

VX-706

## Features

- AT-Cut Crystal
- Surface Mount FR4 based package
- Single layer
- Reflow Process Compatible
- Low Phase Noise & Jitter
- Tight Stabilities
- Frequency Range 40 - 300MHz
- Standard Frequencies 61,44; 100; 122,88; 153,6; 200; 250; 300MHz

## Applications

- Industrial
- Synthesizers
- Test & Measurement
- Military

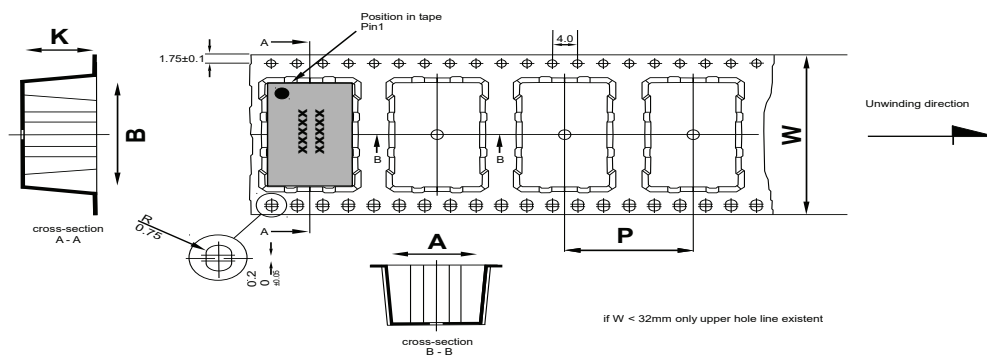
## Performance Specifications

| Frequency Stabilities <sup>1</sup>                       |     |         |     |       |                                                                       |
|----------------------------------------------------------|-----|---------|-----|-------|-----------------------------------------------------------------------|
| Parameter                                                | Min | Typical | Max | Units | Condition                                                             |
| vs. operating temperature range<br>(referenced to +25°C) | -30 |         | +30 | ppm   | -40 to +85°C                                                          |
| Initial tolerance                                        | -15 |         | +15 | ppm   | @V <sub>C</sub> =V <sub>S</sub> /2<br>V <sub>S</sub> ±5%<br>Load ±10% |
| vs. supply voltage change                                | -3  |         | +3  | ppm   |                                                                       |
| vs. load change                                          | -2  |         | +2  | ppm   |                                                                       |
| vs. aging / 1 Year                                       | -2  |         | +2  | ppm   |                                                                       |
| vs. aging (15 years)                                     | -8  |         | +8  | ppm   |                                                                       |

