

# D and F Series Crystal



- **HC-49/US Surface Mounted Crystal**
- **Wide Frequency Range**
- **RoHS Compliant Available**
- **Fundamental or 3<sup>rd</sup> OT AT Cut**



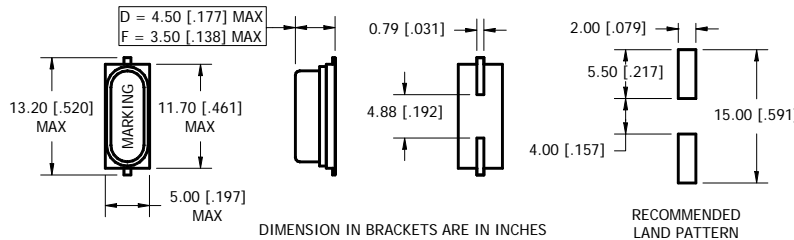
## ELECTRICAL SPECIFICATIONS:

Frequency Range	3.200MHz to 80.000MHz
Frequency Tolerance / Stability	(See Part Number Guide for Options)
Operating Temperature Range	(See Part Number Guide for Options)
Storage Temperature	-55°C to +125°C
Aging	±5ppm / first year Max
Shunt Capacitance	7pF Max
Load Capacitance	20pF Standard (See Part Number Guide for Options)
Equivalent Series Resistance	See ESR Chart
Mode of Operation	Fundamental, or 3 <sup>rd</sup> OT
Drive Level	1mW Max
Shock	MIL-STD-883, Meth 2002, Cond B
Solderability	MIL-STD-883, Meth 2003
Solvent Resistance	MIL-STD-202, Meth 215
Vibration	MIL-STD-883, Meth 2007, Cond A
Gross Leak Test	MIL-STD-883, Meth 1014, Cond C
Fine Leak Test	MIL-STD-883, Meth 1014, Cond A

## ESR CHART:

Frequency Range	ESR (Ohms)	Mode / Cut
3.200MHz to 3.999MHz	150 Max	Fund / AT
4.000MHz to 4.999MHz	120 Max	Fund / AT
5.000MHz to 5.999MHz	100 Max	Fund / AT
6.000MHz to 7.999MHz	90 Max	Fund / AT
8.000MHz to 9.999MHz	70 Max	Fund / AT
10.000MHz to 11.999MHz	50 Max	Fund / AT
12.000MHz to 14.999MHz	50 Max	Fund / AT
15.000MHz to 19.999MHz	40 Max	Fund / AT
20.000MHz to 33.000MHz	30 Max	Fund / AT
24.576MHz to 29.999MHz	100 Max	3 <sup>rd</sup> OT / AT
30.000MHz to 80.000MHz	80 Max	3 <sup>rd</sup> OT / AT

## MECHANICALS DETAIL:

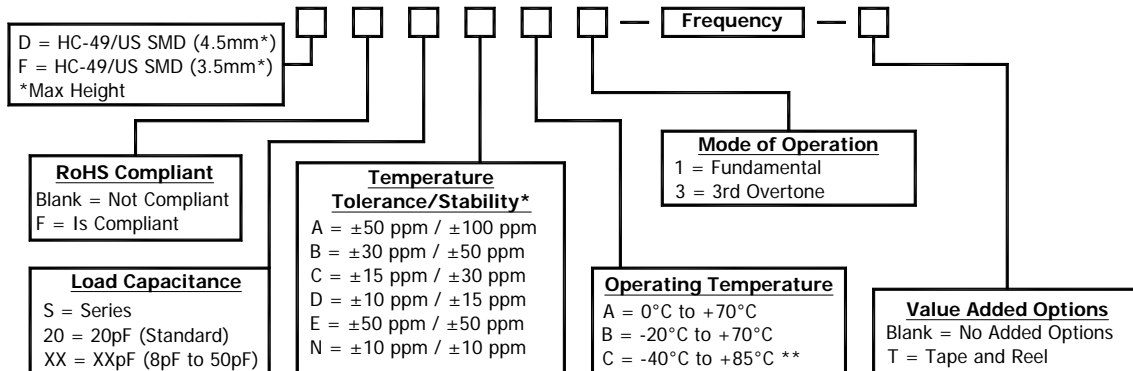


## MARKING:

Line 1: MXX.XXX  
XX.XXX = Frequency in MHz

Line 2: SYMCL  
S = Internal Code  
YM = Date Code (Year/Month)  
CC = Crystal Parameters Code  
L = Denotes RoHS Compliant

## PART NUMBER GUIDE:



\* Please consult with MMD sales department for any other parameters or options.  
\*\* Not all Frequency Tolerance/Stability options available at this temperature range.

**MMD Components**, 30400 Esperanza, Rancho Santa Margarita, CA, 92688  
Phone: (949) 709-5075, Fax: (949) 709-3536, [www.mmdcomp.com](http://www.mmdcomp.com)  
Sales@mmdcomp.com