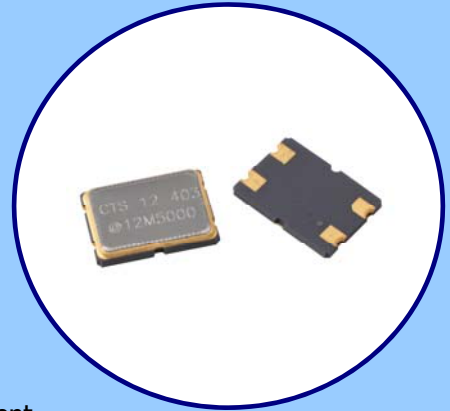




FEATURES

- 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	
F = Fundamental	T = 3rd Overtone

FREQUENCY IN MHz
M - indicates MHz and decimal point. ^{1,2}

FREQUENCY TOLERANCE @ +25°C	
1 = ± 10 ppm	2 = ± 20 ppm
X = ± 15 ppm	3 = ± 30 ppm

LOAD CAPACITANCE	
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°C	-30°C to +85°C	-40°C to +85°C
1 = ± 10 ppm	R = ± 10 ppm	W = ± 15 ppm
X = ± 15 ppm	Y = ± 15 ppm	6 = ± 20 ppm
2 = ± 20 ppm	N = ± 20 ppm	7 = ± 30 ppm
3 = ± 30 ppm	4 = ± 30 ppm	9 = ± 50 ppm
5 = ± 50 ppm	8 = ± 50 ppm	

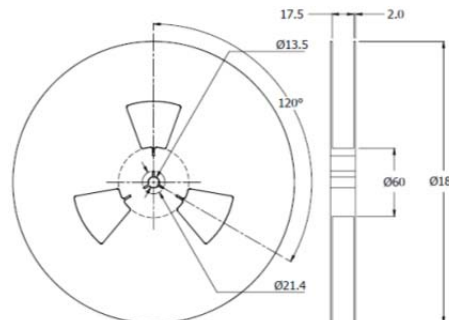
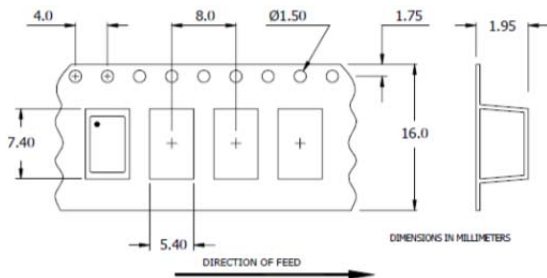
1] Frequency is recorded with 3 leading digits before the 'M' and 4 significant digits after the 'M' [including zeros].
[Ex. XXXXXXXX (016M3840), XXXXXXXX (022M184)]

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.

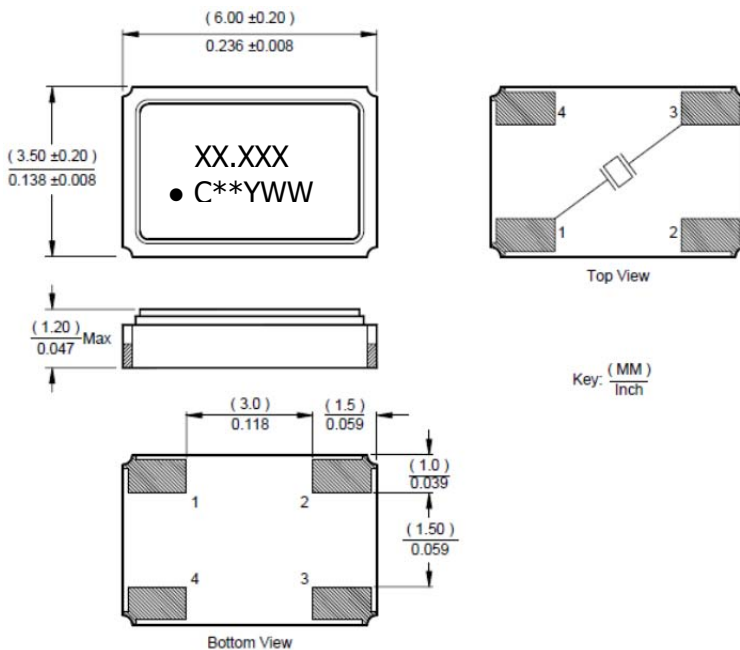


ELECTRICAL CHARACTERISTICS

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



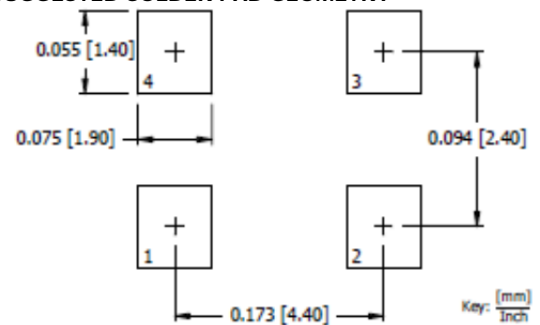
MARKING INFORMATION

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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CTS:

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[407F35D032M0000](#) [407F35D044M7360](#) [407F35E007M3728](#) [407F35E024M0000](#) [407F35E032M0000](#)
[407F39D007M3728](#) [407F39D009M6000](#) [407F39D012M0000](#) [407F39D016M6700](#) [407F39D024M0000](#)
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[407F39E012M0000](#) [407F39E016M6700](#) [407F39E024M0000](#) [407F39E025M0000](#) [407F39E032M0000](#)
[407F39E044M7360](#) [407F35E009M6000](#) [407F35E012M0000](#) [407F35E025M0000](#)