



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



Contact us

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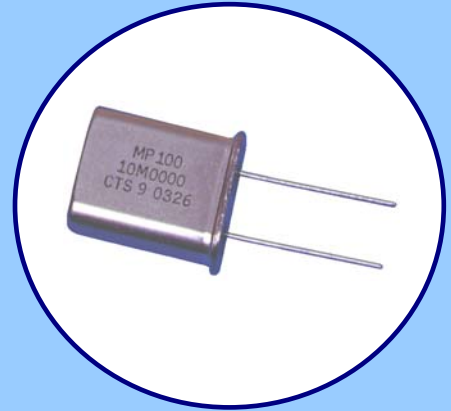
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China





FEATURES

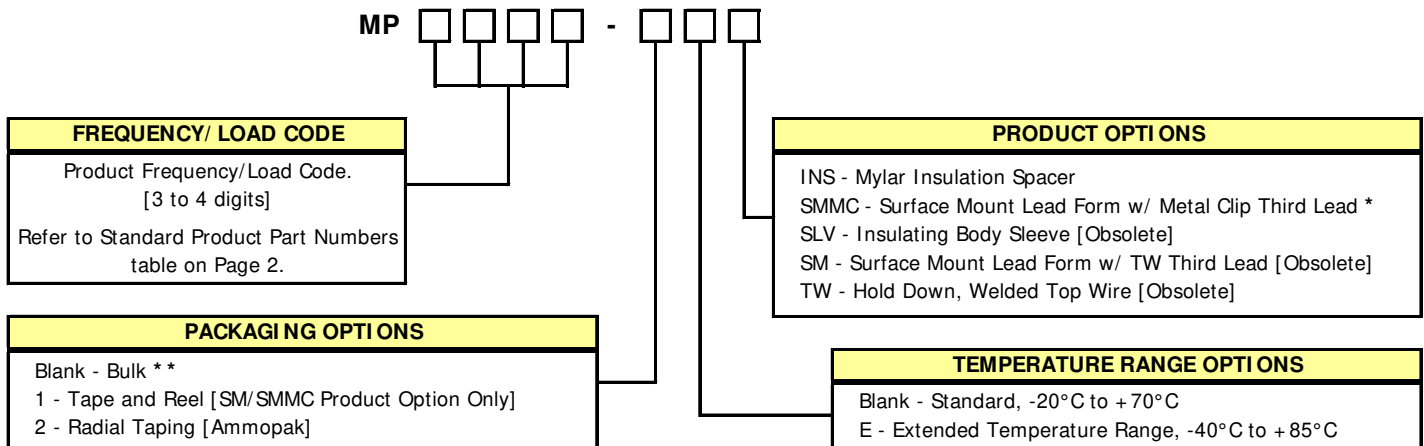
- Standard HC-49/U Package, HC-49/U SMMC Package Option Available
- Stable Frequency Over Temperature and Drive Level
- **Fundamental and 3rd Overtone Crystals**
- Frequency Range 1.8432 – 64 MHz
- Frequency Tolerance, ±30 ppm Standard
- Frequency Stability, ±50 ppm Standard
- Operating Temperature, -20°C to +70°C Standard, -40°C to +85°C Available
- Tape & Reel Packaging Available
- **RoHS/ Green Compliant [6/ 6]**



APPLI CATIONS

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 I NFORMATION



** 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.

STANDARD PRODUCT PART NUMBERS

Part numbers in **BOLD** are common stock items through CTS authorized distributors. Non-bold part numbers may be stocked or are available for order.
Contact your CTS Distributor or local CTS Representative for availability.

