

**AN-XA7XXX-X Series  
HF SMD TCXO  
Ultra Low Phase Noise**

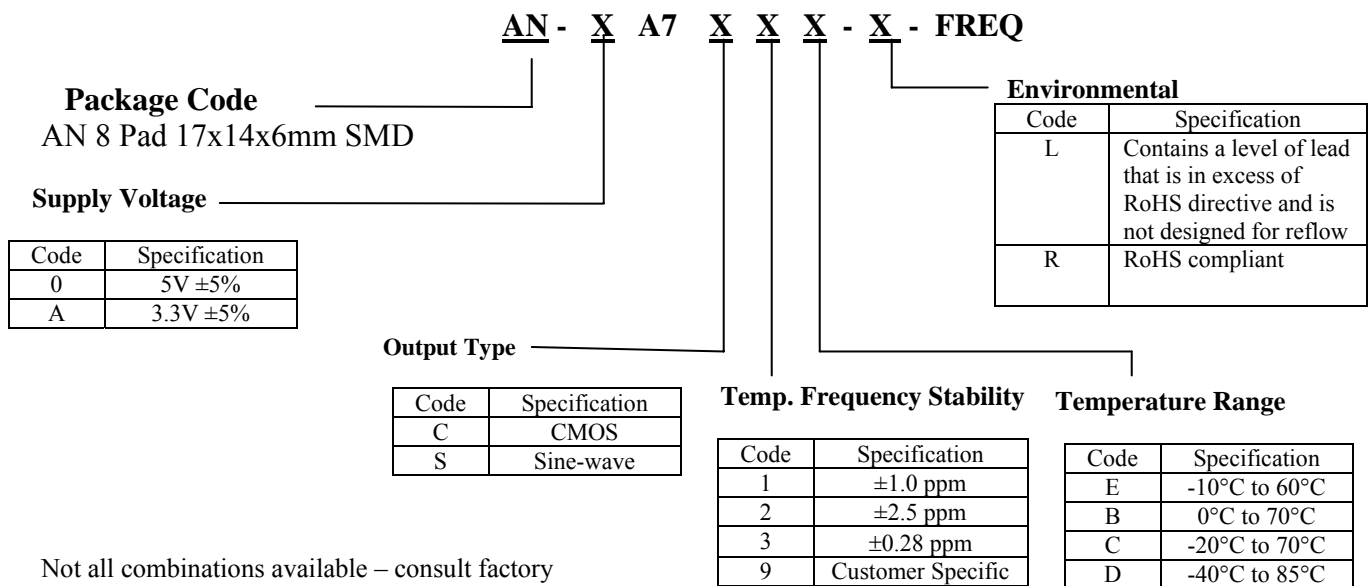
**Rev. C**

**Description:** The AN-XA7XXX Series of SMD temperature compensated crystal oscillators (TCXO), provides High Frequency with excellent temperature stability, extremely low phase noise and jitter with either CMOS or Sine-wave output in a small surface mount FR4 based package.

**Features**

- **Small, Low Profile SMD Package**
- **Very Low Phase Jitter and Phase Noise**
- **Excellent Frequency Stability**
- **Frequency – up to 250 MHz (Sine)**
- **No Multiplication – no sub-harmonics**
- **Stratum3 available**

**Creating a Part Number**



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Rev. C

(1)

**Specifications**

| Parameter                   | Symb         | Condition   | Min  | Typ  | Max           | Unit                            | Note                                |
|-----------------------------|--------------|---|--|--|---------------|---------------------------------|-------------------------------------|
| <b>Electrical</b>           |              |   |  |  |               |                                 |                                     |
| Frequency Range             | F            | CMOS<br>Sine-wave                                 | 10<br>10                                     |  | 200<br>250    | MHz                             |                                     |
| Input Voltage               | Vcc          |   | 3.135<br>4.75                                | 3.30<br>5.0                                    | 3.465<br>5.25 | V                               | A<br>0                              |
| Input Current               | Icc          | CMOS, Sine  |  |  | 40            | mA                              | @100MHz, 3.3V                       |
| Frequency Stab.             | $\Delta F/F$ | Overall, available                                |  |  | $\pm 4.6$     |                                 | 20 years                            |
| Frequency Stability         | $\Delta F/F$ | vs. Temperature<br>vs. Vcc<br>aging               |  | $\pm 0.5$<br>$\pm 0.1$<br>$\pm 1$<br>$\pm 3.5$ | $\pm 1$       | ppm<br>ppm/V<br>ppm/year<br>ppm | See chart<br>First Year<br>10 years |
| Calibration                 | $\Delta F/F$ | As shipped, 25°C                                  |  | $\pm 0.5$                                      | $\pm 1$       | ppm                             |                                     |
| Load                        |              | CMOS<br>Sine                                      | 15pf/10K Ohm<br>Internally AC-coupled 50 Ohm |  |               |                                 |                                     |
| Duty cycle                  |              | @50%  | 45   | 50   | 55            | %                               | CMOS                                |
| Rise/Fall time              | Tr/Tf        | 20 to 80 %  |  | 3  |               | ns                              | CMOS                                |
| Logic "1" level             | Voh          | CMOS  | 0.9Vcc                                       |  |               | V                               |                                     |
| Logic "0" level             | Vol          | CMOS  |  |  | 0.1Vcc        | V                               |                                     |
| Output power <sup>(2)</sup> | P            | Sine-wave Into<br>50 Ohms                         | 0<br>4                                       | 3<br>7   |               | dBm                             | 3.3V<br>5.0V                        |
| Start up time               | Ts           |   |  | 2  | 100           | ms                              |                                     |
| Phase Jitter                |              | 1 $\sigma$  |  | 0.4<br>0.2                                     | 1<br>0.4      | ps                              | 100Hz to 20MHz<br>12KHz to 20MHz    |
| Subharmonics                |              |   |  |  | none          |                                 |                                     |
| Spurious                    |              |   |  |  | -60           | dBc                             |                                     |
| Harmonics                   |              | Sine-wave   |  | -30  | -25           | dBc                             |                                     |
| SSB Phase Noise             |              | @10Hz<br>@100 Hz<br>@1 KHz<br>@10 KHz<br>@100 KHz |  | -80<br>-110<br>-140<br>-155<br>-160            |               | dBc/Hz                          | @100MHz                             |
| SSB Phase Noise             |              | @10Hz<br>@100 Hz<br>@1 KHz<br>@10 KHz<br>@100 KHz |  | -105<br>-135<br>-150<br>-160<br>-165           |               | dBc/Hz                          | @20 MHz                             |

