

Oven Controlled Crystal Oscillators (OCXO's)

EX-380/385 (EMXO™) Type



Features

- Aging: $<1 \times 10^{-9}$ /day, $<1 \times 10^{-7}$ / year, $<1 \times 10^{-6}$ /10 years (@ 10 MHz)
- Temperature Stability: to $\pm 7.5 \times 10^{-8}$ over -20°C to 70°C
- Acceleration Sensitivity: $<1 \times 10^{-9}$ /g, Total Gamma
- Uses SC Family 3rd Overtone Crystal
- Low Power Consumption: <0.35 watts
- Frequencies: 10 to 20.48 MHz (additional frequencies available up to 80 MHz - consult factory)
- Patented Techniques*
- U.S. Patent 5,917,272

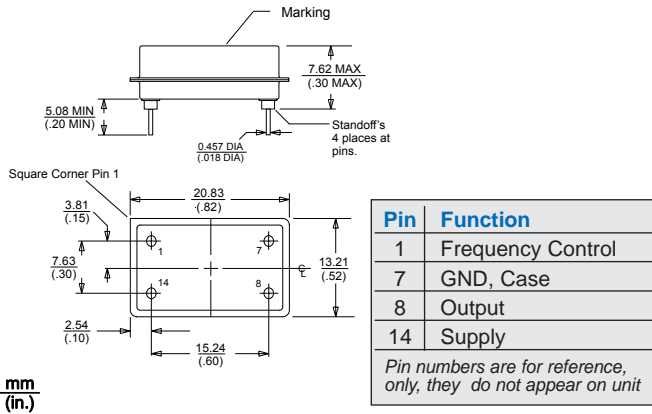
Performance Characteristics

Parameter	Characteristics												
Standard Frequencies	10, 10.23, 12.8, 13, 16.384, 19.44, 20 & 20.48 MHz												
Package Size	See next page for Drawings and Dimensions												
Supply Voltage	5 Vdc $\pm 5\%$, 3.3Vdc $\pm 5\%$												
Supply Current (Steady State)	<70 mA @ $+25^{\circ}\text{C}$ with 5 Vdc supply <90 mA @ $+25^{\circ}\text{C}$ with 3.3 Vdc supply <120 mA @ -40°C with 5 Vdc supply <150 mA @ -40°C with 3.3 Vdc supply												
Turn-on Current	300 mA max @ 5 Vdc / 450 mA max @ 3.3 Vdc												
Output Type	HCMOS (+3 dBm Sinewave available with EX-385, consult factory)												
Level "0" and "1"	<0.4 Volts, >0.9 Vdd												
Rise/Fall Time (10-90%)	<7 ns												
Symmetry (Duty Cycle)	50/50 $\pm 10\%$ (at 50% Vdd)												
Temperature Stability: (Note: Tighter stabilities and wider temperature ranges are available, please consult factory.)	D-758 = ± 0.075 ppm over -20°C to $+70^{\circ}\text{C}$ D-ST3 = Stratum 3 over -20°C to $+70^{\circ}\text{C}$ F-ST3 = Stratum 3 over -40°C to $+85^{\circ}\text{C}$ F-107 = ± 0.1 ppm over -40°C to $+85^{\circ}\text{C}$ x-ST3 = Stratum 3 Holdover stability per GR-1244-CORE Table 3-1 as described in Sections 5.2 and 9.1												
Aging (10MHz Typical)	$<1 \times 10^{-9}$ /day average, $<1 \times 10^{-7}$ first year, $<1 \times 10^{-6}$ /10 years												
Short Term Stability (Allan Deviation)	$<5 \times 10^{-10}$, 0.1 seconds to 10 seconds												
Phase Noise (typical at 10 MHz, Static Condition)	<table border="1"> <thead> <tr> <th>Offset</th> <th>Phase Noise</th> </tr> </thead> <tbody> <tr> <td>10 Hz</td> <td>-100 dBc/Hz</td> </tr> <tr> <td>100 Hz</td> <td>-130 dBc/Hz</td> </tr> <tr> <td>1 kHz</td> <td>-140 dBc/Hz</td> </tr> <tr> <td>10 kHz</td> <td>-145 dBc/Hz</td> </tr> <tr> <td>100 kHz</td> <td>-150 dBc/Hz</td> </tr> </tbody> </table>	Offset	Phase Noise	10 Hz	-100 dBc/Hz	100 Hz	-130 dBc/Hz	1 kHz	-140 dBc/Hz	10 kHz	-145 dBc/Hz	100 kHz	-150 dBc/Hz
Offset	Phase Noise												
10 Hz	-100 dBc/Hz												
100 Hz	-130 dBc/Hz												
1 kHz	-140 dBc/Hz												
10 kHz	-145 dBc/Hz												
100 kHz	-150 dBc/Hz												
Frequency vs. Supply	$<2.5 \times 10^{-9}$ per percent change												
Warm-up (Restabilization) (frequency relative to that 1 hour after turn-on, following 24 hours off time, at $+25^{\circ}\text{C}$)	<table border="1"> <thead> <tr> <th></th> <th>Standard</th> <th>Optional (consult factory)</th> </tr> </thead> <tbody> <tr> <td>$<\pm 1 \times 10^{-6}$</td> <td>60 seconds</td> <td>45 seconds</td> </tr> <tr> <td>$<\pm 1 \times 10^{-7}$</td> <td>120 seconds</td> <td>90 seconds</td> </tr> </tbody> </table>		Standard	Optional (consult factory)	$<\pm 1 \times 10^{-6}$	60 seconds	45 seconds	$<\pm 1 \times 10^{-7}$	120 seconds	90 seconds			
	Standard	Optional (consult factory)											
$<\pm 1 \times 10^{-6}$	60 seconds	45 seconds											
$<\pm 1 \times 10^{-7}$	120 seconds	90 seconds											
Electrical Frequency Adjust	$>\pm 1$ ppm range with 0 to Vdd input voltage												
Acceleration Sensitivity (10 MHz)	1×10^{-9} /g total Gamma, standard 5×10^{-10} /g available at 10 MHz (Consult factory for tighter specification.)												

