

# QC5B Series

## 3.2x5.0 2-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	8.000 to 160.000MHz	
Mode of Oscillation	Fundamental	8.000 to 52.000MHz
	Third Overtone	40.000 to 160.000MHz
Frequency Tolerance at 25°C	±10 to ±30ppm (±30ppm standard)	
Frequency Stability over Temperature Range	See Stability vs. Temperature Table	
Storage Temperature	-55 to +125°C	
Aging per Year	±3ppm	
Load Capacitance $C_L$	10 to 32pF and Series Resonance	
Shunt Capacitance $C_0$	7.0pF max.	
Equivalent Series Resistance (ESR)	See ESR Table	
Drive Level	100µW typ.	
Insulation Resistance ( $M\Omega$ )	500 at 100Vdc ±15Vdc	

### Equivalent Series Resistance (ESR)

Frequency Range - MHz	$\Omega$ max.	Mode of Operation
8.000 to 10.000	150	Fundamental
10.100 to 12.000	90	
12.100 to 15.000	70	
15.100 to 30.000	50	
30.100 to 52.000	30	Third Overtone
40.000 to 52.000	100	
52.100 to 80.000	100	
80.100 to 156.000	80	

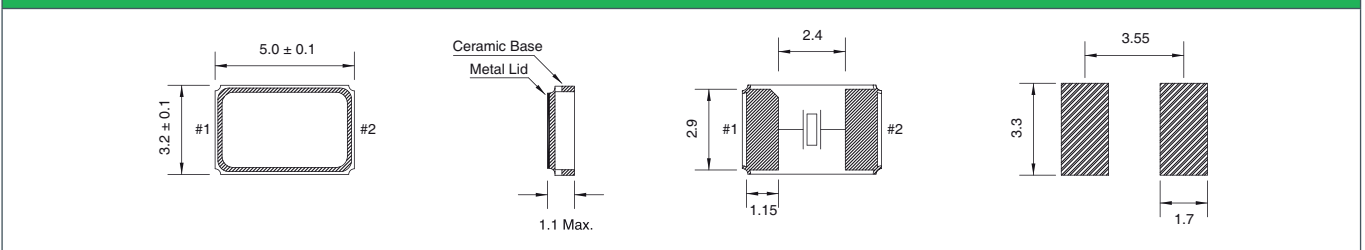
### Frequency Stability vs. Temperature

Operating Temperature	±10ppm	±20ppm	±30ppm	±50ppm	±100ppm
-20°C - +70°C	○	○	○	○	○
-40°C - +85°C	○*	○	●	○	○
-40°C - +105°C	-	-	-	○	○
-40°C - +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	C5B = 3.2x5.0 2-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

Example: QC5B12.0000F12B33R

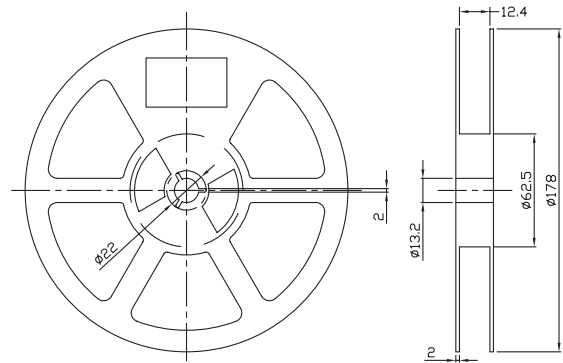
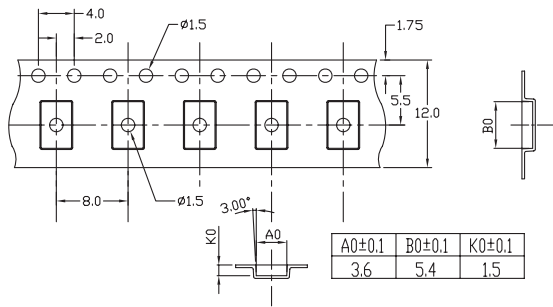
bold letters = recommended standard specification



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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

January	A	July	G
February	B	August	H
March	C	September	I
April	D	October	J
May	E	November	K
June	F	December	L

#### Year Codes

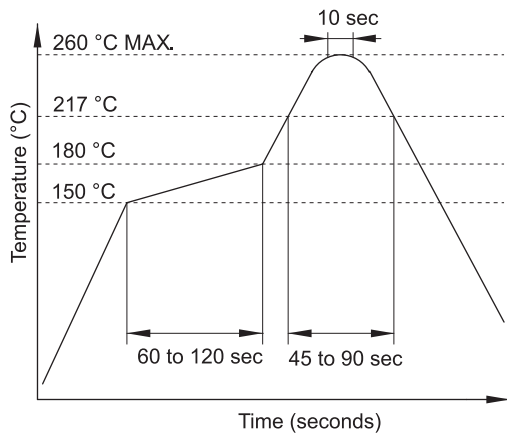
2013	3	2014	4	2015	5
2016	6	2017	7	2018	8

#### Load Capacitance Code in pF

pF	PN Code	pF	PN Code
12	A	20	F
18	B	22	G
8	C	30	H
10	D	32	I
16	E	S	S

Example: First Line: 12.000 (Frequency) Second Line: QA5A (Qantek - January - 2015 - 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.

