



**LUCKI CM ELECTRONICS Co.,Ltd**



APPROVAL SHEET

Customer : \_\_\_\_\_  
 Part Number: 2520 Seam Sealing Crystal  
 LK Part No.: L225S320DH  
 Holder : SMD 2520  
 Frequency: 32.000MHZ 8PF ± 10PPM  
 Manufacturer: Lucki Electronics  
 Date: 2021-11-07

| Prepared   | Checked       | Approved  |
|------------|---------------|-----------|
| Chen Mohan | Zhang Dongwei | Zhang Bin |

(For Customer Use)

| Acceptable |  |
|------------|--|
|            |  |



**LUCKI CM ELECTRONICS Co.,Ltd**



Revision History

| No. | Revised Date | Change Content | Approved | Remark |
|-----|--------------|----------------|----------|--------|
|     |              |                |          |        |



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### 1. Electrical characteristics

| Items                   | Symbol        | Specification  |        |     | Unit   | Notes       |
|-------------------------|---------------|--|--------|-----|--------|-------------|
|                         |               | Min  | Typ    | Max |        |             |
| Model No                |               | Seam Seal 2520   |        |     |        |             |
| Blank Cutting Mode      |               | AT FUND  |        |     |        |             |
| Nominal Frequency       | F0            | 32.000000  |        |     | MHz    |             |
| Oscillation Mode        |               | <input checked="" type="checkbox"/> Fundamental <input type="checkbox"/> 3rd |        |     |        |             |
| Frequency Tolerance     | $\Delta F/F0$ | -10  |        | 10  | ppm    | 25°C ± 3°C  |
| Load Capacitance        | CL            |  | 8      |     | pF     |             |
| Frequency Stability     | TC            | -10  |        | 10  | ppm    |             |
| Operating Temperature   | Topr          | -20  |        | 75  | °C     |             |
| Storage Temperature     | Tstg          | -55  | ~      | 125 | °C     |             |
| Drive Level             | DL            |  | 100    | 300 | uW     |             |
| Effective Resistance RR | Rr            | -  | -      | 40  | Ω      |             |
| Shunt Capacitance C0    | C0            | -  | -      | 2   | pF     |             |
| Trim Sensitivity TS     | TS            | -  |        | -   | ppm/PF |             |
| Insulation Resistance   | IR            | 500  | -      | -   | MΩ     | at DC 100 V |
| Aging:                  | Fa            | -2   |        | 0   | ppm    | Per year    |
| Weight                  |               |  | 0.0125 |     | g      |             |

**Remark:** Sample Data See Attachment

#### Measure equipment :

Electrical characteristics measured by S&A 250B or equivalent.

#### Hermetically :

**Fine Leak:** Helium Bombing 4kg/cm<sup>2</sup> for 1 Hour, Leak ate Less Than <sup>-8</sup>atm. cc/sec 1×10

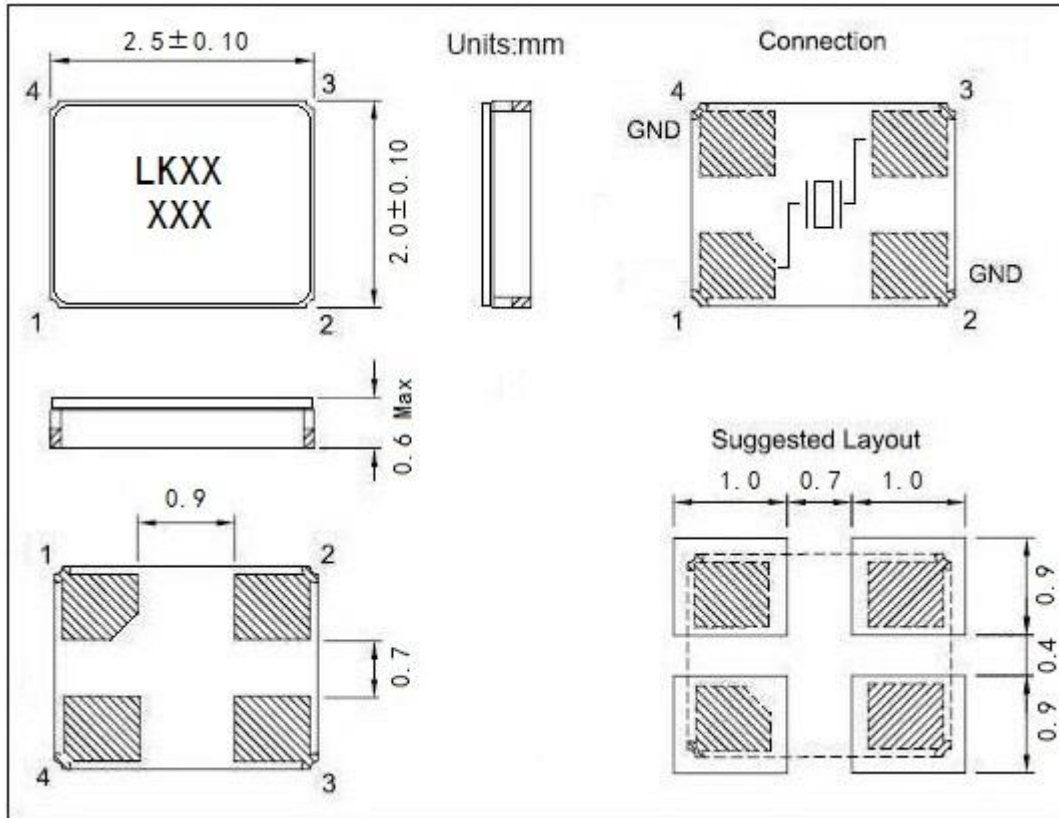
**Gross Leak:** 125°C FC#40 , 120 Seconds, No Bubble



