QTP9 Series
4.0x9.6 Plastic SMD Tuning Fork

QTP9 Series

RoHS Compliant

Features

- Excellent environmental and heat resistance plastic package with reflow capability
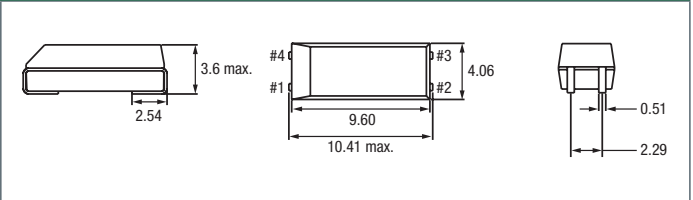- Extended temperature -40 to +85°C for industrial applications

Applications

- Wide range in communication and measuring equipment
- Commercial and Industrial applications
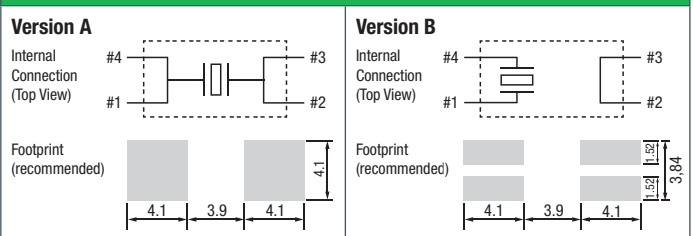- Wireless communications
- Time of day Applications

General Specifications

Nominal Frequency	32.768 kHz
Frequency Tolerance at 25°C	±20ppm
Temperature Coefficient	$-0.04 \pm 0.006ppm/\Delta\ °C^2$
Temperature Range (Operating)	-40 to +85ºC
Storage Temperature	-55 to +125°C
Load Capacitance C_L	6.0pF, 12.5pF
Shunt Capacitance C_0	1.5pF typ.
Motional Capacitance C_1	1.8fF typ.
Equivalent Series Resistance (ESR)	50KΩ max.
Drive Level	1 µW max.
Aging per Year	±3ppm max.
Insulation Resistance (MΩ)	500 at 100Vdc ±15Vdc
Quality Factor	60000 typ.
Capacitance Ratio	450 typ.

Mechanical Dimensions

Pad Connection

Version A
Internal Connection (Top View)
#4 #3
#1 #2

Footprint (recommended)
4.1   3.9   4.1   4.1

Version B
Internal Connection (Top View)
#4 #3
#1 #2

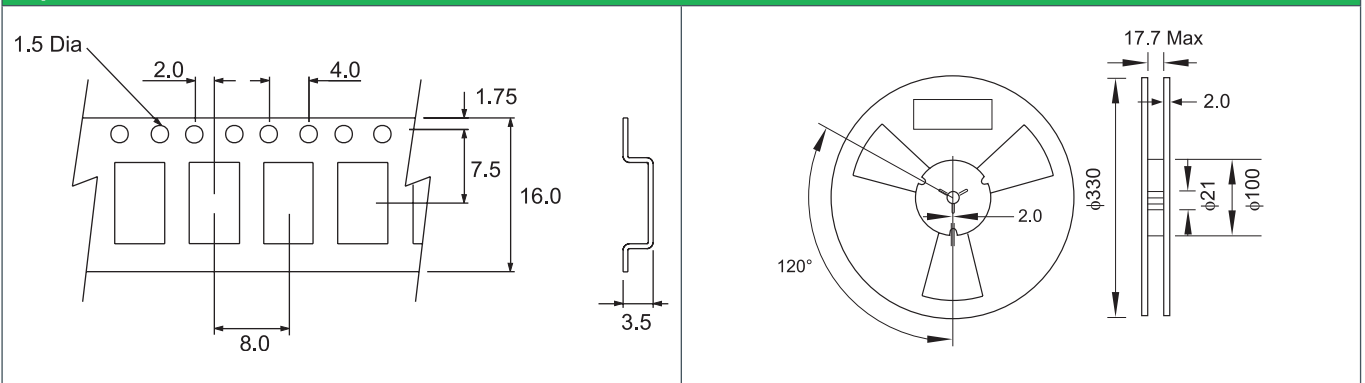Footprint (recommended)
4.1   3.9   4.1   1.52 3.84 1.52

Part Numbering Guide

Qantek Code	Package	Pad Connection	Nominal Frequency (in kHz)	Load Capacitance	Operating Temperature Range	Frequency Tolerance	Packaging
Q = Qantek	TP9 = 4.0x9.6 Plastic SMD	A = Version A B = Version B	32.768	06 = 6.0pF **12 = 12.5pF**	B = -40 to +85°C	20 = ±20ppm	R = 2000pcs Tape&Reel

Example: QTP9A32.76812B20R   bold letters = recommended standard specification

Tape and Reel Dimensions

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QTP9 Rev. 0.7

Marking Code Guide

Contains frequency

Solder Reflow Profile

260 °C MAX.

10 sec

217 °C

180 °C

150 °C

Temperature (°C)

60 to 120 sec   45 to 90 sec

Time (seconds)
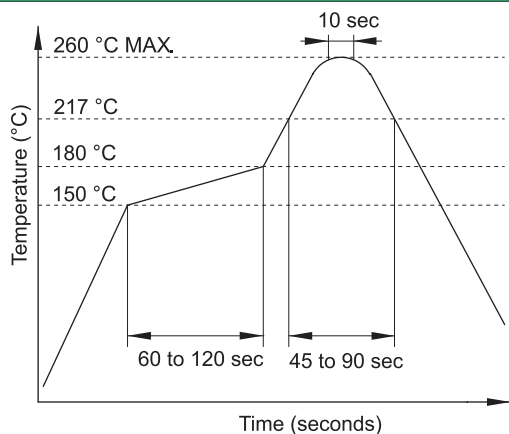
Frequency vs. Temperature Characteristics

-15   25   60

0   Temp ºC

-50

△ f/fo (PPM)
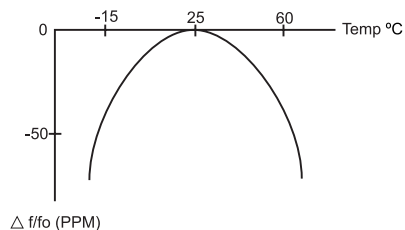
To calculate the frequency stability the parabolic curvature constant (K) is needed. For calculating the stability at 45°C?

1- Change in temperature (ΔT) is (45-25) = +20°C

2- Change in frequency is (-0.034 x (Δ°C)²) = (-0.035 x (20)² = -14.0ppm

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