


**Table 1. Electrical Performance**

Parameter	Symbol	Min.	Typ	Max	Units
Nominal Frequency	F <sub>NOM</sub>	3.500		75.000	MHz
Mode		Fundamental, 3rd Overtone			
Operating Temperature Range	T <sub>OP</sub>	0/70, -10/70, -20/70, -40/85			°C
Stability Over T <sub>OP</sub> <sup>1</sup>	F <sub>STAB</sub>	±10		±100	ppm
Frequency Tolerance <sup>2</sup>	F <sub>TOL</sub>		±10	±20	ppm
Load Capacitance	C <sub>L</sub>	6		32	pF
Shunt Capacitance	C <sub>o</sub>			5	pF
Drive Level			10	100	uW
Aging / 1st year (at 25 °C)	F <sub>AGE</sub>			±5	ppm
Insulation Resistance		500			MOhm
Storage Temperature	T <sub>STO</sub>	-40		90	°C
Equivalent Series Resistance					
Crystal Frequency	ESR				Ohm
3.500MHz-4.000MHz				140	
4.001MHz-5.000MHz				120	
5.001MHz-6.000MHz				80	
6.001MHz-7.000MHz				70	
7.001MHz-9.000MHz				45	
9.001MHz-13.000MHz				40	
13.001MHz-16.000MHz				35	
16.001MHz-20.000MHz				30	
20.001MHz-30.000MHz, Fundamental				25	
24.001MHz-32.000MHz, 3rd Overtone				120	
32.000MHz-80.000MHz, 3rd Overtone				80	

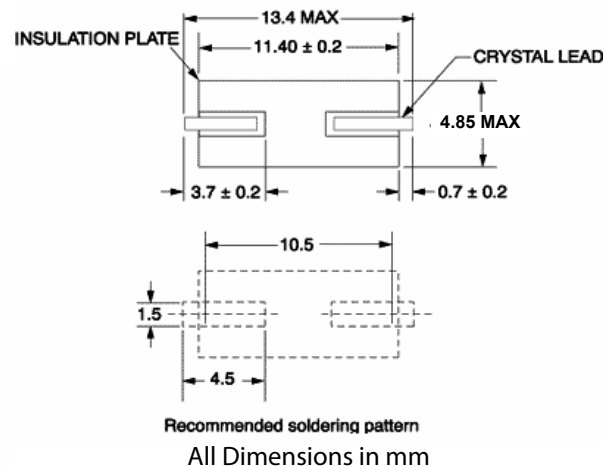
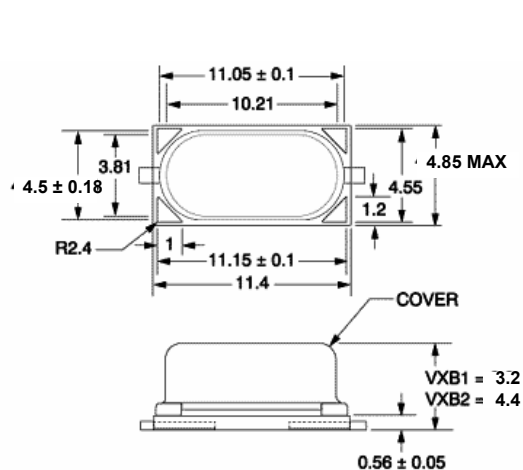
Notes:

1. Referenced to the Frequency at 25 °C.

2. Frequency measured at 25 °C ± 3 °C.

Product is compliant to RoHS directive and fully compatible with lead free assembly. 

## Package Drawing

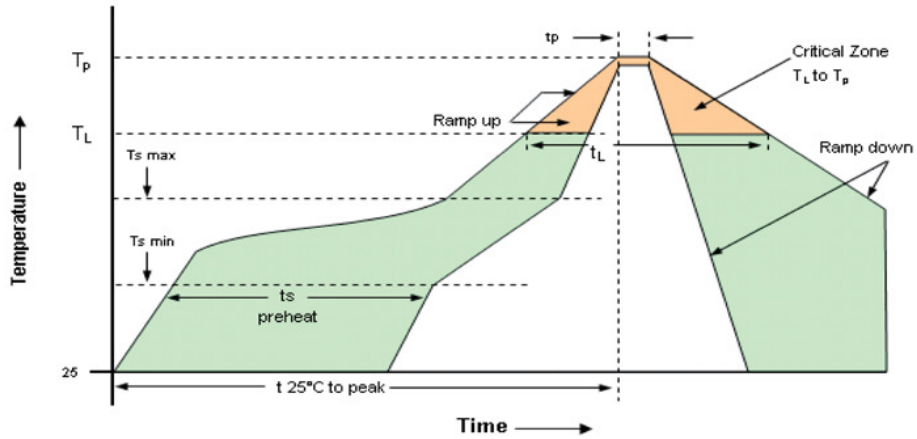


**Table 2. Environmental Compliance**

Parameter	Conditions
Mechanical Shock	MIL-STD-883, Method 2002, Condition B
Mechanical Vibration	MIL-STD-883, Method 2007, Condition A
Temperature Cycle	MIL-STD-883, Method 1010, Condition B
Solderability	MIL-STD-202-210, Condition B
Gross and Fine Leak	MIL-STD-883, Method 1014
Altitude	MIL-STD-883, Method 1001, Condition B
Moisture Sensitivity Level	MSL 1
Weight	575 mg