## Performance Specifications

| Supply Voltage (Vs)               |                            |                                             |            |                                                          |                                                        |                            |
|-----------------------------------|----------------------------|---------------------------------------------|------------|----------------------------------------------------------|--------------------------------------------------------|----------------------------|
| Parameter                         | Min                        | Typical                                     | Max        | Units                                                    | Condition                                              |                            |
| Supply voltage (standard)         | 3.135                      | 3.3                                         | 3.465      | VDC                                                      |                                                        | Options                    |
| Current consumption               |                            |                                             | 20         | mA                                                       | @ HCMOS                                                |                            |
| Current consumption               |                            |                                             | 100        | mA                                                       | @ PECL                                                 |                            |
| Supply voltage                    | 4.75                       | 5                                           | 5.25       | VDC                                                      |                                                        |                            |
| Current consumption               |                            |                                             | 15         | mA                                                       | @ HCMOS                                                |                            |
| Current consumption               |                            |                                             | 65         | mA                                                       | @ PECL                                                 |                            |
| RF Output                         |                            |                                             |            |                                                          |                                                        |                            |
| Signal                            | HCMOS ( up to 200MHz)      |                                             |            |                                                          |                                                        | Options                    |
| Load                              |                            | 15                                          |            | pF                                                       |                                                        |                            |
| Rise and Fall time                |                            |                                             | 5          | ns                                                       | @ 15 pF 10 to 90%                                      |                            |
| Duty cycle                        | 45                         |                                             | 55         | %                                                        | @ Vs / 2                                               |                            |
| Signal                            | PECL                       |                                             |            |                                                          |                                                        |                            |
| Load                              |                            | 50                                          |            | Ω                                                        |                                                        |                            |
| Rise and Fall time                |                            |                                             | 1          | ns                                                       | 20 to 80%                                              |                            |
| Duty cycle                        | 45                         |                                             | 55         | %                                                        |                                                        |                            |
| Frequency Tuning (EFC)            |                            |                                             |            |                                                          |                                                        |                            |
| Tuning Range                      | ±60.0                      | ±100                                        | ±200.0     | ppm                                                      |                                                        |                            |
| Linearity                         | 10 %                       |                                             |            |                                                          |                                                        |                            |
| Tuning Slope                      | Positive                   |                                             |            |                                                          |                                                        |                            |
| Control Voltage Range             | 0<br>0.5                   | 1.65<br>2.5                                 | 3.3<br>4.5 | VDC<br>VDC                                               | with Vs = 3.3V<br>with Vs = 5V                         |                            |
| Frequency Control Input Impedance | 100                        |                                             |            | kΩ                                                       |                                                        |                            |
| Additional Parameters             |                            |                                             |            |                                                          |                                                        |                            |
| Phase Noise                       |                            | -72<br>-105<br>-132<br>-154<br>-164<br>-166 |            | dBc/Hz<br>dBc/Hz<br>dBc/Hz<br>dBc/Hz<br>dBc/Hz<br>dBc/Hz | 10 Hz<br>100 Hz<br>1 kHz<br>10 kHz<br>100 kHz<br>1 MHz | @122.88 MHz<br>LVCMOS 3.3V |
| Jitter                            |                            | 0.042                                       |            | ps RMS                                                   | @ 12kHz .. 20MHz                                       |                            |
| Phase Noise                       |                            | -74<br>-104<br>-133<br>-154<br>-160<br>-162 |            | dBc/Hz<br>dBc/Hz<br>dBc/Hz<br>dBc/Hz<br>dBc/Hz<br>dBc/Hz | 10 Hz<br>100 Hz<br>1 kHz<br>10 kHz<br>100 kHz<br>1 MHz | @ 122.88 MHz<br>PECL 3.3V  |
| Jitter                            |                            | 0.064                                       |            | ps RMS                                                   | @ 12kHz .. 20MHz                                       |                            |
| Weight                            |                            |                                             | 1.0 g      |                                                          |                                                        |                            |
| Processing & Packing              | Handling & Processing Note |                                             |            |                                                          |                                                        |                            |
| Absolute Maximum Ratings          |                            |                                             |            |                                                          |                                                        |                            |
| Supply voltage (Vs)               |                            |                                             | 6.0        | V                                                        |                                                        |                            |
| Operable Temperature Range        | -40                        |                                             | +85        | °C                                                       |                                                        |                            |
| Storage Temperature Range         | -40                        |                                             | +95        | °C                                                       |                                                        |                            |

# Standard Shipping Method



Dimension in mm:  
A, B and K are dependent upon component dimensions  
production tolerance complying DIN IEC 286-3

All dimensions in millimeters unless otherwise stated

| Enclosure Type | Tape Width W (mm) | Quantity per meter | Quantity per reel | Dimension P |
|----------------|-------------------|--------------------|-------------------|-------------|
| G322           | 12                | 150                | 750               | 8           |

## Enclosure

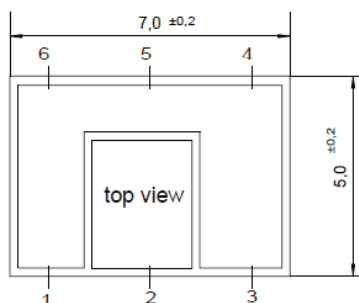
### Package Codes

| Type | Height "H" | Pin Length "L" |
|------|------------|----------------|
| G322 | 1.6        | NA             |

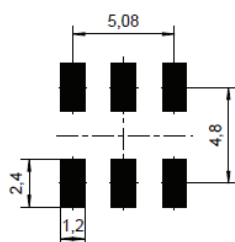
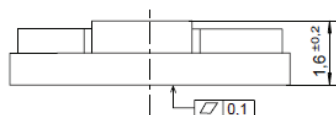
### Marking

