

FEATURES

- Standard HC-49/US [thru-hole] and HC-49/US-SM [surface mount] Packages
- Stable Frequency Over Temperature and Drive Level
- **Fundamental and 3rd Overtone Crystals**
- Frequency Range 3.2 – 64 MHz
- Frequency Tolerance, ± 30 ppm Standard
- Frequency Stability, ± 50 ppm Standard
- Operating Temperature, -20°C to $+70^{\circ}\text{C}$ Standard, -40°C to $+85^{\circ}\text{C}$ Available
- Tape & Reel Packaging Available
- **RoHS/Green Compliant [6/6]**

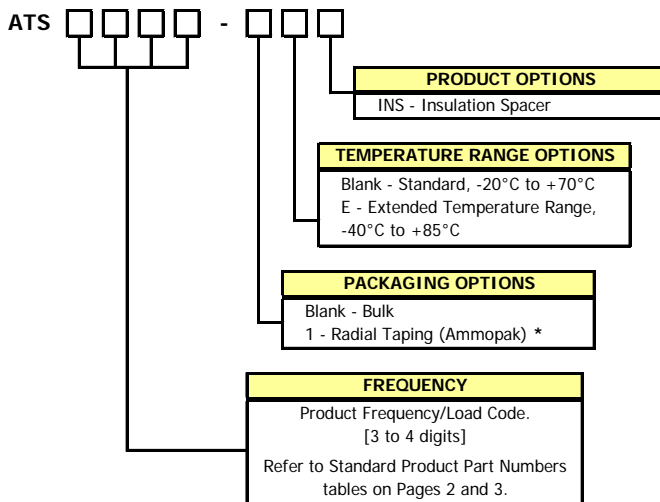


APPLICATIONS

The ATS/ATS-SM crystal series offers excellent long-term stability and reliability in a proven resistance-weld metal package. The excellent shock performance makes it suitable for microprocessor, telecommunication, industrial, consumer electronics and networking applications.

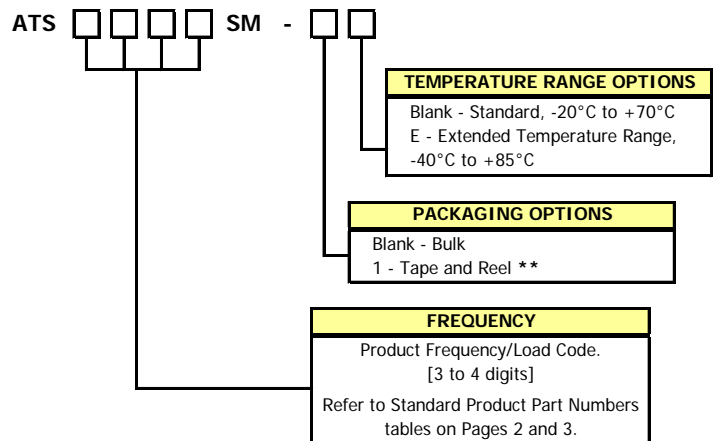
ORDERING INFORMATION

ATS



* Standard packaging is bulk in a bag.

ATS-SM



** Standard packaging is tape and reel.
CTS Distributors may use -T for tape and reel indicator.

Non-Standard Ordering Options

- Contact your local CTS Representative or CTS Inside Sales Representative for assistance.

ELECTRICAL CHARACTERISTICS

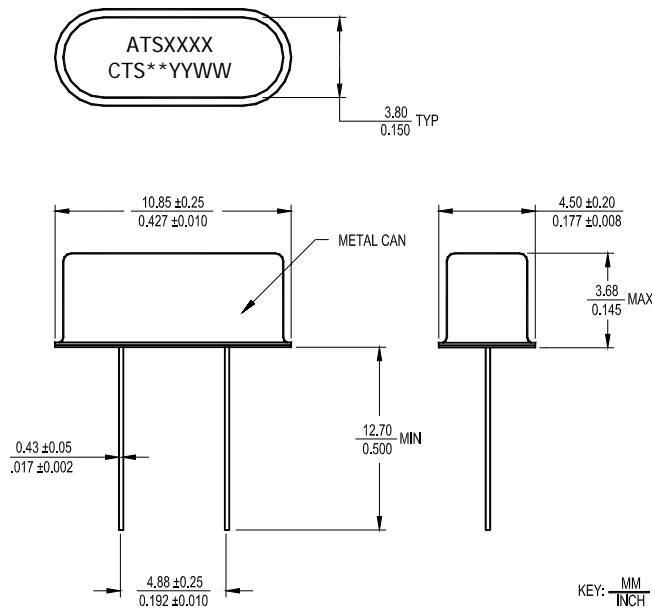
ELECTRICAL PARAMETERS	PARAMETER	VALUE
	Frequency Range	3.2 MHz to 64.0 MHz
	Operating Mode	Fundamental or 3rd Overtone
	Crystal Cut	AT-Cut
	Frequency Tolerance @ +25°C	± 30 ppm Standard *
	Frequency Stability Tolerance (Operating Temperature Range, Referenced to 25°C Reading)	± 50 ppm Standard *
	Operating Temperature Range	-20°C to +70°C * -40°C to +85°C Available, See Ordering Information
	Equivalent Series Resistance	See ESR Table
	Load Capacitance or Resonance Mode	See Standard Part Numbers tables *
	Shunt Capacitance (C ₀)	7.0 pF Maximum
	Drive Level	100 µW Typical, 1,000 µW Maximum
	Aging @ +25°C	±3 ppm/yr Typical, ±5 ppm/yr Maximum
	Insulation Resistance	500 Ohms @ DC 100V
	Storage Temperature Range	-40°C to +85°C
	Reflow Condition, per JEDEC J-STD-020	+260°C Maximum, 10 Seconds Maximum

* Custom requirements may be available upon request.

