

SPECIFICATION FOR APPROVAL



CUSTOMER : _____
PRODUCT NAME : QUARTZ CRYSTAL UNIT
HOLD TYPE : SMD 2016-4P
NOMINAL FREQ. : 32.000MHz
CUSTOMER P/N : _____
P/N : XTAL2016-32M-8P-1020-HT
ISSUE DATE : 2023-03-31

PREPARED	CHECKED	APPROVED
王会蓉	唐梦梦	姚良元

CUSTOMER APPROVAL:

CHECKED	APPROVED

Please return one copy with approval to XTAL

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RECORD OF REVISION

[illegible]

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● PRODUCT DESCRIPTION

1. Holder Form

☐ Epoxy Resin ☒ Resistance Welding ☐ Laser Welding ☐ AuSn Welding

2. Holder Medium

☐ N2 ☒ Vacuum ☐ Others

3. Standard atmospheric conditions

Unless otherwise specified. The standard range of atmospheric conditions for making measurement and tests are as follow:

Ambient temperature : $25 \pm 10^{\circ}\text{C}$

Relative humidity : 45%~75%

If there is any doubt bout the results, measurement shall be made within the following limit:

Ambient temperature : $25 \pm 1^{\circ}\text{C}$

Relative humidity : 48%~52%

4. Measure equipment

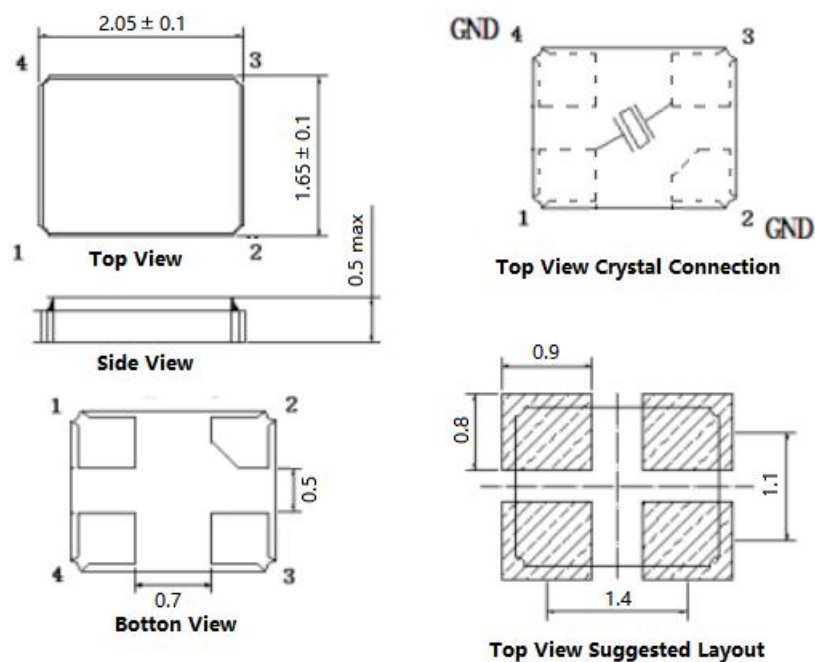
Electrical characteristics measured by S&A 250B and insulation resistance tester or equivalent.

● ELECTRICAL SPECIFICATIONS

NO.	Parameters	Symbol	Specifications				Notes
			Min	Type	Max	Units	
1	Nominal frequency	F0	32.000			MHz	
2	Mode of Oscillation	-	Fundamental				AT-CUT
3	Load Capacitance	CL	8			pF	
4	Frequency Tolerance	FL	± 10			ppm	at $25 \pm 2^{\circ}\text{C}$
5	Frequency Stability	TC	± 20			ppm	reference 25°C
6	Operating Temperature	-	-40	~	+105	$^{\circ}\text{C}$	
7	Drive Level	DL	1	10	100	μW	
8	Effective Resistance	RR	≤ 50			Ω	
9	Shunt Capacitance	C0	≤ 3.0			pF	
10	Insulation Resistance	IR	≥ 500			M Ω	at DC 100V
11	Spurious Ratio	SPDB	≤ -3			dB	$F0 \pm 500\text{KHz}$
12	Aging	-	± 3			ppm	First year
13	Storage Temperature Range	-	-55	~	+125	$^{\circ}\text{C}$	

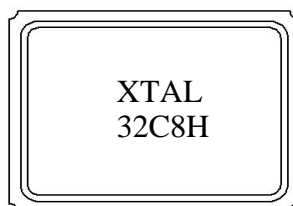
● DIMENSIONS

(unit: mm)



Note: Different manufacturers have different shape and the base of pin, but it has not influence on using.

