

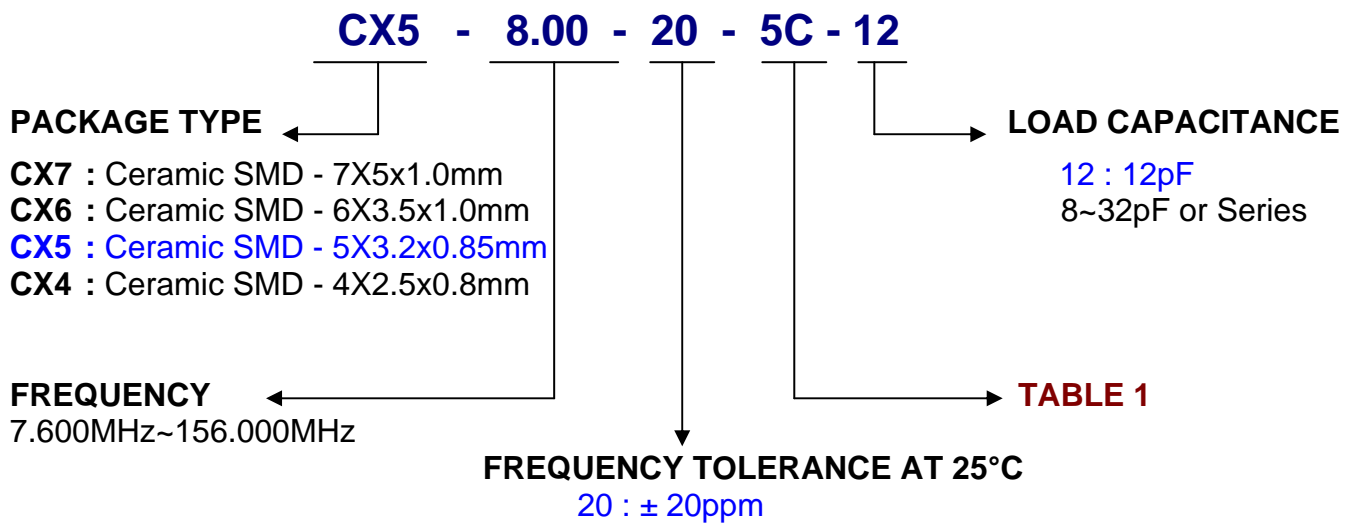
CX Series Ceramic SMD Crystal



- Four pad ceramic surface mount package
- AT cut
- Tight tolerance / stability
- Using highly reliable seam weld method
- Tape and reel available, automatic mountable



PART NUMBER GUIDE



ELECTRICAL SPECIFICATIONS

MODEL	CX
Frequency Range	8.000MHz (Fundamental)
Operating Temperature Range	-0 to +70°C
Storage Temperature Range	-55 to +125°C
Frequency Tolerance (at 25°C)	±20ppm
Frequency Stability over Operating Temperature Range	±20ppm
Load Capacitance (CL)	12pF
Drive Level	100µW Typ. , 300µW Max.
Equivalent Series Resistance (ESR)	Less than 100 ohms
Shunt Capacitance (Co)	5.0pF Max
Aging (at 25°C)	±2ppm/year Max
Shunt Capacitance (Co)	More than 500Mohms at DC100V

E.S.R (Equivalent Series Resistance)

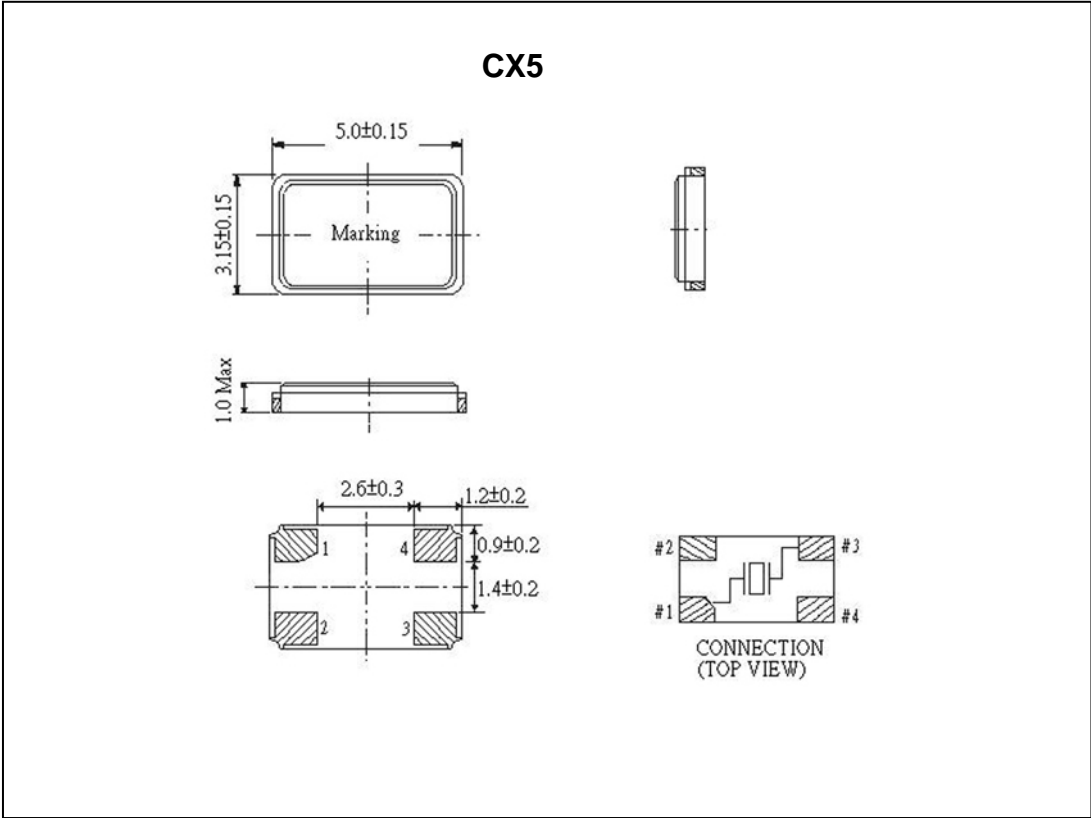
Frequency Range (MHz)	ESR (Ohms Max)	Mode of Oscillation	Package
4.000 ~ 5.9	300	Fundamental	CX7
6.000 ~ 11.999	60 / 100 / 100	Fundamental	CX7 / CX6 / CX5
12.000 ~ 13.999	60 / 50 / 50 / 50	Fundamental	CX7 / CX6 / CX5 / CX4
14.000 ~ 39.999	50 / 60 / 40 / 40	Fundamental	CX7 / CX6 / CX5 / CX4
40.000 ~ 59.999	60 / 80 / 70 / 30	Fundamental	CX7 / CX6 / CX5 / CX4
60.000 ~ 69.999	60 / 80 / 60 / 50	3rd Overtone	CX7 / CX6 / CX5
70.000 ~ 99.999	60 / 50 / 60	3rd Overtone	CX7 / CX6 / CX5
100.000 ~ 125.000	50 / 50 / 60	3rd Overtone	CX7 / CX6 / CX5

