

**AN-XC2XXXX-X Series
HF SMD TCXO/VCTCXO
Ultra Low Phase Noise**

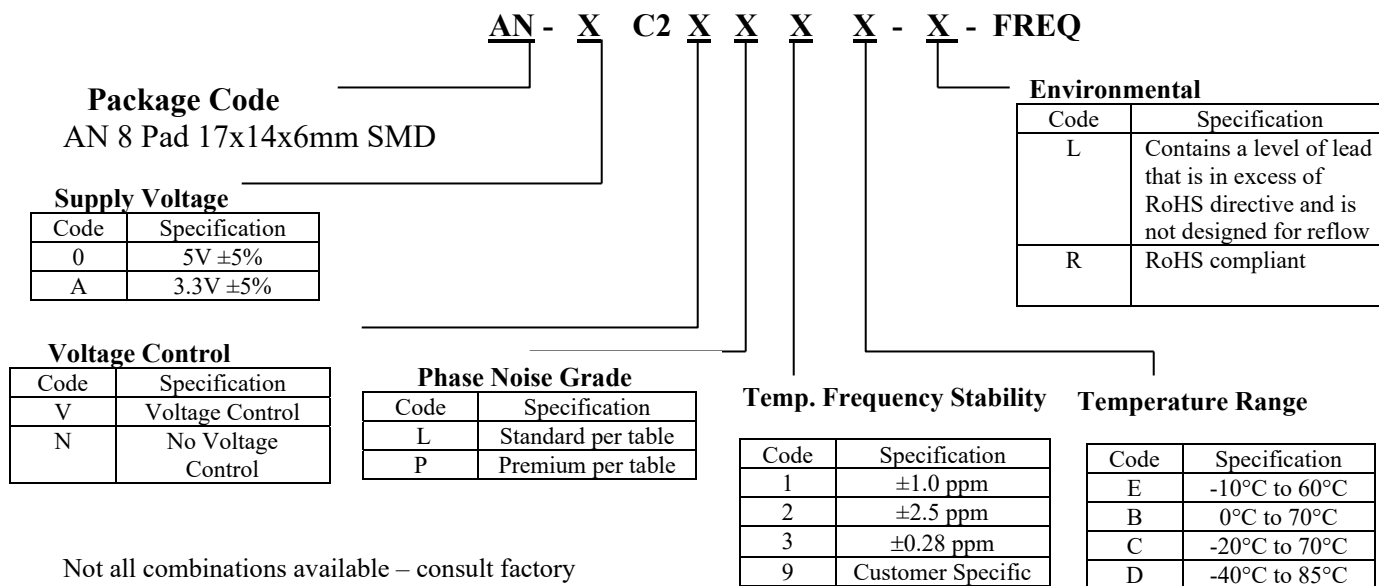
Rev. C

Description: The AN-XC2XXXX Series of SMD temperature compensated crystal oscillators (TCXO/VCTCXO), provides High Frequency with excellent temperature stability, ultra low phase noise and jitter with CMOS 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 200 MHz**
- **No Multiplication – no sub-harmonics**
- **Stratum3 available**
- **COTS/Dual use**

Creating a Part Number



Supply Voltage

Code	Specification
0	5V ±5%
A	3.3V ±5%

Voltage Control

Code	Specification
V	Voltage Control
N	No Voltage Control

Phase Noise Grade

Code	Specification
L	Standard per table
P	Premium per table

Temp. Frequency Stability

Code	Specification
1	±1.0 ppm
2	±2.5 ppm
3	±0.28 ppm
9	Customer Specific

Temperature Range

Code	Specification
E	-10°C to 60°C
B	0°C to 70°C
C	-20°C to 70°C
D	-40°C to 85°C

Environmental

Code	Specification
L	Contains a level of lead that is in excess of RoHS directive and is not designed for reflow
R	RoHS compliant

