# PRODUCT APPROVAL SHEET


| | |
|---|---|
| Product Type | XMD-SMD3225 Quartz Crystal |
| CREC's P/N | 01.X.MD.120JMVCA008000000 |
| Description | X'Tal XMD-SMD3225 8.000000MHz 20pF ±20ppm 300ohm |
| Customer Number | SHC002 |
| Customer P/N | J40070014 |
| Customer Name | - |
| Vevision | B0 |

| Drafting | ISS | CHK.(R&D) | APP. |
|---|---|---|---|
| Sign | 杨静 | | |
| Date | 2022/7/12 | 2022/7/12 | 2022/7/12 |

| Process | Site | Tel | Fax | Address |
|---|---|---|---|---|
| Fab | Chengdu,Sichuan,China | +86-28-69095918<br>+86-755-83475957 | +86-28-60238368<br>+86-755-83475977 | No.8 Baiye Road,West Area of Hi-Tech Zone, Chengdu,sichuan,China |
| Assembly | | | | |
| Test | | | | |
| Web Site | www.chinacrec.com | | | |

## REVISION RECORD

| No | HISTORY | REASON | DATE |
|---|---|---|---|
| 1 | New | - | 2022/7/12 |
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## 1 Parts explanation

This part is a miniature AT cut stirp crystal units with SMD3225 miniature BASE. It is mainly used in mobile , wifi and Automotive, bluetooth and telecommunications application.

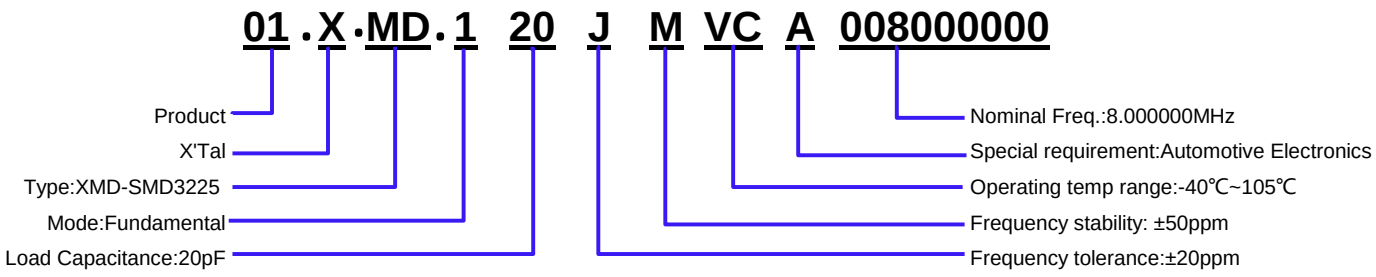
## 2 SCOPE

This specification only covers CREC's 01.X.MD.120JMVCA008000000

## 3 Reference Standard

3.1 MIL-STD-883H :Environmental tests' Mechanical tests.
3.2 MIL-STD-202 : Test Methods for Electronic and Electrical component part.
3.3 IEC 60068-2 :Environmental tests' Mechanical tests.
3.4 ANSI/EIA-481-C : 8mm through 200mm enbossed carrier taping and 24mm punched
3.5 JEDEC J-STD-020C: Soldering
3.6 AEC-Q200：Reliability Test Item

## 4 Title Guide



## 5 Performance

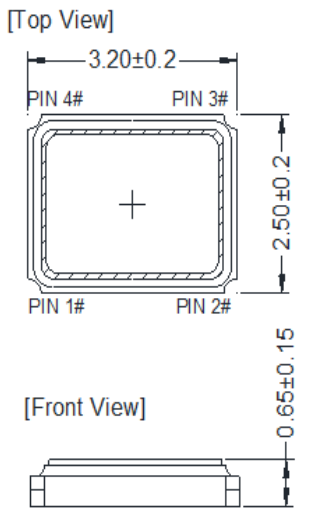
Electrical Performance. Electrical characteristics measured by S&A250B.

