

# Oven Controlled Crystal Oscillator

## 25 x 25mm Standard OCXO – Family Data Sheet

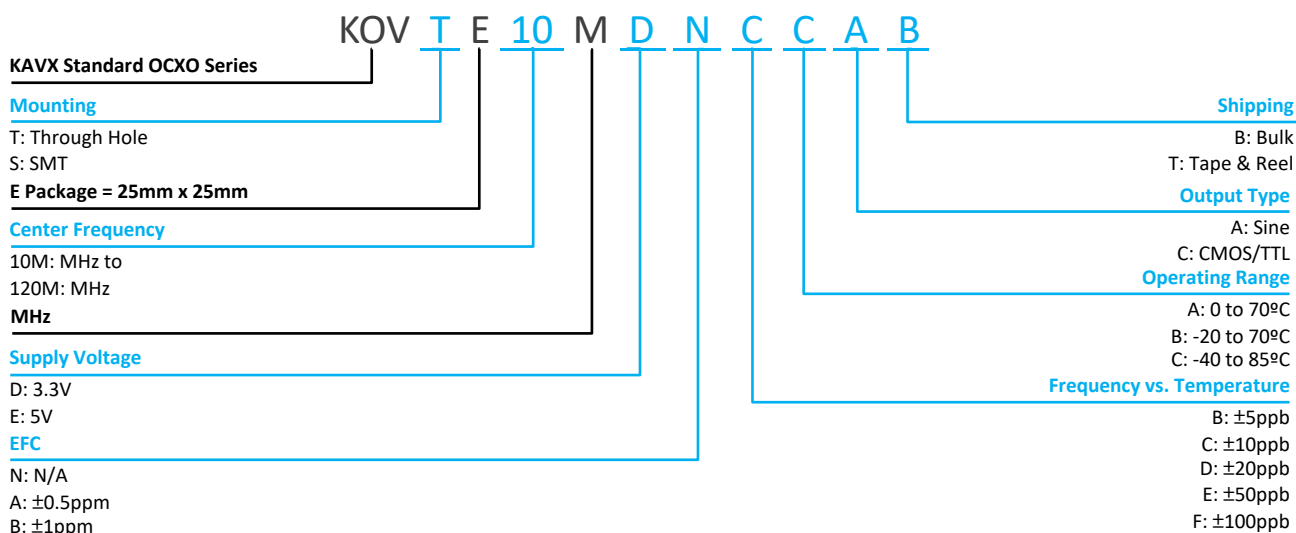


### FEATURES

- Thru Hole or Surface Mountable
- High Stability vs. Temperature
- Quick Warm-Up Time
- Low Age Rates
- Low Phase Noise
- 25 x 25mm Package

KYOCERA AVX's high performance OCXO product offering is a result of 90+ years of leading products within the Frequency Control Industry. Modern layout topologies enable KYOCERA AVX to engineer and manufacture robust designs for all applications.

### HOW TO ORDER



\* Configuration items are in blue

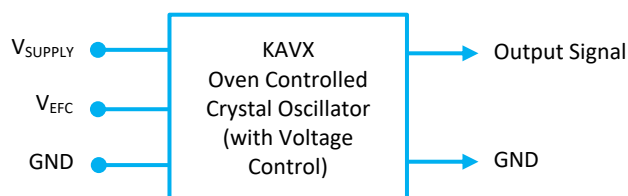
\*\* Not all combinations of options may be possible

\*\*\* Other options may be available

### APPLICATIONS

- Network Infrastructure
- 5G Picocell
- Test and Measurement Systems
- GPS Precision Timing Devices
- Medical Devices
- Aerospace
- Industrial

### BLOCK DIAGRAM



Note: If EFC Option "N" is used, connect  $V_{EFC}$  to GND



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### PERFORMANCE SPECIFICATIONS

