

QCS Series

HC-49/U-S SMD 2-Pad



Features

- Suitable for RoHS reflow
- Available for tight stability & extended temperature range

Applications

- Computers, Modems, Microprocessors
- Wireless Applications

General Specifications

| | | |
|--|-------------------------------------|---------------------|
| Frequency Range | 3.200 to 70.000MHz | |
| Mode of Oscillation | Fundamental | 3.200 to 32.768MHz |
| | Third Overtone | 24.576 to 70.000MHz |
| 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 max. | |
| Load Capacitance C_L | 10 to 32pF and Series Resonance | |
| Shunt Capacitance C_0 | 7.0pF | |
| Equivalent Series Resistance (ESR) | See ESR Table | |
| Drive Level | 100µW typ. / 500µW max. | |
| Insulation Resistance ($M\Omega$) | 500 at 100Vdc ±15Vdc | |

Equivalent Series Resistance (ESR)

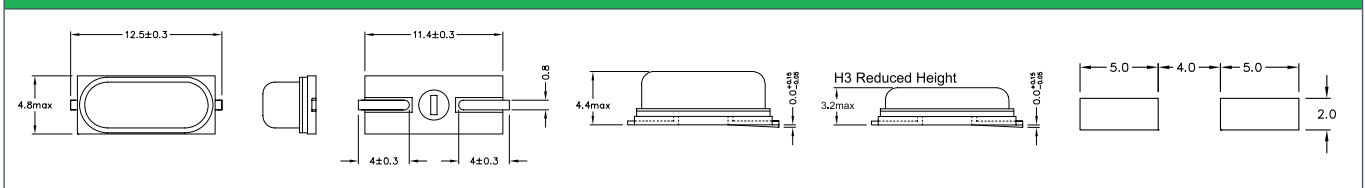
| Frequency Range - MHz | Ω max. | Mode of Operation |
|-----------------------|---------------|-------------------|
| 3.200 to 3.499 | 150 | Fundamental / AT |
| 3.500 to 3.999 | 120 | |
| 4.000 to 5.999 | 100 | |
| 6.000 to 6.999 | 70 | |
| 7.000 to 8.999 | 60 | |
| 9.000 to 9.999 | 50 | |
| 10.000 to 12.999 | 40 | |
| 13.000 to 19.999 | 30 | |
| 20.000 to 30.999 | 20 | |
| 30.000 to 66.999 | 80 | Third Overtone |

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 | | | | | ○ |

● 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 | Package Option | Packaging |
|-------------|--------------------------|---|----------------|---|---|--|--|----------------|---|
| Q = Qantek | CS = HC-49/U-S SMD 2-Pad | 7 digits including the decimal point (f.i.e. 12.0000) | F = AT-Fund | S = Series 08 = 8pF 12 = 12pF 18 = 18pF 20 = 20pF etc. | A = -20 to +70°C B = -40 to +85°C C = -40 to +105°C D = -40 to +125°C | 1 = ±10ppm 2 = ±20ppm 3 = ±30ppm 5 = ±50ppm 0 = ±100ppm | 1 = ±10ppm 2 = ±20ppm 3 = ±30ppm 5 = ±50ppm 0 = ±100ppm | H3 = 3.2mm | M = 250pcs Tape&Reel R = 1000pcs Tape&Reel |

Example: QCS12.0000F18B35R

bold letters = recommended standard specification



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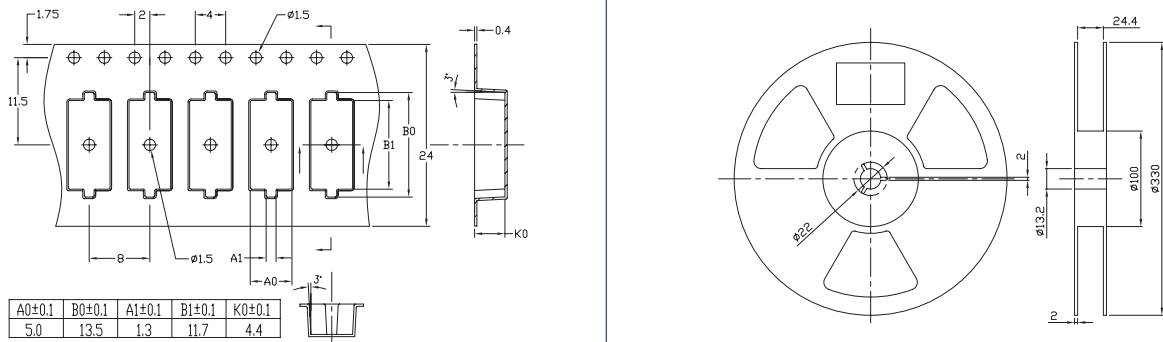
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Tape and Reel Dimensions



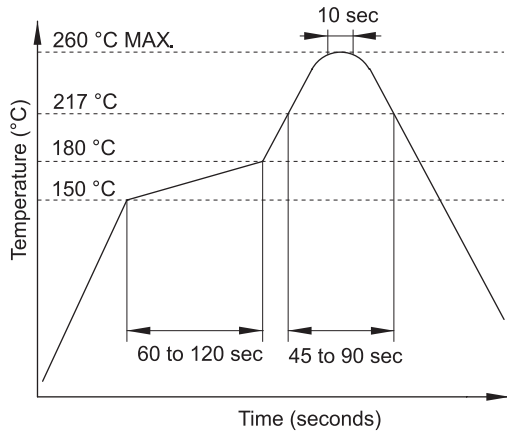
Marking Code Guide

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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