EQUIVALENT SERIES RESISTANCE TABLE

FREQUENCY RANGE	OSCILLATION MODE	ESR MAXIMUM
3.20 MHz - < 4.00 MHz	Fundamental	150 Ohms
4.00 MHz - < 5.00 MHz	Fundamental	120 Ohms
5.00 MHz - < 8.00 MHz	Fundamental	80 Ohms
8.00 MHz - < 12.00 MHz	Fundamental	60 Ohms
12.00 MHz - < 20.00 MHz	Fundamental	40 Ohms
20.00 MHz - < 30.00 MHz	Fundamental	30 Ohms
27.00 MHz - 64.00 MHz	3rd Overtone	80 Ohms

ATS PACKAGE DRAWING



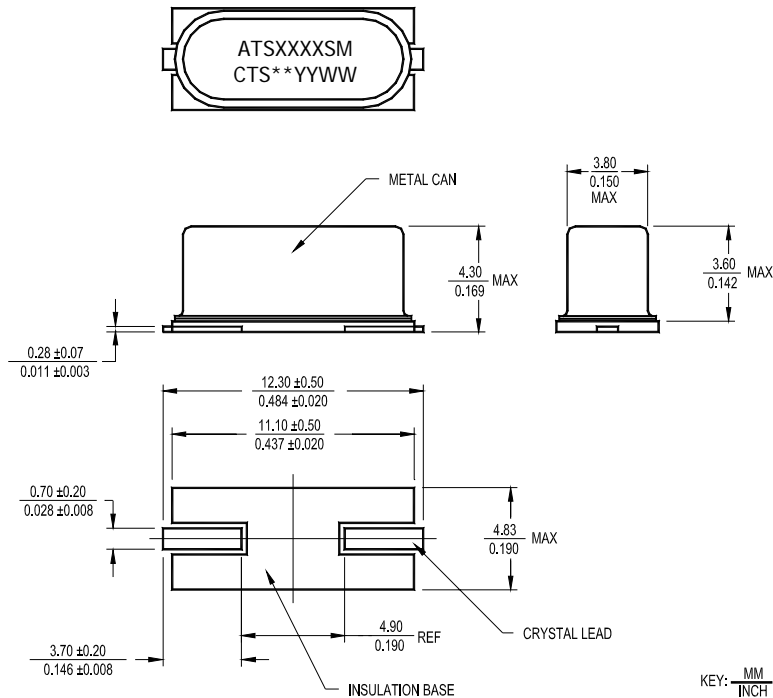
MARKING INFORMATION

1. ATXXXXX - CTS Part Number.
 - a) The package code "1" is not required in the marking.
 - b) The -E is required in the marking for extended temperature range parts.
 [See Standard Product Part Numbers tables.]
2. ** - Manufacturing Site Code.
3. YYWW - Date Code, YY - year, WW - week.
4. Complete CTS part number, frequency value and date code information must appear on bag and box labels.

NOTES

1. Lead finish (e1), SnAgCu.
2. MSL = 1.

ATS-SM PACKAGE DRAWING



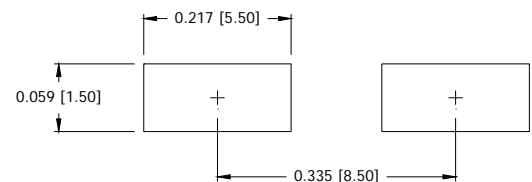
MARKING INFORMATION

1. ATXXXXXS - CTS Part Number.
 - a) The package code "1" is not required in the marking.
 - b) The -E is required in the marking for extended temperature range parts.
 [See Standard Product Part Numbers tables.]
2. ** - Manufacturing Site Code.
3. YYWW - Date Code, YY - year, WW - week.
4. Complete CTS part number, frequency value and date code information must appear on bag and box labels.

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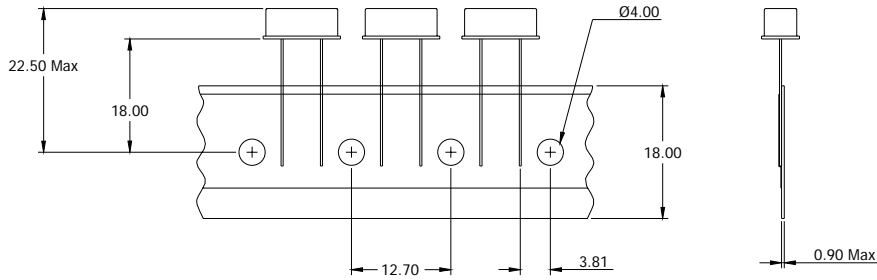
SUGGESTED SOLDER PAD GEOMETRY



PACKAGING INFORMATION

ATS Radial Taping (Ammopak)

DIMENSIONS IN MILLIMETERS



ATS-SM Tape and Reel

DIMENSIONS IN MILLIMETERS