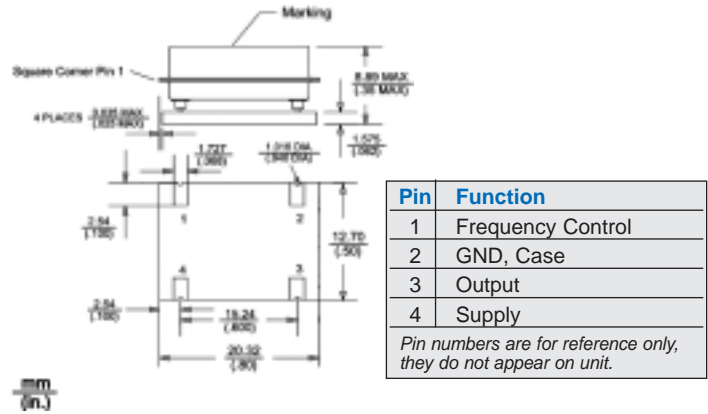
Oven Controlled Crystal Oscillators (OCXO's)

EX-380/385

380 Package Outline Drawing

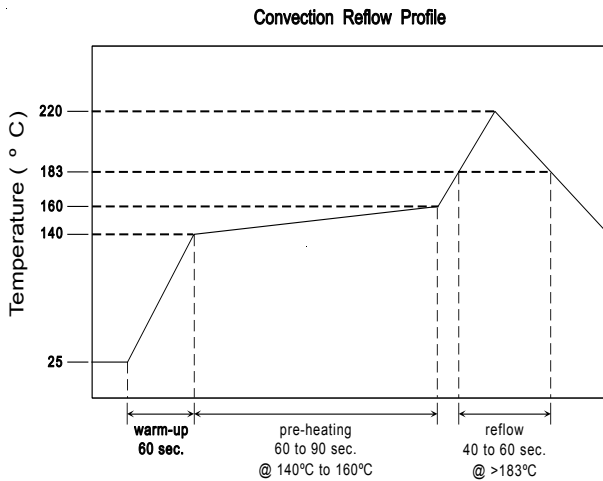


385 Package Outline Drawing

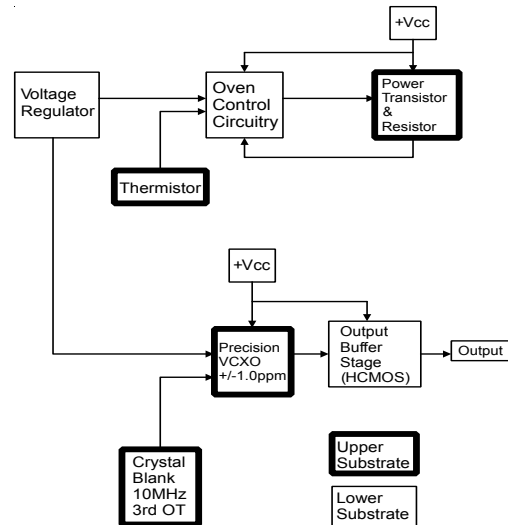


OCXO

Recommended Reflow Profile



Block Diagram



Ordering Information

EX - 380 - D A F - S T 3 A - 12.800 MHz

EX = EMXO
Package
 380 = Thru hole
 385 = SMT
Supply Voltage
 C = 5.0 Vdc ±5%
 D = 3.3 Vdc ±5%
Output
 A = HCMOS

Output Frequencies

10.000 MHz	16.384 MHz
10.230 MHz	19.440 MHz
12.800 MHz	20.000 MHz
13.000 MHz	20.480 MHz

Other Options
 A = Electrical Frequency Adjust (standard)
 F = Fixed Frequency, No Frequency Adjust, Initial Accuracy 25°C is ±1.5 ppm

Temperature & Stability
 D-758 = ±0.075 ppm over -20°C to +70°C
 D-ST3 = Stratum 3 over -20°C to +70°C
 F-ST3 = Stratum 3 over -40°C to +85°C
 F-107 = ±0.1 ppm over -40°C to +85°C
 Note: Tighter stabilities and wider temperature ranges are available, please consult the factory.