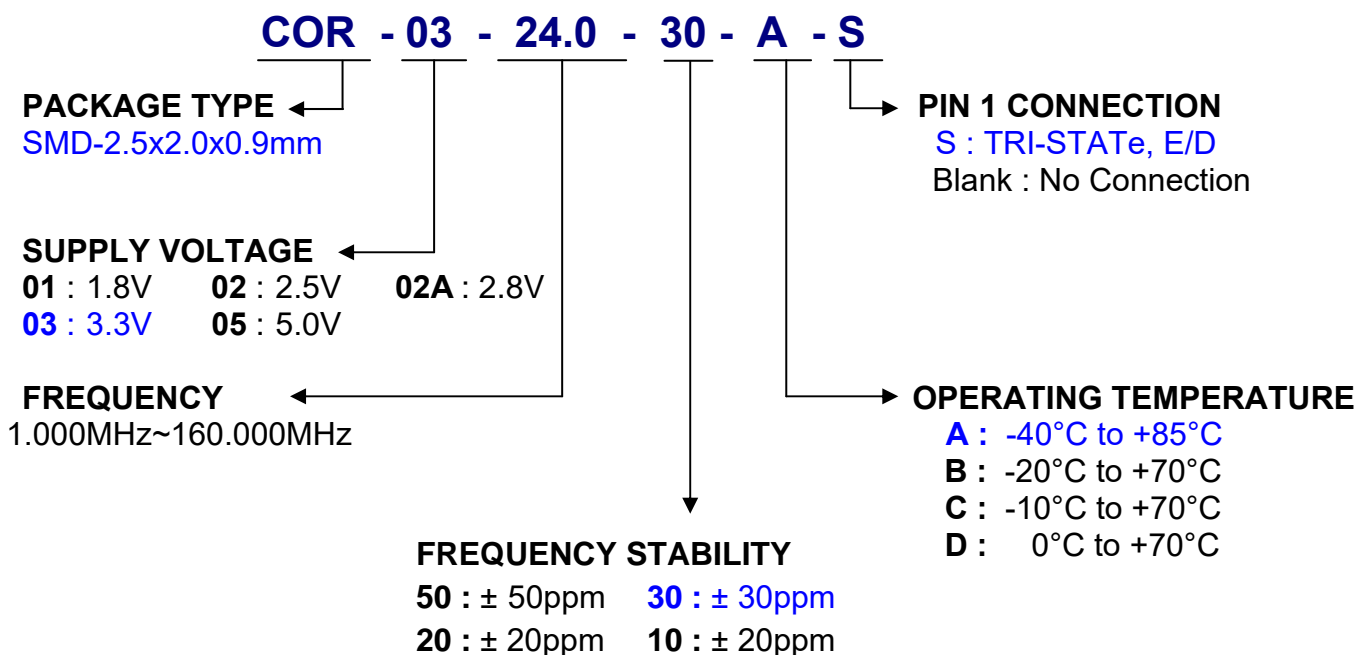


## COR Series Ceramic SMD Oscillator



- Ultra-thin, thickness (0.9mm)
- CMOS Output
- 1.8V to 5.0V supply voltage
- Stability to  $\pm 10\text{ppm}$
- Tri-state function available

### PART NUMBER GUIDE



### ELECTRICAL SPECIFICATIONS

MODEL	COR
Frequency Range	24.000MHz
Frequency Tolerance / Stability	$\pm 30\text{ppm}$
Operating Temperature Range	-40°C to +85°C
Storage Temperature Range	-55°C to +125°C
Supply Voltage (VDD)	3.3V $\pm 5\%$
Current consumption	10mA Max.
Load	15pf
Output Level	CMOS
Output Voltage Logic High (VOH)	0.9VDD Min.
Output Voltage Logic Low (VOL)	0.1VDD Max.
Start up Time	5ms Max.
Rise / Fall Time	5ns Max.
Output Symmetry	45~55 % (at 50% VDD)
Aging (at 25°C)	$\pm 3\text{ppm}/\text{year}$ Max.
Min. Packing	3000pcs/ Reel

**MECHANICAL DIMENSION**

**COR**

The top view shows a square component with a width of  $2.5 \pm 0.1$  and a height of  $2.0 \pm 0.1$ . A marking is located in the bottom-left corner. The side view shows a thickness of  $1.0$  Max.

