

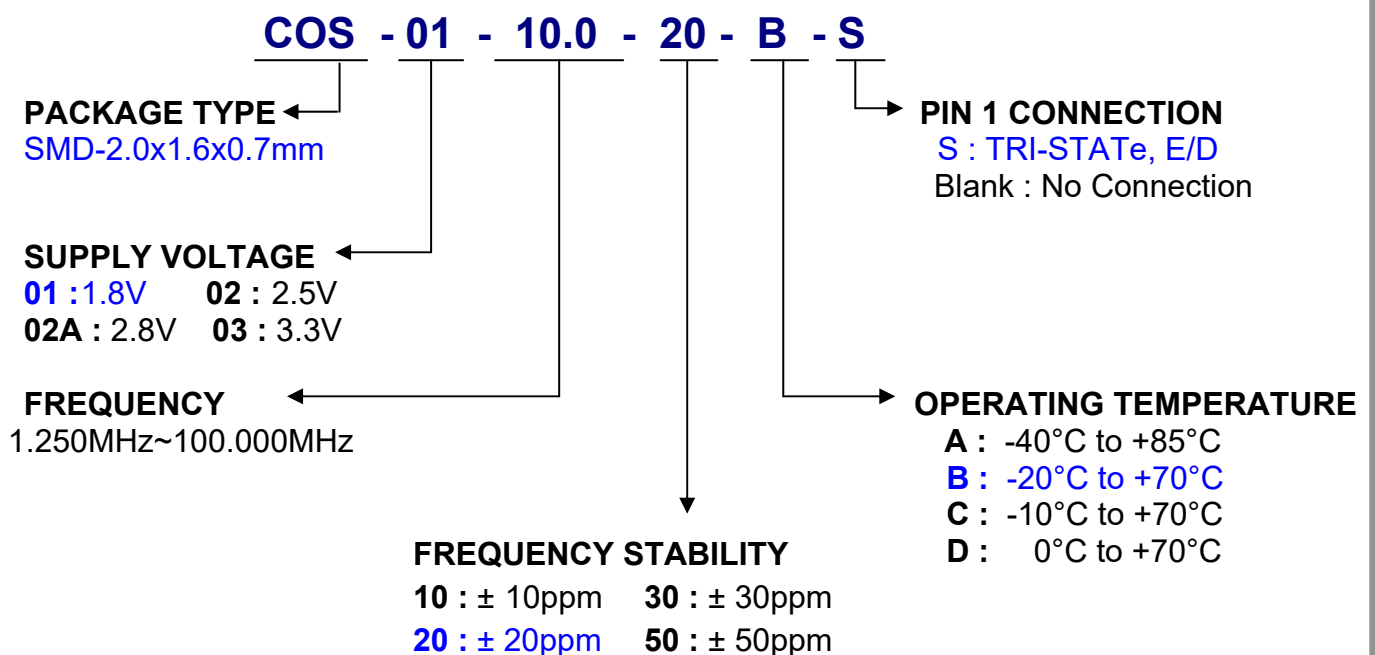


COS Series Ceramic SMD Oscillator



- Ultra-thin, thickness (0.7mm)
- CMOS Output
- 0.8V to 3.6V supply voltage
- Stability to $\pm 10\text{ppm}$
- Tri-state function available

PART NUMBER GUIDE



ELECTRICAL SPECIFICATIONS

MODEL	COS
Frequency Range	10.000MHz
Frequency Tolerance / Stability	$\pm 20\text{ppm}$
Operating Temperature Range	-20°C to +70°C
Storage Temperature Range	-55°C to +125°C
Supply Voltage (VDD)	1.8V $\pm 5\%$
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)	$\pm 2\text{ppm}$, 1st Year.
Min. Packing	3000pcs/ Reel

MECHANICAL DIMENSION

COS

Top View Dimensions: 2.0 ± 0.1 (width), 1.6 ± 0.1 (height). Marking: A small dot is located in the bottom-left corner of the square.

Side View Dimension: 0.7 ± 0.1 (height).

