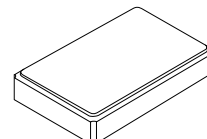


- **High Performance Crystal**
- **Good Frequency Stability and Reliability**
- **Miniature SMD Package**
- **Complies with Directive 2002/95/EC (RoHS)**
- **Moisture Sensitivity Level: 1**
- **AEC-Q200 Qualified**

XTL1003-1

**13.5600 MHz
Crystal Unit**



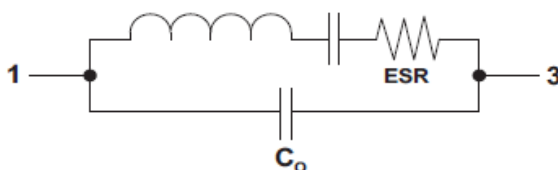
SM5032-4 Case

The XTL1003-1 is a surface mount 5.0 x 3.2 mm crystal unit for use in wireless telecommunications devices, especially where a miniature package is needed for mobility.

Electrical Characteristics

Characteristic	Sym	Notes	Minimum	Typical	Maximum	Units
Nominal Frequency				13.5600		MHz
Mode of Oscillation	f_o		Fundamental			
Storage Temperature Range in Tape and Reel			-40		+85	°C
Component Storage Temperature Range			-50		+125	°C
Component Operating Temperature Range			-20		+70	°C
Frequency Manufacturing Tolerance	f_L		± 10 ppm @ 25 °C ± 3 °C			
Frequency Stability over Operating Temperature Range			± 20 ppm (referenced to the value at 25 °C)			
Nominal Drive Level				10		μ W
Driving Level Dependence (DR) test by 0.01, 0.1, 1, 10, 30, 50 100, 0.01 μ W					4	Ω
Equivalent Series Resistance	ESR				40	Ω
Motional Capacitance	C_M		3.36	4.20	5.04	fF
Shunt Capacitance	C_O				2.0	pF
Load Capacitance	C_L			13.5		pF
Insulation Resistance, 100 VDC			500			M Ω
Aging, 25 °C					± 1.0	ppm/yr
Standard Shipping Quantity on 330 mm (13") Reel				3000		units
Lid Symbolization (Y = year, WW = week, S = shift)	1003-1, YWWWS					

Crystal Equivalent Circuit



CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.

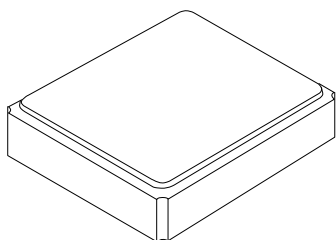
NOTES:

1. The design, manufacturing process, and specifications of this device are subject to change.
2. US or International patents may apply.
3. RoHS compliant from the first date of manufacture.

SM5032-4 Case

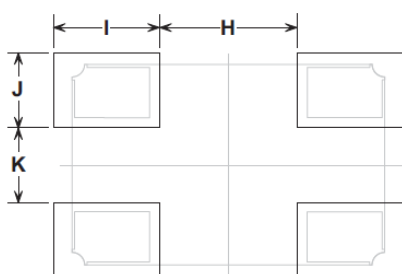
4-Terminal Surface-Mount Seam Weld Case

5.0 x 3.2 mm Nominal Footprint

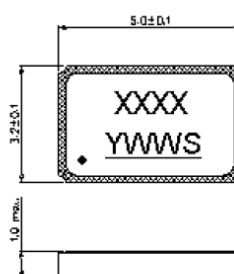


Electrical Connections

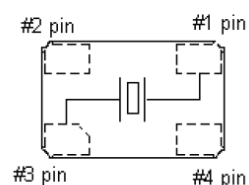
Connection	Terminals
Input / Output	1
Ground	2
Input / Output	3
Ground	4



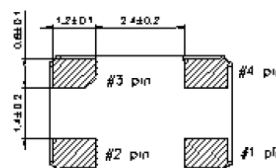
Typical PCB Land Footprint
(Top View)



<Top View>



Mating #2 #4 is connected with metal cap of top.