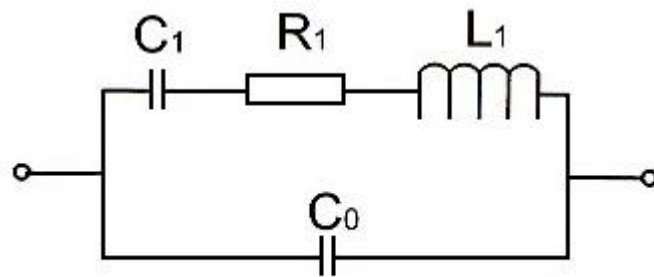
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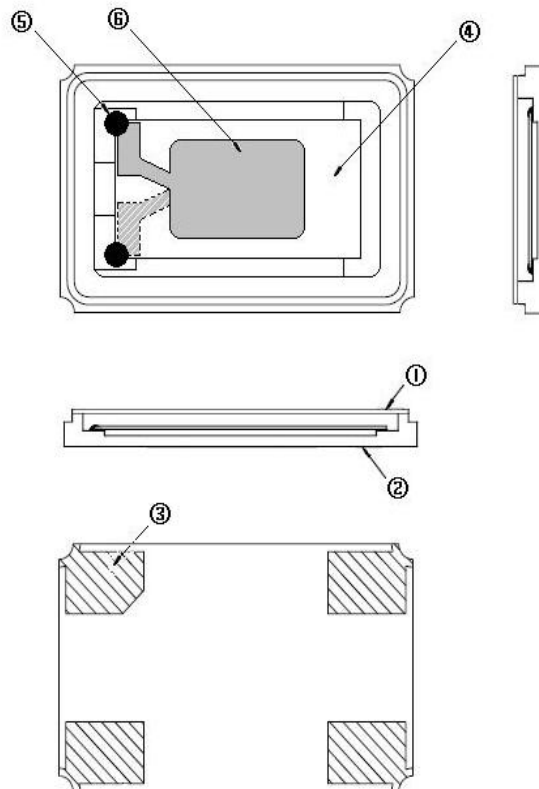
## 2.Solder Dimension And Pattern



## 3. Equivalent Circuit



Equivalent Circuit

**4. Structure drawing**


| NO | COMPONENTS          | MATERIALS        | QTY | FINISH / SPECIFICATIONS                        |
|----|---------------------|------------------|-----|--|
| 1  | Cap                 | Metal ( Fe )     | 1   | -  |
| 2  | Base                | Ceramic          | 1   | Color black                                    |
| 3  | PAD                 | Au               | 4   | Tungsten metalize + Ni plating<br>+ Au plating |
| 4  | Crystal Blank       | SiO <sub>2</sub> | 1   | -  |
| 5  | Conductive Adhesive | Ag               | 4   | Silicone                                       |
| 6  | Electrode           | Ag + Cr          | 2   | -  |



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### 5. Reliability Specification

