

# QC32 Series

## 2.5x3.2 4-Pad SMD Quartz Crystal Unit



### Features

- Low in height, suitable for thin equipment
- Ceramic package and metal lid assures high reliability
- Tight tolerance and stability available

### Applications

- High density applications
- Modem, communication and test equipment
- PCMCIA, wireless applications
- Automotive applications

### General Specifications

Frequency Range	10.000 to 120.000MHz (Fundamental)
Frequency Tolerance at 25°C	±10 to ±100ppm (±30ppm standard)
Frequency Stability over Temperature Range	See Stability vs. Temperature Table
Storage Temperature	-55 to +125°C
Load Capacitance $C_L$	7 to 32pF and Series Resonance
Shunt Capacitance $C_0$	5.0pF max.
Equivalent Series Resistance (ESR)	See ESR Table
Drive Level	100µW typ.
Aging per Year	±3ppm max.
Insulation Resistance (MΩ)	500 at 100Vdc ±15Vdc

### Equivalent Series Resistance (ESR)

Frequency Range - MHz	Ω max.	Mode of Operation
10.000 to 12.000	150	Fundamental
12.001 to 14.000	100	
14.001 to 16.000	80	
16.001 to 20.000	60	
20.001 to 26.000	50	
26.001 to 60.000	40	Third Overtone
54.000 to 120.000	100	

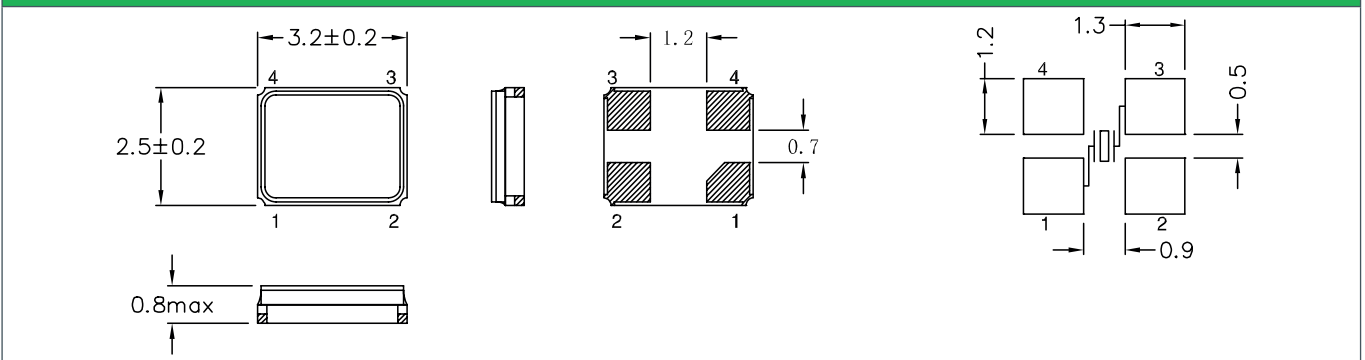
### Frequency Stability vs. Temperature

Operating Temperature	±10ppm	±20ppm	±30ppm	±50ppm	±100ppm
-20 to +70°C	○	○	○	○	○
-40 to +85°C	○*	○	●	○	○
-40 to +105°C	-	-	-	○	○
-40 to +125°C	-	-	-	-	○

\*Operating Temperature -30 to +80°C

● standard ○ available

### Mechanical Dimensions



### Part Numbering Guide

Qantek Code	Package	Nominal Frequency (in MHz)	Vibration Mode	Load Capacitance	Operating Temperature Range	Frequency Tolerance	Frequency Stability	Automotive Indicator	Packaging
Q = Qantek	C32 = 2.5x3.2 4-Pad SMD	7 digits including the decimal point (f.i.e. 12.0000)	F = AT-Fund	S = Series 08 = 8pF <b>12 = 12pF</b> 18 = 18pF 20 = 20pF etc.	A = -20 to +70°C <b>B = -40 to +85°C</b> C = -40 to +105°C D = -40 to +125°C	1 = ±10ppm 2 = ±20ppm <b>3 = ±30ppm</b> 5 = ±50ppm 0 = ±100ppm	1 = ±10ppm 2 = ±20ppm <b>3 = ±30ppm</b> 5 = ±50ppm 0 = ±100ppm	A = AEC-Q200	M = 250pcs Tape&Reel R = 1000pcs Tape&Reel R3 = 3000pcs Tape&Reel