FREQUENCY [M Hz]	PART NUMBER [-20/70°C]	PART NUMBER [-40/85°C]	LOAD CAPACITANCE	OPERATING MODE	FREQUENCY [M Hz]	PART NUMBER [-20/70°C]	PART NUMBER [-40/85°C]	LOAD CAPACITANCE	OPERATING MODE
1.843200	MP018A	MP018A-E	Series	Fundamental	10.738635	MP107	MP107-E	32 pF	Fundamental
1.843200	MP018B	MP018B-E	18 pF	Fundamental	11.000000	MP110B	MP110B-E	Series	Fundamental
1.843200	MP018S	MP018S-E	13 pF	Fundamental	11.000000	MP110A	MP110A-E	20 pF	Fundamental
2.000000	MP020A	MP020A-E	Series	Fundamental	11.000000	MP110	MP110-E	18 pF	Fundamental
2.000000	MP020S	MP020S-E	20 pF	Fundamental	11.059200	MP111	MP111-E	Series	Fundamental
2.000000	MP020B	MP020B-E	18 pF	Fundamental	11.059200	MP111A	MP111A-E	20 pF	Fundamental
2.457600	MP024S	MP024S-E	32 pF	Fundamental	11.059200	MP111B	MP111B-E	18 pF	Fundamental
3.579545	MP036	MP036-E	Series	Fundamental	11.059200	MP111C	MP111C-E	32 pF	Fundamental
3.579545	MP036S	MP036S-E	18 pF	Fundamental	12.000000	MP120	MP120-E	Series	Fundamental
3.686400	MP037A	MP037A-E	Series	Fundamental	12.000000	MP120A	MP120A-E	20 pF	Fundamental
3.686400	MP037	MP037-E	20 pF	Fundamental	12.000000	MP120B	MP120B-E	18 pF	Fundamental
3.686400	MP037B	MP037B-E	18 pF	Fundamental	12.000000	MP120C	MP120C-E	32 pF	Fundamental
4.000000	MP04A	MP04A-E	Series	Fundamental	12.288000	MP122C	MP122C-E	Series	Fundamental
4.000000	MP040	MP040-E	20 pF	Fundamental	12.288000	MP122A	MP122A-E	20 pF	Fundamental
4.000000	MP040B	MP040B-E	18 pF	Fundamental	12.288000	MP122B	MP122B-E	18 pF	Fundamental
4.032000	MP043A	MP043A-E	Series	Fundamental	12.288000	MP122	MP122-E	32 pF	Fundamental
4.032000	MP043	MP043-E	20 pF	Fundamental	14.318180	MP143	MP143-E	Series	Fundamental
4.096000	MP042A	MP042A-E	20 pF	Fundamental	14.318180	MP143B	MP143B-E	18 pF	Fundamental
4.194304	MP041	MP041-E	12 pF	Fundamental	14.745600	MP147	MP147-E	Series	Fundamental
4.915200	MP049A	MP049A-E	Series	Fundamental	14.745600	MP147A	MP147A-E	20 pF	Fundamental
4.915200	MP042	MP042-E	20 pF	Fundamental	14.745600	MP147B	MP147B-E	18 pF	Fundamental
4.915200	MP049B	MP049B-E	18 pF	Fundamental	15.000000	MP150	MP150-E	Series	Fundamental
5.000000	MP05B	MP05B-E	Series	Fundamental	16.000000	MP160	MP160-E	Series	Fundamental
5.000000	MP05A	MP05A-E	20 pF	Fundamental	16.000000	MP160A	MP160A-E	20 pF	Fundamental
5.000000	MP050C	MP050C-E	18 pF	Fundamental	16.000000	MP160B	MP160B-E	18 pF	Fundamental
5.068000	MP050	MP050-E	Series	Fundamental	18.000000	MP180	MP180-E	Series	Fundamental
5.068000	MP051A	MP051A-E	20 pF	Fundamental	18.432000	MP184	MP184-E	Series	Fundamental
5.185000	MP052	MP052-E	Series	Fundamental	18.432000	MP184A	MP184A-E	20 pF	Fundamental
