

## CZ Series Ceramic SMD Crystal

- Ultra miniature and lightweight SMD crystal resonator.
- Tight tolerance / stability.
- Bluetooth, WIFI, GSM, GPS, LoRa...



### PART NUMBER GUIDE

**CZ-20 - 40.0 - 10 - 1E - 10**

**PACKAGE TYPE** ←

- CZ-32** : Ceramic SMD - 3.2X2.5X0.7mm
- CZ-25** : Ceramic SMD - 2.5X2.0X0.5mm
- CZ-20** : Ceramic SMD - 2.0X1.6X0.45mm
- CZ-16** : Ceramic SMD - 1.6X1.25X0.32mm

**FREQUENCY** ←

16.000MHz~80.000MHz

→ **LOAD CAPACITANCE**

10 : 10.0pF

→ **TABLE 1**

↓ **FREQUENCY TOLERANCE AT 25°C**

10 : ± 10ppm

### ELECTRICAL SPECIFICATIONS

MODEL	CZ-20
Frequency Range (Fundamental)	40.000MHz (Fundamental - AT Cut)
Operating Temperature Range	-20°C to +70°C
Storage Temperature Range	-55°C to +125°C
Frequency Tolerance (at 25°C)	±10ppm
Frequency Stability over Operating Temperature Range	±10ppm
Load Capacitance (CL)	10pF
Equivalent series resistance	60 ohms Max.
Drive Level	50µW Typ. , 100µW Max.
Shunt Capacitance (Co)	3.0pF Max.
Aging (at 25°C)	±2ppm/year
Min. Packing	3.000pcs/Reel

\* : Available

**TABLE 1**

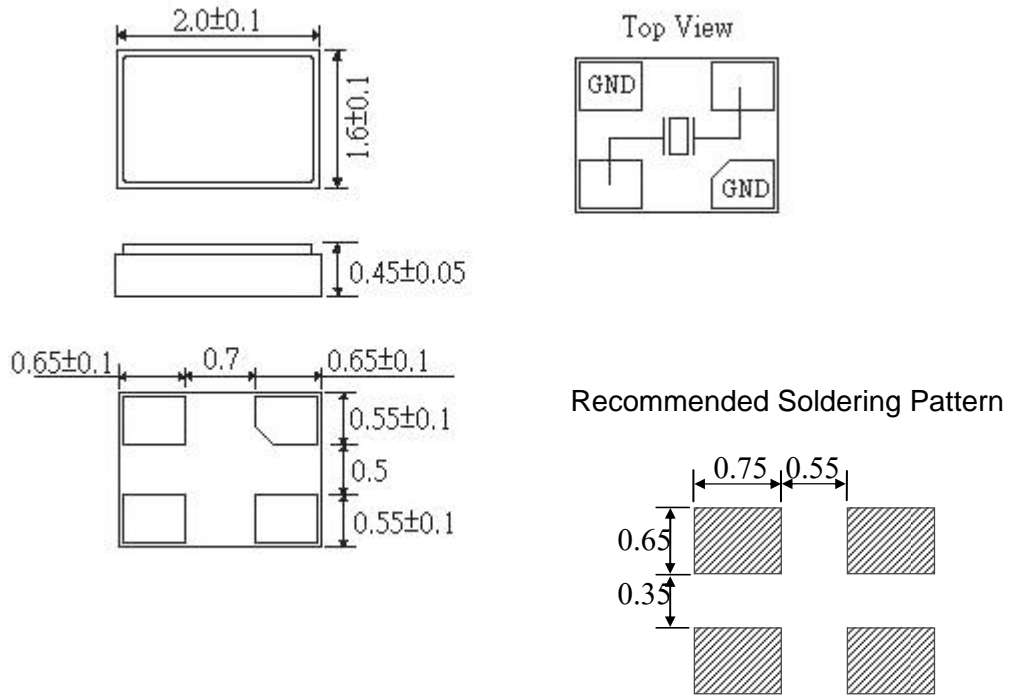
FREQUENCY STABILITY VS. TEMPERATURE RANGE							
Stability Temp		±10	±15	±20	±30	±50	±100
		1	2	3	4	5	6
-10~+60°C	A	*	*	*	*	*	*
-20~+60°C	B	*	*	*	*	*	*
0~+70°C	C	*	*	*	*	*	*
-10~+70°C	D	*	*	*	*	*	*
-20~+70°C	E	*	*	*	*	*	*
-30~+85°C	F	*	*	*	*	*	*
-40~+85°C	G	*	*	*	*	*	*
-40~+125°C	H				*	*	*