Example: QC3212.0000F12B33R

bold letters = recommended standard specification



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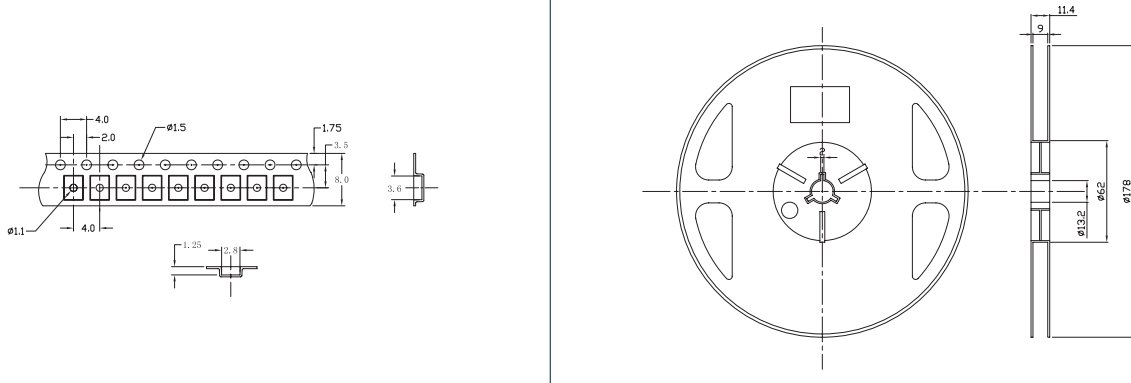
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### Tape and Reel Dimensions



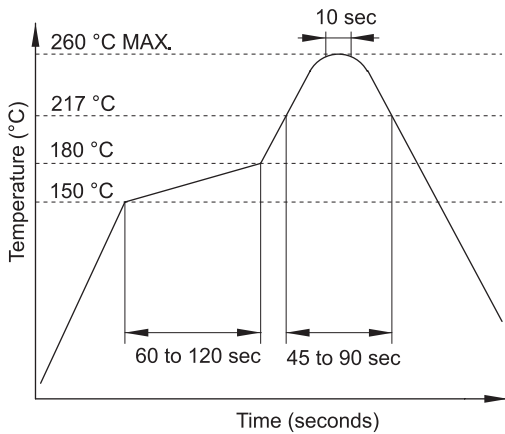
### Marking Code Guide

Contains frequency, Qantek manufacturing code, production code (month and year) and load capacitance.

Month Codes				Year Codes						Load Capacitance Code in pF			
January	A	July	G	2017	7	2018	8	2019	9	pF	PN Code	pF	PN Code
February	B	August	H	2020	0	2021	1	2022	2	12	A	20	F
March	C	September	I	2023	3	2024	4	2025	5	18	B	22	G
April	D	October	J							8	C	30	H
May	E	November	K							10	D	32	I
June	F	December	L							16	E	S	S

Example: First Line: 12.000 (Frequency) Second Line: QA8A (Qantek - January - 2018 - 12 pF)

### Solder Reflow Profile



### Environmental Specifications

Mechanical Shock	MIL-STD-202, Method 213, C
Vibration	MIL-STD-202, Method 201 & 204
Thermal Cycle	MIL-STD, Method 1010, B
Gross Leak	MIL-STD-202, Method 112
Fine Leak	MIL-STD-202, Method 112

All specifications are subject to change without notice.



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