The top view also shows four pins labeled #1, #2, #3, and #4. Pin #1 is at the bottom-left, #2 at the bottom-right, #3 at the top-right, and #4 at the top-left. The distance from the left edge to the center of pin #4 is  $0.8 \pm 0.1$ . The distance between the centers of pins #1 and #2 is  $0.9 \pm 0.1$ . The height of the pins is  $0.6$ .

(Top View)

**PIN CONNECTION**

- 1 STANDBY CON
- 2 GND
- 3 OUTPUT
- 4 VDD

Pin 1	Output
H/Floating	Enable
L	Standby

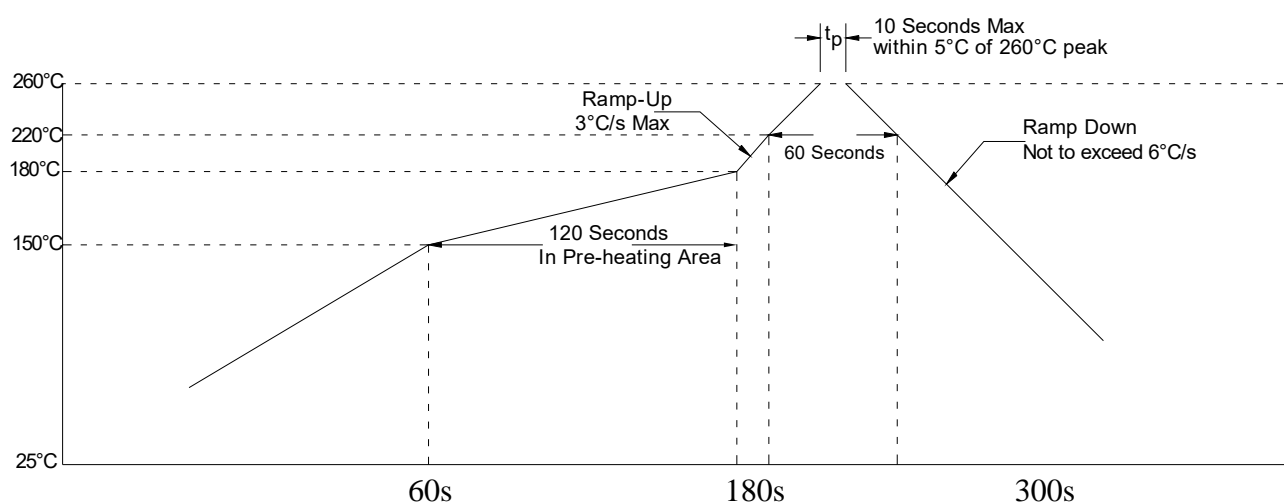
**TEST CIRCUIT**

The test circuit diagram shows a power supply connected to pin 4 (VDD) through an ammeter (A) and a voltmeter (V). A  $0.1\mu\text{F}$  capacitor is connected between pins 4 and 2 (GND). Pin 1 (Standby Con) is connected to the power supply through a switch labeled "No connect or INH". Pin 3 (Output) is connected to a load capacitor (CL) and an oscilloscope. Pin 2 (GND) is also connected to the oscilloscope and a frequency counter.

The timing diagram shows the output signal on pin 3. The "1" level is at 90% and the "0" level is at 10% relative to 0VDC. The rise time ( $T_r$ ) and fall time ( $T_f$ ) are indicated. The signal transitions between 40% min. and 60% max. levels.