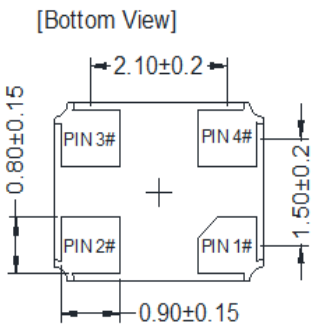
| No. | Item | Symb. | Electrical Specification | | | | Remark (Humidity: 40%~60%) |
|---|---|---|---|---|---|---|---|
| | | | Min. | Type | Max. | Unit | |
| 1 | Nominal Frequency | F0 | | 8.000000 | | MHz | - |
| 2 | Mode of vibration | - | | Fundamental | | - | - |
| 3 | Frequency tolerance | ΔF/F0 | -20 | - | 20 | ppm | 25℃±3℃ |
| 4 | Operating Temperature Range | $T_{OPR}$ | -40 | - | 105 | ℃ | - |
| 5 | Frequency Stability | Tc | -50 | - | 50 | ppm | Ref 25℃±3℃ |
| 6 | Storage Temperature | Tstg | -55 | - | 125 | ℃ | - |
| 7 | Load Capacitance | CL | - | 20 | - | pF | - |
| 8 | Equivalent Series Resistance | ESR | - | - | 300 | Ω | 25℃±3℃ |
| 9 | Drive Level | DL | - | - | 100 | μW | - |
| 10 | Insulation Resistance | IR | 500 | - | - | Mohm | @DC100V |
| 11 | Shunt Capacitance | C0 | - | - | 2 | pF | 25℃±3℃ |
| 12 | Motional Capacitance | C1 | - | - | - | fF | 25℃±3℃ |
| 13 | Spurious | SPDB | - | - | -3 | dB | ±5000ppm |
| 14 | Aging | Aging | -3 | - | 3 | ppm | First Year |
| 15 | Reliability | - | AEC-Q200 | | | | |

## 6 Figure

### 6.1 Product Dimensions and Solder Pad Layout Dimensions (Unit:mm)

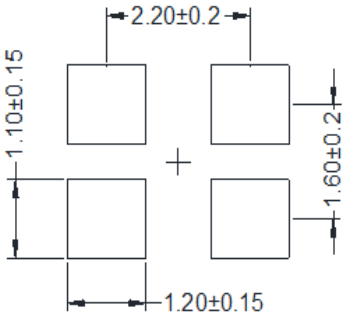
Product Dimensions




| Pin | Connection |
|---|---|
| 1# and 3# | X'tal |
| 2# and 4# | GND |

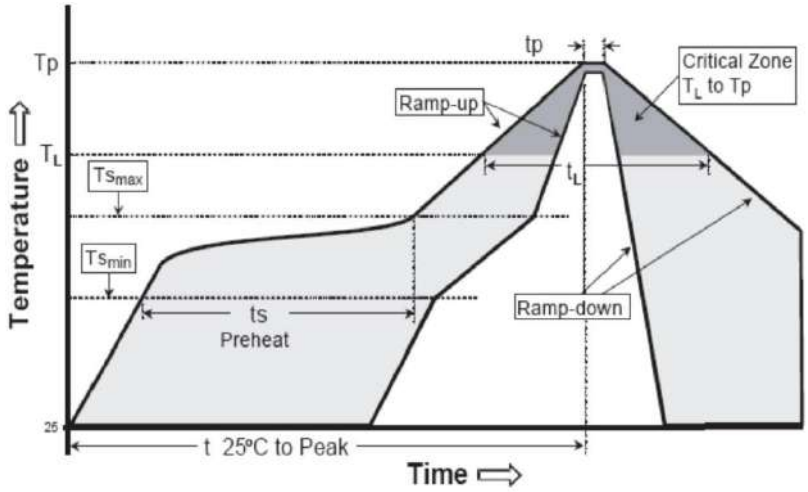
Solder Pad Layout Dimensions



6.2 Marking


| No. | Item | | E.G. | Remark |
|---|---|---|---|---|
| 1 | X.XXXX | Nominal Frequency (MHz) 6digit | 8.0000 | 8.0000=8.000000MHz |
| 2 | CC | Load Capacitance (pF) | 20 | 20=20pF |
| 3 | CREC | LOGO | CREC | - |
| 4 | Y | Year: Last 1 Digit | 2 | 2022 Year |
| 5 | WW | Week Code 2 Digit | 29 | 29th Week |

