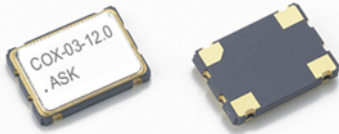
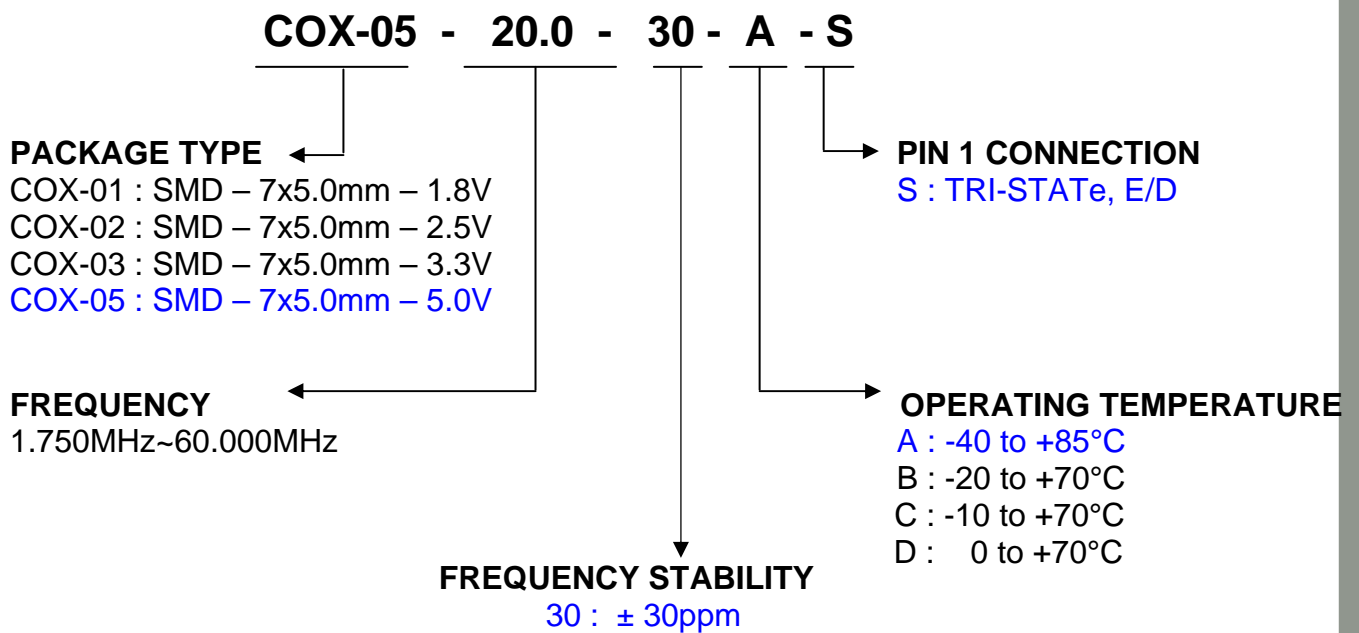


COX Series Ceramic SMD Oscillator



- Ceramic SMD package
- HCMOS/TTL Output
- Stability to ± 20 ppm
- Tri-state function available
- Reflow soldering is possible