| Parameter                    | Conditions              | Values |          |      | Unit |
|------------------------------|-------------------------|--------|----------|------|------|
|                              |                         | MIN    | TYP      | MAX  |      |
| Frequency Range              |                         | 10     |          | 120  | MHz  |
| Initial Tolerance            | @ +25°C (Nominal)       |        |          | ±100 | ppb  |
| Warm Up Time                 | To initial tolerance    |        |          | 3    | Min  |
| Frequency Stability          |                         |        |          |      |      |
| vs. Temperature              | Options B - (Max-Min)/2 |        | ±5       |      | ppb  |
|                              | Options C - (Max-Min)/2 |        | ±10      |      | ppb  |
|                              | Options D - (Max-Min)/2 |        | ±20      |      | ppb  |
|                              | Options E - (Max-Min)/2 |        | ±50      |      | ppb  |
|                              | Options F - (Max-Min)/2 |        | ±100     |      | ppb  |
| vs. Load                     | ± 5% Δ in Load          |        | ±2       |      | ppb  |
| vs. Supply Voltage           | ± 5% Δ in supply        |        | ±2       |      | ppb  |
| ADEV (Short Term Stability)  | T = 1 second            |        | 5E-11    |      |      |
| Aging                        |                         |        |          |      |      |
| Per Day                      | After 30 Days Operation |        |          | ±1.0 | ppb  |
| 1 <sup>st</sup> Year         |                         |        |          | ±100 | ppb  |
| Supply Voltage (Vdd)         | Option D                | 3.13   | 3.3      | 3.47 | Vdc  |
|                              | Option E                | 4.75   | 5        | 5.25 | Vdc  |
| Power Dissipation            |                         |        |          |      |      |
| Start Up                     | @ +25°C (Nominal)       |        |          | 3.5  | W    |
| Steady State                 | @ +25°C (Nominal)       |        | 1.5      |      | W    |
| Electronic Frequency Control |                         |        |          |      |      |
| Voltage Range                |                         | 0      | Vdd/2    | Vdd  | Vdc  |
| Frequency Range              | Option N                | 0      |          |      | ppm  |
|                              | Option A                | ±0.5   |          |      | ppm  |
|                              | Option B                | ±1.0   |          |      | ppm  |
| Slope                        |                         |        | positive |      |      |
| Input Impedance              |                         |        | 100      |      | kΩ   |
| Linearity                    |                         |        | 10       |      | %    |

Note: Values typical of 10MHz units



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| Parameter                         | Conditions | Values  |     |         | Unit |
|-----------------------------------|------------|---------|-----|---------|------|
| Output Characteristics (CMOS/TTL) |            | MIN     | TYP | MAX     |      |
| High Output Level                 | Logic "1"  | 90% Vdd |     |         | Vdc  |
| Low Output Level                  | Logic "0"  |         |     | 10% Vdd | Vdc  |
| Rise/Fall Time                    |            |         |     | 5       | nSec |
| Duty Cycle                        |            | 45      | 50  | 55      | %    |
| Load                              |            |         | 15  |         | pF   |
| Output Characteristics (Sinusoid) |            | MIN     | TYP | MAX     |      |
| Output Level                      |            |         | 9.0 |         | dBm  |
| Spurious                          |            |         |     | -70     | dBc  |
| Harmonics                         |            |         |     | -40     | dBc  |
| Load                              |            | 45      | 50  | 55      | Ω    |

| Parameter             | Conditions                | Values   |      | Unit   |
|-----------------------|---------------------------|----------|------|--------|
| Phase Noise           |                           | TYP      | TYP  |        |
| Phase Noise (10 MHz)  | Tested at +25°C (Nominal) | Sinusoid | CMOS |        |
|                       | 10Hz                      | -120     | -120 | dBc/Hz |
|                       | 100Hz                     | -140     | -140 | dBc/Hz |
|                       | 1kHz                      | -145     | -145 | dBc/Hz |
|                       | 10kHz                     | -155     | -150 | dBc/Hz |
|                       | 100kHz                    | -155     | -155 | dBc/Hz |
| Phase Noise (100 MHz) | Tested at +25°C (Nominal) | Sinusoid | CMOS |        |
|                       | 10Hz                      | -90      | -90  | dBc/Hz |
|                       | 100Hz                     | -120     | -120 | dBc/Hz |
|                       | 1kHz                      | -145     | -140 | dBc/Hz |
|                       | 10kHz                     | -155     | -145 | dBc/Hz |
|                       | 100kHz                    | -155     | -150 | dBc/Hz |

