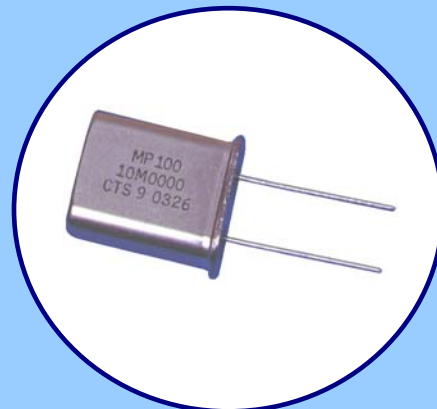


FEATURES

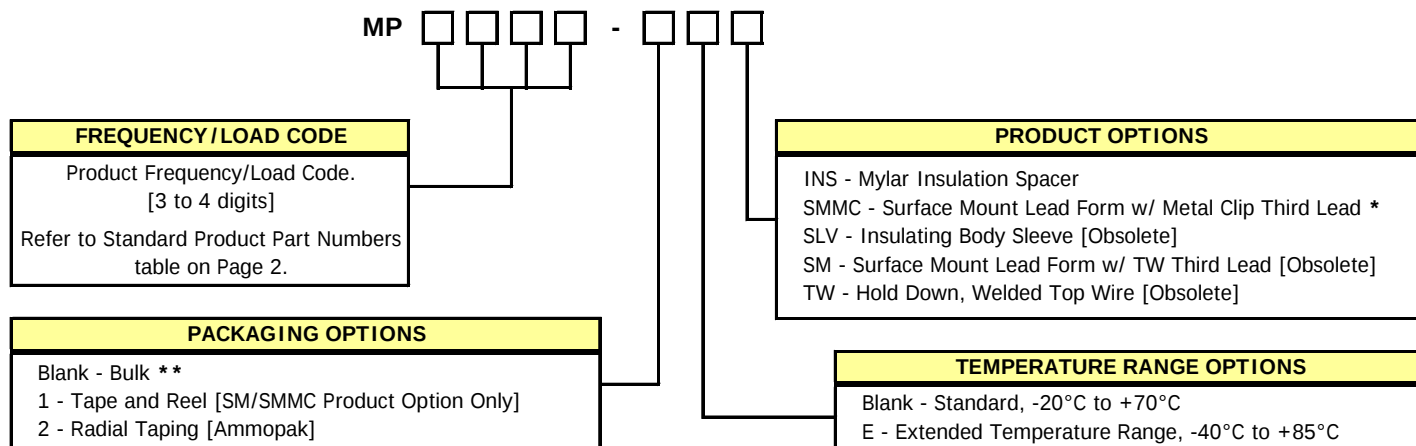
- Standard HC-49/U Package, HC-49/U SMMC Package Option Available
- Stable Frequency Over Temperature and Drive Level
- **Fundamental and 3rd Overtone Crystals**
- Frequency Range 1.8432 – 64 MHz
- Frequency Tolerance, ± 30 ppm Standard
- Frequency Stability, ± 50 ppm Standard
- Operating Temperature, -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 MP 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



** Standard packaging is bulk in a bag.

* Consult factory for Option availability.

Non-Standard Ordering Options

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

ELECTRICAL CHARACTERISTICS

ELECTRICAL PARAMETERS	PARAMETER	VALUE
	Frequency Range	1.8432 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	+250°C Maximum, 10 Seconds Maximum

* Custom requirements may be available upon request.

EQUIVALENT SERIES RESISTANCE TABLE

FREQUENCY RANGE	OSCILLATION MODE	ESR MAXIMUM
1.80 MHz - < 2.00 MHz	Fundamental	600 Ohms
2.00 MHz - < 2.40 MHz	Fundamental	500 Ohms
2.40 MHz - < 3.00 MHz	Fundamental	300 Ohms
3.00 MHz - < 3.70 MHz	Fundamental	200 Ohms
3.70 MHz - < 4.20 MHz	Fundamental	100 Ohms
4.20 MHz - < 4.90 MHz	Fundamental	70 Ohms
4.90 MHz - < 6.00 MHz	Fundamental	50 Ohms
6.00 MHz - < 8.00 MHz	Fundamental	40 Ohms
8.00 MHz - < 10.00 MHz	Fundamental	35 Ohms
10.00 MHz - < 12.50 MHz	Fundamental	30 Ohms
12.50 MHz - < 40.00 MHz	Fundamental	25 Ohms
24.00 MHz - < 64.00 MHz	3rd Overtone	55 Ohms

MECHANICAL SPECIFICATIONS

MP PACKAGE DRAWING



KEY: $\frac{\text{MM}}{\text{INCH}}$

MARKING INFORMATION

1. MPXXXX - CTS Part Number.
[Per Ordering Information Format]
2. XXMXXXXXX - Frequency is marked with only leading significant digits before the 'M' and 4 - 6 digits after the 'M' [including zeros].
Ex. XMXXXXXX - 3M579545
XXMXXXXXX - 14M31818
XXMXXXXXX - 20M0000
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.