7 IR Reflow Profile

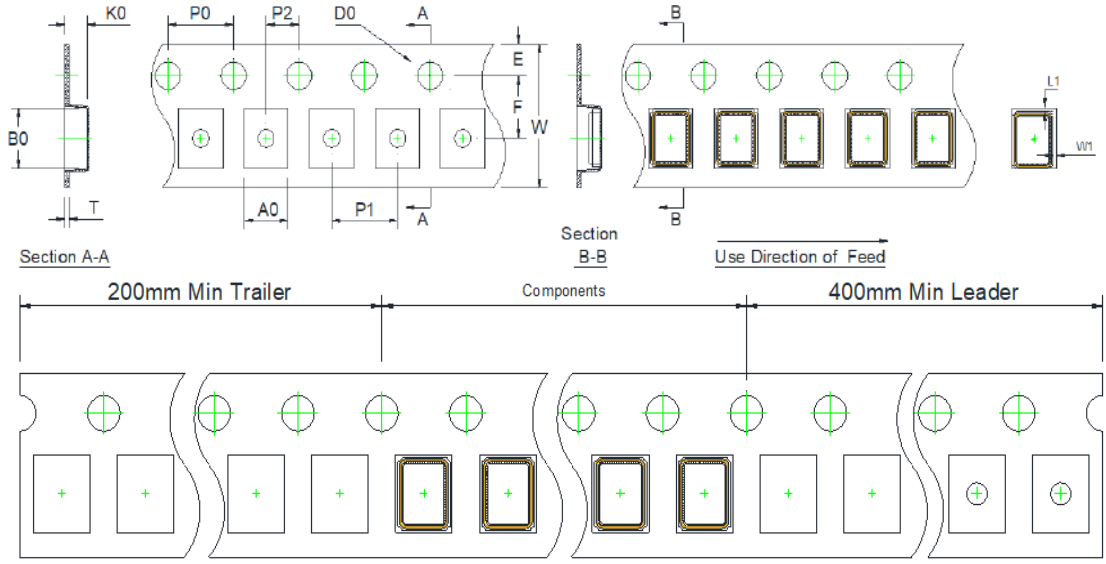



Remark: Referance JEDEC J-STD-020C

| Profiles Feature | Pb-Free Assembly |
|---|---|
| Average Ramp-up Rate (Ts max to Tp) | 3℃/second max. |
| Preheat | |
| ■Temperature Min (Ts min) | 125℃ |
| ■Temperature Max (Ts max) | 200℃ |
| ■Time (ts min to ts max) | 60~180 seconds |
| Time maintained above | |
| ■Temperature ($T_L$) | 217℃ |
| ■Time ($t_L$) | 60~150 seconds |
| Peak/Classification Temperature ($T_p$) | 260℃ |
| Time within 5℃ of actual Peak | 20~40 seconds |
| Temperature ($t_p$) | |
| Ramp-down rate | 6℃/second Max |
| Time 25℃ to Peak Temperature | 8 minutes Max |
| Suggest reflow times | 3 times |

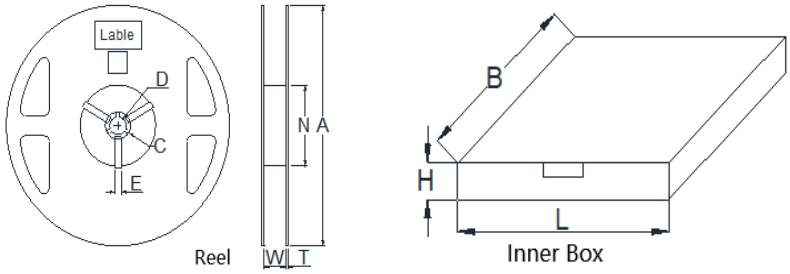
## 8 Packing specification

### 8.1 Tape Dimensions



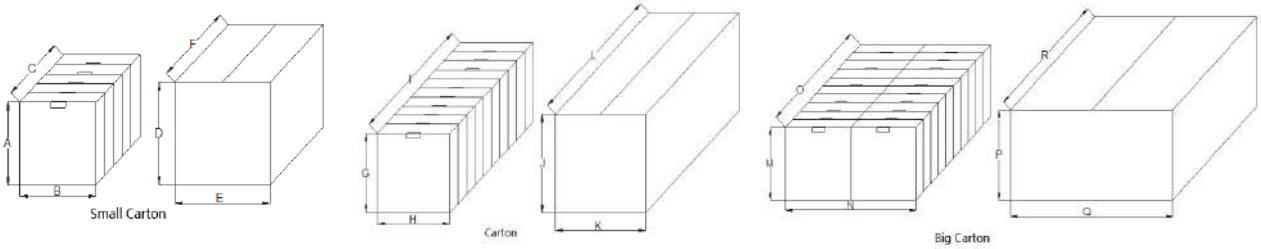

| ITEM | W | P1 | E | F | D0 | P0 | P2 | A0 | B0 | K0 | T | L1 | W1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Spec(mm) | 8.00 | 4.00 | 1.75 | 3.50 | 1.55 | 4.00 | 2.00 | 2.70 | 3.40 | 1.40 | 0.25 | 0.20 | 0.20 |
| Tol.(mm) | ±0.30 | ±0.10 | ±0.22 | ±0.10 | ±0.05 | ±0.10 | ±0.10 | ±0.10 | ±0.10 | ±0.10 | ±0.05 | ±0.05 | ±0.05 |