5.185000	MP051	MP051-E	20 pF	Fundamental	18.432000	MP184B	MP184B-E	18 pF	Fundamental
5.185000	MP052C	MP052C-E	32 pF	Fundamental	19.660800	MP196	MP196-E	Series	Fundamental
5.714300	MP057	MP057-E	Series	Fundamental	19.660800	MP196A	MP196A-E	20 pF	Fundamental
5.714300	MP057A	MP057A-E	20 pF	Fundamental	19.660800	MP196B	MP196B-E	18 pF	Fundamental
6.000000	MP060A	MP060A-E	Series	Fundamental	20.000000	MP200	MP200-E	Series	Fundamental
6.000000	MP060	MP060-E	20 pF	Fundamental	20.000000	MP200A	MP200A-E	20 pF	Fundamental
6.000000	MP060B	MP060B-E	18 pF	Fundamental	20.000000	MP200B	MP200B-E	18 pF	Fundamental
6.000000	MP060C	MP060C-E	32 pF	Fundamental	22.118400	MP221A	MP221A-E	Series	Fundamental
6.144000	MP061	MP061-E	20 pF	Fundamental	22.118400	MP221	MP221-E	20 pF	Fundamental
6.144000	MP061C	MP061C-E	32 pF	Fundamental	22.118400	MP221B	MP221B-E	18 pF	Fundamental
6.250000	MP062	MP062-E	30 pF	Fundamental	24.000000	MP240	MP240-E	Series	Fundamental
6.400000	MP064	MP064-E	20 pF	Fundamental	24.000000	MP240A	MP240A-E	20 pF	Fundamental
6.553600	MP065	MP065-E	20 pF	Fundamental	24.000000	MP240B	MP240B-E	18 pF	Fundamental
6.553600	MP065C	MP065C-E	12 pF	Fundamental	24.576000	MP245	MP245-E	Series	Fundamental
7.372800	MP073	MP073-E	Series	Fundamental	24.576000	MP245B	MP245B-E	18 pF	Fundamental
7.372800	MP073A	MP073A-E	20 pF	Fundamental	25.000000	MP250	MP250-E	Series	Fundamental
7.372800	MP073B	MP073B-E	18 pF	Fundamental	25.000000	MP250A	MP250A-E	20 pF	Fundamental
8.000000	MP080	MP080-E	Series	Fundamental	25.000000	MP250B	MP250B-E	18 pF	Fundamental
8.000000	MP080A	MP080A-E	20 pF	Fundamental	27.000000	MP270	MP270-E	Series	3rd Overtone
8.000000	MP080B	MP080B-E	18 pF	Fundamental	27.000000	MP270B	MP270B-E	18 pF	3rd Overtone
8.000000	MP080C	MP080C-E	32 pF	Fundamental	32.000000	MP320A	MP320A-E	20 pF	3rd Overtone
8.192000	MP081B	MP081B-E	18 pF	Fundamental	32.000000	MP320B	MP320B-E	18 pF	3rd Overtone
9.216000	MP092B	MP092B-E	18 pF	Fundamental	32.768000	MP327B	MP327B-E	18 pF	3rd Overtone
9.830400	MP098A	MP098A-E	Series	Fundamental	36.000000	MP360	MP360-E	Series	3rd Overtone
9.830400	MP098	MP098-E	20 pF	Fundamental	40.000000	MP400	MP400-E	20 pF	3rd Overtone
9.830400	MP098B	MP098B-E	18 pF	Fundamental	48.000000	MP480	MP480-E	Series	3rd Overtone
10.000000	MP100	MP100-E	Series	Fundamental	48.000000	MP480A	MP480A-E	20 pF	3rd Overtone
10.000000	MP100A	MP100A-E	20 pF	Fundamental	48.000000	MP480B	MP480B-E	18 pF	3rd Overtone
10.000000	MP100B	MP100B-E	18 pF	Fundamental	50.000000	MP500B	MP500B-E	18 pF	3rd Overtone
10.000000	MP101	MP101-E	30 pF	Fundamental	64.000000	MP640B	MP640B-E	18 pF	3rd Overtone

