

# TX-D Type 32.768KHz

## 3.2 x 2.5 mm SMD CMOS

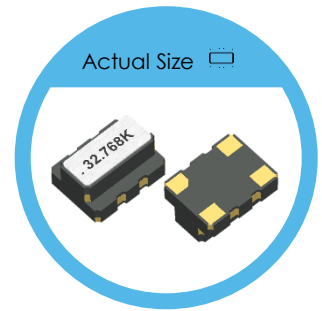
### Temperature Compensated Crystal Oscillator

#### FEATURES

- Compact Ceramic SMD Package: 3.2 x 2.5 x 1.36 mm
- Multiple Power Options: 3.3V, 2.5V, 1.8V
- CMOS Clock Output
- Operating Temperature: -40°C to 105°C
- Low Current Consumption
- Tight Symmetry Range: 40-60%

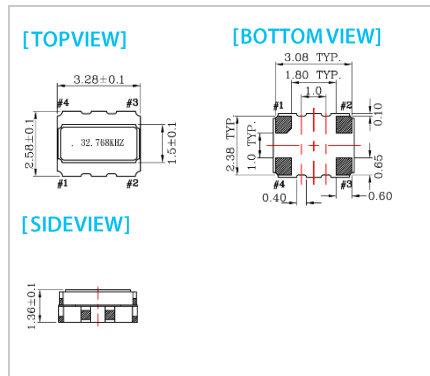
#### TYPICAL APPLICATION

- Real-Time Clocks, Mobile Phones
- Digital Cameras, Set-Top Boxes, HDTVs
- Car Navigation Systems

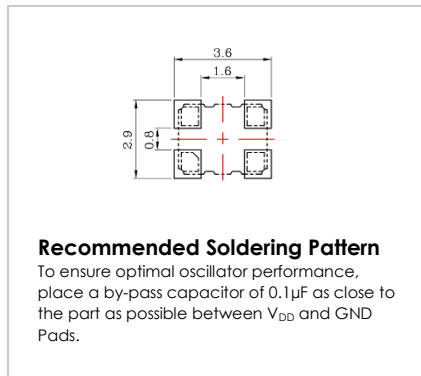


RoHS Compliant

#### DIMENSION (mm)



#### SOLDER PAD LAYOUT (mm)



#### PIN FUNCTION (mm)

| PIN# | FUNCTION       |
|------|----------------|
| 1    | Output Enable  |
| 2    | Ground         |
| 3    | Frequency Out  |
| 4    | Supply Voltage |

#### ELECTRICAL SPECIFICATION

| Parameter                                   | CMOS      |             |       |       |      |      | Unit | Test Condition |   |
|---|-----------|-------------|-------|-------|------|------|------|----------------|---|
|   | 3.3V      |             | 2.5V  |       | 1.8V |      |      |                |   |
|   | Min.      | Max.        | Min.  | Max.  | Min. | Max. |      |                |   |
| Supply Voltage Variation (V <sub>DD</sub> ) | 3.135     | 3.465       | 2.375 | 2.625 | 1.71 | 1.89 | V    |                |   |
| Standard Frequency                          | 32.768    |             |       |       |      |      | KHz  |                |   |
| Initial Frequency Tolerance                 | -2.5      | +2.5        | -2.5  | +2.5  | -2.5 | +2.5 | ppm  |                |   |
| Supply Current @ No load                    |           | 2           |       | 2     |      | 2    | µA   |                |   |
| Standby Current @ No load                   |           | 1.5         |       | 1.5   |      | 2    | µA   |                |   |
| Duty Cycle                                  | 40        | 60          | 40    | 60    | 45   | 55   | %    |                |   |
| Output Level                                | CMOS      | Output High | 2.9   | 60    | 2.1  | 60   | 1.4  | V              |   |
|   |           | Output Low  |       | 0.4   |      | 0.4  |      | 0.4            | V |
| Transition Time (10%-90%)                   | Rise Time |             | 50    |       | 50   |      | 40   | nSec           |   |
|   | Fall Time |             | 50    |       | 50   |      | 40   | nSec           |   |
| Startup Time                                |           |             | 0.5   |       | 0.5  |      | 0.5  | Sec            |   |
| Tri-State Mode (Input to Pin 1)             | Enable    | 2.64        |       | 2     |      | 1.44 |      | V              |   |
|   | Disable   |             | 0.66  |       | 0.5  |      | 0.36 | V              |   |
| Aging (@25°C 1 <sup>st</sup> year)          | -3        | +3          | -3    | +3    | -3   | +3   | ppm  |                |   |
| Operating Temp. Range                       | -40       | +105        | -40   | +105  | -40  | +105 | °C   |                |   |
| Storage Temp. Range                         | -40       | +125        | -40   | +125  | -40  | +125 | °C   |                |   |

#### FREQ. STABILITY vs. TEMP. RANGE

| Temp.(°C)  | ppm |    |
|------------|-----|----|
|            | ±5  | ±8 |
| -40 ~ +85  | ○   | ○  |
| -40 ~ +105 | X   | ○  |

○: Available Δ: Conditional x: Not Available  
 Inclusive of calibration @ 25°C ,operating temperature range,input Voltage variation,load variation,aging (1<sup>st</sup> year),shock,and vibration

Note: not all combination of options are available. Other specifications may be available upon request.  
 Specifications subject to change without notice.