

Helping Customers Innovate, Improve & Grow

**Table 1. Electrical Performance**

Parameter	Symbol	Min.	Typ	Max	Units
Nominal Frequency	F <sub>NOM</sub>	24.000		54.000	MHz
Mode		Fundamental, AT - Cut			
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> , ordering option	F <sub>STAB</sub>	±15		±100	ppm
Frequency Tolerance <sup>2</sup>	F <sub>TOL</sub>		±10	±20	ppm
Load Capacitance, ordering option	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 24.000MHz-37.399MHz 37.400MHz-54.000MHz	ESR			100 80	Ohm

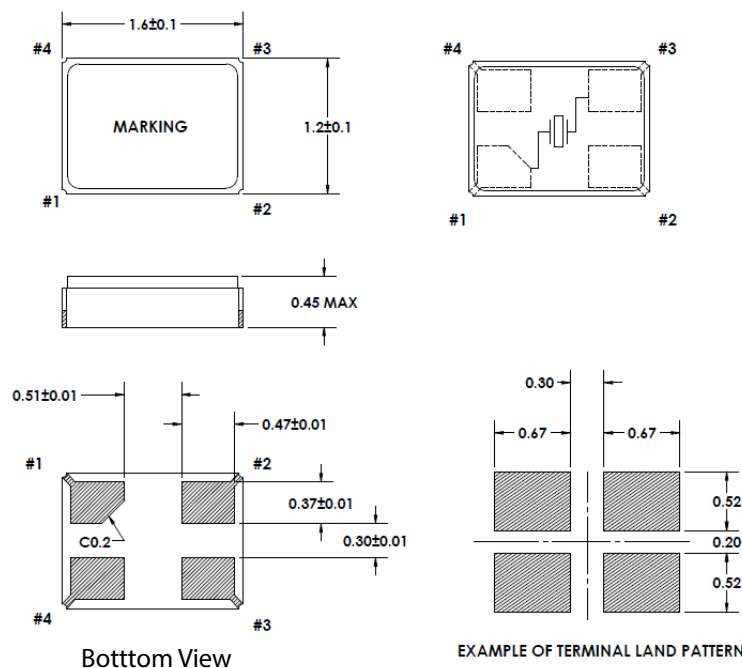
Notes:

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. Pinout**

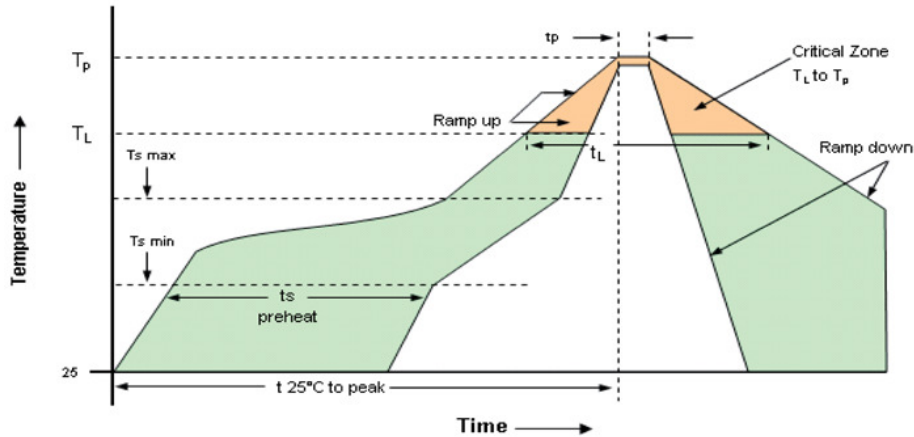
Pin	Function
1	Crystal
2	Connected to cover (Connect to GND)
3	Crystal
4	Connect to GND

