

Table 1. Electrical Performance

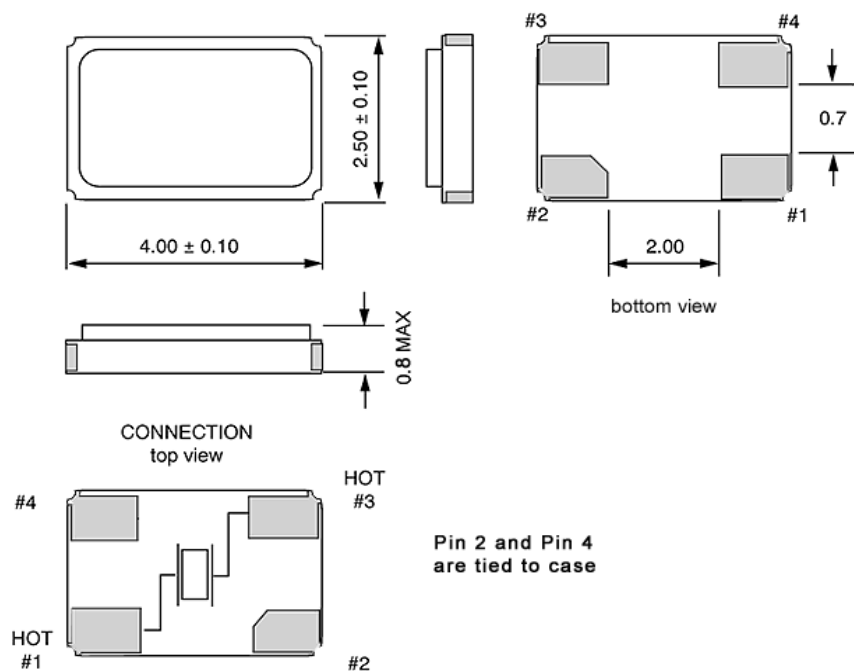
Parameter	Symbol	Min.	Typ	Max	Units
Nominal Frequency	F_{NOM}	12.000		60.000	MHz
Mode		Fundamental			
Operating Temperature Range	T_{OP}	0/70, -10/70, -20/70, -40/85			°C
Stability Over T_{OP} ¹	F_{STAB}	±10		±100	ppm
Frequency Tolerance ²	F_{TOL}		±10		ppm
Load Capacitance	C_L	6		32	pF
Shunt Capacitance	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
12.001MHz-16.000MHz				80	
16.001MHz-20.000MHz				60	
20.001MHz-24.000MHz				50	
24.001MHz-60.000MHz				40	

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.

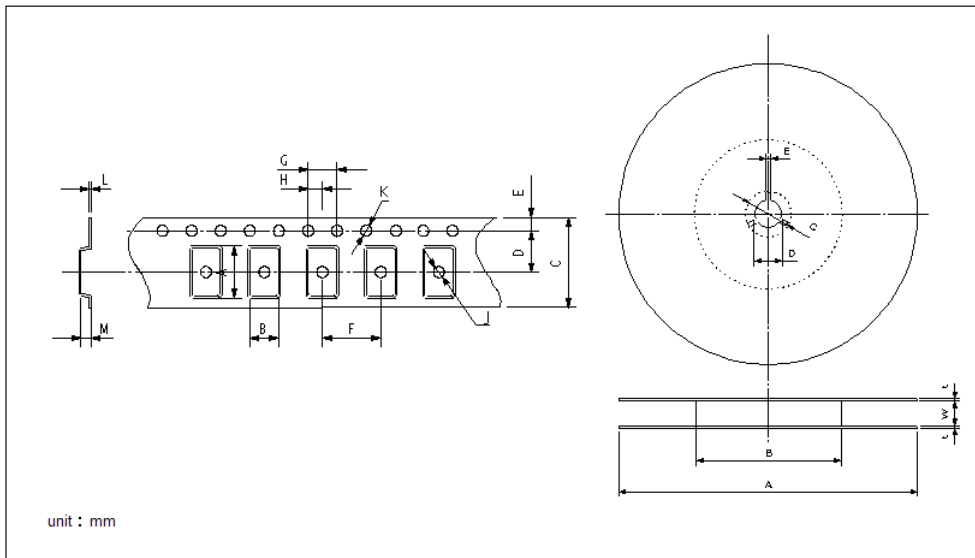
Package Drawing



Tape & Reel

Table 7. 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	
4.40	2.9	12.0	5.5	1.75	8.0	4.0	2.0	0.5	1.55	0.25	0.8	180	60	21.0	13.0	2.0	9.0	2.0	



Reliability & IR Compliance

Solderprofile:

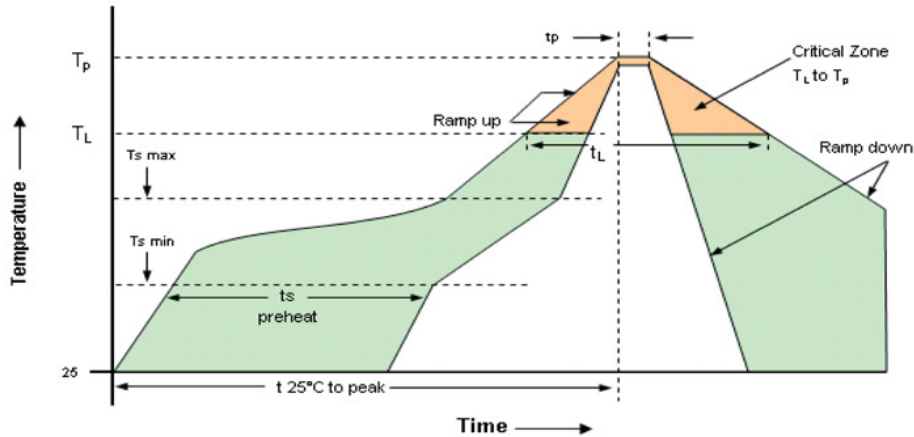


Table 2: Reflow Profile

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

Ordering Information

VXM4 - XXX - XX- xxMxxxxxxxx

Product
4.0 x 2.5mm, 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

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.*

10ppm stability not available for -40 to 85°C

* Add **_SNPBDIP** for tin lead solder dip
 Example: **VXM4-1KE-18-26M0000000_SNPBDIP**

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



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