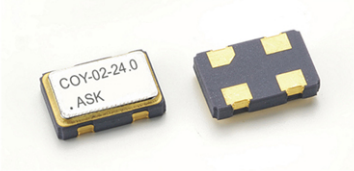
# CRYSTAL OSCILLATORS

ASK

## COY Series Ceramic SMD Oscillator




- Ceramic SMD package
- 1.8V to 5.0V supply voltage
- HCMOS/TTL Output
- Stability to ±10ppm
- Suitable for reflow soldering

RoHS

## PART NUMBER GUIDE

**COY-05 - 10.0 - 20 - A - S**

**PACKAGE TYPE**
COY-05 : SMD - 5.0x3.2x1.2mm (5.0V)
COY-03 : SMD - 5.0x3.2x1.2mm (3.3V)
COY-03A : SMD - 5.0x3.2x1.2mm (3.0V)
COY-03M : SMD - 5.0x3.2x1.2mm (1.8V ~3.3V)
COY-02 : SMD - 5.0x3.2x1.2mm (2.5V)
COY-02A : SMD - 5.0x3.2x1.2mm (2.8V)
COY-01 : SMD - 5.0x3.2x1.2mm (1.8V)

**FREQUENCY**
1.000MHz~156.000MHz

**FREQUENCY STABILITY**
20 : ± 20ppm

**OPERATING TEMPERATURE**
A : -40°C to +85°C
B : -20°C to +70°C
C : -10°C to +70°C
D : 0°C to +70°C

**PIN 1 CONNECTION**
S : TRI-STATe, E/D
Blank : No Connection

## ELECTRICAL SPECIFICATIONS

| MODEL | COY-05 |
|---|---|
| Frequency Range | 10.00MHz (AT Cut, Fundamental) |
| Frequency Tolerance / Stability | ±20ppm |
| Operating Temperature Range | -40°C to +85°C |
| Storage Temperature Range | -55°C to +125°C |
| Supply Voltage (VDD) | 5.0VDC ±10% |
| 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) |
| Phase jitter (integrated 10KHz ~ 20Mhz) | 1ps RMS |
| Peak to peak jitter | 50ps Max. |
| Aging (at 25℃) | ±3ppm/ year Max. |
| Min. Packing | 1000pcs/ Reel |

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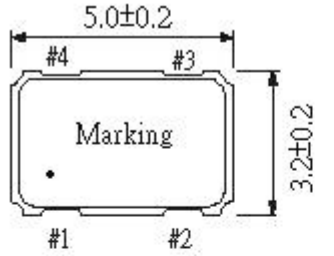
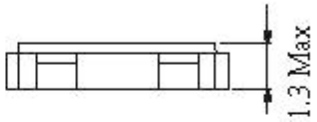
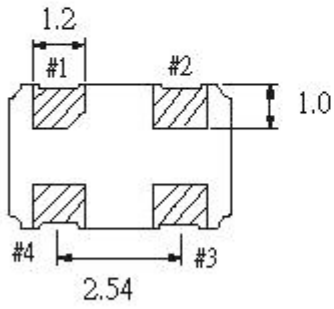
## MECHANICAL DIMENSION