**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
Contact Pads	Gold (0.2 um min) over Nickel
Weight	3.2 mg

**Reliability & IR Compliance**

**Solderprofile:**



**Table 3: Reflow Profile**

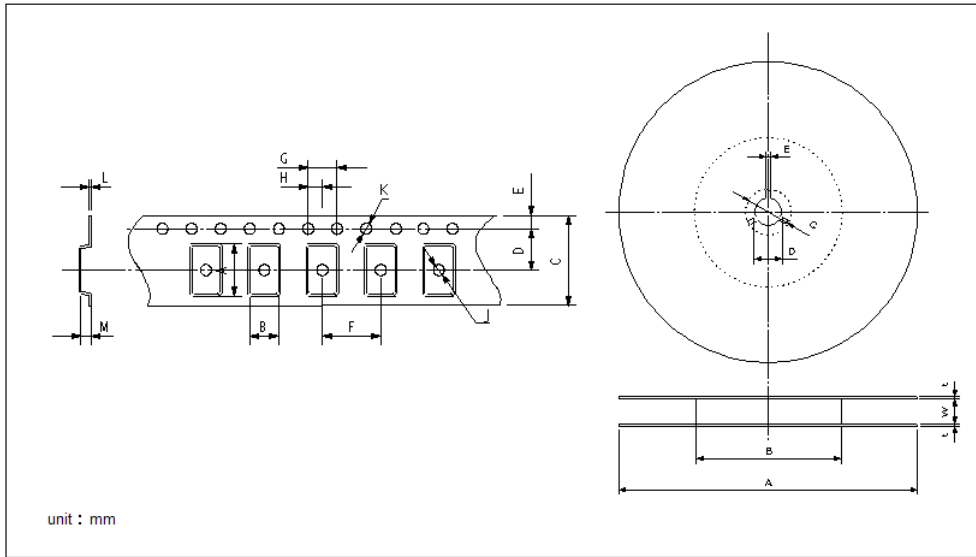
Parameter	Symbol	Value
PreHeat Time $T_{s\ min}$ $T_{s\ max}$	$t_s$	60 sec Min, 260 sec Max 150°C 200°C
Ramp Up	$R_{UP}$	3 °C/sec Max
Time Above 217 °C	$t_L$	60 sec Min, 150 sec Max
Time To Peak Temperature	$T_{AMB-P}$	480 sec Max
Time at 260 °C	$t_p$	30 sec Max
Ramp Down	$R_{DN}$	6 °C/sec Max

Pads are Au over Ni and compatible with either SnPb or Pb free attachment.  
MSL: 1

# Tape & Reel

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

Tape												Reel							
A	B	C	D	E	F	G	H	J	K	L	M	A	B	C	D	E	W	T	
1.85	1.45	8.0	3.5	1.75	4.0	4.0	2.0	0.5	1.55	0.25	0.45	180	60	21.0	13.0	2.0	9.0	2.0	



3K pieces per reel

## Ordering Information

**VXN1 - XXX - XX- xxMxxxxxxxxXX**

**Product**

1.6 x 1.2mm, Crystal

**Mode**

1: Fundamental

**Temp Stability**

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

**Packaging**

- TR: Tape and Reel
- blank: Cut Tape / non Tape and Reel quantities
- \_SNPB: Tin lead solder dipped

**Frequency in MHz**

**Load Capacitance**

- 00: Series Resonance
- 06-32pF

**Operating Temperature**

- E: -40 to 85 °C
- J: -20 to 70 °C

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

**Example:**

- |                                    |                               |
|------------------------------------|-------------------------------|
| <b>VXN1-1EE-12-25M0000000TR</b>    | <b>Tape and Reel</b>          |
| <b>VXN1-1EE-12-25M0000000</b>      | <b>Cut Tape</b>               |
| <b>VXN1-1EE-12-25M0000000_SNPB</b> | <b>Tin lead solder dipped</b> |

## Revision History

Revision Date	Approved	Description
August 23, 2016	RC	Initial datasheet for factory approval and release to customer.
August 10, 2018	FB	Update logo and contact information, add "SNPBDIP" ordering option
June 07, 2019	FB	Update logo and contact information, add Table 2 Environmental compliance, change "SNPBDIP" to "SNPB"
April 30, 2020	FB	Add tape and reel option ordering option

## Contact Information

### **USA:**

100 Watts Street  
Mt Holly Springs, PA 17065  
Tel: 1.717.486.3411  
Fax: 1.717.486.5920

### **Europe:**

Landstrasse  
74924 Neckarbischofsheim  
Germany  
Tel: +49 (0) 7268.801.0  
Fax: +49 (0) 7268.801.281



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