ELECTRICAL CHARACTERISTICS

	PARAMETER	VALUE
ELECTRICAL PARAMETERS	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

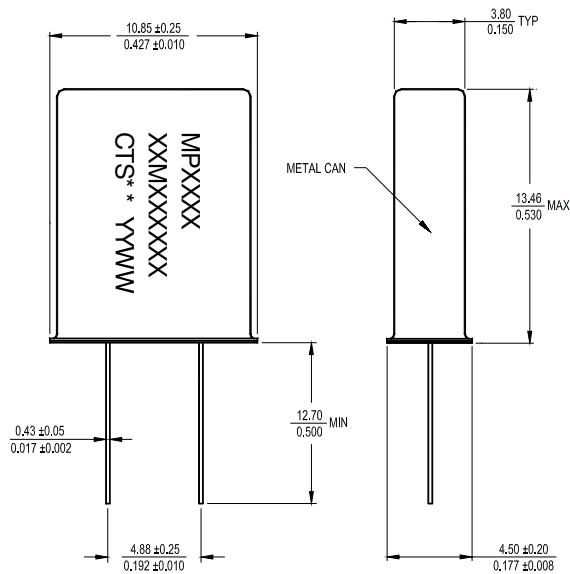
* Custom requirements may be available upon request.

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: $\frac{MM}{INCH}$

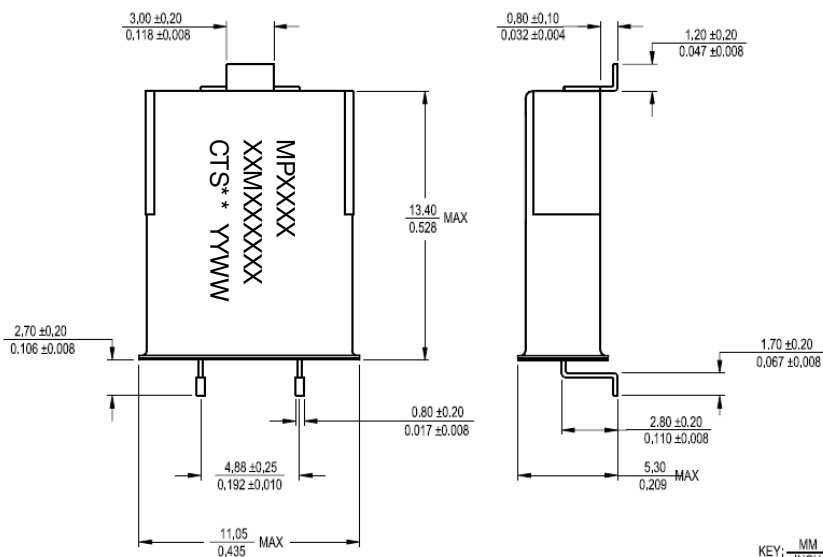
MARKING INFORMATION

- MPXXXX - CTS Part Number.
[Per Ordering Information Format]
- 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
- ** - 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

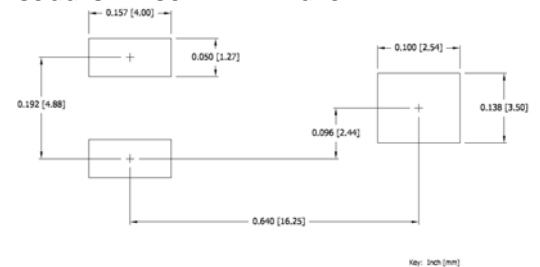
- Lead finish [e1], SnAgCu.
- MSL = 1.