● MARKING



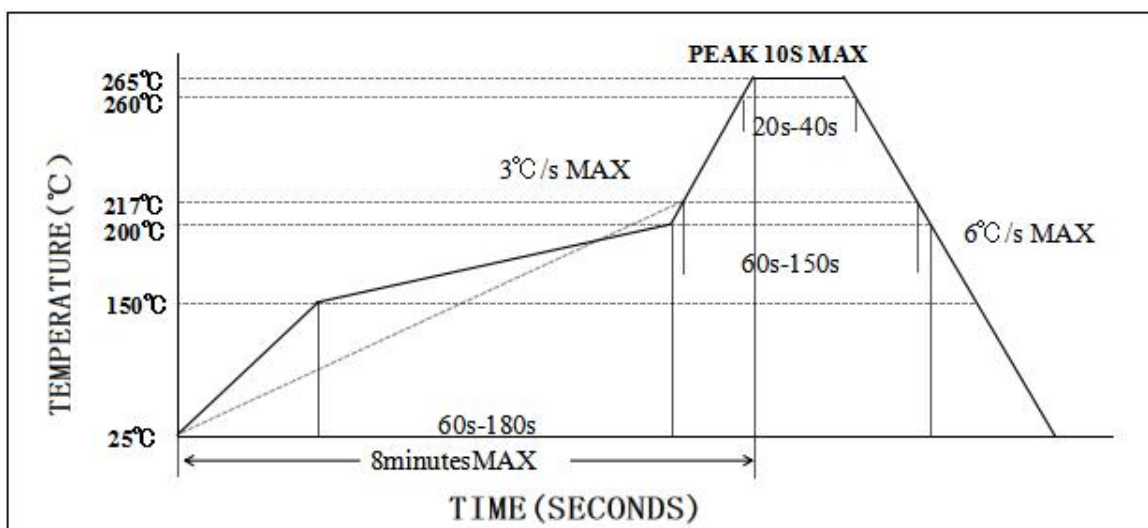
X T A L ----- Logo

32----- Frequency

C8-----Load capacitance

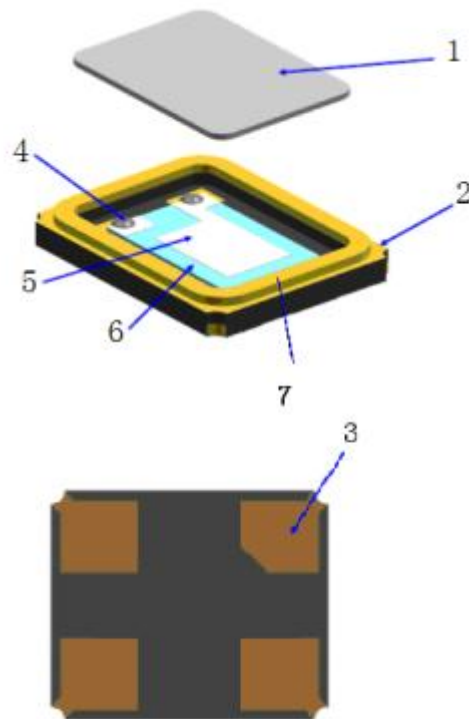
H-----High temperature

● SUGGESTED REFLOW PROFILE



Reference standard: JEDEC J-STD-020. (lead free)

● STRUCTURE ILLUSTRATION

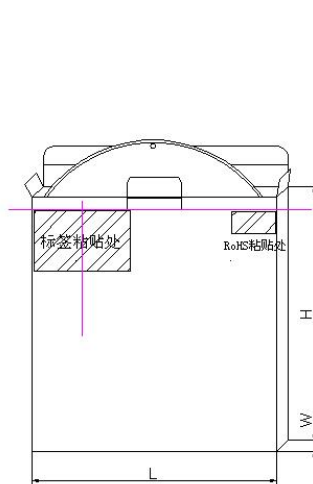


NO.	COMPONENTS	MATERIALS	QTY
1	Cap(Lid)	kovar	1
2	Base(Package)	Al ₂ O ₃	1
3	Pad(Package)	Au	4
4	Conductive adhesive	Ag+ Silicone resin	4
5	Electrode	Noble Metal	2
6	Crystal blank	SiO ₂	1
7	Kovar ring	Kovar ring alloy	1

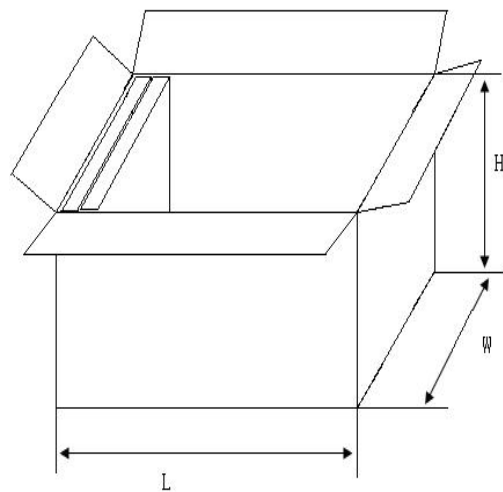
(unit: mm)

