

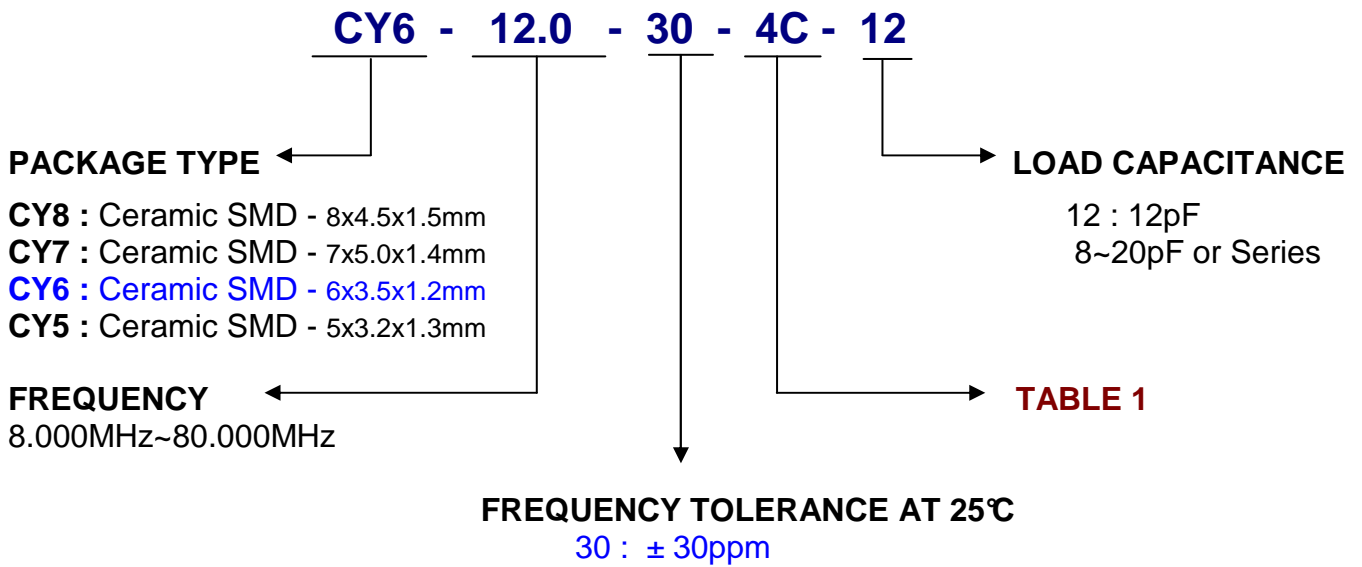


## CY Series 2 pads - Glass sealed ceramic SMD package



- Ultra thin, thickness 1.0mm
- Two pad ceramic surface mount package
- Tight tolerance / stability
- Bluetooth, LoRa, Wifi, GPS....
- Excellent solderability
- Low cost performance

### PART NUMBER GUIDE



### ELECTRICAL SPECIFICATIONS

MODEL	CY6
Frequency Range	12.000MHz
Operating Temperature Range	-20 to +70°C
Storage Temperature Range	-55 to +125°C
Frequency Tolerance (at 25°C)	±30ppm
Frequency Stability over Operating Temperature Range	±30ppm
Load Capacitance (CL)	12pF
Drive Level	100µW
Shunt Capacitance (Co)	5pF Max
Test Circuit	S&A 250A
Aging (at 25°C)	±3ppm/year Max
Insulation Resistance	500 MΩ Min at 100VDC