## Reliability & IR Compliance

Solderprofile:



**Table 3: Reflow Profile**

Parameter	Symbol	Value
PreHeat Time Ts-min Ts-max	$t_s$	60 sec Min, 260 sec Max 150°C 200°C
Ramp Up	$R_{UP}$	3 °C/sec Max
Time Above 217 °C	$t_L$	60 sec Min, 150 sec Max
Time To Peak Temperature	$T_{AMB-P}$	480 sec Max
Time at 260 °C	$t_p$	30 sec Max
Ramp Down	$R_{DN}$	6 °C/sec Max

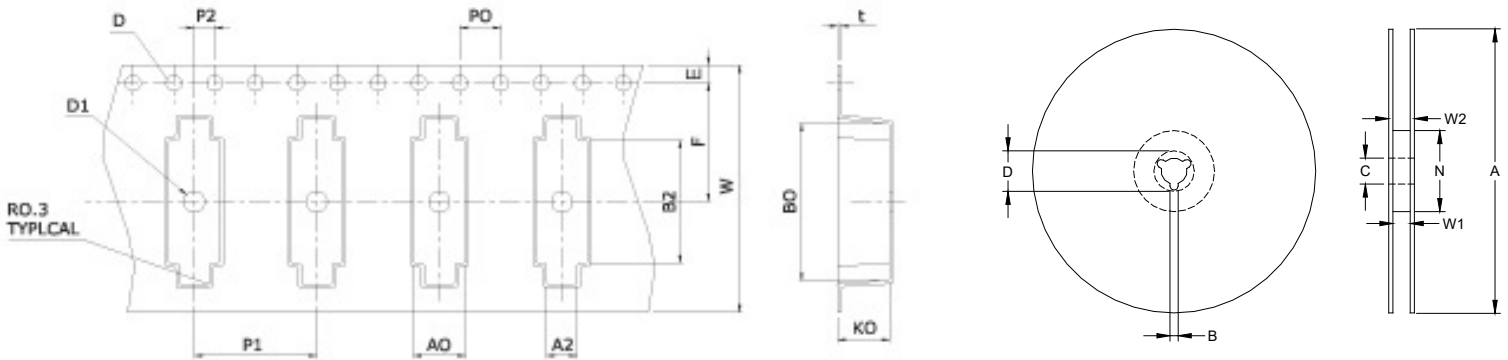
# Tape & Reel

**Table 4a. Tape and Reel Dimensions (mm)**

Tape														
Package	A0	A2	B0	B2	D	D1	E	F	K0	P0	P1	P2	t	W
VXB1	5.1	3.0	16.1	11.9	1.55	1.6	1.75	11.5	3.4	4.0	12.0	2.0	0.4	24.0
VXB2	5.1	3.0	16.1	11.9	1.5	2.0	1.75	11.5	4.3	4.0	12.0	2.0	0.4	24.0

**Table 4b. Tape and Reel Dimensions (mm)**

Reel							
Package	A	A	C	D	W1	W2	N
VXB1	330	1.5	13	20.2	24.4	26.4	100
VXB2	330	2.0	13	21.0	24.4	26.4	80



## Ordering Information

**VXBX - XXX - XX- xxMxxxxxxx**

**Product**

VXB1: 3.2mm tall  
VXB2: 4.4mm tall

**Mode**

1: Fundamental  
3: 3rd Overtone

**Temp Stability**

D: 15ppm  
E: 20ppm  
F: 25ppm  
G: 30ppm  
H: 35ppm  
I: 40ppm  
J: 45ppm  
K: 50ppm  
S: 100ppm

**Frequency in MHz**

**Load Capacitance**

00: Series Resonance  
06-32pF

**Operating Temperature**

E: -40 to 85 °C  
J: -20 to 70 °C  
W: -10 to 70 °C  
T: 0 to 70 °C

*\*Note: not all combination of options are available.  
Other specifications may be available upon request.*

*15ppm stability not available for -40 to 85°C*

## Revision History

Revision Date	Approved	Description
August 30, 2016	RC	Initial datasheet for factory approval and release to customer.
August 10, 2018	FB	Update logo and contact information
June 10, 2019	FB	Update logo and contact information

**Previous Ordering Information for Reference Only**  
**Do Not Use to Build a New Part Number**

### VXB1-1A2-10M000

**Package**

VXB1: 3.2mm tall  
 VXB2: 4.4 mm tall

**Mode**

1 : Fundamental  
 3: 3rd Overtone

**Stability**

A: ±100 ppm over -20° C to 70° C  
 B: ±50 ppm over -20° C to 70° C  
 C: ±100 ppm over -40° C to 85° C  
 D: ±50 ppm over -40° C to 85° C  
 F: ±30 ppm over -20° C to 70° C

**Frequency**

**Load Capacitance**

0: Series Resonant  
 1: 16 pf  
 2: 20 pf  
 3: 32 pf  
 4: 18 pf  
 5: 10 pF  
 6: 30 pf

The ordering codes for the VXB1/B2 were changed in 2016. If you had ordered a specific code based off this ordering method, it is still available for purchase under the old code however no new part numbers will be created using this system.

Due to the change in the 8th character from numeric to alphabetic, there is no opportunity for overlap between the two ordering

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