

## Features

- Miniature Cylindrical Tuning Fork Crystals
- Package Size: Φ2.0x6.0mm
- Low Aging, Low Power Consumption, High Shock
- RoHS Compliant/Pb Free

## Applications

- Real Time Clock
- Consumer Devices
- Portable Electronics
- Time Display Devices



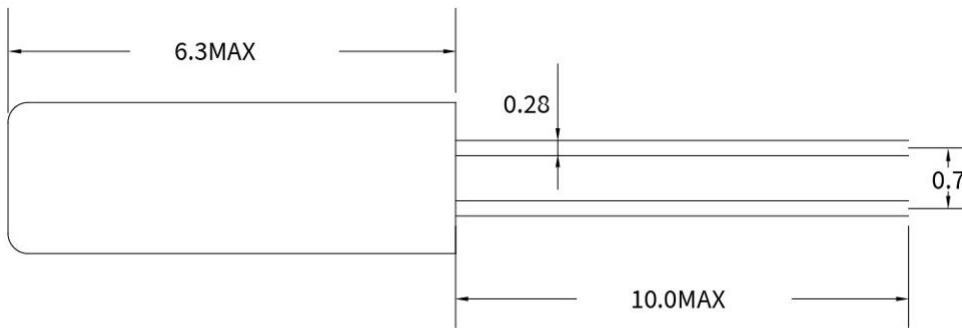
## Electrical Specifications

Item	Symb.	Electrical spec.	Notes
Nominal Frequency	Freq.	32.768KHz	
Operating Temperature	T <sub>use</sub>	-10°C~+60°C/-20°C~+70°C	
Storage Temperature Range	T <sub>stg</sub>	-40°C~85°C	
Oscillation Mode	-	Fundamental	
Frequency Tolerance	f <sub>tol</sub>	±10ppm / ±20ppm	at 25°C±3°C
Turnover Temperature	T <sub>i</sub>	±25°C±5°C	
Parabolic curvature constant	B	-0.042ppm/(Δ°C) <sup>2</sup> max.	Over Operating Temp. Range (Reference 25°C)
Drive Level	DL	1 μW Max.	
Load Capacitance	CL	6pF;7pF;9pF;12.5pF	
Effective Resistance	RR	30kΩ max	
Aging	f <sub>age</sub>	±3 ppm Max.	1st. Year at 25°C