## SPECIFICATION OF CRYSTAL

### Soldering reflow



### 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, European ROHS 3 Directive (EU) 2015/865).

### 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

### EACH 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 )

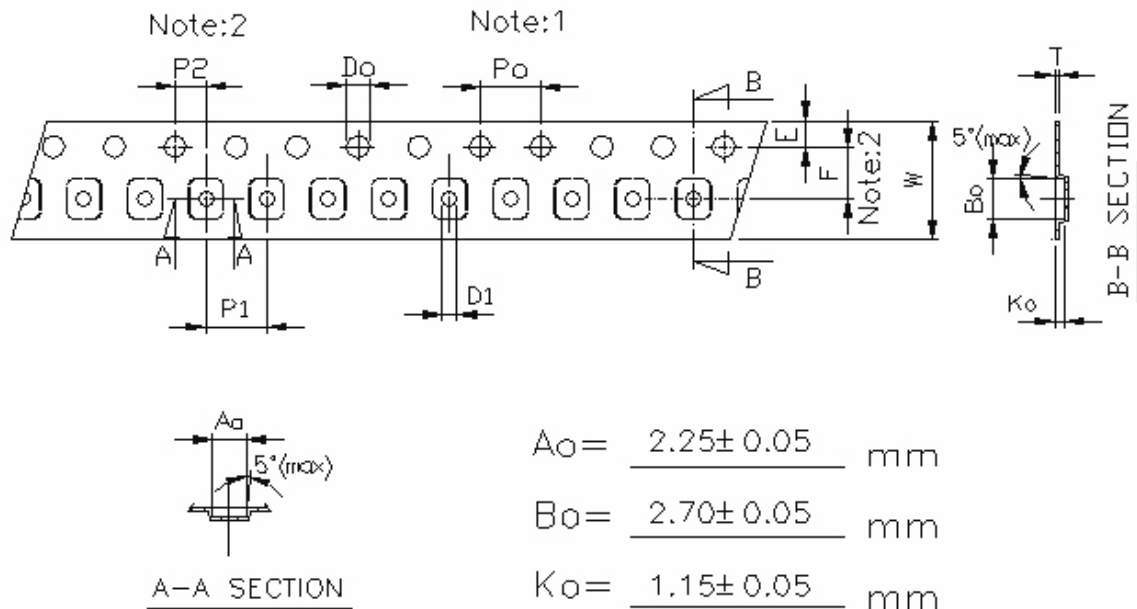
Test Items	Test Condition	Specification	
		General OSC (Note:1)	General X' tal (Note:2)
1. Gross Leak Test	FC-40 125°C/30sec	No continuous bubble	
2. Fine Leak Test	Bombing of He 5kg/cm <sup>2</sup> for 2 hours	Less than 1*10 <sup>-8</sup> atm.c.c./sec, Helium	
3. Drop Test	Free dropped a. ~19.999MHz(Fund.) →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.	$\Delta F \leq \pm 10\text{PPM}$ , $\Delta C.I. \leq \pm 10\text{ohms}$
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.	$\Delta F \leq \pm 10\text{PPM}$ , $\Delta C.I. \leq \pm 10\text{ohms}$
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	$\Delta F \leq \pm 10\text{PPM}$ , $\Delta C.I. \leq \pm 10\text{ohms}$
	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.	$\Delta F \leq \pm 10\text{PPM}$ , $\Delta C.I. \leq \pm 10\text{ohms}$
8. Low Temp. Exposure Test	-40±3°C, 240±12 hrs	$\Delta F \leq \pm 10\text{PPM}$ , Duty within spec.	$\Delta F \leq \pm 10\text{PPM}$ , $\Delta C.I. \leq \pm 10\text{ohms}$
9. Aging Test	125±3°C, 240±12hrs	$\Delta F \leq \pm 10\text{PPM}$ , Duty within spec.	$\Delta F \leq \pm 10\text{PPM}$ , $\Delta C.I. \leq \pm 10\text{ohms}$
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.	$\Delta F \leq \pm 10\text{PPM}$ , $\Delta C.I. \leq \pm 10\text{ohms}$
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.	$\Delta F \leq \pm 10\text{PPM}$ , $\Delta C.I. \leq \pm 10\text{ohms}$