Note: Values typical of 10MHz units



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### ENVIRONMENTAL COMPLIANCE

| Parameter                | Conditions                                                                 | Values |     |      | Unit  |
|--------------------------|----------------------------------------------------------------------------|--------|-----|------|-------|
|                          |                                                                            | MIN    | TYP | MAX  |       |
| Operating Temperature    | Option A                                                                   | 0      |     | +70  | °C    |
|                          | Option B                                                                   | -20    |     | +70  | °C    |
|                          | Option C                                                                   | -40    |     | +85  | °C    |
| Storage Temperature      |                                                                            | -55    |     | +100 | °C    |
| Seal                     | MIL-STD-202 Method 112<br>Test Condition D                                 |        |     |      |       |
| Mechanical Shock         | MIL-STD-202, Method 213,<br>Test Condition C                               |        |     |      |       |
| Vibration                | Mil-Std-202, Method 201                                                    |        |     |      |       |
| Acceleration Sensitivity | 10MHz output<br>Vibration profile:<br>0.001G <sup>2</sup> /Hz 10Hz to 2kHz |        | 1.0 |      | ppb/g |



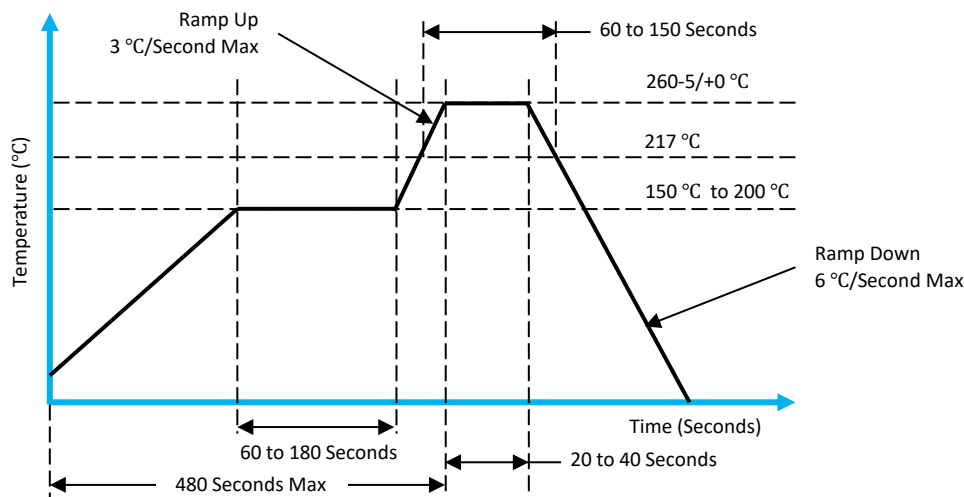
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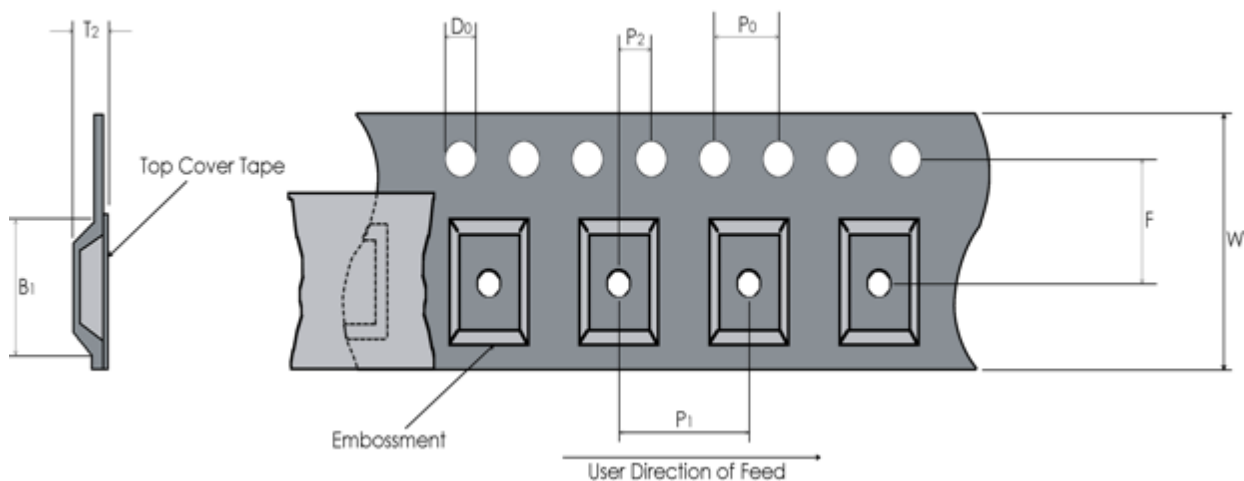
## 25 x 25mm Standard OCXO – Family Data Sheet



