VXB1/VXB2

HC-49/US SMD Crystal

Standard Crystal Datasheet

Helping Customers Innovate, Improve & Grow

Table 1. Electrical Performance

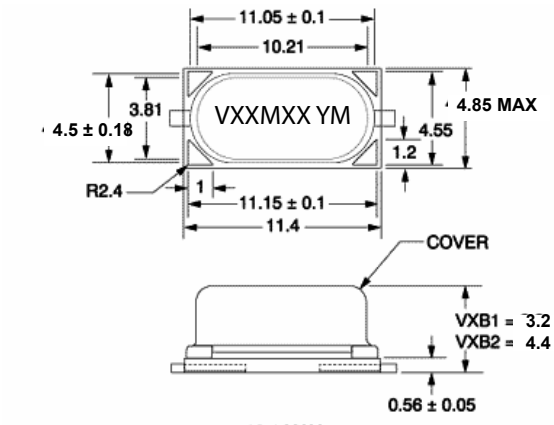
Parameter	Symbol	Min.	Typ	Max	Units
Nominal Frequency	F_{NOM}	3.500		75.000	MHz
Mode		Fundamental, 3rd Overtone			
Operating Temperature Range	T_{OP}	0/70, -10/70, -20/70, -40/85			°C
Stability Over T_{OP} [1]	F_{STAB}	±10		±100	ppm
Frequency Tolerance[2]	F_{TOL}		±10	±20	ppm
Load Capacitance	C_L	6		32	pF
Shunt Capacitance	C_o			5	pF
Drive Level			10	100	uW
Aging / 1st year (at 25 °C)	F_{AGE}			±5	ppm
Insulation Resistance		500			MOhm
Storage Temperature	T_{STO}	-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	

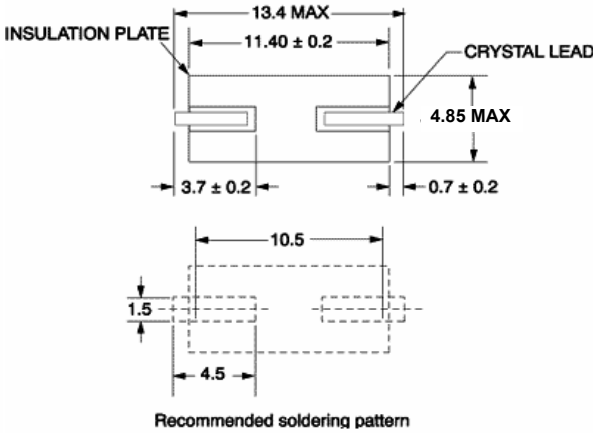
Notes:

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





Part Marking:

V = Vectron
XXMXX = Frequency
Y = Last digit of the year
M = Month Code
A=January
B=February
C=March
D=April
E=May
F=June
G=July
H=August
I=September
J=October
K=November
L=December

All Dimensions in mm

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:

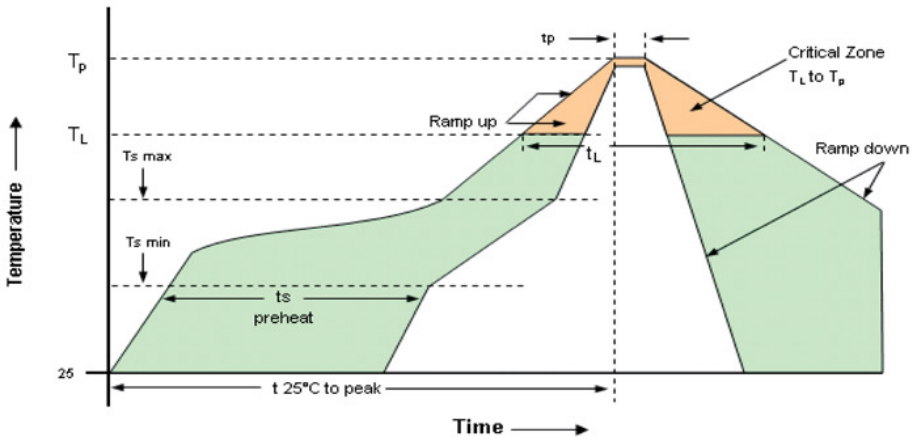


Table 3: Reflow Profile		
Parameter	**Symbol**	**Value**
PreHeat Time Ts-min Ts-max	t_S	60 sec Min, 260 sec Max 150°C 200°C
Ramp Up	R_{UP}	3 °C/sec Max
Time Above 217 °C	t_L	60 sec Min, 150 sec Max
Time To Peak Temperature	T_{AMB-P}	480 sec Max
Time at 260 °C	t_P	30 sec Max
Ramp Down	R_{DN}	6 °C/sec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

Tape & Reel

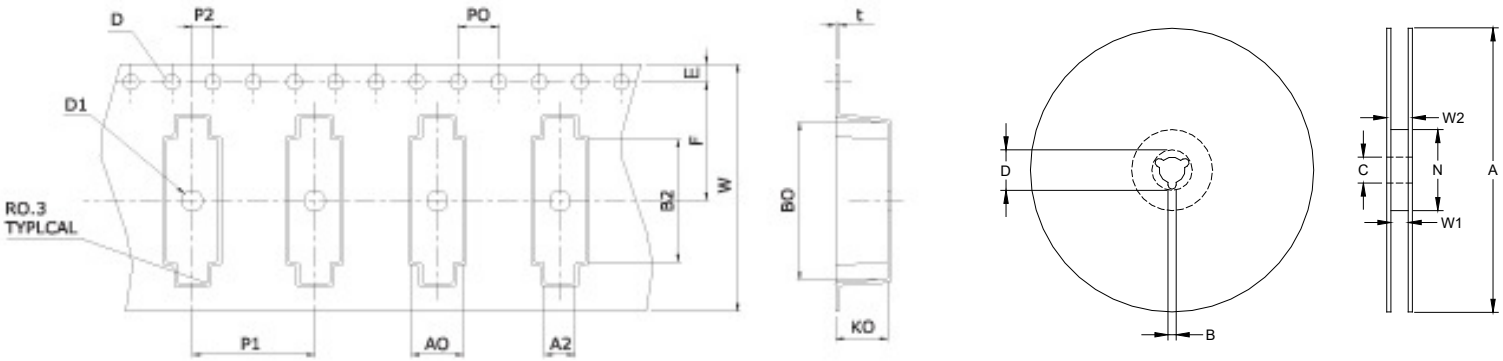
Table 4a. Tape and Reel Dimensions (mm)

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

1K pieces per reel



Ordering Information

VXBX - XXX - XX- xxMxxxxxxxXX

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

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

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

Load Capacitance
00: Series Resonance
06-32pF

Frequency in MHz

Packaging
TR: Tape and Reel
blank: Cut Tape / non Tape and Reel quantities

Example:
VXB2-1EE-12-25M0000000TR **Tape and Reel**
VXB2-1EE-12-25M0000000 **Cut Tape**

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
April 30, 2020	FB	Add tape and reel ordering option

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
I: ±25 ppm over -40° C to 85° 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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