

DETAILED SPECIFICATION FOR CRYSTAL PART # X9.6000AT-43-M1-30AC



KEY FEATURES

- f 9.6000 MHz
- COLD WELDED HC-43/U
- FUNDAMENTAL MODE FOR WIDE TUNING
- AT CUT
- FOR OCXO APPLICATION

DESCRIPTION

Well documented / high performance Quartz Crystal with high C1 value enabling wide tuning range. For use in high performance and high reliability OCXO applications.

DETAILED SPECIFICATION ► ELECTRICAL

1. GENERAL

Item	Parameter	Condition	Value	Tolerance	Unit	Note
1.1	Angle of cut		AT			
1.2	Mode of operation	Fundamental	1			
1.3	Circuit type	Series resonance				
1.4a	Circuit type	Parallell resonance				
1.4b	Load capacitance, C_L		30	+/- 1	pF	
1.5	Drive level, nom P	Nominal P	50	+/- 10 %	uW	
1.6	Drive level, max P	Maximum P	100	+/- 10 %	uW	
1.7	Package	HC-43/U				Height mm

2. TEMPERATURE CHARACTERISTICS

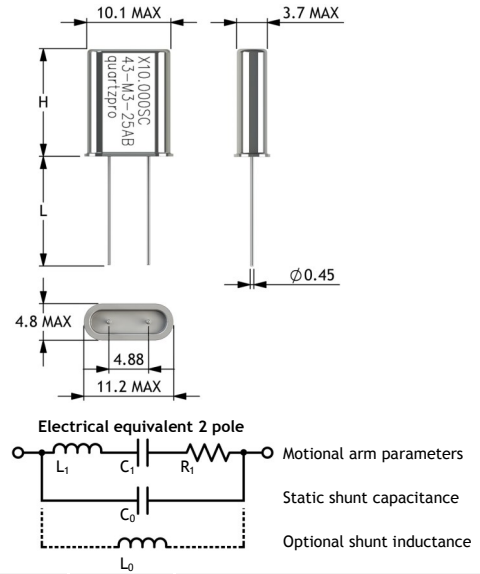
Item	Parameter	Condition	Min.	Typ.	Max.	Unit	Note
2.1	Reference temperature, ref T		+60	+65	+70	°C	
2.2	Operating temperature range					°C	
2.3	Storage temperature range		-55		+105	°C	

3. ELECTRICAL PARAMETERS

3.1	Motional resistance	R_1	5	10	20	Ohm	
3.2	Motional inductance	L_1		39.4		mH	
3.2	Motional capacitance	C_1	5.9	7.0	9.0	fF	
3.3	Static shunt capacitance	C_0	3.0	3.7	4	pF	
3.4	Figure of merit	Q	140 000	300 000	550 000	-	
3.5	Shunt inductance	L_0		75		µH	Optional C_0 cancellation

4. FREQUENCY CHARACTERISTICS

4.1	Nominal frequency	@ ref T, C_L and nom P		9.600 000		MHz	
4.2	Frequency accuracy	@ ref T, C_L and nom P	-20.0		+20.0	ppm	
4.3	Drive level dependency, $R_1(P)$	R_1 max / R_1 min			10	%	DLD sweep from 0.1 uW – nom P
4.4	Drive level dependency, $f_1(P)$	$\Delta f / f$ nom				ppm	DLD Sweep from 0.1uW – nom P
4.5	Long term stability (aging)	First year	-500		+500	ppb	After 30 days of continues operation
4.6	Long term stability (aging)	After first year				ppb	After 30 days of continues operation



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DETAILED SPECIFICATION ► ENVIRONMENTAL

