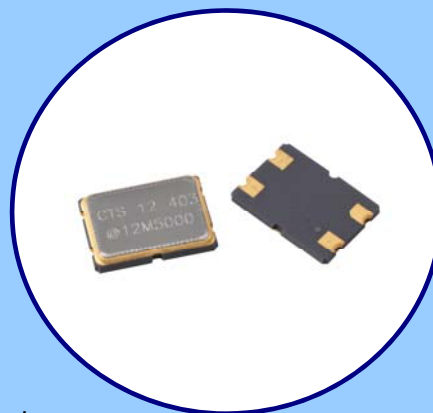




FEATURES

- Standard 7.0mm x 5.0mm Ceramic Surface Mount Package
- Fundamental and 3rd Overtone Crystal Design
- Frequency Range 6 – 133MHz
- Frequency Tolerance, ± 30 ppm Standard
- Frequency Stability, ± 50 ppm Standard
- Operating Temperature to -40°C to $+85^{\circ}\text{C}$
- Stable Frequency Over Temperature and Drive Level
- Tape & Reel Packaging Standard, EIA-481
- **RoHS/Green Compliant [6/6]**



APPLICATIONS

Model 407 is a seam sealed ceramic packaged quartz resonator offering excellent performance for a wide variety of applications including; wireless communications, broadband access, WLAN/WiMax/WIFI, test and measurement, portable equipment and computer peripherals.

ORDERING INFORMATION

407 M

| MODE OF OSCILLATION | | | FREQUENCY IN MHz | |
|--|--|--|---|------------|
| F = Fundamental T = 3rd Overtone | | | M - indicates MHz and decimal point. ^{1,2} | |
| FREQUENCY TOLERANCE @ +25°C | | | LOAD CAPACITANCE | |
| 1 = ± 10 ppm | 2 = ± 20 ppm | X = ± 15 ppm 3 = ± 30 ppm | K = 8pF | D = 18pF |
| | | | J = 9pF | E = 20pF |
| | | | A = 10pF | F = 24pF |
| | | | L = 12pF | G = 30pF |
| | | | C = 16pF | S = Series |
| TEMPERATURE STABILITY/TEMPERATURE RANGE | | | | |
| -20°C to $+70^{\circ}\text{C}$ | -30°C to $+85^{\circ}\text{C}$ | -40°C to $+85^{\circ}\text{C}$ | | |
| 1 = ± 10 ppm X = ± 15 ppm 2 = ± 20 ppm 3 = ± 30 ppm 5 = ± 50 ppm | R = ± 10 ppm Y = ± 15 ppm N = ± 20 ppm 4 = ± 30 ppm 8 = ± 50 ppm | W = ± 15 ppm 6 = ± 20 ppm 7 = ± 30 ppm 9 = ± 50 ppm | | |

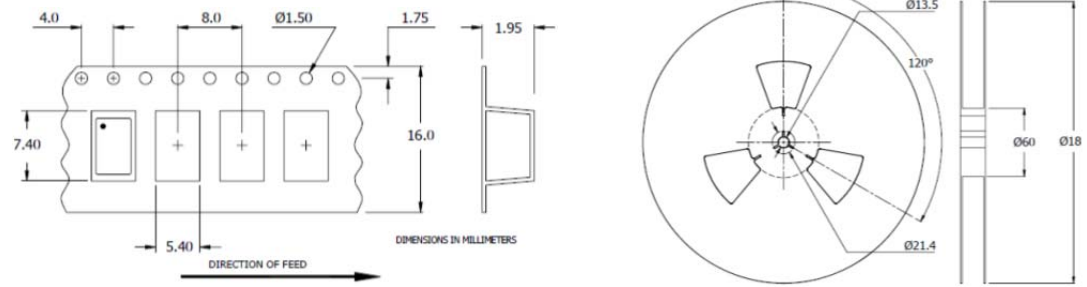
1 Frequency is recorded with 3 leading digits before the 'M' and 4 significant digits after the 'M' [including zeros].
[Ex. XXXMXXXX (016M3840), XXXMXXXX (022M1184)]

2] There are frequencies that have significant digits after the 'M' that exceed the 4 digits. The remaining digits will be truncated from the CTS part number, but the factory will calibrate to the full frequency desired. Ex. PN Frequency = Actual Frequency
13M5537 = 13.553750 MHz 14M3181 = 14.318180 MHz 16M6666 = 16.666670 MHz 28M6363 = 28.636360 MHz

Not all performance combinations and frequencies may be available.
Contact your local CTS Representative or CTS Customer Service for availability.

PACKAGING INFORMATION [reference]

Device quantity is 1k pcs. maximum per 180mm reel.