Bottom View Dimensions: Pin #1 width 0.6 ± 0.1 , Pin #2 width 0.6 ± 0.1 , Pin #3 width 0.7 ± 0.1 , Pin #4 width 0.7 ± 0.1 . Pin #1 to #2 distance 0.5 ± 0.1 , Pin #2 to #3 distance 0.5 , Pin #3 to #4 distance 0.5 ± 0.1 .

(BOTTOM VIEW)

Pin Assignment

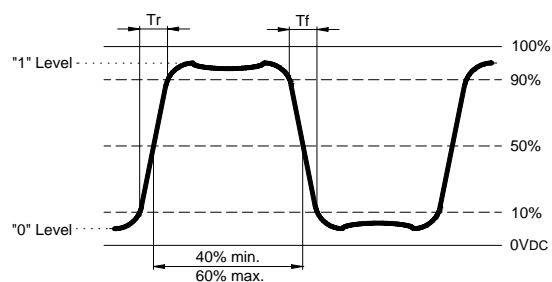
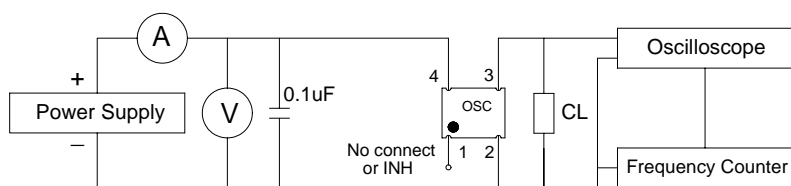
- #1 Standby Con.
- #2 Gnd
- #3 Output
- #4 Vdd

Pin 1	Output
H/Floating	Enable
L	Standby

Recommended Soldering Pattern

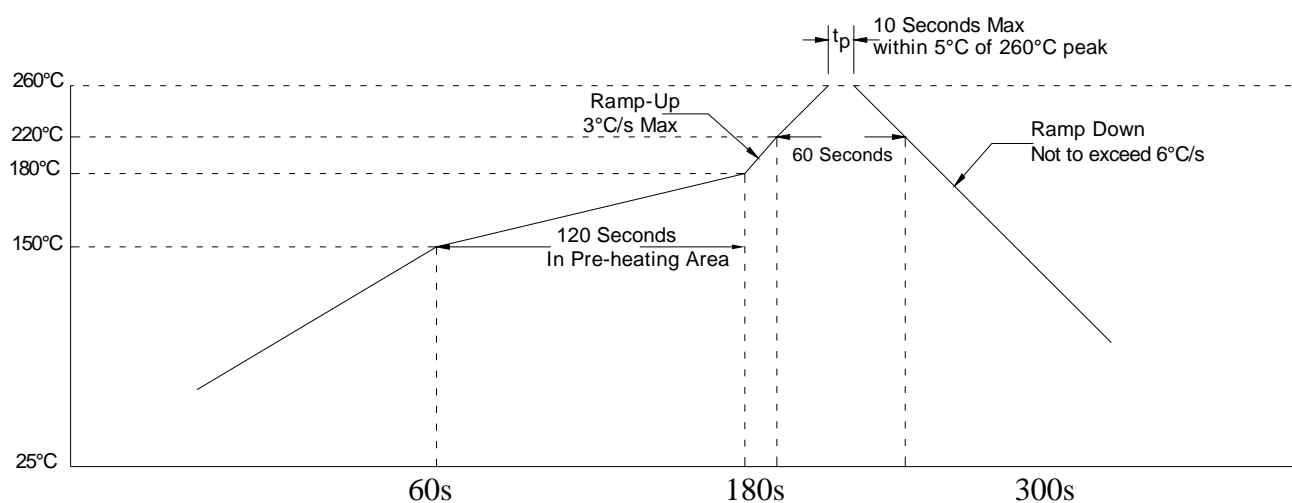
Soldering Pattern Dimensions: Pin #1 width 0.9 , Pin #2 width 0.5 , Pin #3 width 0.9 . Pin #1 to #2 distance 0.80 , Pin #2 to #3 distance 0.30 , Pin #3 to #4 distance 0.80 .

