



MP49 Series HC-49/U Crystal

December 2018

- The Pletronics' MP49 Series is a thru-hole crystal
- Bulk packaging
- 1.8 MHz to 210 MHz
- AT Cut Crystal

Pletronics Inc. certifies this device is in accordance with the RoHS (2011/65/EC) and WEEE (2002/96/EC) directives.

Pletronics Inc. guarantees the device does not contain the following:

Cadmium, Hexavalent Chromium, Lead (<1000 ppm), Mercury, PBB's, PBDE's

Weight of the Device: 1.00 grams

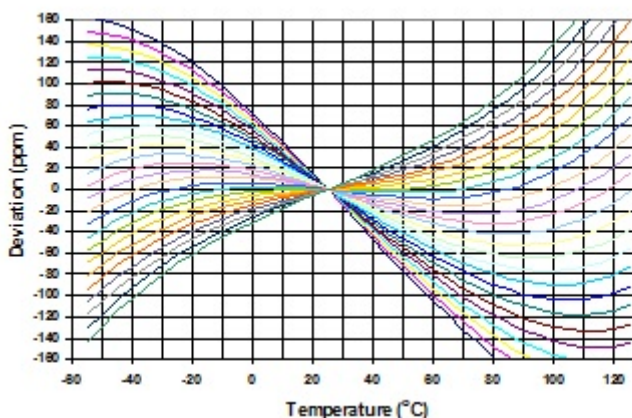
Moisture Sensitivity Level: 1 As defined in J-STD-020C

Second Level Interconnect code: e1 or e3

Electrical Specification:

Item	Min	Max	Unit	Condition	
Frequency Range	1.8432	210	MHz	AT cut	
Calibration Frequency Tolerance	-	-	ppm	at +25°C ± 3°C	see table on page 3 for available options
Frequency Stability over OTR	-	-	ppm		
Equivalent Series Resistance (ESR)	-	700	Ohms	1.8432 MHz to 3 MHz	Fundamental
	-	150	Ohms	3 MHz to 4 MHz	
	-	100	Ohms	4 MHz to 7 MHz	
	-	50	Ohms	7 MHz to 10 MHz	
	-	25	Ohms	10 MHz to 37 MHz	
	-	40	Ohms	21 MHz to 90 MHz	3 rd Overtone
	-	70	Ohms	60 MHz to 150 MHz	5 th Overtone
	-	100	Ohms	85 MHz to 210 MHz	7 th Overtone
Drive Level	-	1	mW	use 10 µW for testing	
Shunt Capacitance (C0)	-	7	pF	Pad to Pad capacitance	
Aging	-5	+5	ppm /Yr	at +25°C ± 3°C	
Specified Temperature Range	-40	+85	°C	see table on page 3 for available options	
Storage Temperature Range	-55	+125	°C		

**AT Cut Crystal Frequency
versus Temperature
Typical Performance:**



Part Marking:

PLE or **PLE**
MP49x **SRMP49**
FFFFFM **FFFFFM**
ymdz **ymdz**

Legend:

x = Capacitance load code from below
FFFFFM = Frequency in MHz
PLE = Pletronics
ymdz = Date of Manufacture (year, month and day)
All other marking is internal factory codes

Specifications such as frequency tolerance and operating temperature range, etc. are not identified from the marking. External packaging labels and packing list will correctly identify the ordered Pletronics part number.

Code	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	T	U	V	W	X	Y
pF	10	12	13	8	15	18	20	22	24	26	28	30	32	34	36	27	33	50	19	16	17	14

Codes for Date Code YMD

Code	4	5	6	7	8	9	0
Year	2014	2015	2016	2017	2018	2019	2020

Code	A	B	C	D	E	F	G	H	J	K	L	M
Month	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC

Code	1	2	3	4	5	6	7	8	9	A	B	C
Day	1	2	3	4	5	6	7	8	9	10	11	12
Code	D	E	F	G	H	J	K	L	M	N	P	R
Day	13	14	15	16	17	18	19	20	21	22	23	24
Code	T	U	V	W	X	Y	Z					
Day	25	26	27	28	29	30	31					

Part Number:

MP49	-18	-14.31818M	-50	H	1	G	G	-XX	See chart below for available options
Internal code or blank									
Highest Specified Operating Temperature									
A = 40°C			G = 70°C						
B = 45°C			H = 75°C						
C = 50°C			J = 80°C						
D = 55°C			K = 85°C						
E = 60°C									
F = 65°C									
Lowest Specified Operating Temperature									
A = +10°C			F = -15°C			L = -40°C			
B = +5°C			G = -20°C						
C = 0°C			H = -25°C						
D = -5°C			J = -30°C						
E = -10°C			K = -35°C						
Mode: 1 = Fundamental 3 = 3rd Overtone									
Frequency Stability See chart below									
Calibration Frequency Tolerance (Typ. Values shown)									
15 = ± 15 ppm at 25°C ± 3°C									
20 = ± 20 ppm at 25°C ± 3°C									
30 = ± 30 ppm at 25°C ± 3°C (Standard)									
Frequency in MHz									
Load in pF									
Load Resonance from 09 to 44 pF --or-- blank for SRMP									
Series Model									
MP = For load resonant version									
SRMP = Series Resonance									

