



### Features and Benefits

Frequency range: 32.768KHz  
Supply voltage: 2.5/3.0/3.3/5.0V  
Current consumption: 3uA Max  
Output waveform: HCMOS or CMOS/TTL  
Frequency stability vs. operating temperature: ±3.0ppm  
Aging per year: ±3.0ppm Max  
Phase noise@1KHz: -135dBc/Hz  
Operating temperature: -40°C to +85°C  
Size:3.2x2.5x1.4mm

### Typical Applications

Cellular Base Stations  
Instrumentation  
Microwave Applications  
Radar reference

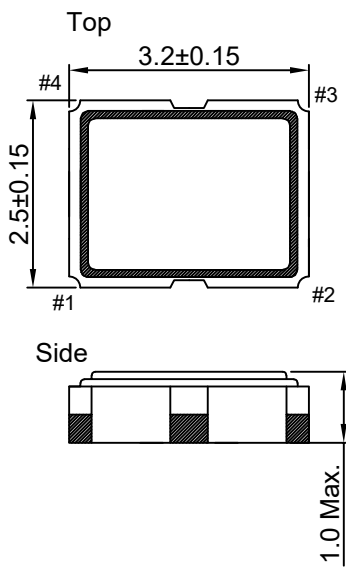
### Description

The TCXO3225AX-32.768KHz is designed for applications where exceptional frequency stability and timing is required.

It has both excellent temperature performance and short-term stability. These characteristics make it an excellent choice for timing applications.

### Mechanical Drawing & Pin Connections

**Drawing No: MD240032-1**



Pin Connections

| Pin | Function       |
|-----|----------------|
| 1   | Output Control |
| 2   | GND            |
| 3   | RF Output      |
| 4   | Supply Voltage |

Unit in mm  
1mm = 0.0394 inches



**Specifications**

| Oscillator Specification                    | Sym              | Condition                      | Value                |                 |                    | Unit   | Note |
|---|------------------|--------------------------------|----------------------|-----------------|--------------------|--------|------|
|   |                  |                                | Min.                 | Typ.            | Max.               |        |      |
| Frequency Range                             | F <sub>nom</sub> |                                |                      | 32.768          |                    | KHz    |      |
| <b>RF Output</b>                            |                  |                                |                      |                 |                    |        |      |
| Signal Waveform                             |                  |                                | CMOS/TTL or HCMOS    |                 |                    |        |      |
| Load  | R <sub>L</sub>   |                                |                      | 15              |                    | pF     |      |
| H-Level Voltage                             | V <sub>H</sub>   |                                | V <sub>cc</sub> -0.4 |                 | 0.4                | V      |      |
| L- Level Voltage                            | V <sub>L</sub>   |                                |                      |                 | 0.4                | V      |      |
| Duty Cycle                                  |                  |                                | 40                   | 50              | 60                 | %      |      |
| Rise/Fall time                              |                  |                                |                      |                 | 100                | ns     |      |
| <b>Power Supply</b>                         |                  |                                |                      |                 |                    |        |      |
| Supply Voltage                              | V <sub>cc</sub>  |                                |                      | 2.5,3.0,3.3,5.0 |                    | V      |      |
| Current Consumption                         |                  |                                |                      | 1.0             | 3.0                | uA     |      |
| Output Enable                               |                  | Enable—High<br>Disable--Low    | 20%V <sub>cc</sub>   |                 | 80%V <sub>cc</sub> |        |      |
| Startup Time                                |                  |                                |                      | 1               | 3                  | Sec    |      |
| <b>Frequency Stability</b>                  |                  |                                |                      |                 |                    |        |      |
| Versus Operating Temperature Range          |                  | Reference to +25°C             |                      | ±3.0 or<br>±5.0 |                    | ppm    |      |
| Initial Tolerance                           |                  | +25°C                          |                      | ±1.5            |                    | ppm    |      |
| Versus supply voltage                       |                  | ±5% change                     |                      |                 | ±0.2               | ppm    |      |
| Versus load                                 |                  | ±10% change                    |                      |                 | ±0.2               | ppm    |      |
| Aging 1 <sup>st</sup> Year                  |                  |                                |                      |                 | ±3.0               | ppm    |      |
| Phase noise @25°C                           |                  | 10Hz                           |                      | -80             |                    | dBc/Hz |      |
|   |                  | 100Hz                          |                      | -115            |                    | dBc/Hz |      |
|   |                  | 1kHz                           |                      | -135            |                    | dBc/Hz |      |
|   |                  | 10kHz                          |                      | -138            |                    | dBc/Hz |      |
| <b>Environmental, Mechanical Conditions</b> |                  |                                |                      |                 |                    |        |      |
| Operating temperature range                 |                  | -20°C to +70°C, -40°C to +85°C |                      |                 |                    |        |      |
| Storage temperature range                   |                  | -50°C to +100°C                |                      |                 |                    |        |      |