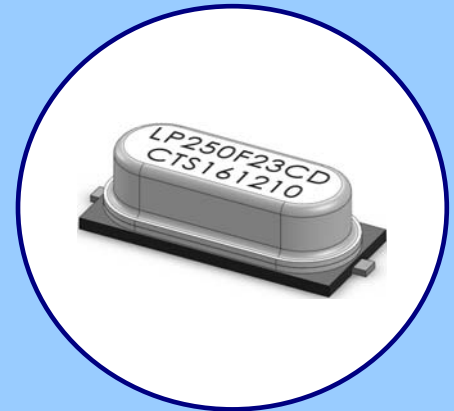




**FEATURES**

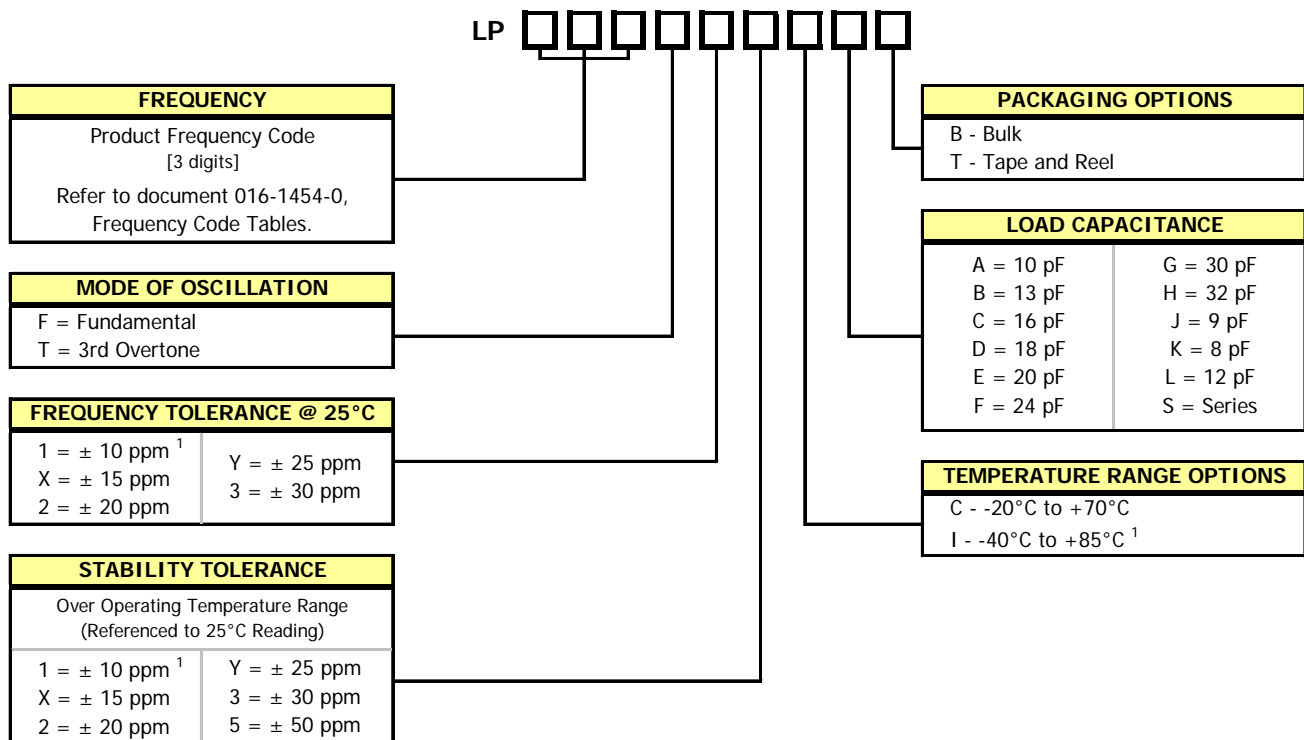
- **Low Profile Package Height, 3.2mm Maximum [HC-49/US-SM]**
- **Fundamental and 3<sup>rd</sup> Overtone Crystals**
- Stable Frequency Over Temperature and Drive Level
- Frequency Range 3.2 – 64 MHz
- Frequency Tolerance, Options from  $\pm 10$  ppm to  $\pm 30$  ppm
- Frequency Stability, Options from  $\pm 10$  ppm to  $\pm 50$  ppm
- Operating Temperature,  $-20^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$  &  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$  Standard
- Tape & Reel Packaging Standard
- **RoHS/Green Compliant (6/6)**



**APPLICATIONS**

The ATSSMLP [Low Profile] 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**



1] Check factory availability for "111" Tolerance/Stability/Temperature combination.