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Specifications

Parameter	Symb	Condition	Min	Typ	Ma x	Unit	Note
Electrical							
Frequency Range	F	CMOS	10		200	MHz	
Input Voltage	V _{cc}		3.135 4.75	3.30 5.0	3.465 5.25	V	A 0
Input Current	I _{cc}	CMOS			40	mA	@100MHz, 3.3V
Frequency Stab.	ΔF/F	Overall, available			±4.6		20 years
Frequency Stability	ΔF/F	vs. Temperature vs. V _{cc} aging		±0.5 ±0.1 ±1 ±3.5	±1	ppm ppm/V ppm/year ppm	See chart First Year 10 years
Calibration	ΔF/F	As shipped, 25°C		±0.5	±1		
Load		CMOS	15pF/10K Ohm				
Duty cycle		@50%	45	50	55	%	CMOS
Rise/Fall time	Tr/Tf	20 to 80 %		3		ns	CMOS
Logic "1" level	V _{oh}	CMOS	0.9V _{cc}			V	
Logic "0" level	V _{ol}	CMOS			0.1V _{cc}	V	
Start up time	T _s			2	100	ms	
Phase Jitter		1σ		0.4 0.2	1 0.4	ps	100Hz to 20MHz 12KHz to 20MHz
Subharmonics				none			
Spurious					-60	dBc	
SSB Phase Noise		@10Hz @100 Hz @1 KHz @10 KHz @100 KHz		-80 -110 -140 -155 -160	-135	dBc/Hz	@100MHz, Grade L
SSB Phase Noise		@10Hz @100 Hz @1 KHz @10 KHz @100 KHz		-90 -120 -146 -160 -165			@100MHz, Grade P
SSB Phase Noise		@10Hz @100 Hz @1 KHz @10 KHz @100 KHz		-105 -135 -150 -160 -165		dBc/Hz	@20 MHz
Input Impedance			>10K Ohm				
Control voltage	V _c		0		3.0	V	
Modulation bandwidth	MB				1.5	Hz	
Deviation	ΔF/F	V _c =0V to 3.3V,25°C	±5	±7		ppm	

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

Absolute Maximum Ratings

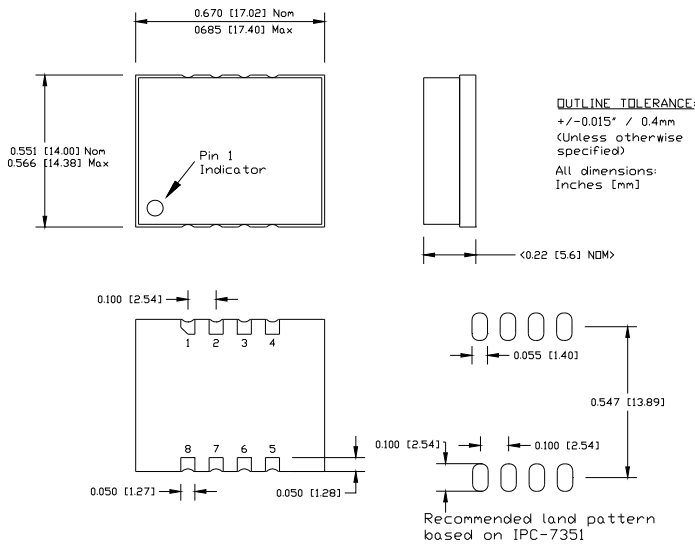
Parameter	Symb	Condition	Min	Typ	Max	Unit	Note
Input Break Down Voltage	V _{cc}		-0.5		5.5	V	
Storage temp.	T _s		-40		105	° C	
Contr. Voltage	V _c		-1		9	V	

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Environmental and Mechanical

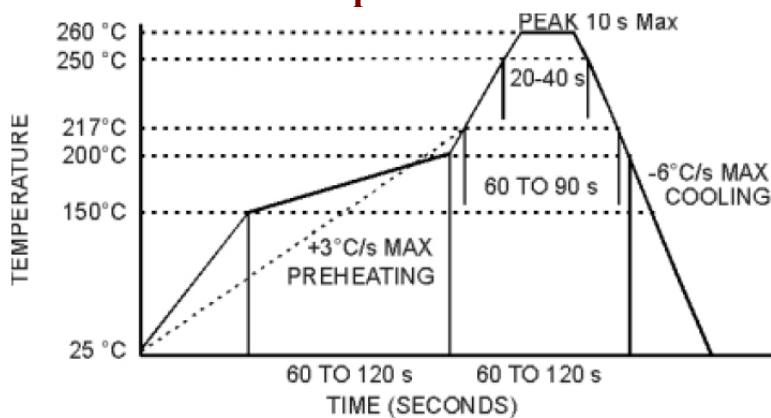
Operating temp. range	0°C to 70°C, -40°C to 85°C, see chart, page 1
Mechanical Shock	Per MIL-STD-202, Method 213, Cond. E
Thermal Shock	Per MIL-STD-883, Method 1011, Cond. A
Vibration	Per MIL-STD-883, Method 2007, Cond. A
Soldering Conditions	See MAX reflow profile; The device may be reflowed once. Reflowing upside down is not allowed. NO CLEAN assembly is recommended.
Hermetic Seal	Leak rate less than 1×10^{-8} atm.cc/s of helium (crystal only)



Electrical Connections

Pin out	Pin 1=Vcc; Pin 2=Do Not Connect; Pin 3=GND; Pin 4=GND; Pin 5=Output; Pin 6= Optional Voltage Control; Pin 7 & 8= Do Not Connect
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Maximum solder reflow profile



The device may be reflowed once. Reflowing upside down is not allowed. NO CLEAN assembly is recommended.