### 8.2 Reel and Inner Box Dimensions and Q'ty




| Item | Reel | | | | | | | Inner Box | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | A | W | N | C | D | E | T | L | B | H |
| SPEC(mm) | 178 | 9.3 | 60.0 | 20.0 | 13.0 | 2.3 | 1.4 | 180 | 180 | 30 |
| Tol.(mm) | ±2.0 | ±0.5 | ±0.5 | ±1.0 | ±0.5 | ±0.5 | ±0.2 | - | - | - |
| Q'ty (pcs) | 3K/Reel Max | | | | | | | 6K/Box Max | | |

### 8.3 Carton Dimensions and Q'ty




Small Carton Carton Big Carton

| Item | Small Carton | | | | | | Carton | | | | | | Big Carton | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R |
| SPEC(mm) | 180 | 180 | 150 | 230 | 230 | 230 | 180 | 180 | 300 | 230 | 230 | 350 | 180 | 360 | 300 | 230 | 350 | 410 |
| Q'ty (pcs) | 30K/Carton Max | | | | | | 60K/Carton Max | | | | | | 120K/Carton Max | | | | | |

## 9 Reliability Test Item

| No. | Item | Test Condition | Reference |
|---|---|---|---|
| 1 | High Temperature Storage | Temperature: 125℃ ± 5℃<br>Time 1000 hours | MIL-STD-202<br>Method 108 |
| 2 | Temperature Cycle | 1000 cycles (-40℃ to 125℃),30min max<br>dwell time at peak temperature.<br>1 min. maximum transition time | JESD22 Method JA-104 |
| 3 | Biased Humidity | Temperature: 85℃ ± 2℃<br>Relative Humidity: 85%<br>Time: 1000 hours. | MIL-STD-202 Method 103 |
| 4 | Operational Life | Temperature: 125℃<br>Time:1000 hours | MIL-STD-883H Method 1008.2 |
| 5 | Mechanical Shock | 100g,half-sine, Dulation:6ms,<br>Each direction for 3 times in X,Y,Z | MIL-STD-202 Method 213,<br>condition C |
| 6 | Vibration | Frequency: 10 to 2000 Hz, full wave<br>Amplitude: 1.52 mm (Peak to Peak)<br>Direction: X, Y,Z<br>Duration: 20 Minutes 12 cycles each of 3 orientation | MIL-STD-202 METHOD 204 |
| 7 | Resistance to Soldering Heat | Pre-Heating:125℃ 60~120 Seconds，<br>Solder temperature: 260± 5℃，Time: 10±5 sec | MIL-STD-202 Method 210B |
| 8 | Solderability | 4Hrs dry heat 155℃<br>Dipping 235±5℃ 5±0.5 sec | J-STD-002 |
| 9 | Board Flex | 60 sec minimum holding time,<br>Deflection min :2mm | AEC Q200-005 |
| 10 | Terminal Strength | Force : 1.8Kg Test duration : 60+1 sec | AEC Q200-006 |

# 10 Product handling and control procedure

## 10.1 Precautions for storage

Storage of crystal units under higher temperature or high humidity for a long term may affects frequency stability or solderability.Please store the crystal units under the normal temperature and humidity without exposing to direct sunlight and dew condensation,and avoid the storage of crystal units for more than 6 months,and mount them as soon as possible after unpacking.

| Item | | Electrical Specification | | | |
|---|---|---|---|---|---|
| | | Min. | Type | Max. | Unit |
| Storage peiod | After customer assembly | 15 | | - | Year |
| | Crystal unused | - | | 2 | Year |

## 10.2 Mounting of SMD Type products

When using an automatic loading machine,please test and confirm to cause no damage to the crystal units before mounting.Bending the circuit board in the process of cleaving boards after mounting and soldering crystal units may cause peeling off the soldering or package cracks by mechanical stress.

## 10.3 Ultrasonic cleaning

General cleaning solutions or ultrasonic cleaning method may be used to clean CREC's products. However, under certain circumstances, ultrasonic cleaning machine could generate resonance at the oscillaton frequency of our products and thus deteriorate the electrical characteristics in devices, and even damage the overall structure of devices. Therefore, verification test is recommended before cleaning.

## 10.4 Ultrasonic welding

Avoid mounting and processing by Ultrasonic welding this method has a possibility of an excessive vibration spreading inside the crystal products and becoming the cause of characteristic deterioration and not oscillating. If Ultrasonic welding is being used in process, please notify us in advance to verify it.