* : Available

TABLE 1

FREQUENCY STABILITY VS. TEMPERATURE RANGE									
Stability Temp		±5	±7.5	±10	±15	±20	±30	±50	±100
		1	2	3	4	5	6	7	8
-10~+60°C	A	*	*	*	*	*	*	*	*
-20~+60°C	B		*	*	*	*	*	*	*
0~+70°C	C		*	*	*	*	*	*	*
-10~+70°C	D		*	*	*	*	*	*	*
-20~+70°C	E		*	*	*	*	*	*	*
-30~+60°C	F			*	*	*	*	*	*
-20~+85°C	G				*	*	*	*	*
-30~+70°C	H					*	*	*	*
-30~+85°C	I					*	*	*	*
-40~+85°C	J					*	*	*	*
-40~+90°C	K						*	*	*
-40~+105°C	L						*	*	*

MECHANICAL DIMENSION

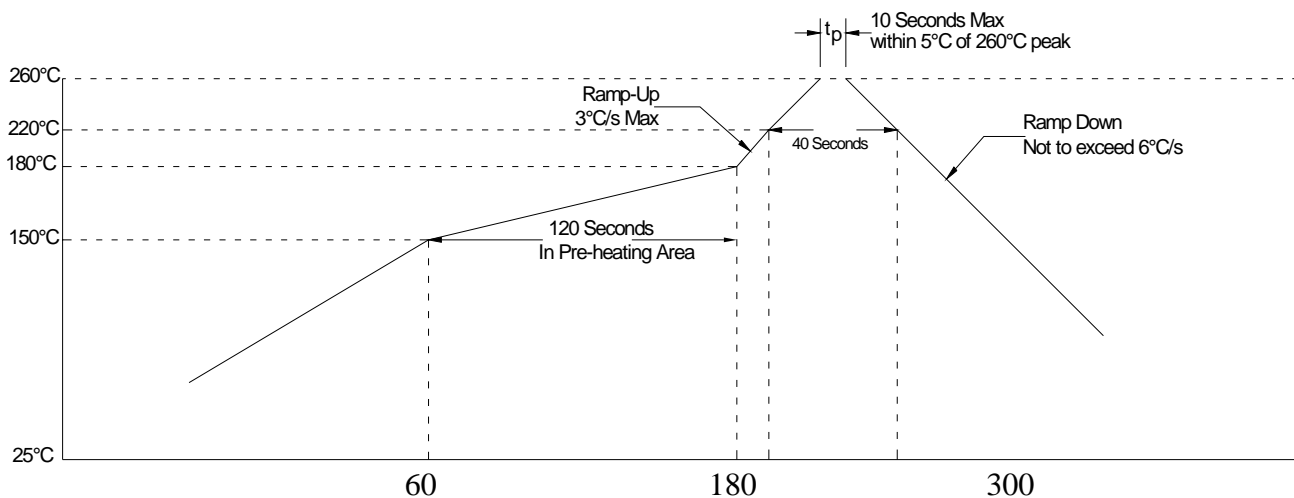


MARKING

8.00
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SPECIFICATION OF CRYSTAL

Soldering reflow



RoHS and REACH Regulation



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

REACH Regulation (EC) 1907/2006

Above concerned part is compliant with all requirements in the REACH regulations EC No. 1907/2006.

SPECIFICATION OF CRYSTAL

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 ² for 2 hours	Less than 1*10 ⁻⁸ 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 " $\Delta F \leq \pm 5\text{ PPM}$, $\Delta \text{C.I.} \leq \pm 5\text{ ohms}$ "