Frequency

● AYYWW



G 322



Padvorschlag  
land pattern  
recommendation

### Enable true table (optional; Enable code: 1)

|       | HCMOS         |       | LVPECL  |             |
|-------|---------------|-------|---------|-------------|
| Pin 2 | Pin 4         | Pin 5 | Pin 4   | Pin 5       |
| High  | Data          | N.C.  | No Data | No Data     |
| Open  | Data          | N.C.  | Data    | Compl. Data |
| Low   | High Tristate | N.C.  | Data    | Compl. Data |

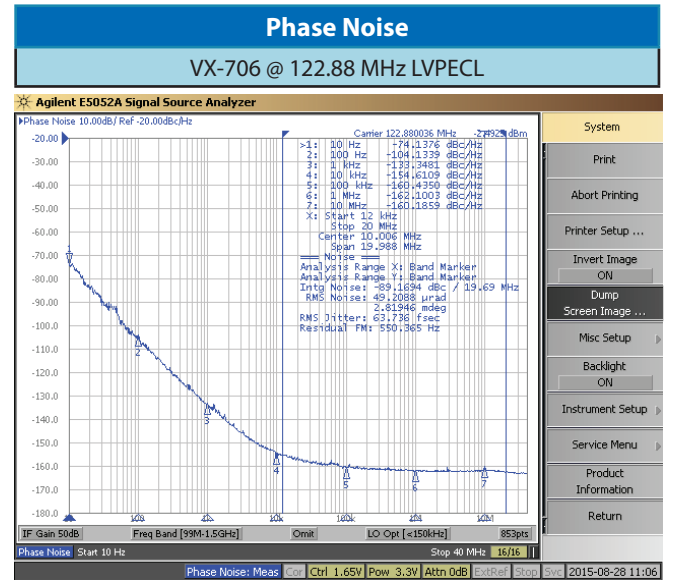
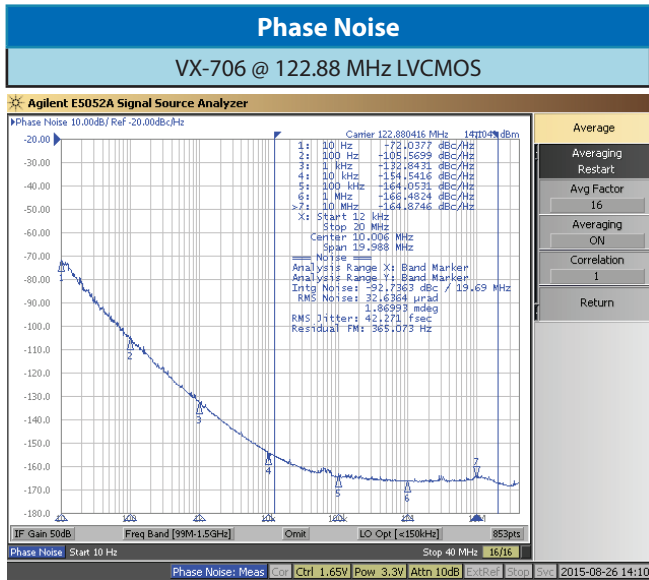
### Pin Connections

|   |                                               |
|---|-----------------------------------------------|
| 1 | Control Voltage (Vc)                          |
| 2 | N.C. / Enable (Option)                        |
| 3 | Ground                                        |
| 4 | RF Output                                     |
| 5 | RF Output complementary (PECL)<br>N.C. (CMOS) |
| 6 | Supply Voltage Input (Vs)                     |

### Enable true table (optional Enable code: 2)

|       | LVPECL  |             |
|-------|---------|-------------|
| Pin 2 | Pin 4   | Pin 5       |
| High  | Data    | Compl. Data |
| Open  | Data    | Compl. Data |
| Low   | No Data | No Data     |