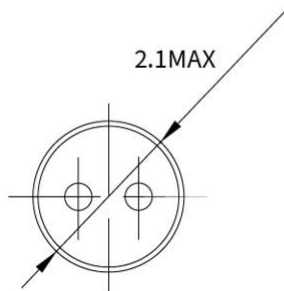


**Dimensions (mm)**

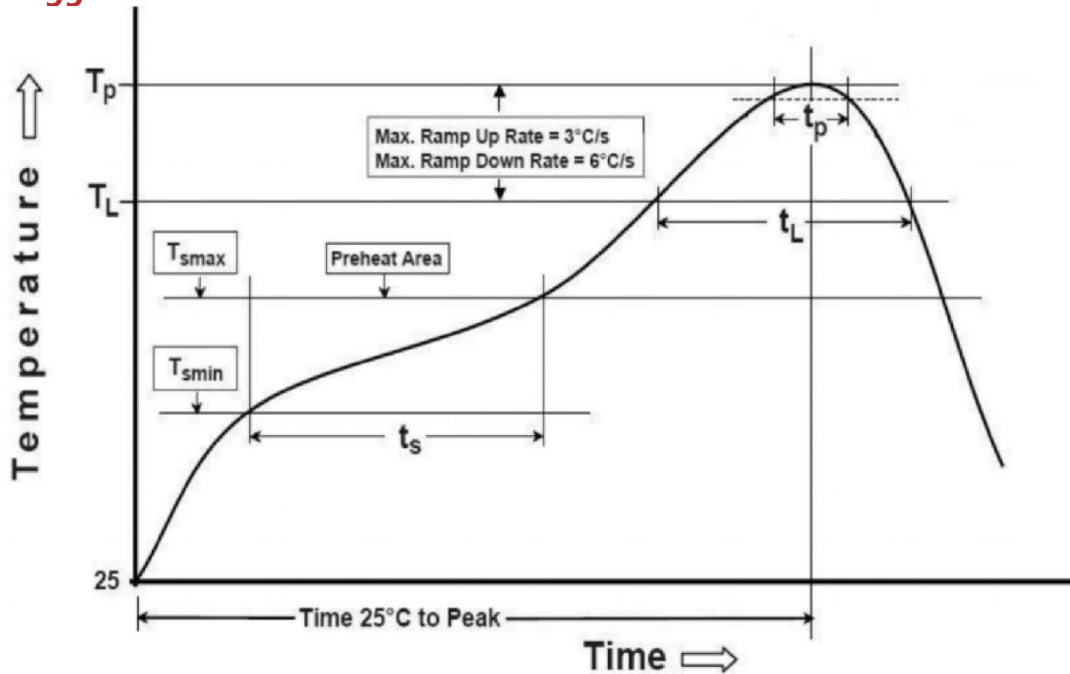
• SIDE VIEW



• BOTTOM VIEW

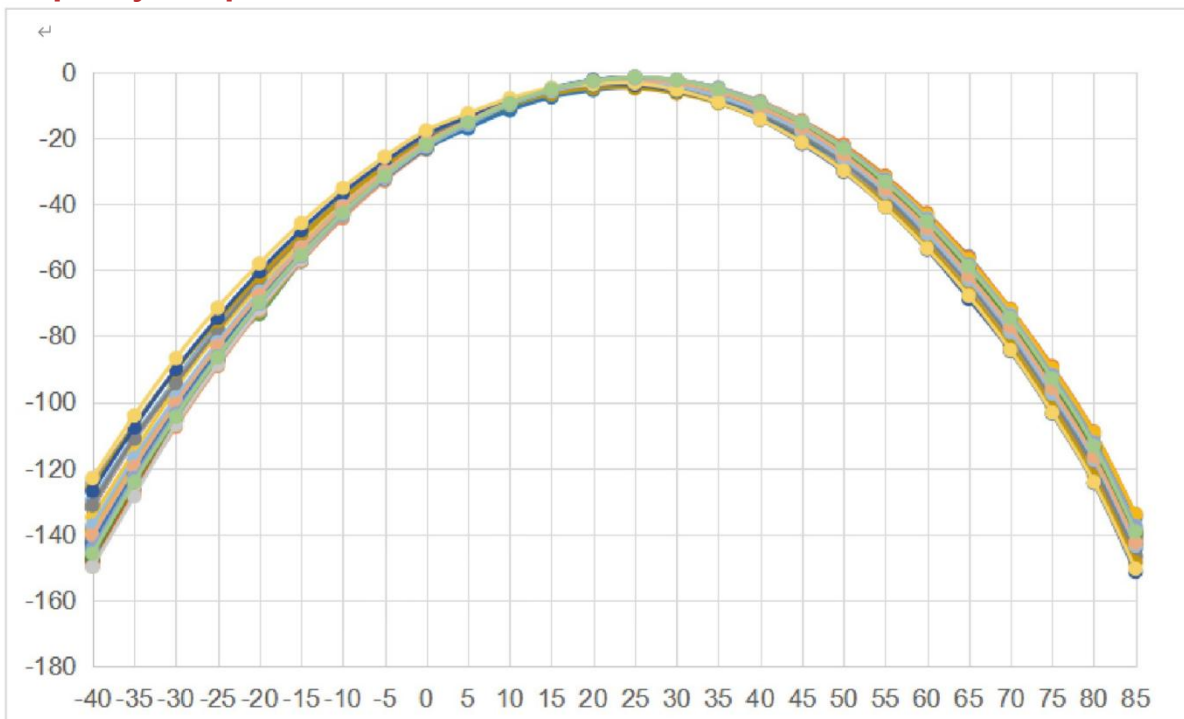


**Suggested Reflow Profile**



Profile Feature	Sn - Pb Eutectic Assembly	Preheat / Soak
Preheat / Soak ● Temperature Min ( Ts min ) ● Temperature Max ( Ts max ) ● Time ( Ts min to Ts max )	100°C 150°C 60-120 seconds	150°C 200°C 60-120 seconds
Ramp - up rate ( TL to Tp )	3°C/ second max.	3°C/ second max.
Time maintained above ● Liquidous temperature ( TL ) ● Time ( tL ) maintained above TL	183°C 60-150 seconds	217°C 60-150 seconds
Peak package body temperature ( Tp )	235°C	260°C
Time within 5° C of the specified classification temperature ( Tp )	20 seconds	30 seconds
Ramp - down rate ( Tp to TL )	6°C/ second max.	6°C/ second max.
Time 25° C to peak temperature	6 minutes max.	8 minutes max.
<b>Suggest reflow times</b>	<b>2 Times max.</b>	

**Frequency Temperature Characteristics**



**PN Structure:**

WQC-TF2063276812520EBR

WQC-TF206 32.768kHz 12.5pF ±20ppm -10°C+60°C Bulk RoHS

WQC-	TF206	32768	125	20	C	B	R
Series		Frequency Code(kHz)	Load Capacitance	Frequency Tolerance	Operating Temperature	Bulk	RoHS
		<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>

**1. Frequency**

32768	32.768kHz
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**2. Capacitance**

125	12.5pF
09	9pF
07	7pF
06	6pF

**3. Frequency Tolerance**

10	±10ppm
20	±20ppm

**4. Operating Temperature**

C	-10°C+60°C
E	-20°C+70°C

**5. Packing**

B	Bulk
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**6. RoHS**

R	RoHS
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