5. VIBRATION IEC 60068-2-6 Fc (Sinewave)

Item	Description	Parameter	Condition	Units	Notes
5.1	Frequency range	10 - 55 Hz	Amplitude, 0.75	mm	
5.2	Frequency range	55 - 500 Hz	Acceleration, 10	g	
5.3	Sweep rate and direction	1 octave / minute	up / down = 11	min	5.5 octaves - 5.5 min / sweep*2 (1 up/1down)
5.4	Direction and number of sweeps	X, Y and Z	10 sweeps		
5.5	Duration	5.5 min x 2 sweep x 10 sweep	5.5 x 2 x 10 = 110	min	- 1 hour 50 min

6. SHOCK IEC 60068-2-27 Ea

6.1	Pulse waveform	Half sine	40 (peak)	g	
6.2	Pulse length		11	ms	
6.3	Sign, direction and number of shocks	+/- X, Y and Z	5		In each direction, totally 5*6=30

7. TEMPERATURE CYCLING IEC 60068-2-14 Na

7.1	Low temperature		-40	Deg C	
7.2	High temperature		+85	Deg C	
7.3	Transition time		2 - 3	min	
7.4	Exposure time	Time in each temperature	10	min	
7.5	Number of cycles		5		

8. ADDITIONAL INFORMATION

8.1	Wire cutting	Use a low shock wire cutter
8.2	Wire bending	Before bending of wires apply a flat plier at least 2 mm from glass insulation feedthrough and press so that the
8.3	Soldering	Use flux and a tip temperature of not more than 350 deg C and apply to crystal lead terminal for max 5 seconds.
8.4	Cleaning	If No Clean solder is used –not necessary to clean but recommended when flux is used.
8.5	ESD	Use normal ESD precautions.
8.6	Hermeticity	< 1·10 ⁻⁸ mbar liter / sec

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EXAMPLE OF PRODUCT PART NUMBER DESIGNATION AND INTERPRETATION.

Item	Product Category	1. Frequency	2. Angle of cut	3. Package	4. Mode of operation	5. Circuit type	6. Version
Parameter	X	10.000 MHz	SC	HC-43/U	3rd Overtone	Load Capacitance, 25pF	
Code	X	10.000	SC	- 43	- M3	- 25	AB
Part number designation : X10.000SC-43-M3-25AB							

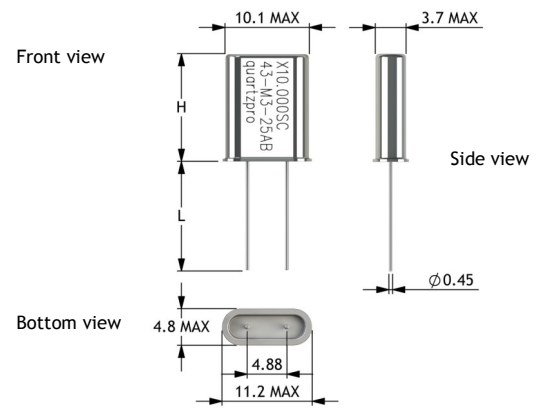
DETAILED SPECIFICATION ► MECHANICAL

9. LABEL MARKING

Line 1, Product Category, Frequency, Cut	in MHz - Cut Ex. X10.000SC
Line 2, Part number	Package - Mode - Circuit, Version Ex. 43 - M3 - 25AB
Other information on request.	

10. MECHANICAL DIMENSIONS

	(mm)
H = Height	13.3 MAX
L = Pin length	13.2 ±0.5



11. REVISION HISTORY

	Date	Description
11.1	2009.02.06	First issue
11.2	2014.08.15	New detailed datasheet
11.3		
11.4		
11.5		
11.6		

UNLESS OTHERWISE SPECIFIED :

TITLE X-HC-43-C

	NAME	SIGN.	DATE	TOLERANCES	DWG NO.	X-HC-43-C
DRAWN	Vikram Singh	VS	2009.02.02	MATERIAL A	REV.	0.1
CHK'D	Anders Aven	AA	2009.02.03	MATERIAL B		
APPV'D	Anders Olsen	AO	2009.02.03	WEIGHT GR		
NOTE						

SHEET 1 OF 1