s2} = 0.1 \text{mW}$
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	Not ap	plicable	pF	
16	Q Factor	Q	130 000	-	_	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	5:1	-		In the frequency range: f _r -200kHz to f _r + 200kHz
18	Ageing	$\frac{\Delta f}{f}$	-3.0	+3.0	10-6	After burn-in, per year
19	Lead Finish	_		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

						
No.	Characteristics	Symbol	Limi Min.	Max.	Unit	Remarks
1	Resonance Frequency	fL	10.0		MHz	
2	Reference Temperature	To	+36	+ 44	°C	
3	Overtone Order	-	Fundan	nental		
4	Load Capacitance	C _L	28	32	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	-	15	Ω	At To °C
8	Frequency Variation with Temperature over Top	Δf f	-30	+30	10 ⁻⁶	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	<u>Δ R</u> R	-10 -1.5	+10 or +1.5	% Ω	From resistance measured at T_0 °C If $R < 10\Omega$
10	Operating Temperature Range	T _{op}	-20	+90	°C	
11	Frequency variation with Drive Level	<u>∆</u> f	Not ap	plicable	10 ⁻⁶	
12	Resistance variation with Drive Level	ΔR R	Not ap	plicable	%	
13	Motional Inductance	L ₁	2.8	-	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	Rp/R IZpI/R	2:1	-		In the frequency range: f _L -50kHz to f _L + 50kHz
18	Ageing	$\frac{\Delta f}{f}$	-3.0	+3.0	10-6	Per year after burn-in
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol -	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	fL	6.0		MHz	
2	Reference Temperature	To	+ 23	+ 27	°C	
3	Overtone Order	_	Fundar	nental		
4	Load Capacitance	C _L	30)	pF	
5	Rated Drive Level	Po	0.	1	mW	
6	Frequency Adjustment Tolerance	<u>Δ f</u> f	-10	+10	10-6	At T _o °C
7	Resonance Resistance	RL	-	50	Ω	At T _o °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	<u>∆R</u> R	-20 or -2.0	+20 or +2.0	% Ω	From resistance measured at T _o °C
10	Operating Temperature Range	T _{op}	-45	+ 75	°C	
11	Frequency variation with Drive Level	∆ 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	Not ap	plicable	pF	
16	Q Factor	Q	200 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpI/R	2:1	-		In the frequency range: f _L -50kHz to f _L + 50kHz
18	Ageing	$\frac{\Delta f}{f}$	-3.0	+3.0	10-6	Per year after burn-in
19	Lead Finish	-		2		



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	nits Max.	Unit	Remarks
1	Resonance Frequency	fL	12.5		MHz	
2	Reference Temperature	T _o	+23	+27	°C	
3	Overtone Order	-	Funda	mental		
4	Load Capacitance	C_L	3	0	pF	
5	Rated Drive Level	Po	0	.1	mW	
6	Frequency Adjustment Tolerance	<u>Δ f</u> f	-20	+20	10-6	At To °C
7	Resonance Resistance	R_L	*	30	Ω	At To °C
8	Frequency Variation with Temperature over Top	<u>∆</u> f	-30	+30	10 ⁻⁶	From frequency measured at To °C
9	Resistance Variation with Temperature over Top	ΔR R	-20 or -2.0	+20 or +2.0	% Ω	From resistance measured at T _o °C
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	Not ap	plicable	mH	
14	Motional Capacitance	C ₁	Not ap	oplicable	fF	
15	Static Capacitance	Co	Not ap	oplicable	pF	
16	Q Factor	Q	Not ap	oplicable	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R	2:1	-		In the frequency range: f _L -50kHz to f _L + 50kHz
18	Ageing	$\frac{\Delta f}{f}$	-10	+10	10-6	5 years after burn-in
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