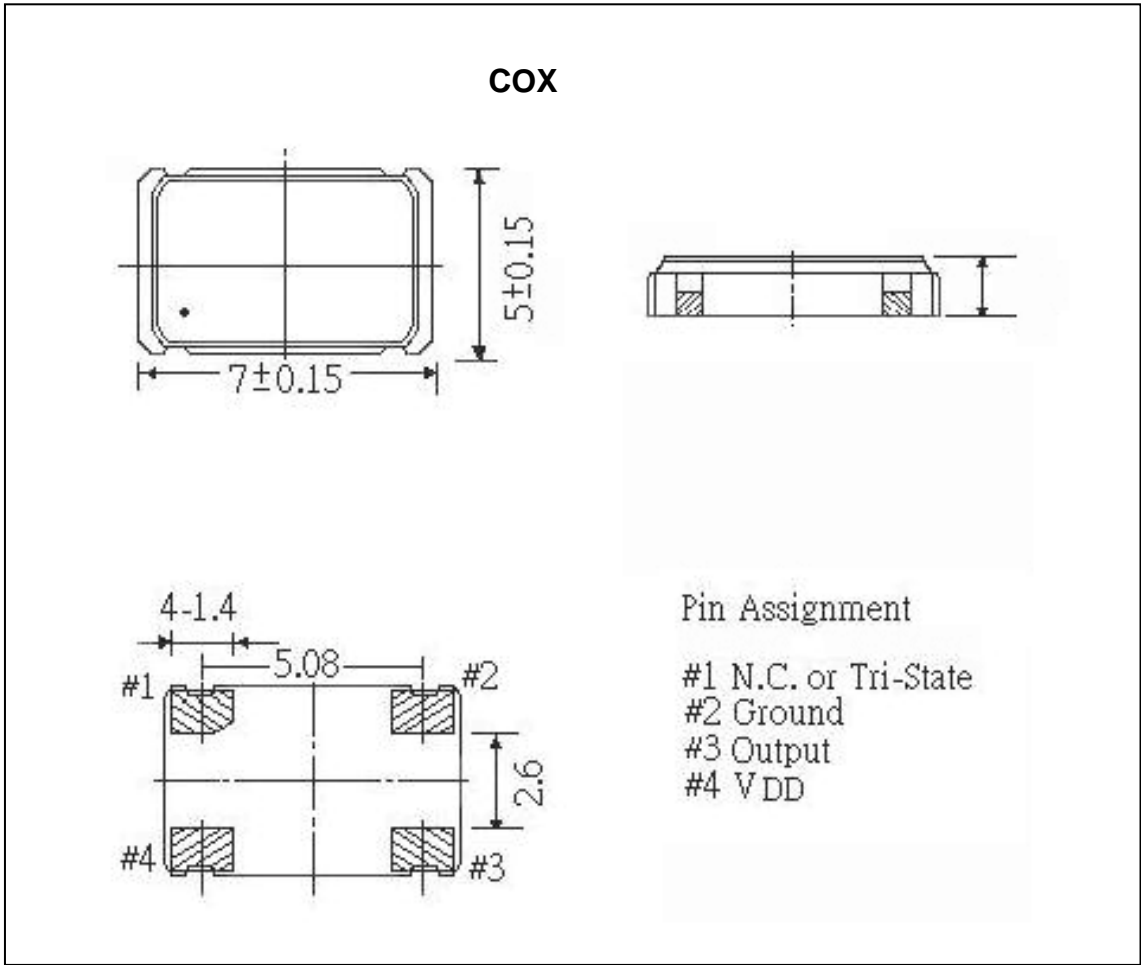
PART NUMBER GUIDE



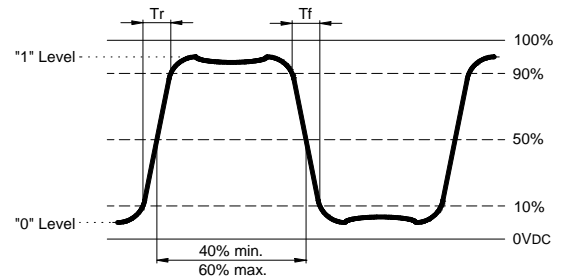
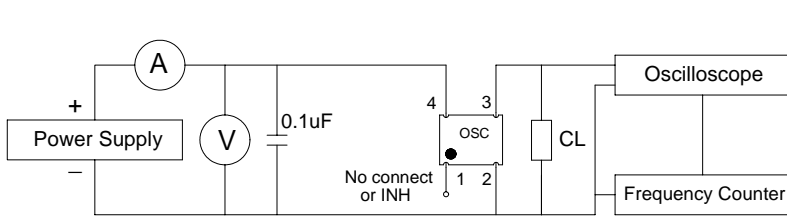
ELECTRICAL SPECIFICATIONS

| MODEL | COX |
|--|---|
| Frequency Range | 20.480MHz |
| Operating Temperature Range | -40 to +85°C |
| Storage Temperature Range | -55 to +125°C |
| Supply Voltage (VDD) | 5VDC $\pm 5\%$ |
| Frequency Tolerance / Stability | ± 30 ppm Max |
| Output level Load / Output Level | 15pf / CMOS |
| Start up Time | 10msec Max |
| Current Consumption | 20 mA Max |
| Aging (at 25°C) | 3ppm / year Max |
| Output Voltage Logic High (VOH) | 0.9 VDD min |
| Output Voltage Logic Low (VOL) | 0.1 VDD max |
| Duty Cycle | 45 to 55% |
| Rise / Fall Time | 8 ns max |
| PIN 1 Tri-State Input Voltage | No connection: Enables Output |
| | $V_{IH} \geq 2.0V_{DC}$: Enables Output $V_{IH} \leq 0.8V_{DC}$: High impedance |
| Phase Jitter(integrated 10KHz ~ 20Mhz) | 2ps RMS (1- σ) |
| Phase Accumated | 5ps RMS (20.000 adjacent periods) |
| Peak to Peak jitter | 50ps (100.000 random periods) |

MECHANICAL DIMENSION

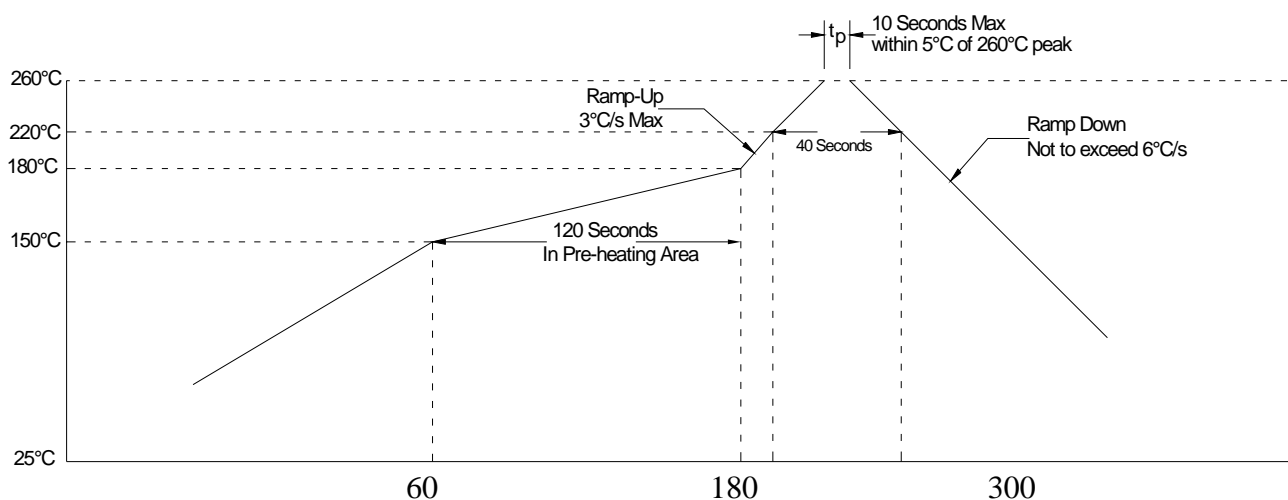


Test circuit



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 requirement 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) | 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" .