TEST CIRCUIT



CRYSTAL OSCILLATOR SPECIFICATION

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
- External packaging and terminations are Pb-free
- Internal PCB, components, solders, and terminations are Pb-free

CRYSTAL OSCILLATOR SPECIFICATION

Reliability Test (applicable to OSC and SMD type X'tal)

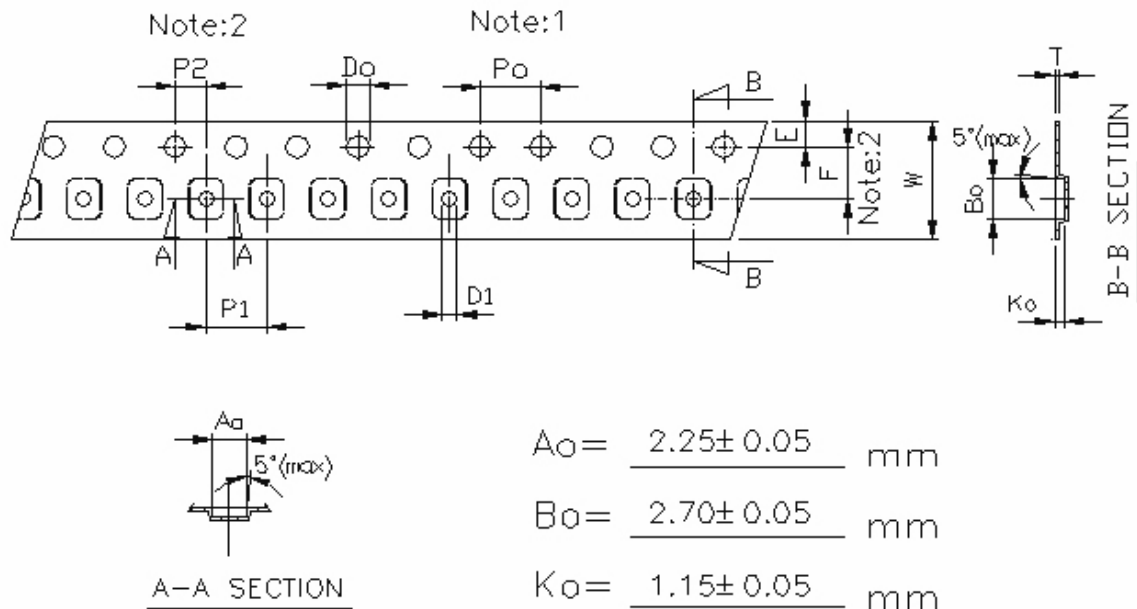
Test Items	Test Condition	Specification	
		General OSC (Note:1)	General X' tal (Note:2)
1. Gross Leak Test	FC-40 125°C/30sec	No continuous bubble	
2. Fine Leak Test	Bombing of He 5kg/cm ² for 2 hours	Less than 1*10 ⁻⁸ atm.c.c./sec, Helium	
3. Drop Test	Free dropped a. ~19.999MHz(Fund.) →100 cm height 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)	ΔF ≤ ± 10PPM , Duty within spec.	ΔF ≤ ±10PPM , ΔC.I. ≤ ±10ohms
4. Vibration Test	Freq. range: 10~55Hz Peak to peak amplitude:1.5mm Peak acceleration:10 G 3 direction(X,Y,Z) , each 60min.	ΔF ≤ ± 10PPM , Duty within spec.	ΔF ≤ ±10PPM , ΔC.I. ≤ ±10ohms
5. Resistance to Soldering Test	a. IR Reflow furnace with the condition 2 times. Peak temp. 260±3°C , 10sec(Min.)	ΔF ≤ ±10PPM , Duty within spec. For SMD OSC only	ΔF ≤ ±10PPM , ΔC.I. ≤ ±10ohms
	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°	ΔF ≤ ±5PPM , Duty within spec. For DIP OSC only.	NA
7. Share Test	Weight : 10N, Test duration : 10±1 sec	ΔF ≤ ±5PPM , Duty within spec. For SMD OSC only.	ΔF ≤ ±10PPM , ΔC.I. ≤ ±10ohms
8. Low Temp. Exposure Test	-40±3°C , 240±12 hrs	ΔF ≤ ±10PPM , Duty within spec.	ΔF ≤ ±10PPM , ΔC.I. ≤ ±10ohms
9. Aging Test	125±3°C , 240±12hrs	ΔF ≤ ±10PPM , Duty within spec.	ΔF ≤ ±10PPM , ΔC.I. ≤ ±10ohms
10. High Temp. & Humidity Test	+85°C±5°C & 85%±5% R.H. , 240±12 hrs	ΔF ≤ ±10PPM , Duty within spec.	ΔF ≤ ±10PPM , ΔC.I. ≤ ±10ohms
11. Temperature Cycling Test	-40±3°C/15±3min ~ +85±3°C/15±3min 15cycles	ΔF ≤ ±10PPM , Duty within spec.	ΔF ≤ ±10PPM , ΔC.I. ≤ ±10ohms

