

Helping Customers Innovate, Improve & Grow

Table 1. Electrical Performance

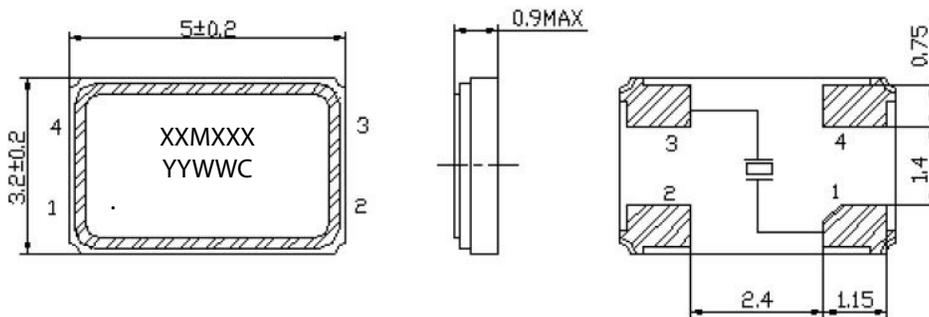
| Parameter | Symbol | Min. | Typ | Max | Units |
|--------------------------------------|------------|------------------------------|-----|--------|-------|
| Nominal Frequency | F_{NOM} | 8.000 | | 54.000 | MHz |
| Mode | | Fundamental or 3rd Overtone | | | |
| Operating Temperature Range | T_{OP} | 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 |
| 8.000MHz-12.000MHz | | | | 80 | |
| 12.001MHz-16.000MHz | | | | 60 | |
| 16.001MHz-20.000MHz | | | | 50 | |
| 20.001MHz-24.000MHz | | | | 40 | |
| 24.001MHz-54.000MHz | | | | 30 | |

Notes:

1. Referenced to the Frequency at 25 °C.
2. Frequency measured at 25 °C ± 3 °C.

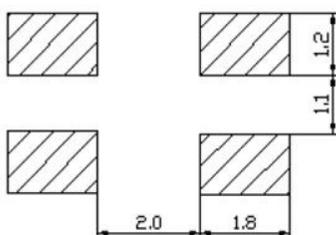
Product is compliant to RoHS directive and fully compatible with lead free assembly. 

Package Drawing



Part Marking:

XXMXXX = Frequency
YYWWC
YY = Year
WW = Week
C = Manufacturing Location

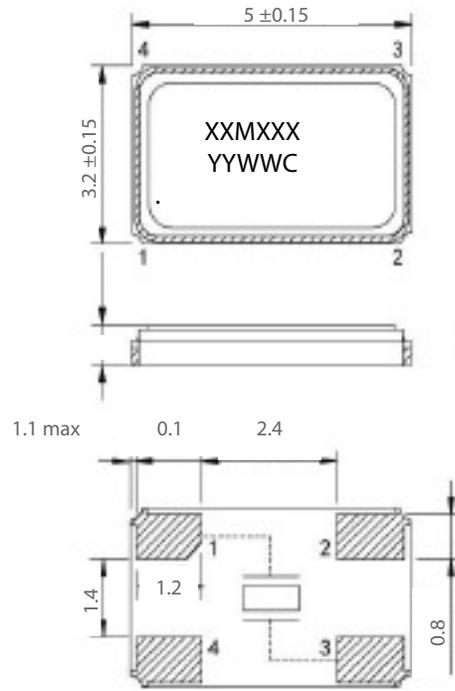


All Dimensions in mm

Table 2. Pinout

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

Alternate Package Drawing



Part Marking:
 XXMXXX = Frequency
 YYWWC
 YY = Year
 WW = Week
 C = Manufacturing Location

Bottom View

All Dimensions in mm

Table 3. 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 (0.3 um min) over Nickel |
| Weight | 38 mg |

Solderprofile:

