

Helping Customers Innovate, Improve & Grow



Description

The EX-420 provides exceptionally low aging rates and tight temperature stabilities in an extremely small package over a wide range of environmental conditions. This EMXO series bridges the gap between current large, high precision OCXO's and smaller TCXO's. The EX-420 Series becomes the most economical choice where there is a need for spectral purity, short and long term stability, along with small size and dramatically reduced power consumption.

Features

- 4-Pin Half Dip
- Fast Warmup
- Low Power Consumption
- Previous Model Number: EX-620 series
- Frequency Range: 10 MHz - 30 MHz

Applications

- SONET/SDH, DWDM, FDM, ATM, 3G
- Telecom Transmission and Switching Equipment
- Wireless Communication Equipment
- Military Airborne and Mobile systems

Performance Specifications

| Parameter | Frequency Stabilities ¹ | | | | Condition |
|---|------------------------------------|-----|------|-------|--------------|
| | Min | Typ | Max | Units | |
| vs. operating temperature range (referenced to +25°C) | -50 | | +50 | ppb | 0... +70°C |
| | -75 | | +75 | ppb | -20... +70°C |
| | -100 | | +100 | ppb | -40... +85°C |

Performance Specifications

| Frequency Stabilities ¹ | | | | | | |
|--|----------------|----------------------------|-----|------------------------------|--------------------------------------|---|
| Parameter | | Min | Typ | Max | Units | Condition |
| vs. Stratum 3 per GR-1244- CORE | Operating Temp | -140 | | +140 | ppb | -20... +70°C |
| | | -140 | | +140 | ppb | -40... +85°C |
| | Holdover | -370 | | +370 | ppb | 24 hours |
| | Drift | -4.63 | | +4.63 | ppb | Over 7100 seconds |
| | MTIE | | | +1 | 10-13/sec ppm | 0.16 sec < Observe Times < 64 sec |
| Warm-up Time | | | | 1 1.5 | minutes minutes | to ± 100 ppb of final frequency (1 hour) @+25°C to ± 100ppb of final frequency (1 hour) @-40°C |
| Initial Accuracy | | -1 | | +1 | ppm | fixed frequency, no EFC input |
| vs. supply voltage change | | -20 | | +20 | ppb | VS ± 5% |
| vs. load change | | -10 | | +10 | ppb | Load ± 5% |
| vs. aging / day | | -2.0 | | +2.0 | ppb | after 30 days of operation |
| vs. aging / 1 year | | -300 | | +300 | ppb | after 30 days of operation |
| Supply Voltage (Vs) | | | | | | |
| Supply voltage (Standard) | | 4.75 | 5.0 | 5.25 | VDC | |
| Supply voltage (Option) | | 3.135 | 3.3 | 3.465 | VDC | |
| Power Consumption | | | | 1.5 0.3 0.6 | Watts Watts Watts | during warm-up steady state @ +25°C steady state @ -40°C |
| RF Output | | | | | | |
| Signal [Standard] | | HCMOS | | | | |
| Load | | | 15 | | pF | |
| Signal Level (Vol) | | | | 0.1 | VDC | |
| Signal Level (Voh) | | 0.8 | | | VDC | |
| Duty cycle | | 40 | | 60 | % | (Voh-Vol)/2 |
| Signal [Standard] | | Sinewave | | | | |
| Load | | | 50 | | ohm | |
| Output Power [Standard] | | 0 | | +4 | dBm | 50 Ohm load |
| Output Power [Option] | | +3 | | +7 | dBm | 50 Ohm load |
| Harmonics | | | | -30 | dBc | 50 Ohm load |
| Spurs | | | | -60 | dBc | 50 Ohm load |
| Frequency Tuning (EFC) 10 to 80 MHz | | | | | | |
| Tuning Range | | Fixed EMXO; No adjust | | | | |
| Tuning Range | | ±3.0 | | ±10.0 | ppm | from 0V to Vs |
| Linearity | | | | 20 | % | |
| Tuning Slope | | Positive | | | | |
| Additional Parameters | | | | | | |
| Phase Noise | | | | -100 -130 -140 -145 | dBc/Hz dBc/Hz dBc/Hz dBc/Hz | 10 Hz 100 Hz 1 KHz 10 KHz |
| Allan Deviation | | | | 0.2 | ppb | Tau = 1 sec to 10 sec |
| Weight | | | | 3 | g | |
| Processing & Packing | | Handling & processing note | | | | |
| Absolute Maximum Ratings | | | | | | |
| Supply Voltage | | | | 5.5 | VDC | |
| Output Load | | | | 30 | pF | |