**Not all performance combinations and frequencies may be available.**  
**Contact your local CTS Representative or CTS Inside Sales Representative for availability.**

**ELECTRICAL CHARACTERISTICS**

	PARAMETER	VALUE
<b>ELECTRICAL PARAMETERS</b>	Frequency Range	3.2 MHz to 64.0 MHz
	Operating Mode	Fundamental or 3rd Overtone
	Crystal Cut	AT-Cut
	Frequency Tolerance @ +25°C *	±10, ±15, ±20, ±25, ±30 ppm
	Frequency Stability Tolerance * (Over Operating Temperature Range, Referenced to +25°C Reading)	±10, ±15, ±20, ±25, ±30, ± 50 ppm
	Operating Temperature Range *	-20°C to +70°C and -40°C to +85°C
	Equivalent Series Resistance	See ESR Table
	Load Capacitance	See Ordering Information
	Shunt Capacitance (C <sub>0</sub> )	7.0 pF Maximum
	Drive Level	100 μW Typical, 1,000 μW Maximum
	Aging @ +25°C	±3 ppm/yr Typical, ±5 ppm/yr Maximum
	Storage Temperature Range	-40°C to +85°C

\* See Ordering Information

**EQUIVALENT SERIES RESISTANCE TABLE**

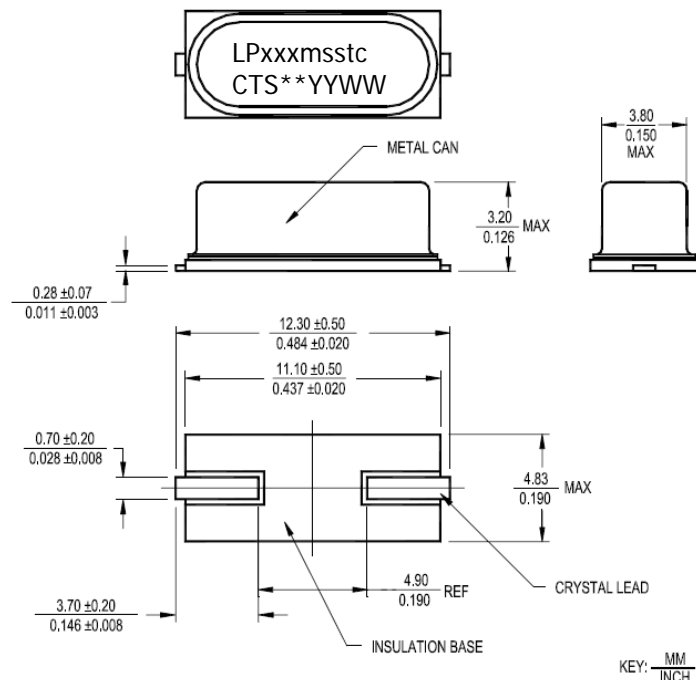
FREQUENCY RANGE	OSCILLATION MODE	ESR MAXIMUM
3.20 MHz - < 4.00 MHz	Fundamental	150 Ohms
4.00 MHz - < 5.00 MHz	Fundamental	120 Ohms
5.00 MHz - < 8.00 MHz	Fundamental	80 Ohms
8.00 MHz - < 12.00 MHz	Fundamental	60 Ohms
12.00 MHz - < 20.00 MHz	Fundamental	40 Ohms
20.00 MHz - < 30.00 MHz	Fundamental	30 Ohms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

**SCHEMATIC**



**MECHANICAL SPECIFICATIONS**

**PACKAGE DRAWING**



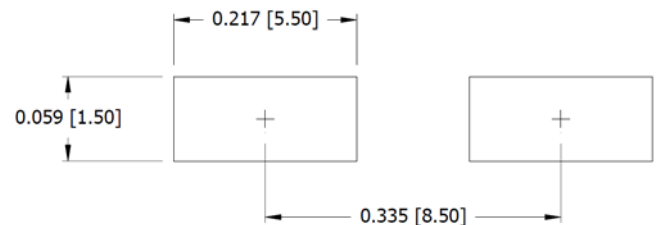
**MARKING INFORMATION**

- LPxxmsstc – Truncated CTS Part Number. [Packaging code is not required in the marking.]
  - LP – ATSSMLP platform.
  - xxx – 3-digit Frequency Code. [Reference document 016-1454-01]
  - m – Operating Mode; F = fundamental, T = 3<sup>rd</sup> Overtone.
  - sstc – Tolerance, Stability, Temperature and Load Capacitance codes. Reference Ordering Information.
- \*\* - Manufacturing Site Code.
- YYWW – Date Code, YY – year, WW – week.
- Complete CTS part number, frequency value and date code information must appear on bag and box labels.

**NOTES**

- Lead finish (e1), SnAgCu.
- Reflow conditions per JEDEC J-STD-020; 260°C maximum, 10 sec.
- MSL = 1.

**SUGGESTED SOLDER PAD GEOMETRY**



Key: Inch [mm]

**PACKAGING INFORMATION**

ATS-SM Tape and Reel [For Reference]

DIMENSIONS IN MILLIMETERS