Note 1) All parameters, unless otherwise specified, are at nominal conditions, ie: T=25°C, Nominal Vcc & Nominal Load  
 2) Higher output power available – consult factory (current consumption may increase)

**Absolute Maximum Ratings**

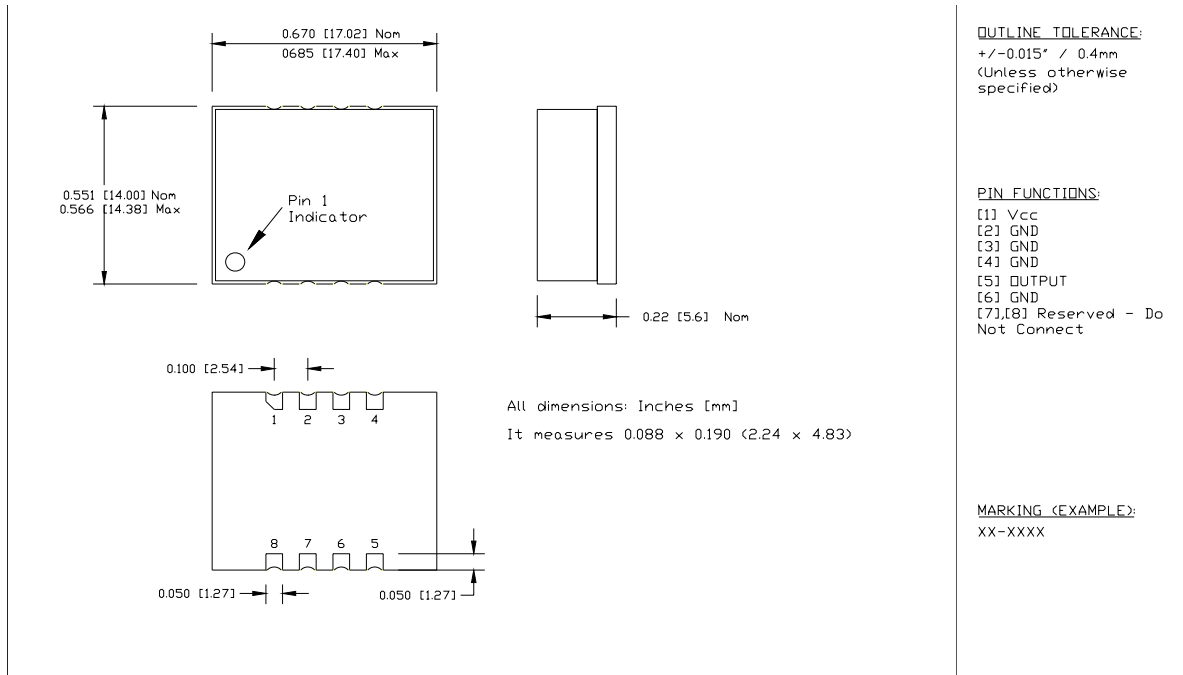
| Parameter                | Symb | Condition | Min  | Typ | Max | Unit | Note |
|--------------------------|------|-----------|------|-----|-----|------|------|
| Input Break Down Voltage | Vcc  |           | -0.5 |     | 5.5 | V    |      |
| Storage temp.            | Ts   |           | -40  |     | 105 | ° C  |      |
| Contr. Voltage           | Vc   |           | -1   |     | 9   | V    |      |

**Environmental and Mechanical**

|                       |  |  |  |  |  |  |  |
|-----------------------|--|--|--|--|--|--|--|
| Operating temp. range | 0°C to 70°C , -40°C to 85°C, see chart, page 1                           |  |  |  |  |  |  |
| Mechanical Shock      | Per MIL-STD-202, Method 213, Cond. E                                     |  |  |  |  |  |  |
| Thermal Shock         | Per MIL-STD-883, Method 1011, Cond. A                                    |  |  |  |  |  |  |
| Vibration             | Per MIL-STD-883, Method 2007, Cond. A                                    |  |  |  |  |  |  |
| Soldering Conditions  | See MAX reflow profile   |  |  |  |  |  |  |
| Hermetic Seal         | Leak rate less than 1x10 <sup>-8</sup> atm.cc/s of helium (crystal only) |  |  |  |  |  |  |

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Maximum solder reflow profile