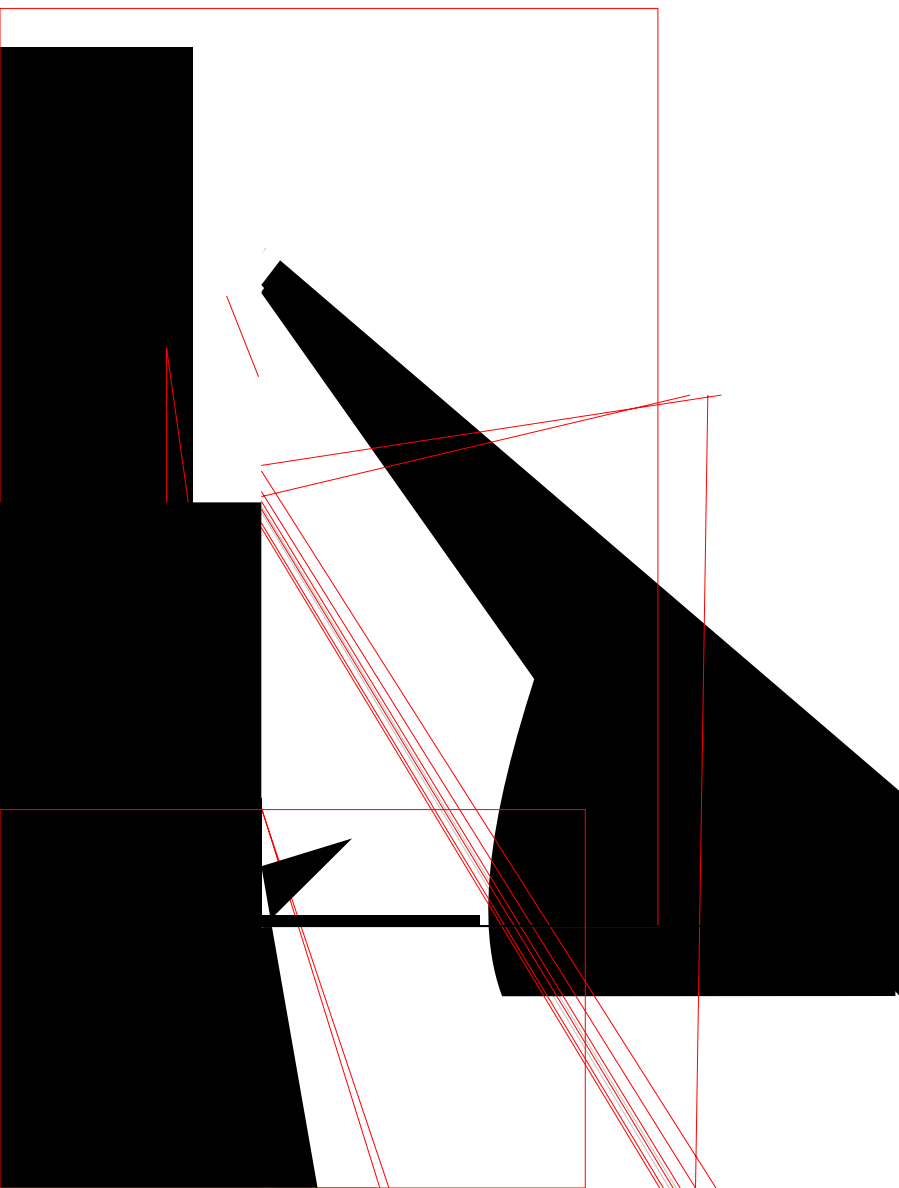
MP-SMMC OPTION w/ METAL CLIP THIRD LEAD



KEY: $\frac{\text{MM}}{\text{INCH}}$

SUGGESTED SOLDER PAD GEOMETRY

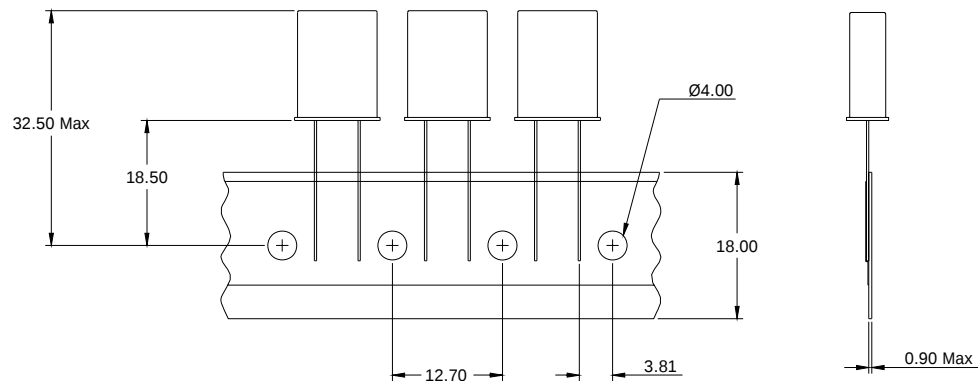




PACKAGING INFORMATION [Reference Only]

MP Radial Taping [Ammopak]

DIMENSIONS IN MILLIMETERS



MP-SMMC Tape and Reel

DIMENSIONS IN MILLIMETERS