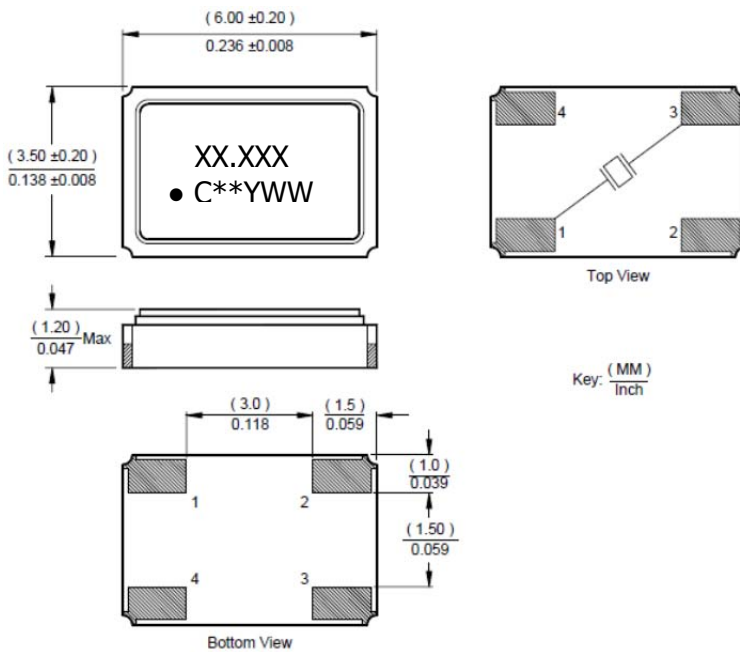


ELECTRICAL CHARACTERISTICS

| ELECTRICAL PARAMETERS | PARAMETER | VALUE | |
|---|-----------------|------------------------------|----------------|
| | Frequency Range | | 6MHz to 40MHz |
| Operating Mode | | Fundamental | 3rd Overtone |
| Crystal Cut | | AT-Cut | |
| Frequency Tolerance @ +25°C | | ±30ppm, Standard | |
| Frequency Stability Tolerance [Operating Temperature Range, Referenced to +25°C Reading] | | ±30ppm, Standard | |
| Operating Temperature Ranges | | -20°C to +70°C | |
| | | -30°C to +85°C | -40°C to +85°C |
| Equivalent Series Resistance - Fundamental Mode [Maximum] | 6MHz - <10MHz | 80 Ohms | |
| | 10MHz - <14MHz | 70 Ohms | |
| | 15MHz - <20MHz | 50 Ohms | |
| | 20MHz - 40MHz | 40 Ohms | |
| Equivalent Series Resistance - 3rd Overtone Mode [Maximum] | 35MHz - <44MHz | 80 Ohms | |
| | 44MHz - <50MHz | 70 Ohms | |
| | 50MHz - <80MHz | 60 Ohms | |
| | 80MHz - 133MHz | 60 Ohms | |
| Load Capacitance | | See Ordering Information | |
| Shunt Capacitance [C ₀] | | 5.0pF Typical, 7.0pF Maximum | |
| Drive Level | | 10µW Typ., 200µW Max. | |
| Aging @ +25°C | | ±3ppm/yr Typical | |
| Insulation Resistance | | 500M Ohms @ DC 100V | |
| Storage Temperature Range | | -40°C to +100°C | |

MECHANICAL SPECIFICATIONS

PACKAGE DRAWING



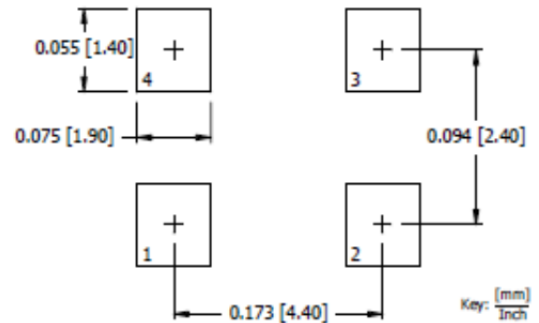
MARKING INFORMATION

1. XX.XXX – Frequency marked with 3 significant digits after the decimal.
2. C – CTS identifier.
3. ** – Manufacturing Site code.
4. YWW – Date Code, Y – Last Digit of Year, WW – Week.

NOTES

1. Complete CTS part number, frequency value and date code information must appear on reel and carton labels.
2. Terminations #2, #4 and metal lid are connected internally and may be connected to ground for EMI suppression.
3. Termination pads (e4); barrier plating is nickel [Ni] with gold [Au] flash plate.
4. Reflow conditions per JEDEC J-STD-020; +260°C maximum, 10 seconds.
5. MSL = 1.

SUGGESTED SOLDER PAD GEOMETRY



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