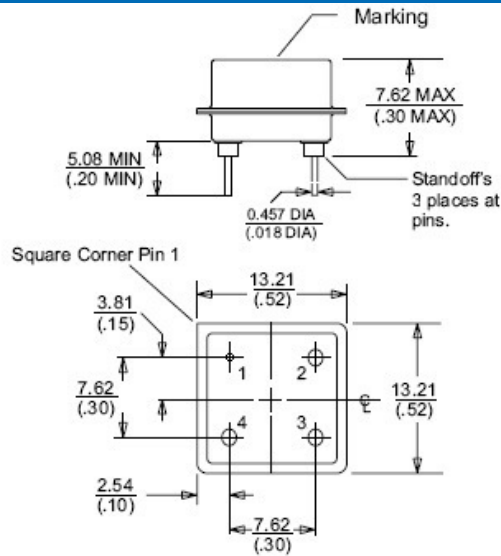
Frequency Stabilities¹

| Parameter | Min | Typ | Max | Units | Condition |
|----------------------------|-----|-----|-----|-------|-----------|
| Operable temperature range | -55 | | +85 | °C | |
| Storage temperature range | -55 | | +85 | °C | |

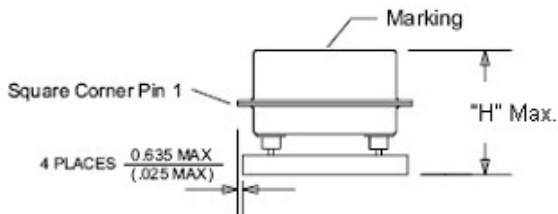
Environmental Conditions

| | | | | | |
|------------------------------|--|--|--|--|--|
| • Mechanical Shock (survive) | MIL-STD-202, Test Method 213, Condition E (100G, 0.5msec) | | | | |
| • Vibration Random (survive) | MIL-STD-202, Test Method 214, Condition I-H (20Grms, 3 minutes/axis) | | | | |
| • Vibration Sine (survive) | MIL-STD-202, Test Method 204, Condition D (20Grms, 20 minutes/axis) | | | | |
| • Thermal Shock (survive) | MIL-STD-202, Test Method 107, Condition A-2 (50 Cycles, -55°C to +85 °C) | | | | |

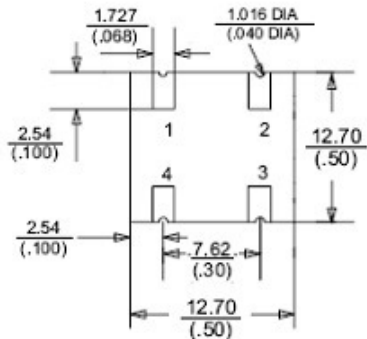
Outline Drawing / Enclosure



mm
(in.)



mm
(in.)

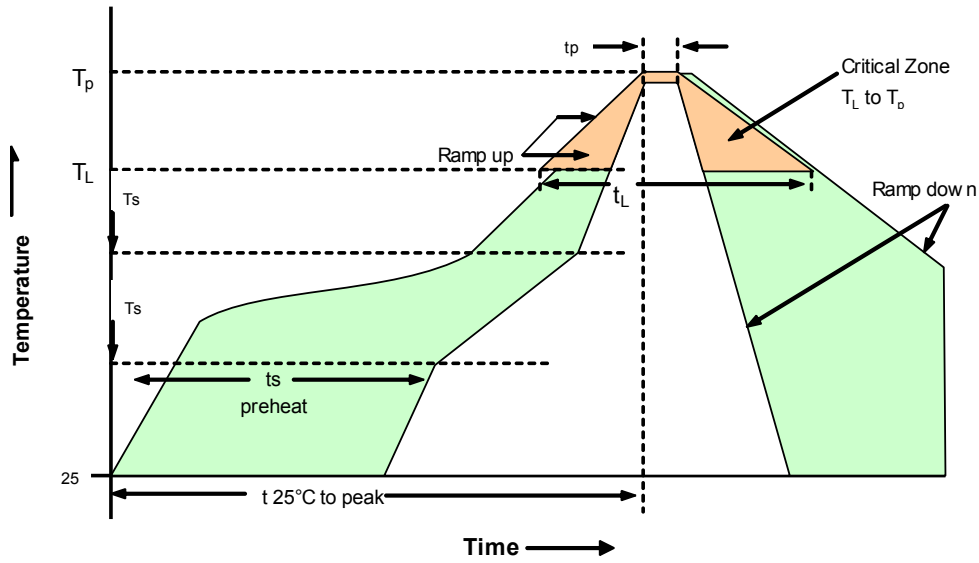


Dimensions in mm (inches)

| Type A | | |
|--------|------------|----------------|
| Code | Height "H" | Pin Length "L" |
| 0 | 7.62 | 5.08 |
| Type B | | |
| Code | Height "H" | Pin Length "L" |
| 1 | 8.89 | NA |
| 2 | 9.65 | NA |