### COY



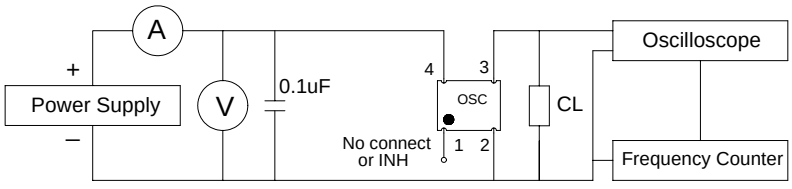



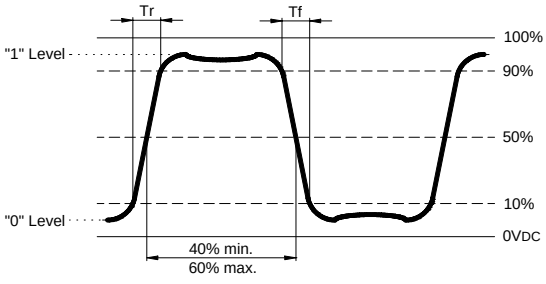




Pin Assignment
#1 STANDBY CON
#2 GND
#3 OUTPUT
#4 VDD

| Pin 1 | Output |
|---|---|
| H/Floating | Enable |
| L | Standby |

## TEST CIRCUIT



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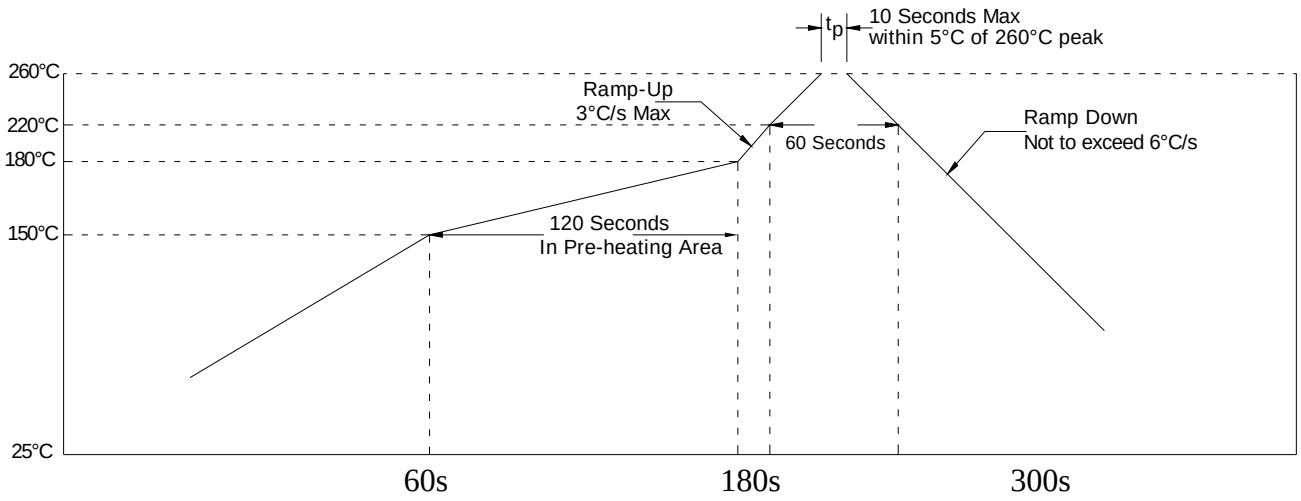
# SPECIFICATION OF CRYSTAL OSCILLATOR

## 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 rquirement in the REACH regultaions EC No. 1907/2006.

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# SPECIFICATION OF CRYSTAL OSCILLATOR

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

**Note:1** → For communication application the spec. demanded **"△F≦±5 PPM, Duty within spec."** 。

**Note:2** → For communication application the spec. demanded **"△F≦±5 PPM, △C.I.≦±5 ohms "** 。

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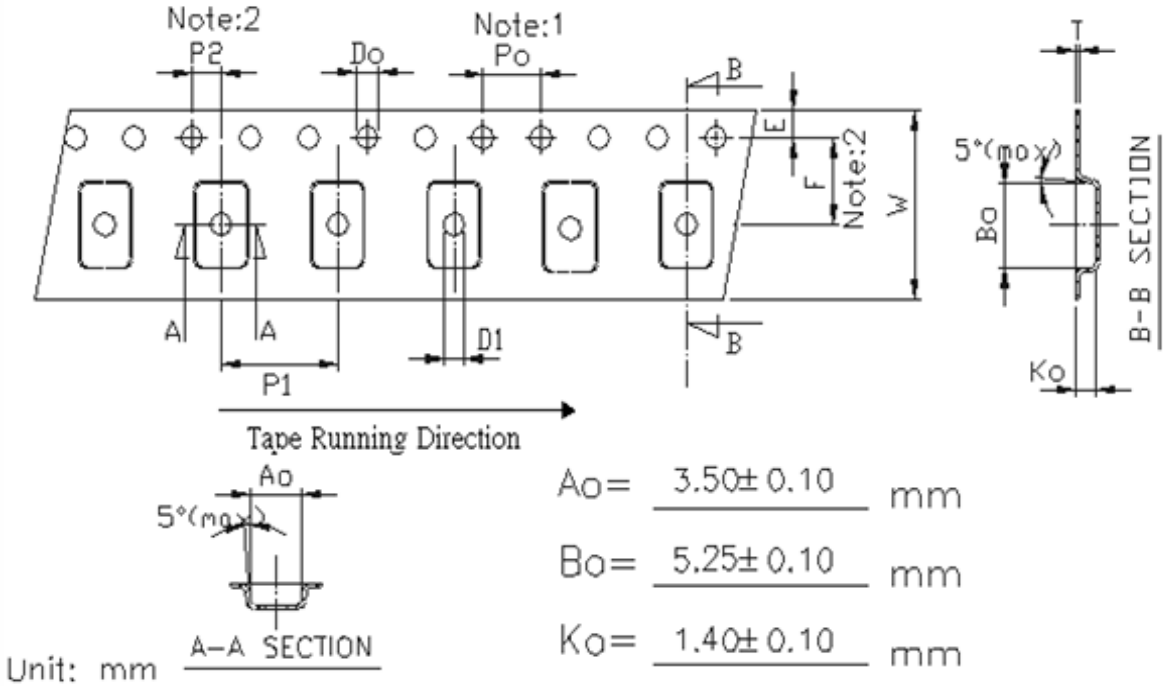
# SPECIFICATION OF TAPE & REEL