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

**TAPE & REEL SPECIFICATIONS**

**Tape Dimensions (unit : mm)**



Unit: mm

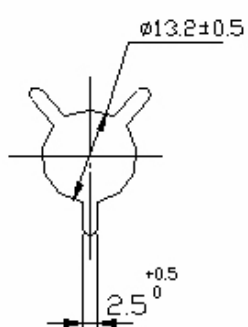
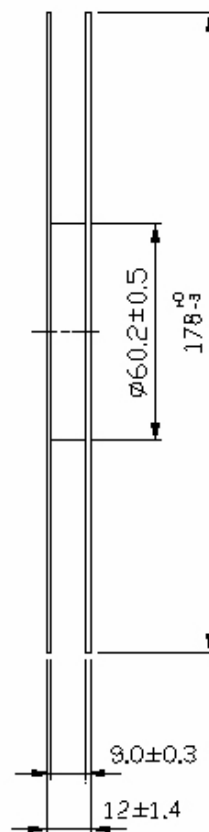
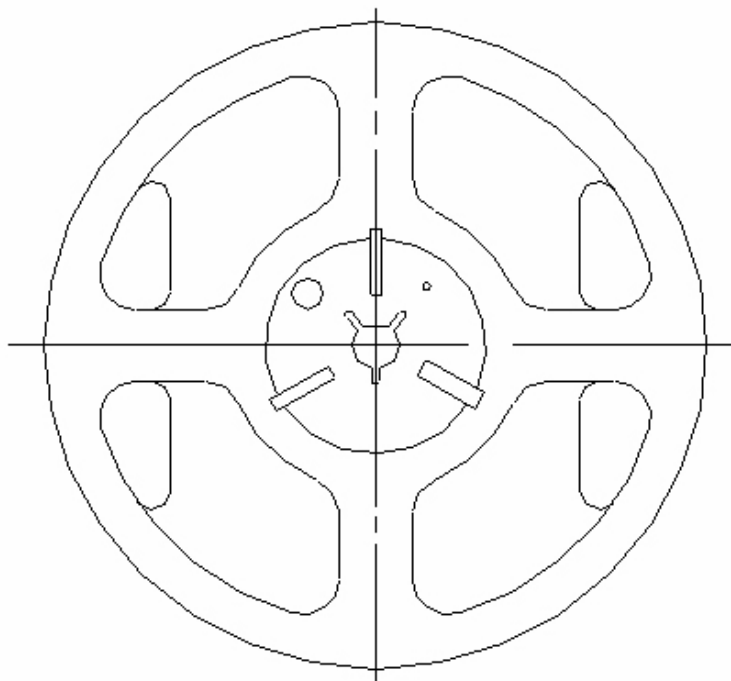
Symbol	Spec.
K1	—
Po	4.0±0.10
P1	4.0±0.10
P2	2.0±0.05
Do	1.55±0.05
D1	1.10±0.10
E	1.75±0.10
F	3.50±0.05
10Po	40.0±0.20
W	8.0±0.20
T	0.25±0.05

**Notice:**

1. Sprocket hole pitch cumulative tolerance is ±0.12mm
2. Pocket position relative to sprocket hole measured as true position of pocket not pocket hole.
3.  $A_0$  &  $B_0$  measured on a place 0.3mm above the bottom of the pocket to top surface of the carrier.
4.  $K_0$  measured from a plane on the inside bottom of the pocket to the top surface of the carrier.
5. Carrier camber shall be not than 1mm per 100mm through a length of 250mm.

TAPE & REEL SPECIFICATIONS

Reel Dimensions (unit : mm)



Unit:mm

Q'ty:2,500.pcs/reel