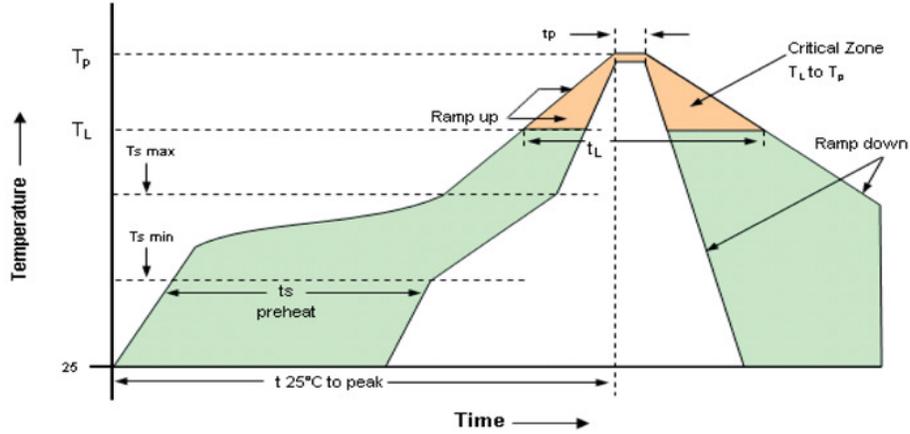


Table 4: Reflow Profile

| 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 |

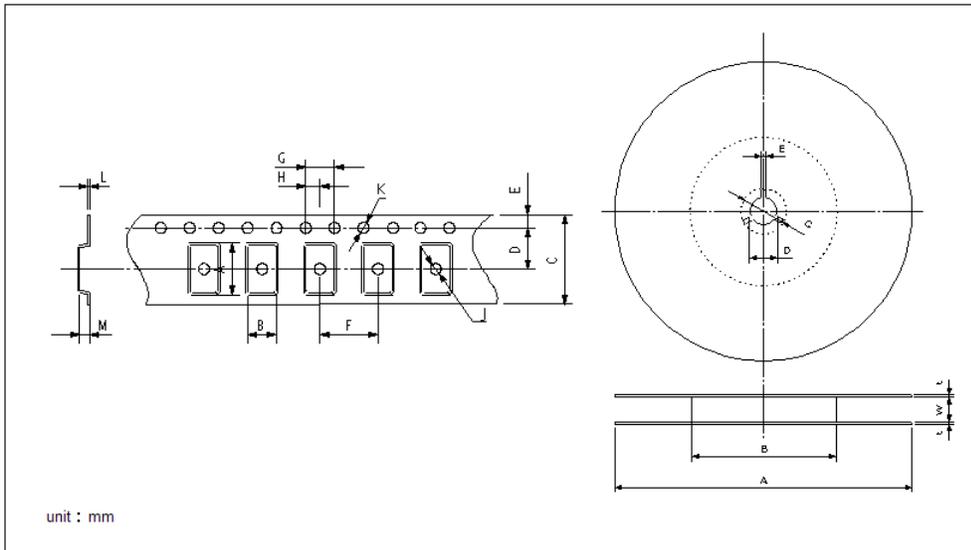
Pads are Au over Ni and compatible with either SnPb or Pb free attachment.

MSL: 1

Tape & Reel

Table 5. 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 | |
| 5.25 | 3.45 | 12.0 | 5.5 | 1.75 | 8.0 | 4.0 | 2.0 | 1.5 | 1.5 | 0.3 | 1.1 | 178 | 180 | 21.0 | 13.0 | 2.0 | 12.4 | 2.0 | |



1K pieces per reel

unit : mm

Ordering Information

VXM5 - XXX - XX- xxMxxxxxxxxXX

Product

5.0 x 3.2mm, Crystal

Mode

1: Fundamental

Temp Stability

C: ±10ppm

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

0: 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.*

Example:

VXM5-1EE-12-25M0000000TR

Tape and Reel

VXM5-1EE-12-25M0000000

Cut Tape

VXM5-1EE-12-25M0000000_SNPB

Tin lead solder dipped

Revision History

| Revision Date | Approved | Description |
|-----------------|----------|---|
| August 29, 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 |

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

VXM5-1A2-10M000

Package

VXM5 : 5.0x3.2mm

Mode

1 : Fundamental

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
E: ±25 ppm over -20° C to 70° 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 VXM5 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 methods.

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