### ACCEPTABLE REFLOW PROFILE



### TAPE AND REEL



| Tape Dimensions (mm) |      |     |     |    |     |      |      | Reel Dimensions (mm) |              |
|----------------------|------|-----|-----|----|-----|------|------|----------------------|--------------|
| W                    | F    | Do  | Po  | P1 | P2  | B1   | T2   | Outside Dia.         | Parts / Reel |
| 56                   | 26.5 | 1.5 | 4.0 | 40 | 2.0 | 25.6 | 17.9 | 330                  | 250          |

- Notes:
1. Profile Classification per IPC/JEDEC J-STD-020C Pb-Free Small Body Assembly
  2. Only the SMT version can be selected as a Tape & Reel shipping method
  3. If Tape & Reel is required a MOQ of 200-piece increments are required.



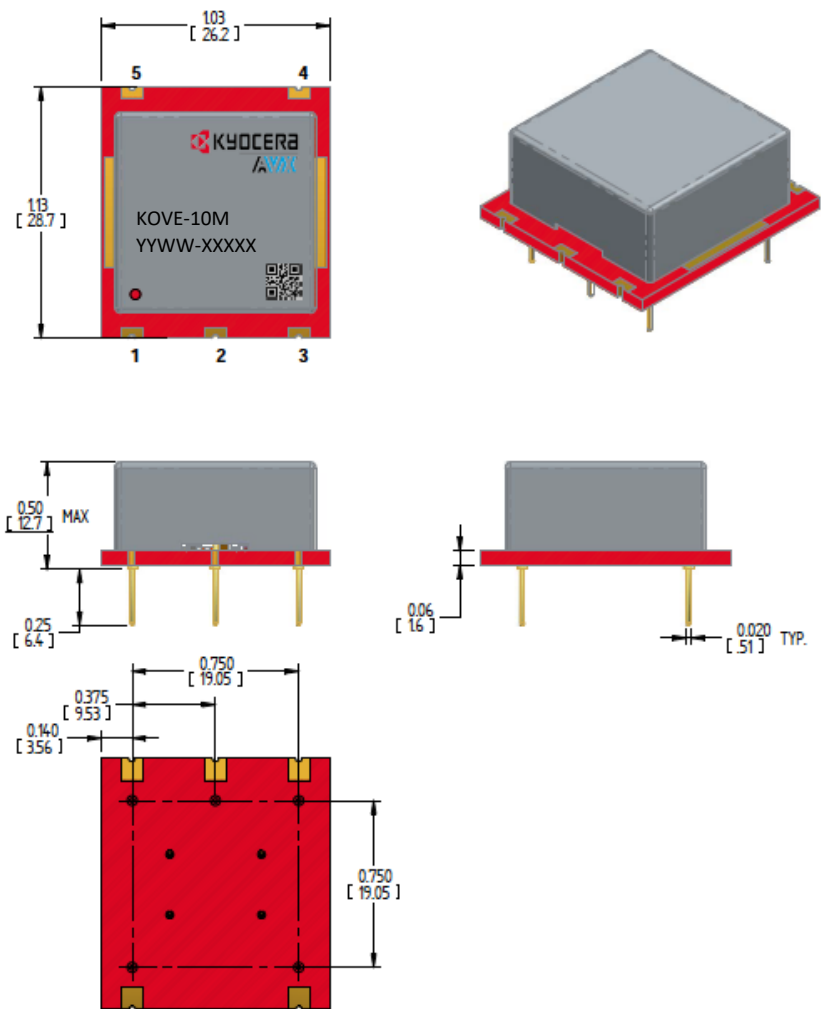
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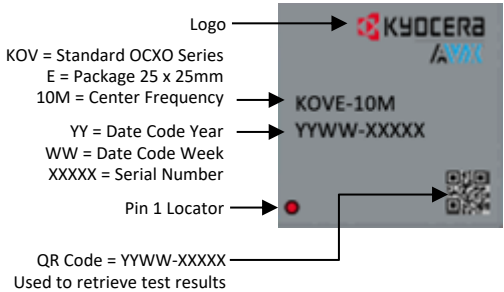
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### MECHANICAL SPECIFICATIONS - THROUGH HOLE



### MARKING



Tolerances (mm) .X =  $\pm 0.5$ , .XX =  $\pm 0.2$  unless otherwise specified

| PIN | FUNCTION       |
|-----|----------------|
| 1   | RF Output      |
| 2   | Ground         |
| 3   | EFC / N.C.     |
| 4   | N.C.           |
| 5   | Supply Voltage |