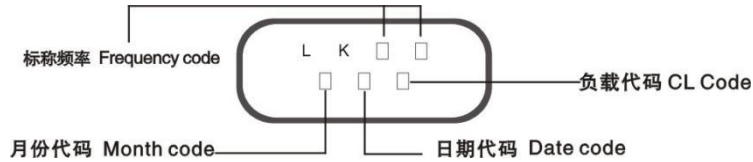
|    | Item                             | Condition   | Standard  |
|----|----------------------------------|---|---|
| 1. | Drop characteristics             | Free drop from 75cm height on a hard wooden board for 3 times. (Board is thickness more than 30 mm.)          | Frequency change: $\leq \pm 5\text{ppm}$<br>Rr as specification |
| 2  | Mechanical shock                 | Device are shocked to half sine wave (1000g) three mutually perpendicular axes each 3 times                   | Frequency change: $\leq \pm 5\text{ppm}$<br>Rr as specification |
| 3. | Shake characteristics            | Shake frequency 10~55Hz, cycle 1~2 minutes, swing 1.5mm, direction x/y/z, all 30 minutes, test after 1 hours. | Frequency change: $\leq \pm 5\text{ppm}$<br>Rr as specification |
| 4. | Humidity characteristics         | +40 $\pm$ 2 $^{\circ}\text{C}$ & 90%~95% R.H. 250 hours   | Frequency change: $\leq \pm 5\text{ppm}$<br>Rr as specification |
| 5. | Low temperature characteristics  | -40 $\pm$ 2 $^{\circ}\text{C}$ , 250 hours, put in room temperature, test after 1 hours.                      | Frequency change: $\leq \pm 5\text{ppm}$<br>Rr as specification |
| 6. | High temperature characteristics | +85 $\pm$ 2 $^{\circ}\text{C}$ , 250 hours, put in room temperature, test after 1 hours.                      | Frequency change: $\leq \pm 5\text{ppm}$<br>Rr as specification |
| 7. | Temperature cycling              | -30 $\pm$ 3 $^{\circ}\text{C}$ /30 $\pm$ 3 min~+85 $\pm$ 2 $^{\circ}\text{C}$ /30 $\pm$ 3min, 5 cycles        | Frequency change: $\leq \pm 5\text{ppm}$<br>Rr as specification |
| 8. | Reflux examination               | <p>1- Max 180 sec<br/>2- Max 10 sec<br/>3- Max 80 sec<br/>4- Max 90 sec</p>                                   | Frequency change: $\leq \pm 5\text{ppm}$<br>Rr as specification |



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## 6. Marking specification



### Produce Time Code

#### 负载代码 CL Code

|         |   |         |         |   |     |   |         |    |      |      |      |    |      |
|---------|---|---------|---------|---|-----|---|---------|----|------|------|------|----|------|
| 负载 CL   | 6 | 6.1~6.5 | 7.1~7.5 | 8 | 8.5 | 9 | 9.1~9.5 | 10 | 10.5 | 11.2 | 11.5 | 12 | 12.5 |
| 代码 Code | A | B       | C       | D | E   | F | G       | H  | I    | J    | K    | L  | M    |

|         |    |    |    |    |    |    |    |    |    |    |    |   |   |
|---------|----|----|----|----|----|----|----|----|----|----|----|---|---|
| 负载 CL   | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 22 | 28 | 30 |   |   |
| 代码 Code | N  | O  | P  | Q  | R  | S  | T  | U  | V  | W  | X  | Y | Z |

#### 月份代码 Month code

|          |   |   |   |   |   |   |   |   |   |    |    |    |
|----------|---|---|---|---|---|---|---|---|---|----|----|----|
| 月份 Month | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 代码 code  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | O  | N  | D  |

#### 日期代码 Date code

|         |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |
|---------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|
| 日期 Date | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| 代码 code | A | B | C | D | E | F | G | H | I | J  | K  | L  | M  | N  | O  | P  |

|         |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|---------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 日期 Date | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| 代码 code | Q  | R  | S  | T  | U  | V  | W  | X  | Y  | Z  | 1  | 2  | 3  | 4  | 5  |