MP-SMMC OPTION w/ METAL CLIP THIRD LEAD



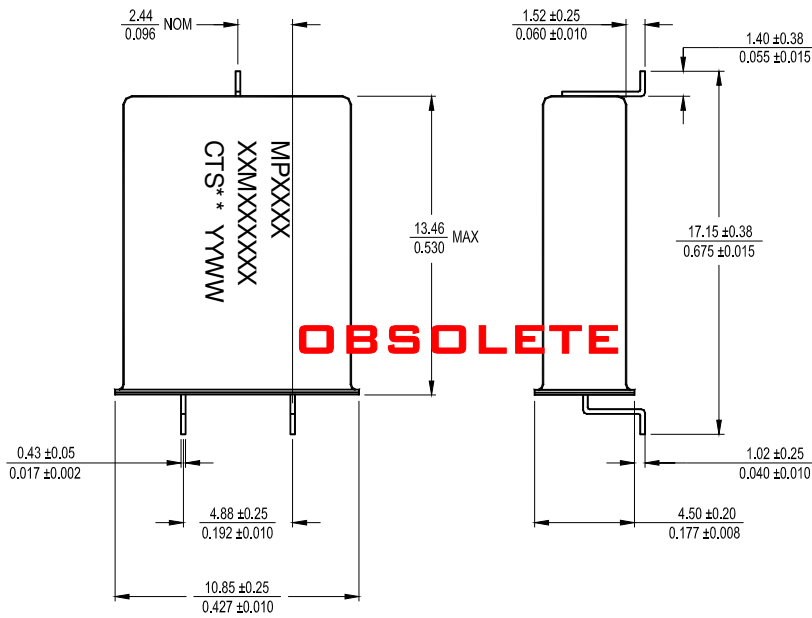
KEY: $\frac{MM}{INCH}$

SUGGESTED SOLDER PAD GEOMETRY

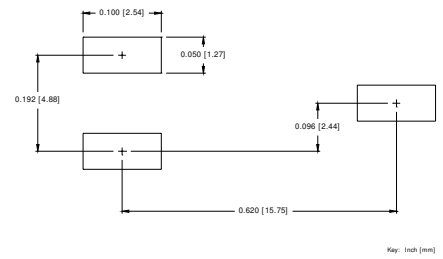


MECHANICAL SPECIFICATIONS

MP-SM OPTION w/ WELDED TOP WIRE THIRD LEAD

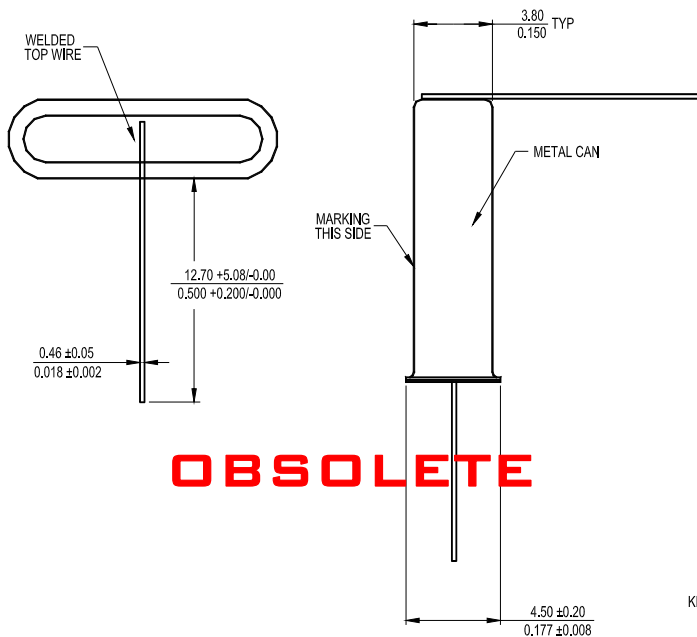


SUGGESTED SOLDER PAD GEOMETRY



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

MP PACKAGE w/ WELDED TOP WIRE [TW] OPTION

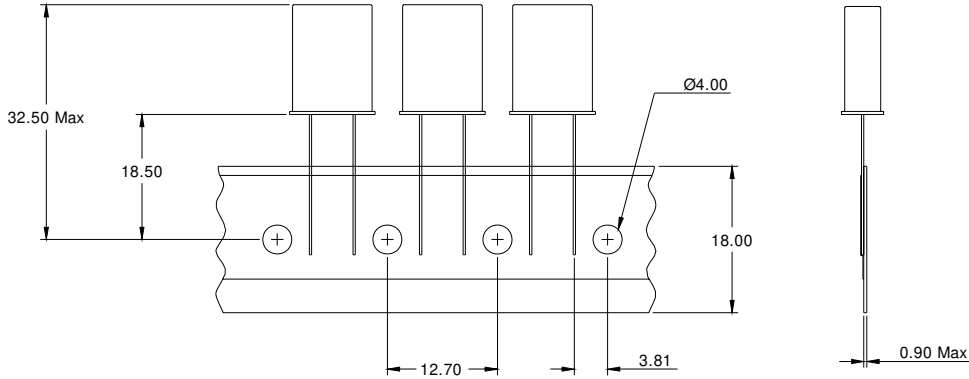


KEY: $\frac{\text{MM}}{\text{INCH}}$

PACKAGING INFORMATION [Reference Only]

MP Radial Taping [Ammopak]

DIMENSIONS IN MILLIMETERS



MP-SMMC Tape and Reel

DIMENSIONS IN MILLIMETERS

