

X Series Crystal



- 2mm X 2.5mm 4 Pads Ceramic Package
- Ultra-miniature Profile
- RoHS Compliant
- Tape and Reel Packaging



Frequency Range	16.000MHZ to 60.000MHZ
Frequency Tolerance / Stability	(See Part Number Guide for Options)
Operating Temperature Range	(See Part Number Guide for Options)
Storage Temperature	-40°C to +85°C
Aging	±2ppm / per year
Shunt Capacitance	3pF Max
Load Capacitance	10pF Standard (See Part Number Guide for Options)
Equivalent Series Resistance	See ESR Chart
Drive Level	100µW Max
Insulation Resistance	500 Megaohms Min at 100VDC

Environmental & Mechanical Detail

Shock	MIL-STD-883, Method 2002 Cond B
Solderability	MIL-STD-883, Method 2003
Solvent Resistance	MIL-STD-202, Method 215
Vibration	MIL-STD-883, Method 2007, Cond A
Gross Leak Test	MIL-STD-883, Method 1014, Cond C
Fine Leak Test	MIL-STD-883, Method 1014, Cond A
MSL	Level 1 per IPC/JEDEC J-STD 20

Marking Detail

First Line = MXX.X (not to exceed 5 characters)		
M	=	MMD
XX.X	=	Device Frequency (four digits including decimal point)
Second Line = SYM (not to exceed 5 characters)		
S	=	Internal Code
YM	=	Date Code (Year/Month)

**QUALITY SYSTEM
CERTIFIED
= ISO 9001 =**

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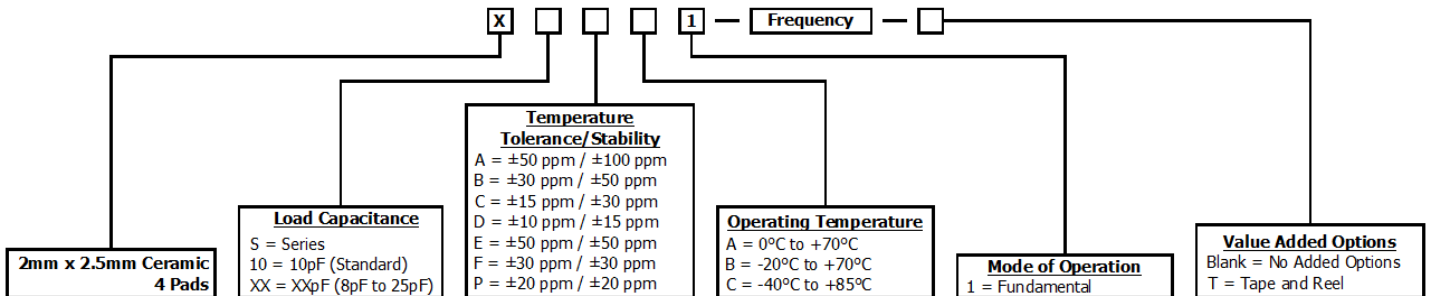


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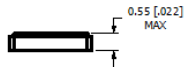
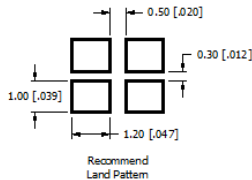
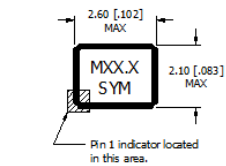
ESR Chart

Frequency Range	ESR (Ohms)	Mode / Cut
16.000MHZ to 19.999MHZ	120 Max	Fund / AT
20.000MHZ to 29.999MHZ	80 Max	Fund / AT
30.000MHZ to 60.000MHZ	50 Max	Fund / AT

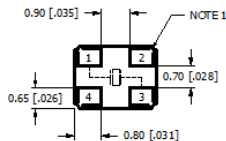
Part Number Guide



Mechanical Details

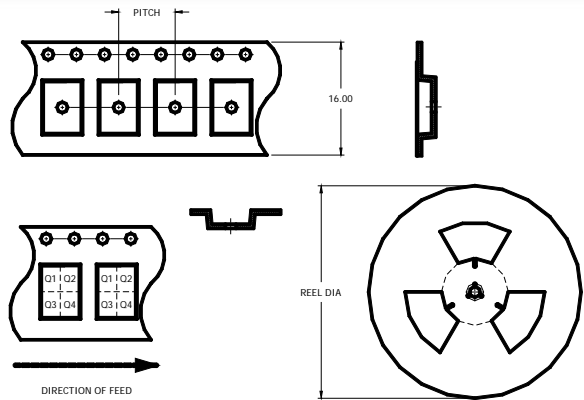


- Notes
- Pin 2 and Pin 4 are internally connected and should not be connected to external sources for proper function.
 - Dimensions in brackets are in inches.
 - Pads: Matl; Base or under conductor thickness 1.3 um to 8.8 um. Final Plating: Au (99.97%) less than .05 um, 0.3 um typ



Pin Connections	
Pin 1	Crystal
Pin 2	See Note 1
Pin 3	Crystal
Pin 4	See Note 1

Tape & Reel



PITCH	4.00 [1.57]
TAPE WIDTH	8.00 [3.15]
REEL DIA	180 [7.0]
COUNT	1000
PIN 1 ORIENT.	01

- NOTES: UNLESS OTHERWISE SPECIFIED
- Applicable Standards / Specifications
 ANSI Y14.5M Dimensions and Tolerances
 EIA-361-B 8 mm through 200mm Embossed Carrier Taping and 8 mm and 12 mm Punched Carrier Taping of Surface Mount Components for Automatic Handling
 - Dimensions are in millimeters (Inch).
 - Tolerances are ±0.1 [0.004] mm unless otherwise specified.
 - Do not scale drawing.

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