Note:1 → For communication application the spec. demanded "ΔF ≤ ±5 PPM, Duty within spec." .

Note:2 → For communication application the spec. demanded "ΔF ≤ ±5 PPM, ΔC.I. ≤ ±5 ohms" .

TAPE & REEL SPECIFICATIONS

Tape Dimensions (unit : mm)



Unit: mm

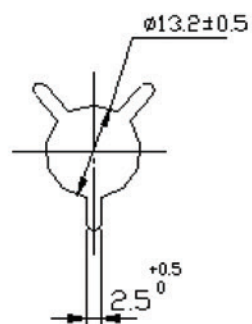
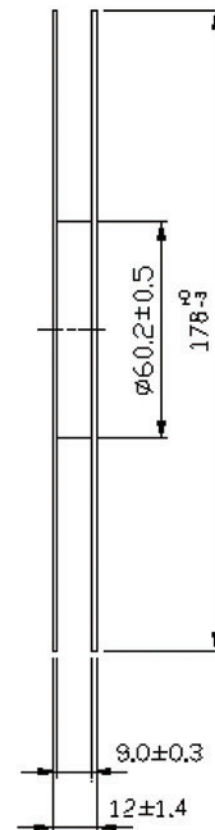
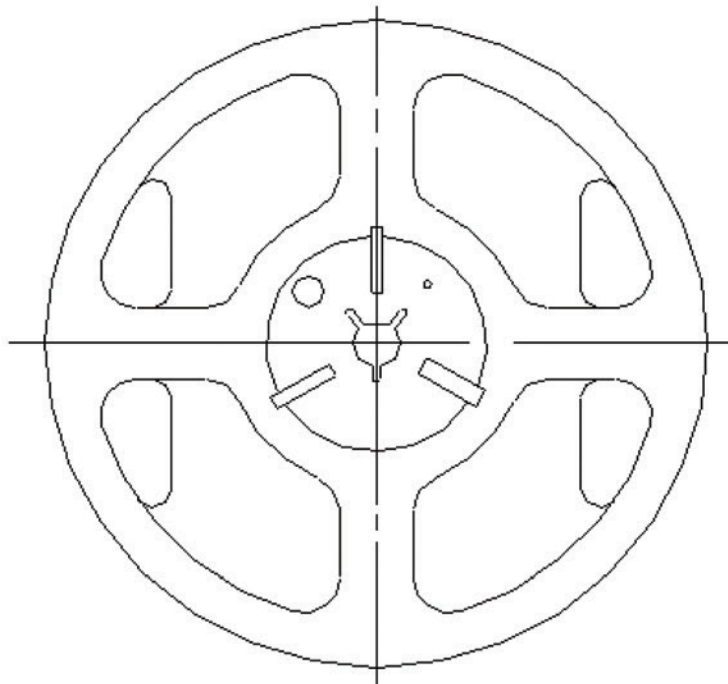
Symbol	Spec.
K1	—
Po	4.0±0.10
P1	4.0±0.10
P2	2.0±0.05
Do	1.55±0.05
D1	1.10±0.10
E	1.75±0.10
F	3.50±0.05
10Po	40.0±0.20
W	8.0±0.20
T	0.25±0.05

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 plane 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

Qty:3000pcs/reel