## Typical Performance



## Recommended Reflow Profile

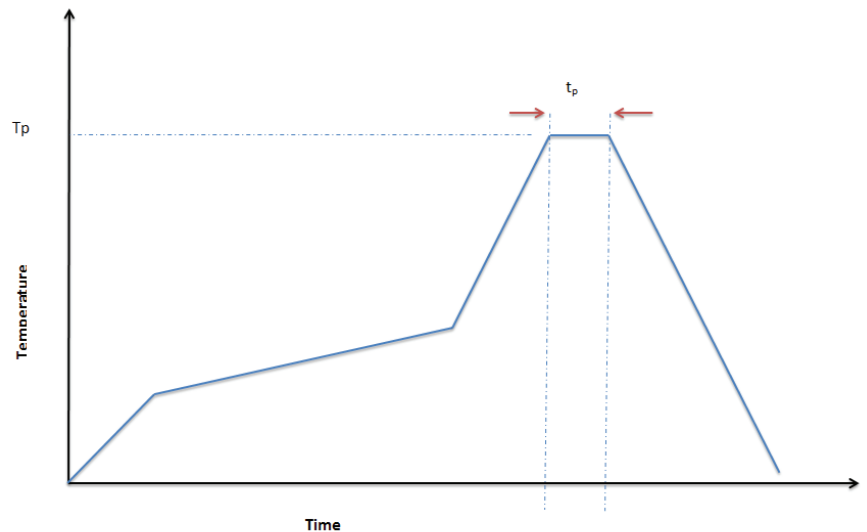
TP: max 250°C (@ solder joint, customer board level)

$T_p$ : max: 10...30 sec

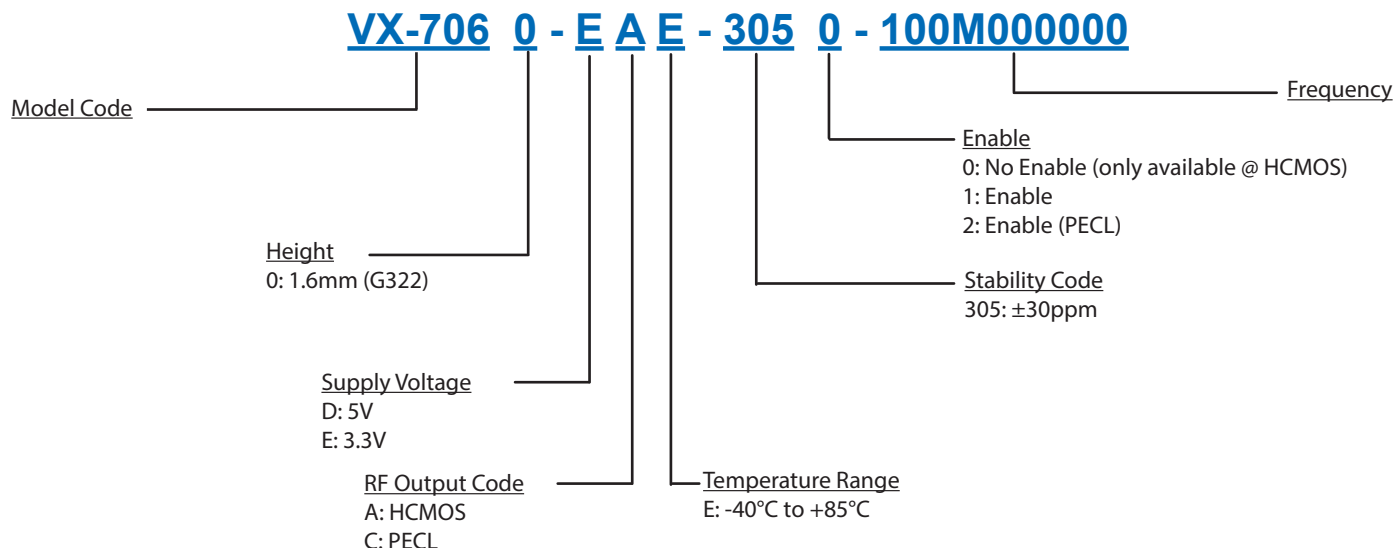
Additional Information:

This SMD oscillator has been designed for pick and place reflow soldering

SMD oscillators must be on the top side of the PCB during the reflow process.



## 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.

## Contact Information

### USA:

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