Notes:  
• Non-RoHS available upon request



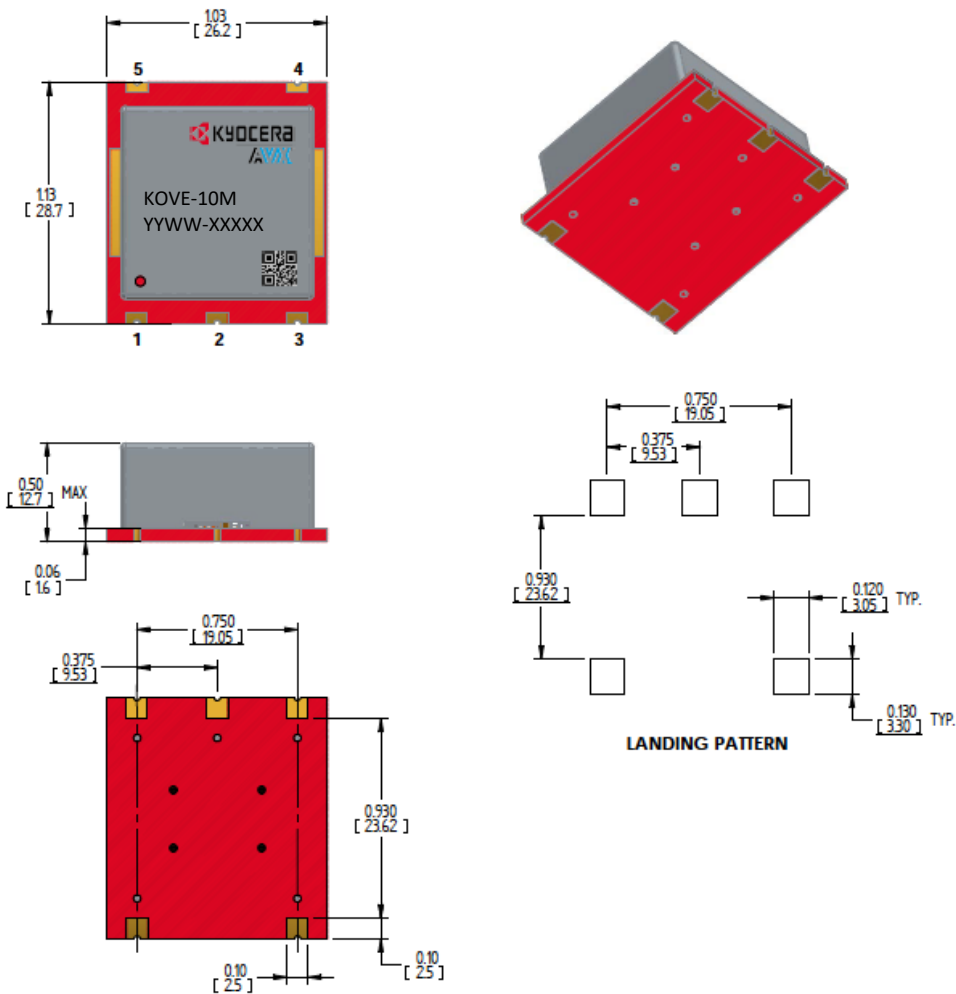
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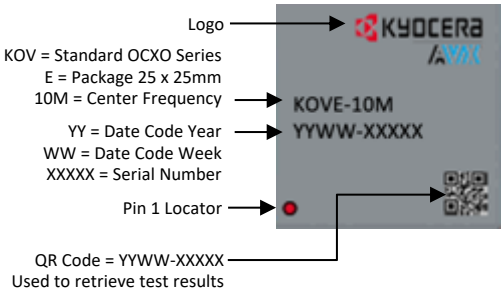
## 25 x 25mm Dip Standard OCXO – Family Data Sheet



### MECHANICAL SPECIFICATIONS – SURFACE MOUNT



### MARKING



Tolerances (mm) .X = ± 0.5, .XX = ±0.2 unless otherwise specified

| PIN | FUNCTION       |
|-----|----------------|
| 1   | RF Output      |
| 2   | Ground         |
| 3   | EFC / N.C.     |
| 4   | N.C.           |
| 5   | Supply Voltage |

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