**Taping**




Ao= 3.50± 0.10 mm

Bo= 5.25± 0.10 mm

Ko= 1.40± 0.10 mm

Unit: mm

| Symbol | Spec. |
|---|---|
| K1 | – |
| Po | 4.0± 0.10 |
| P1 | 8.0± 0.10 |
| P2 | 2.0± 0.05 |
| Do | 1.55± 0.05 |
| D1 | 1.50(MIN) |
| E | 1.75± 0.10 |
| F | 5.50± 0.05 |
| 10Po | 40.0± 0.10 |
| W | 12.0± 0.20 |
| T | 0.30± 0.05 |

Notice:

1. 10 Sprocket hole pitch cumulative tolerance is ±0.1mm
2. Pocket position relative to sprocket hole measured as true position of pocket not pocket hole.
3. Ao & Bo measured on a place 0.3mm above the bottom of the pocket to top surface of the carrier.
4. Ko 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.

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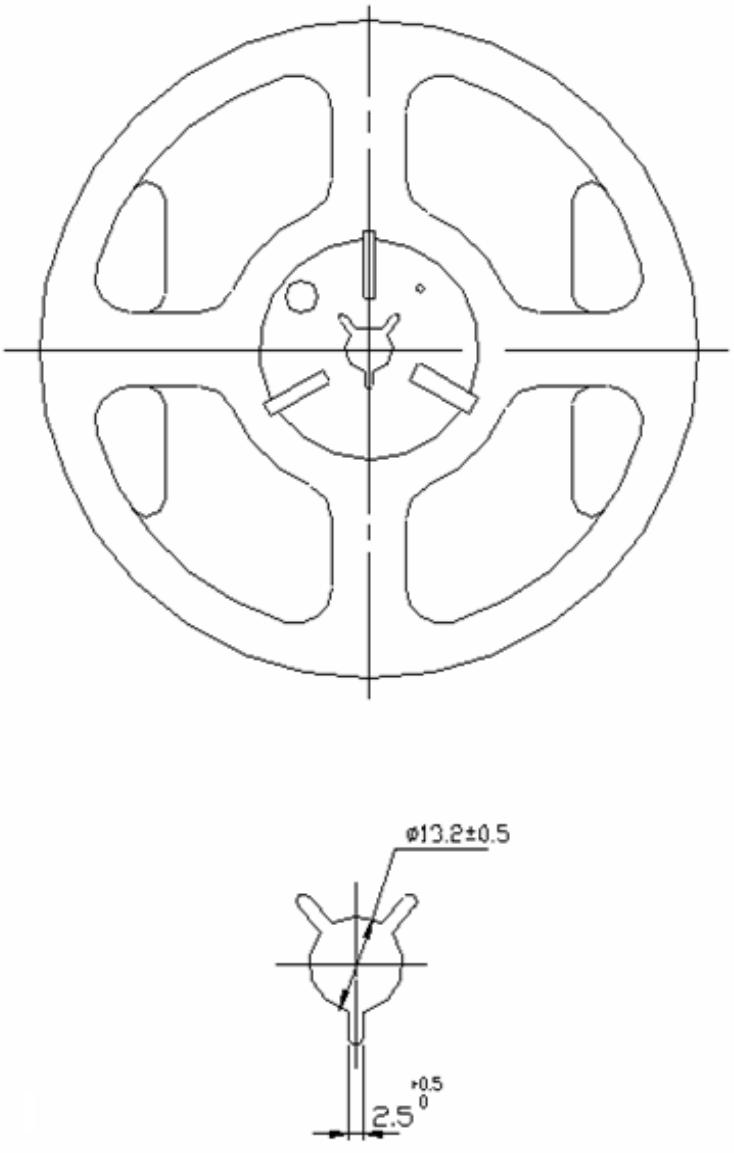
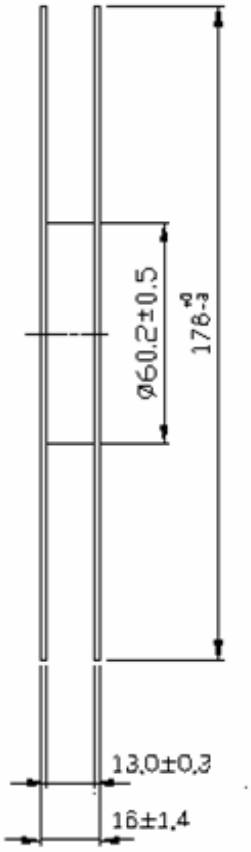
# SPECIFICATION OF TAPE & REEL

**Reel**




Unit:mm

Q'ty:1000pcs/reel