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## 7. Type & Reel

|    | HC-49SMD   | 7050       | 6035       | 5032       | 3225       | 2520       | 2016       |
|----|------------|------------|------------|------------|------------|------------|------------|
| W  | 24.00±0.30 | 16.00±0.05 | 12.00±0.05 | 12.00±0.05 | 8.00±0.05  | 8.00±0.05  | 8.00±0.05  |
| E  | 1.75±0.10  | 1.75±0.10  | 1.75±0.10  | 1.75±0.10  | 1.75±0.10  | 1.75±0.10  | 1.75±0.10  |
| F  | 11.5±0.10  | 7.5±0.10   | 5.5±0.10   | 5.5±0.10   | 3.5±0.05   | 3.5±0.05   | 3.5±0.05   |
| T  | 0.40±0.05  | 0.35±0.05  | 0.35±0.05  | 0.30±0.05  | 0.25±0.03  | 0.25±0.03  | 0.25±0.03  |
| P  | 12.00±0.10 | 8.00±0.10  | 8.00±0.10  | 8.00±0.10  | 4.00±0.05  | 4.00±0.05  | 4.00±0.05  |
| P0 | 4.00±0.10  | 4.00±0.10  | 4.00±0.10  | 4.00±0.10  | 4.00±0.05  | 4.00±0.05  | 4.00±0.05  |
| P2 | 2.00±0.10  | 2.00±0.10  | 2.00±0.10  | 2.00±0.10  | 2.00±0.05  | 2.00±0.05  | 2.00±0.05  |
| D0 | φ1.50±0.10 | φ1.50±0.10 | φ1.50±0.10 | φ1.50±0.10 | φ1.50±0.10 | φ1.50±0.10 | φ1.50±0.10 |
| D1 | φ1.50MIN   | φ1.50MIN   | φ1.50MIN   | φ1.50MIN   | φ1.00MIN   | φ1.00MIN   | φ1.00MIN   |
| A0 | 4.60±0.10  | 5.40±0.10  | 3.90±0.10  | 3.50±0.10  | 2.70±0.10  | 2.4±0.10   | 2.00±0.10  |
| K0 | 4.40±0.10  | 1.80±0.10  | 1.50±0.10  | 1.60±0.10  | 1.50±0.10  | 1.10±0.10  | 1.10±0.10  |
| B0 | 14.20±0.15 | 7.40±0.10  | 6.40±0.10  | 5.20±0.10  | 3.50±0.05  | 2.90±0.05  | 2.4±0.05   |







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|        |                      |                      |                      |                      |                      |                      |                      |
|--------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
|        | HC-49SMD             | 7050                 | 6035                 | 5032                 | 3225                 | 2520                 | 2016                 |
| A      | $\phi 330 \pm 1.0$   | $\phi 178 \pm 2.0$   | $\phi 178 \pm 2.0$   | $\phi 178 \pm 2.0$   | $\phi 178 \pm 2.0$   | $\phi 178 \pm 2.0$   | $\phi 178 \pm 2.0$   |
| B      | $2.30 \pm 0.20$      | $2.00 \pm 0.50$      | $2.00 \pm 0.50$      | $2.00 \pm 0.50$      | $2.50 \pm 0.50$      | $2.50 \pm 0.50$      | $2.50 \pm 0.50$      |
| C      | $\phi 13.5 \pm 0.20$ | $\phi 13.2 \pm 0.20$ | $\phi 13.2 \pm 0.20$ | $\phi 13.2 \pm 0.20$ | $\phi 13.5 \pm 0.20$ | $\phi 13.5 \pm 0.20$ | $\phi 13.5 \pm 0.20$ |
| D      | $\phi 21.5 \pm 0.20$ | $\phi 20.0 \pm 0.50$ | $\phi 20.0 \pm 0.50$ | $\phi 20.0 \pm 0.50$ | $\phi 56.8 \pm 0.50$ | $\phi 56.8 \pm 0.50$ | $\phi 56.8 \pm 0.50$ |
| N      | $\phi 100.0 \pm 0.5$ | $\phi 60.5 \pm 1.0$  | $\phi 60.5 \pm 1.0$  | $\phi 60.5 \pm 1.0$  | $\phi 60.5 \pm 1.0$  | $\phi 60.5 \pm 1.0$  | $\phi 60.5 \pm 1.0$  |
| W<br>I | $24.5 \pm 0.20$      | $16.5 \pm 0.20$      | $12.5 \pm 0.20$      | $12.5 \pm 0.20$      | $9.4 \pm 0.30$       | $8.0 \pm 0.30$       | $8.0 \pm 0.30$       |
| T1     | $2.30 \pm 0.20$      | $1.80 \pm 0.20$      | $1.80 \pm 0.20$      | $1.80 \pm 0.20$      | $1.40 \pm 0.20$      | $1.40 \pm 0.20$      | $1.40 \pm 0.20$      |

## 8. Packing Specification