						T
No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	fL	11.059		MHz	
2	Reference Temperature	To	+23	+ 27	°C	
3	Overtone Order	-	Fundar	nental		
4	Load Capacitance	C _L	50)	pF	
5	Rated Drive Level	Po	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	-	20	Ω	Over T _{op} °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	<u>Δ R</u> R	Not applicable		%	
10	Operating Temperature Range	T _{op}	-35	+ 70	°C	
11	Frequency variation with Drive Level	∆ f f	Not ap	olicable	10-6	
12	Resistance variation with Drive Level	<u>Δ R</u> R	Not ap	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	100 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpl/R	2:1	-		In the frequency range: f _L -200kHz to f _L + 200kHz
18	Ageing	$\frac{\Delta f}{f}$	-5.0	+ 5.0	10 ⁻⁶	Per year after burn-in
19	Lead Finish	-		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	nits Max.	Unit	Remarks
1	Resonance Frequency	fL	7.3728		MHz	
2	Reference Temperature	To	+ 23	+ 27	°C	
3	Overtone Order	-	Funda	mental		
4	Load Capacitance	C _L	3	0	pF	
5	Rated Drive Level	Po	0	.1	mW	
6	Frequency Adjustment Tolerance	Δf f	-10	+ 10	10-6	At T _o °C
7	Resonance Resistance	RL	•	30	Ω	At T _o °C
8	Frequency Variation with Temperature over Top	<u>∆ f</u> f	-15	+ 15	10 ⁻⁶	From frequency measured at To °C
9	Resistance Variation with Temperature over Top	ΔR R	-10 +10 or -1.5 +1.5		% Ω	From resistance measured at T _o °C If R<10Ω
10	Operating Temperature Range	T _{op}	-30	+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	oplicable	%	
13	Motional Inductance	L ₁	Not a	oplicable	mH	
14	Motional Capacitance	C ₁	Not a	oplicable	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	Rp/R IZpl/R	2:1	-		In the frequency range: f _L -200kHz to f _L + 200kHz
18	Ageing	$\frac{\Delta f}{f}$	-3.0	+3.0	10-6	Per year after burn-in
19	Lead Finish	_		2	-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	its Max.	Unit	Remarks
1	Resonance Frequency	fL	5.12		MHz	
2	Reference Temperature	To	+ 38	+ 42	°C	
3	Overtone Order	•	Fundamental			
4	Load Capacitance	CL	30		pF	
5	Rated Drive Level	Po	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	0	30	Ω	At T _o °C
8	Frequency Variation with Temperature over Top	<u>∆ f</u> f	-15	+ 15	10-6	From frequency measured at T _o °C
9	Resistance Variation with Temperature over Top	ΔR R	-10 or -1.5	+ 10 or + 1.5	% Ω	From resistance measured at T_o °C If $R < 10\Omega$
10	Operating Temperature Range	T _{op}	-40	+80	°C	
11	Frequency variation with Drive Level	Δf f	Not applicable		10 ⁻⁶	
12	Resistance variation with Drive Level	<u>Δ R</u> R	Not applicable		%	
13	Motional Inductance	L ₁	Not applicable		mH	
14	Motional Capacitance	C ₁	Not applicable		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	2:1	-		In the frequency range: f _L -200kHz to f _L + 200kHz
18	Ageing	Δf f	-3.0	+3.0	10-6	Per year after burn-in
19	Lead Finish	-	2		-	



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TABLE 1(a) - TYPE VARIANT DETAILED INFORMATION

No.	Characteristics	Symbol	Lim Min.	nits Max.	Unit	Remarks
1	Resonance Frequency	fL	10.0		MHz	
2	Reference Temperature	T _o	+ 65	+ 78	°C	Turn point
3	Overtone Order	-	3			SC cut
4	Load Capacitance	CL	18	32	pF	
5	Rated Drive Level	Po	0.1		mW	
6	Frequency Adjustment Tolerance	$\frac{\Delta f}{f}$	Not applicable		10-6	
7	Resonance Resistance	RL	•	90	Ω	Over T _{op} °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	<u>Δ R</u> R	Not applicable		%	From resistance measured at T ₀ °C
10	Operating Temperature Range	T _{op}	-25	+80	°C	
11	Frequency variation with Drive Level	$\frac{\Delta f}{f}$	Not applicable		10 ⁻⁶	
12	Resistance variation with Drive Level	<u>Δ R</u> R	Not applicable		%	
13	Motional Inductance	L ₁	Not applicable		mH	
14	Motional Capacitance	C ₁	Not applicable		fF	
15	Static Capacitance	Co	-	7.0	pF	
16	Q Factor	Q	800 000	-	-	
17	Ratio of Unwanted: Response Resistance to Resonance Resistance or Response Impedance to Resonance Resistance	Rp/R IZpl/R	Not applicable			
18	Ageing	$\frac{\Delta f}{f}$	-0.5	+ 0.5	10 ⁻⁶	Per year after burn-in
19	Lead Finish	-	2		-	



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APPENDIX 'A'

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AGREED DEVIATIONS FOR C-MAC FREQUENCY PRODUCTS (F)

ITEMS AFFECTED	DESCRIPTION OF DEVIATION
Para. 4.2.2	Para. 9.3, Shock: Shall not be performed.
Para. 4.2.3	Para. 9.11, Radiographic Inspection: Shall not be performed.