**E.S.R (Equivalent Series Resistance)**

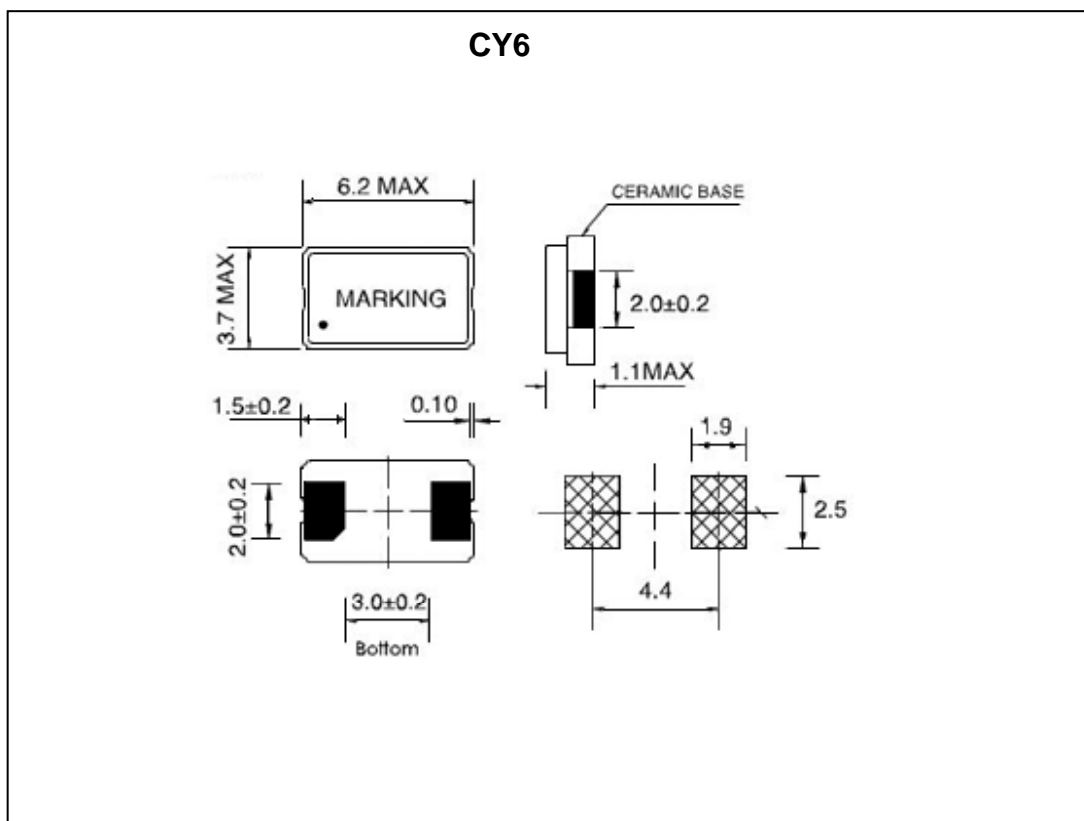
Frequency Range (MHz)	ESR (Max)	Mode of Oscillation	Package
6.000 ~ 8.000	70	Fundamental	CY7
8.000 ~ 10.000	70 / 70 / 70 / 60	Fundamental	CY8 / CY7 / CY6 / CY5
10.000 ~ 30.000	40 / 40 / 40 / 60	Fundamental	CY8 / CY7 / CY6 / CY5
30.000 ~ 40.000	45	Fundamental	CY5
30.000 ~ 45.000	60 / 60 / 70 / 45	3rd Overtone	CY8 / CY7 / CY6
45.000 ~ 80.000	50 / 50 / 50	Fundamental	CY8 / CY7 / CY6
30.000 ~ 80.000	80	3rd Overtone	CY5

**TABLE 1**

\* : Available

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

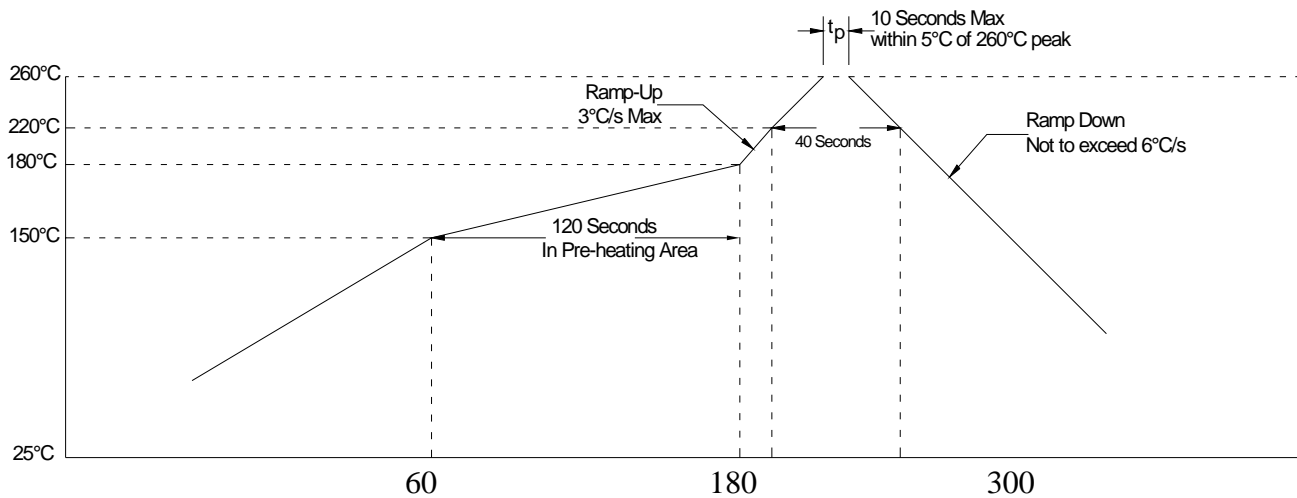
## MECHANICAL DIMENSION



MARKING

12.0  
ASK

## SOLDERING REFLOW PROFILE



## 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
- 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 requirement in the REACH regulations EC No. 1907/2006.

<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 " $\Delta F \leq \pm 5\text{ PPM}$ ,  $\Delta \text{C.I.} \leq \pm 5\text{ ohms}$ " .