L1	2.00 ± 0.1
L2	4.00 ± 0.1
L3	4.00 ± 0.1
D0	1.50 ± 0.1
D1	0.6 ± 0.1
W0	8.50 ± 0.2
W1	1.75 ± 0.1
W2	3.50 ± 0.1
W3	8.00 ± 0.1
A0	1.85 ± 0.1
B0	2.25 ± 0.1
K0	0.65 ± 0.1
T	0.25 ± 0.05

3. Packing



1 Reel/Inner Box



10 In-Boxer/Catton(Standard)

Package &Quantity

Type	Size (L*W*H)	Quantity
Inner Box	180*20*180	3000pcs
Catton	240*200*200	30000pcs

Standard Reel Quantity is 3000pcs per reel.

4. Contents of Packaging Labels

- * CUSTOMER No.
- * NOMINAL FREQUENCY
- * LOAD CAPA.
- * FREQ.TOLERANCE
- * ESR
- * DATE
- * LOT.
- * P/N
- * HOLDER TYPE
- * QUANTITY
- * MARKING

★ Remark

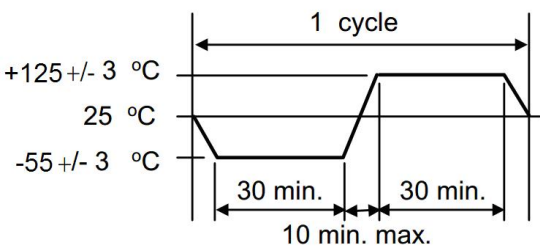
Customer specified requirements for marking , Labels, packaging, please provide the operation procedure.

● RELIABILITY SPECIFICATIONS

1. MECHANICAL ENDURANCE

No.	Test Item	Experimental standard	Test Methods	Test Criteria
1	Drop Test	GB/T2423.8	Electrical characteristics shall be satisfied after dropping three times from the height of 150cm onto the board of the 3cm thickness.	A、C
2	Mechanical Shock	GB/T2423.5	Device are shocked to half sine wave (1000 G), duration time :0.5ms, and three mutually perpendicular axes each 3 times	A、C
3	Vibration	GB/T2423.10	Frequency range 10 ~ 2000Hz Amplitude 1.52mm Sweep Time 20 min Direction x,y,z Test time 2hours/Each Direction	A、C
4	Solder ability	IEC60068-2-58	Temperature 245℃±℃ Immersing depth 0.5 mm minimum Immersion time 3 ±0.5 seconds Flux Rosin resin methyl alcohol solvent (1 : 4)	E

2. ENVIRONMENTAL ENDURANCE

No.	Test Item	Experimental standard	Test Methods	Test Criteria
5	Resistance To Soldering Heat	IEC60068-2-58	Pre-heat temperature 180 °C Pre-heat time 60 ~ 120 sec. Test temperature 260 ± 5℃ Test time 10 ± 1 sec.	A、C、D
6	High Temp. Storage	GB/T2423.2	+125℃± 2℃ for 500 ±12 hours	A、C、D
7	Low Temp. Storage	GB/T2423.1	-40℃ ± 2 °C for 500 ±12 hours	A、C、D
8	Thermal Shock	GB/T2423.22	Total 10 cycles of the following temperature cycle 	A、C、D
9	High Temp & Humidity	GB/T2423.3	85℃± 3℃, RH 85%,500Hrs	A、C、D

3. RELIABILITY SPECIFICATIONS

Specifications	
A	Frequency change: Within $\pm 5\text{ppm}$ or in customer's specification.
B	Frequency change: Within $\pm 10\text{ppm}$ or in customer's specification.
C	Effective resistance (RR) change: Within $\pm 20\%$ or 5Ω (larger value).
D	After conditioning, quartz crystal units shall be subjected to standard atmospheric conductions for 2 hour, and measured.
E	Minimum 95% of immersed terminal shall be covered with new uniform solder.

★Note:

1. The above reliability items are routine test items of our company. If customers have requirements for products such as drop, impact, collision and ultrasonic welding process, please feed back your requirements to our company, and our company will update the reliability items of the products.

2. After the client heats the crystal, in order to ensure the accuracy of frequency, it is recommended to fully cool the crystal before relevant tests.

3. The product meets the requirements of environmental protection standards, please contact us when you need test report.