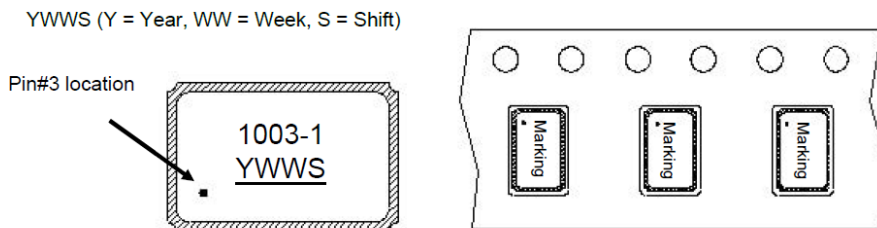


<Bottom View>

Case and PCB Land Dimensions

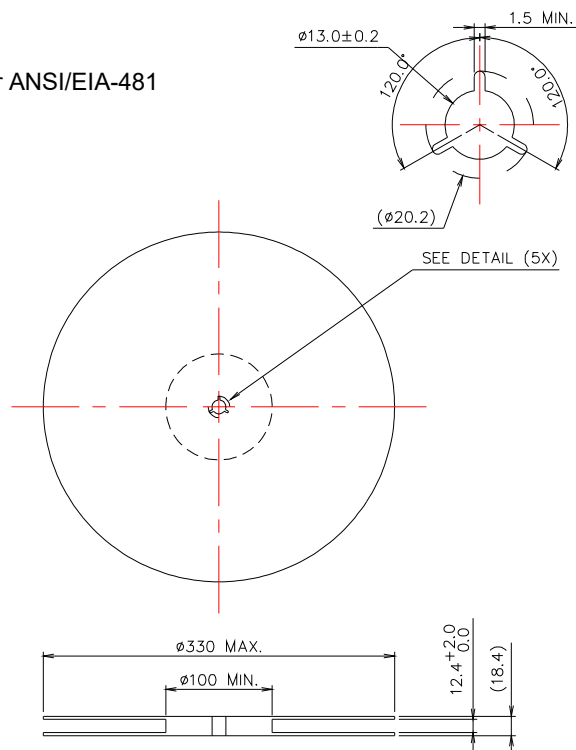
Dimensions	Millimeters			Inches		
	Min	Nom	Max	Min	Nom	Max
A	4.90	5.00	5.10	0.193	0.197	0.200
B	3.10	3.20	3.30	0.122	0.126	0.130
C	0.70	0.80	0.90	0.028	0.031	0.035
D	2.20	2.40	2.60	0.087	0.094	0.102
E	1.10	1.20	1.30	0.043	0.047	0.051
F	1.20	1.40	1.60	0.047	0.055	0.063
G	0.70	0.80	0.90	0.028	0.031	0.035
H	2.10	2.20	2.30	0.083	0.087	0.091
I	1.60	1.70	1.80	0.063	0.067	0.071
J	1.10	1.20	1.30	0.043	0.047	0.051
K	1.10	1.20	1.30	0.043	0.047	0.051