		Available Frequency Stability versus Temperature in ppm					
		D	E	F	G	H	J
Operating Temperature Range	CODE	± 10	± 15	± 20	± 30	± 50	± 100
0 to +45°C	CB	•	•	•	•	•	•
0 to +50°C	CC	•	•	•	•	•	•
0 to +60°C	CE	•	•	•	•	•	•
0 to +70°C	CG	•	•	•	•	STD	•
-10 to +50°C	EC	•	•	•	•	•	•
-10 to +60°C	EE	•	•	•	•	•	•
-10 to +75°C	EH	•	•	•	•	•	•
-20 to +70°C	GG	•	•	•	•	•	•
-20 to +75°C	GH	•	•	•	•	•	•
-30 to +75°C	JH	•	•	•	•	•	•
-30 to +80°C	JJ	•	•	•	•	•	•
-30 to +85°C	JK	•	•	•	•	•	•
-35 to +80°C	KJ		•	•	•	•	•
-40 to +85°C	LK		•	•	•	•	•

Legacy Part Number (not for new designs):

MP49	B	E	-18	-11.0592M	-XX	
Internal code or blank						
Frequency in MHz						
Load in pF Load Resonance in pF –or– blank when SRMP						
Operating Temp Range & Special Mechanical Blank = 0 to + 70°C (standard) E = -40 to +85°C G = Gull Wing Surface Mount Package L = 3 rd Lead (Pull-down pin on top of can)						
Calibration Tolerance / Frequency Stability Blank = 30/50 (STD) B = 30/30 C = 15/30 D = 10/20 (not all frequencies)						
Series Model MP = for load resonant version SRMP = for series resonant version						





Reliability: Environmental Compliance

Parameter	Condition
Mechanical Shock	MIL-STD-883 Method 2002, Condition B
Vibration	MIL-STD-883 Method 2007, Condition A
Solderability	MIL-STD-883 Method 2003
Thermal Shock	MIL-STD-883 Method 1011, Condition A

Package Labeling

Label is 1" x 2.6" (25.4mm x 66.7mm)
Font is Courier New
Bar code is 39-Full ASCII

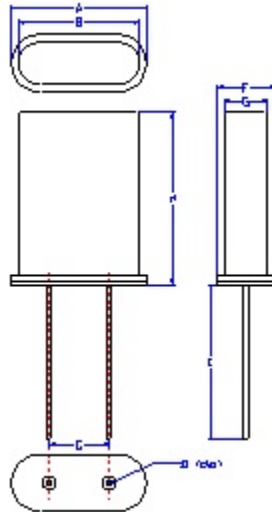
Label is 1" x 2.6" (25.4mm x 66.7mm)
Font is Arial

P/N: 	
MP49-18-10.0M	
Customer P/N: 	
12345678	
Qty: 	D/C: 
1000	6J7-WY
MSL: 1	

RoHS Compliant
2nd LvL Interconnect
Category=e1
Max Safe Temp=260C for 10s 2X Max

RoHS Compliant
2nd LvL Interconnect
Category=e3
Max Safe Temp=260C for 10s 2X Max

Mechanical:



	Inches	mm
A	0.425 max	10.80 max
B	0.404	10.26
C	0.192	4.88
D	0.017 dia	0.43 dia
E	0.500 min	12.7 min
F	0.176 max	4.47 max
G	0.145	3.68
H	0.52 max	13.21 max

Typical dimensions

Contacts (3 types of lead plating used):

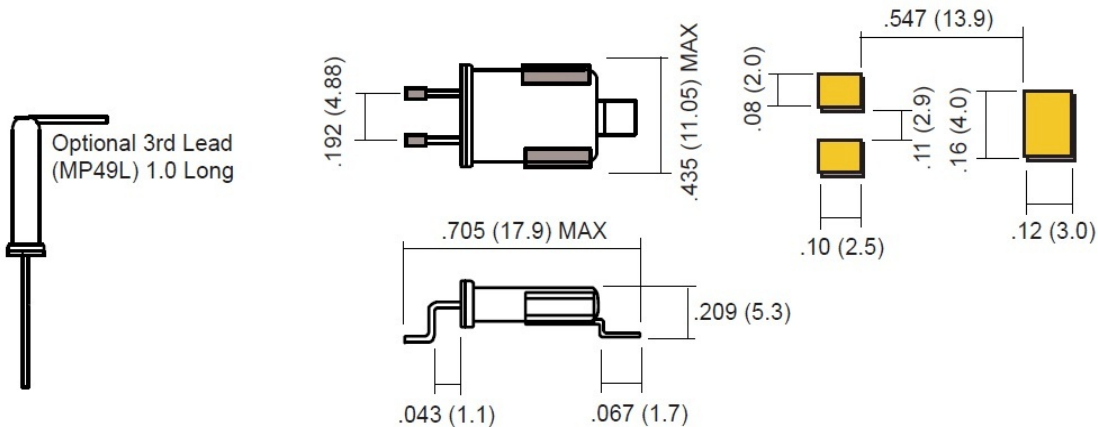
Matte Tin (Sn)

Tin over Copper (SnCu)

SAC (SnAgCu)

Not to Scale

Legacy (MP49L and MP49G):



Layout and application information

- Trace lengths to the crystal should be kept as short as possible.
- The crystal connections are sensitive to noise.
- The package should be grounded for optimum performance.

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Contacting Pletronics Inc.

Pletronics Inc.
19013 36th Ave. West
Lynnwood, WA 98036-5761 USA

Tel: 425-776-1880
Fax: 425-776-2760
E-mail: ple-sales@pletronics.com
URL: www.pletronics.com

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