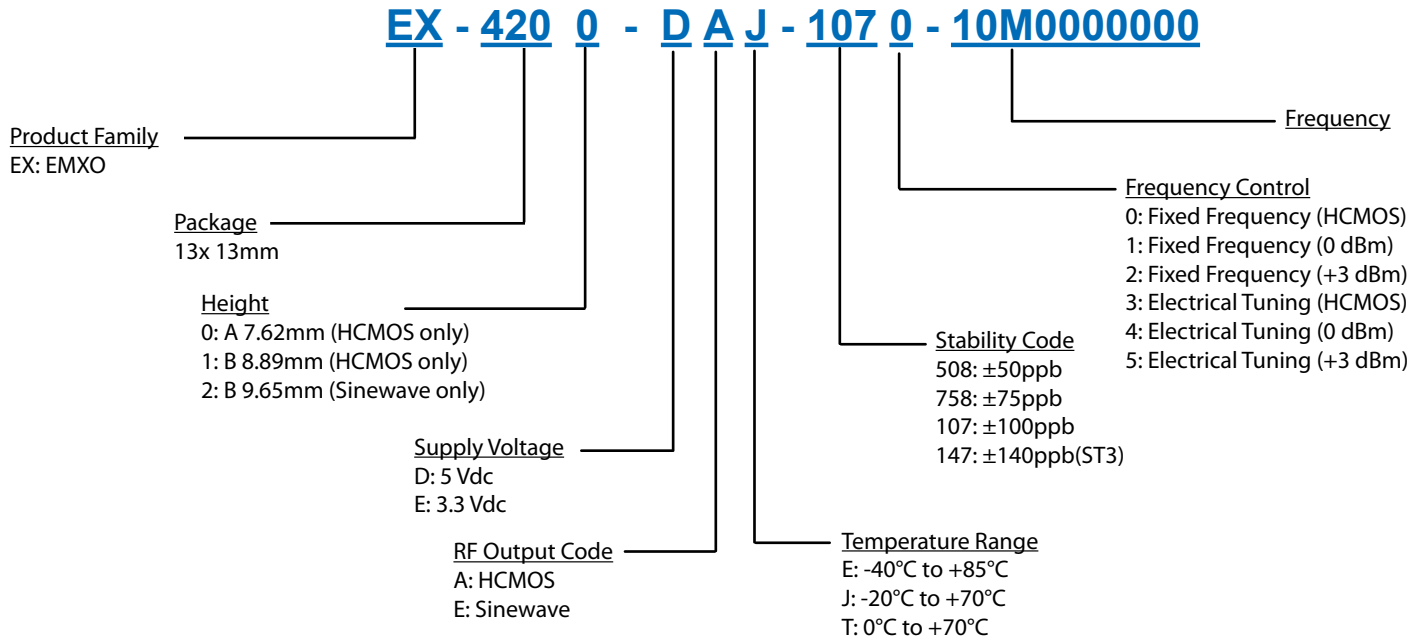
| Pin Connections | |
|-----------------|----------------------|
| 1 | EFC \ No Connect |
| 2 | Ground (Case) |
| 3 | RF Output |
| 4 | Supply Voltage Input |

Recommended Reflow Profile



| Profile Feature | Sn-Pb Assembly | Profile Feature | Sn-Pb Assembly |
|--|---------------------------------|--|------------------------|
| PRECAUTION: Series shall not expose to temperature higher than 230°C. If exposing to temperature higher than 230°C, stability and power consumption may permanently degrade. | | | |
| Average ramp-up rate (TL to Tp) | 3°C/second max. | Time 25°C to Peak Temperature | 4 minutes max. |
| Preheat -Temperature Min Tsmin) -Temperature Min Tsmax) -Time (min to max) (ts) | 135°C 155°C 60-90 seconds | Time maintained above - Temperature (TL) - Time (tL) | 183°C 45-60 seconds |
| Tsmax to TL - Ramp-up Rate | 3°C/second max. | | |
| Time maintained above - Temperature (TL) - Time (tL) | 183°C 45-60 seconds | Time within 5°C of actual Peak Temperature (tp) | 10-20 seconds max. |
| Peak Temperature (Tp) | max 220°C | Ramp-down Rate | 6°C/second max. |
| Note: All temperatures refer to topside of the package, measured on the package body surface. | | | |

Ordering Information



Notes:

1. Contact factory for improved stabilities or additional product options. Not all options and codes are available at all frequencies.
2. Unless other stated all values are valid after warm-up time and refer to typical conditions for supply voltage, frequency control voltage, load, temperature (25°C).
3. Phase noise degrades with increasing output frequency.
4. Subject to technical modification.
5. Contact factory for availability.

For Additional Information, Please Contact

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