Package Orientation

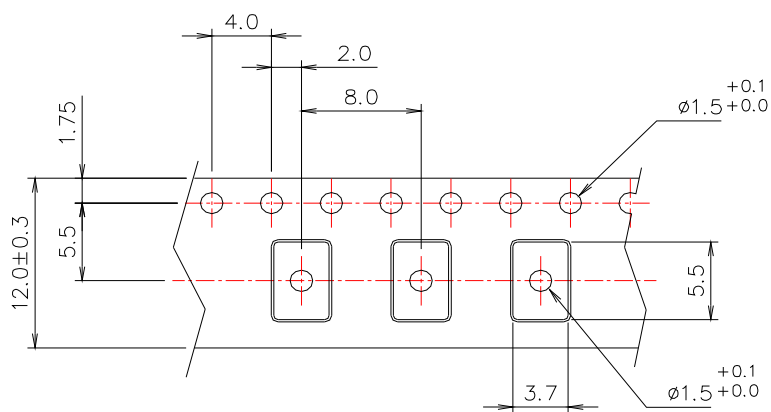


Reel Dimensions

Tape and Reel Standard per ANSI/EIA-481



Tape Dimensions

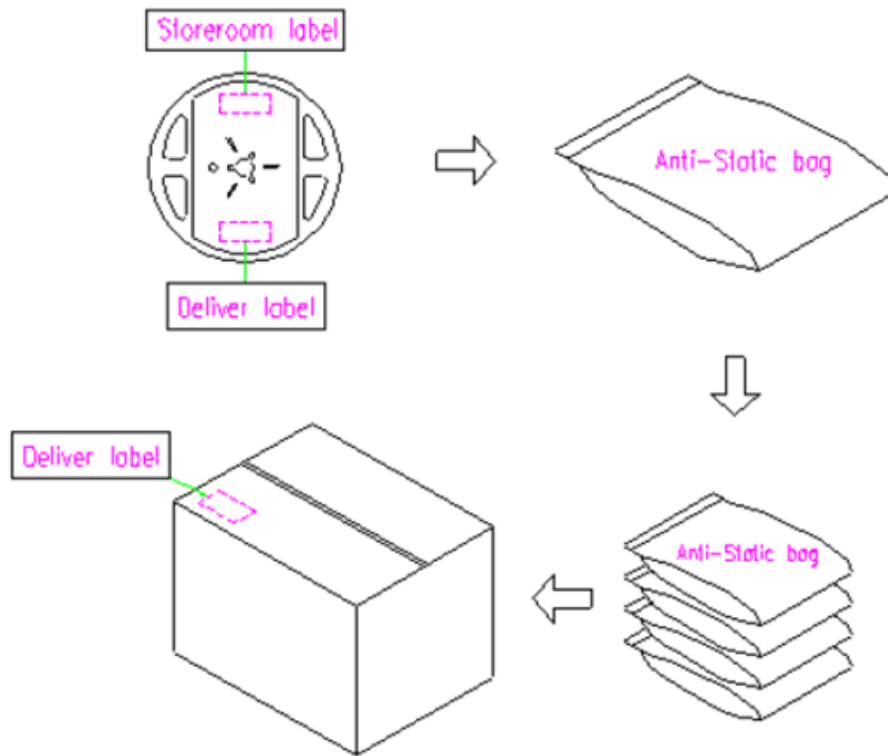


Notes:

1. Unless otherwise specified, tolerance on dimensions is ± 0.1 mm
2. Material is black conductive polystyrene
3. 10 pitch cumulative tolerance is ± 0.2 mm

Packing - 3,000 units per reel maximum

Packing Quantity/Packing:



Deliver package carton

1. L36xW35xH21cm-10 reel max.
2. L38xW36xH32cm-15 reel max.

Reliability Specifications

Test name	Test process / method	Reference standard
Mechanical characteristics		
resistance to Soldering heat (IR reflow)	Temp./Duration : 260 °C /10 seconds ×2 times Total time : 4 minutes (IR-reflow)	EIAJED-4701 -300(301)M(II)
Vibration	Total peak amplitude: 1.5 mm Vibration frequency: 10 to 55 Hz Sweep period: 1.0 minute Vibration directions: 3 mutually perpendicular Duration: 2 hours per direction	MIL-STD 202F method 201A
Mechanical Shock	Directions: 3 impacts per axis Acceleration: 3000g's, +20/-0 % Duration: 0.3 ms (total 18 shocks) Waveform : Half-sine	MIL-STD 202F method 213C
Solderability	Solder Temperature: 265 ±5°C Duration time: 5 ±0.5 seconds.	MIL-STD 883G method 2003
Environmental characteristics		
Thermal Shock	Heat cycle conditions -55 °C, 30 minutes <> 125 °C, 30 minutes * cycle time : 10 times	MIL-STD 883G method 1010.7
Humidity test	Temperature: 70 ± 2 °C Relative humidity: 90~95% Duration: 96 hours	MIL-STD 202F method 103B
Dry heat (Aging test)	Temperature: 125 ± 2 °C Duration: 168 hours	MIL-STD 883G method 1008.2 condition C
PCT test	Pressure: 2.06 kg/cm ² (2.03*10 ⁵ pa) Temperature : 121 ± 2 °C Relative humidity : 100% Duration: 24 hours	EIAJED-4701-3 B-123A

Recommended Reflow Profile

1. Preheating shall be fixed at 150~180°C for 60~90 seconds.
2. Ascending time to preheating temperature 150°C shall be 30 seconds min.
3. Heating shall be fixed at 220°C for 50~80 seconds and at 260°C +0/-5°C peak (10 seconds).
4. Time: 5 times maximum.