**MARKING**

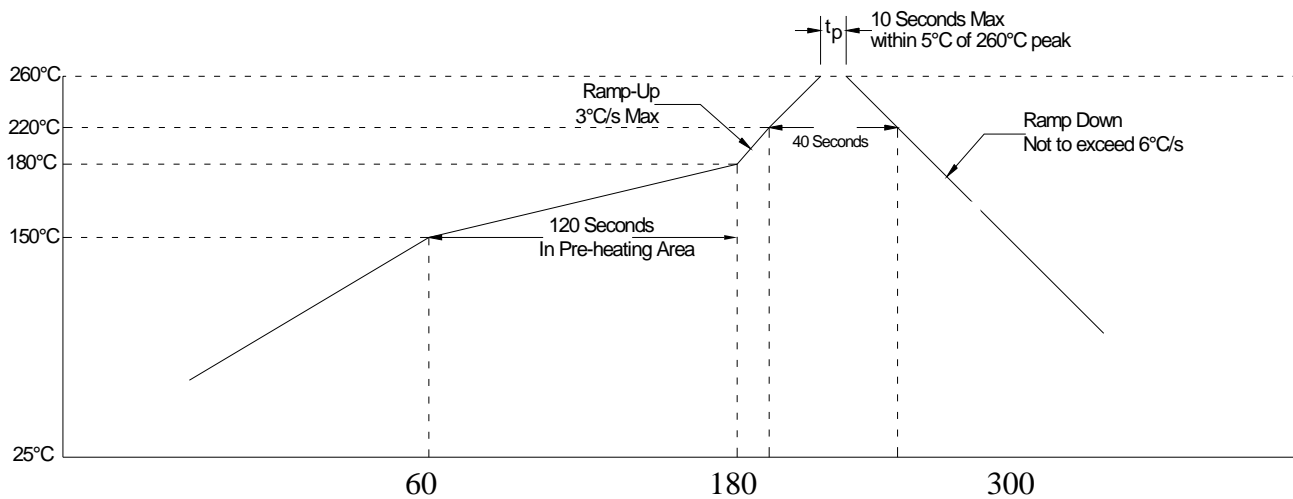
40.0

## MECHANICAL DIMENSION

### CZ-20



## SOLDERING REFLOW



<b>SPECIFICATION OF CRYSTAL</b>
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**Reliability Test** ( applicable to OSC and SMD type X'tal )

Test Items	Test Condition	Specification	
		General OSC (Note:1)	General X' tal (Note:2)
1. Gross Leak Test	FC-40 125°C/30sec	No continuous bubble	
2. Fine Leak Test	Bombing of He 5kg/cm <sup>2</sup> for 2 hours	Less than 1*10 <sup>-8</sup> atm.c.c./sec, Helium	
3. Drop Test	Free dropped a. ~19.999MHz(Fund.) → 100 cm height b. 20~29.999MHz(Fund.) → 50 cm height c. 30~ MHz(Fund.) → 20 cm height on a hard wooden board for 3 times ( board is thickness more than 30 mm)	$\Delta F \leq \pm 10\text{PPM}$ , Duty within spec.	$\Delta F \leq \pm 10\text{PPM}$ , $\Delta \text{C.I.} \leq \pm 10\text{ohms}$
4. Vibration Test	Freq. range: 10~55Hz Peak to peak amplitude:1.5mm Peak acceleration:10 G 3 direction(X,Y,Z) , each 60min.	$\Delta F \leq \pm 10\text{PPM}$ , Duty within spec.	$\Delta F \leq \pm 10\text{PPM}$ , $\Delta \text{C.I.} \leq \pm 10\text{ohms}$
5. Resistance to Soldering Test	a. IR Reflow furnace with the condition 2 times. Peak temp. 260±3°C , 10sec( Min.)	$\Delta F \leq \pm 10\text{PPM}$ , Duty within spec. For SMD OSC only	$\Delta F \leq \pm 10\text{PPM}$ , $\Delta \text{C.I.} \leq \pm 10\text{ohms}$
	b. Dip terminals in a 260±5°C solder bath for 5±0.5 sec.	At least 90% of each dipped area shall be covered by fresh solder. For DIP OSC only.	NA
6. Bending Test	Bending cycle : 1 cycle 0° -> 45° -> 0° -> 45° -> 0°	$\Delta F \leq \pm 5\text{PPM}$ , Duty within spec. For DIP OSC only.	NA
7. Share Test	Weight : 10N, Test duration : 10±1 sec	$\Delta F \leq \pm 5\text{PPM}$ , Duty within spec. For SMD OSC only.	$\Delta F \leq \pm 10\text{PPM}$ , $\Delta \text{C.I.} \leq \pm 10\text{ohms}$
8. Low Temp. Exposure Test	-40±3°C , 240±12 hrs	$\Delta F \leq \pm 10\text{PPM}$ , Duty within spec.	$\Delta F \leq \pm 10\text{PPM}$ , $\Delta \text{C.I.} \leq \pm 10\text{ohms}$
9. Aging Test	125±3°C , 240±12hrs	$\Delta F \leq \pm 10\text{PPM}$ , Duty within spec.	$\Delta F \leq \pm 10\text{PPM}$ , $\Delta \text{C.I.} \leq \pm 10\text{ohms}$
10. High Temp. & Humidity Test	+85°C±5°C & 85%±5% R.H. , 240±12 hrs	$\Delta F \leq \pm 10\text{PPM}$ , Duty within spec.	$\Delta F \leq \pm 10\text{PPM}$ , $\Delta \text{C.I.} \leq \pm 10\text{ohms}$
11. Temperature Cycling Test	-40±3°C/15±3min ~ +85±3°C/15±3min 15cycles	$\Delta F \leq \pm 10\text{PPM}$ , Duty within spec.	$\Delta F \leq \pm 10\text{PPM}$ , $\Delta \text{C.I.} \leq \pm 10\text{ohms}$

Note:1 → For communication application the spec. demanded " $\Delta F \leq \pm 5\text{ PPM}$ , Duty within spec."

Note:2 → For communication application the spec. demanded " $\Delta F \leq \pm 5\text{ PPM}$ ,  $\Delta \text{C.I.} \leq \pm 5\text{ ohms}$ "



### **Pb-free compliance**

Component and Assembly Pb content shall be less than 0.1% by weight of the device (in accordance with IPC/EIA J-STD-006) and shall not be intentionally introduced.

### **Product Information**

For a product to be **RoHS** compliant, it must satisfy several conditions:

- Contain no more than the specified limits of the target hazardous substances set out in the RoHS Directive
- Able to withstand Pb-free 260°C solder reflow profile below
- External packaging and terminations are Pb-free
- Internal PCB, components, solders, and terminations are Pb-free