



LUCKI CM ELECTRONICS Co.,Ltd



APPROVAL SHEET

Customer : _____
 Part Number: 2016 Seam Sealing Crystal
 LK Part No.: L214S320LH
 Holder : SMD2016
 Frequency: 32.000MHZ 12PF ± 10PPM
 Manufacturer: Lucki Electronics
 Date: 2021-11-06

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

(For Customer Use)

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



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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 2016 | | | | |
| Blank Cutting Mode | | AT FUND. | | | | |
| Nominal Frequency | F0 | 32.000 | | | 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 | | 12 | | 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 | | | 0.0126 | | g | |

Remark: Sample Data See Attachment

Measure equipment :

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

Hermetically :

Fine Leak: Helium Bombing 4kg/cm² for 1 Hour, Leak ate Less Than ⁻⁸atm. cc/sec 1×10

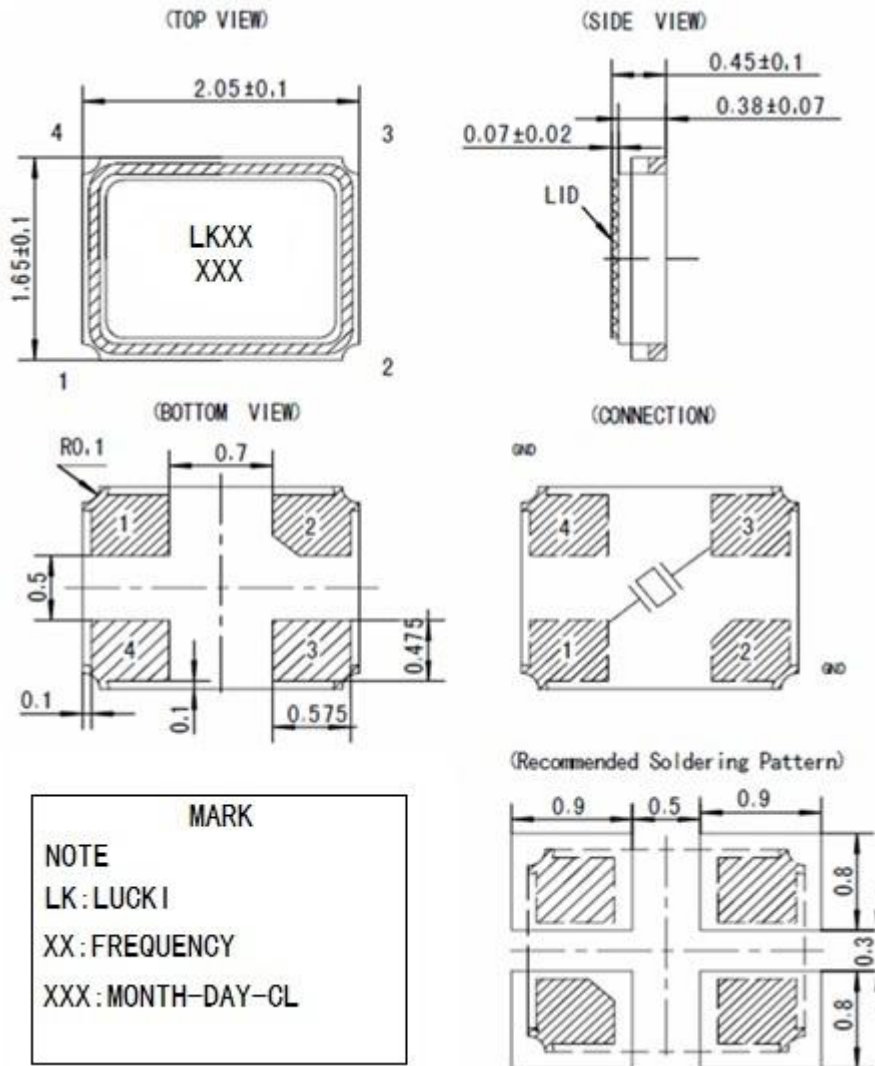
Gross Leak: 125°C FC#40 , 120 Seconds, No Bubble



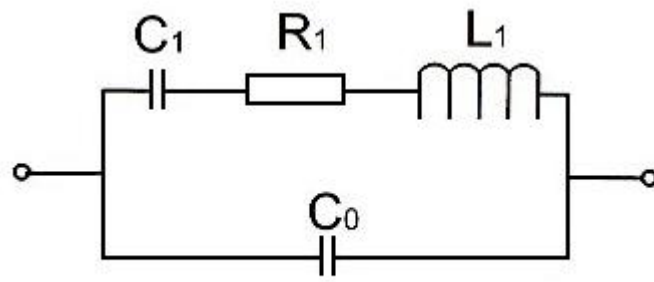
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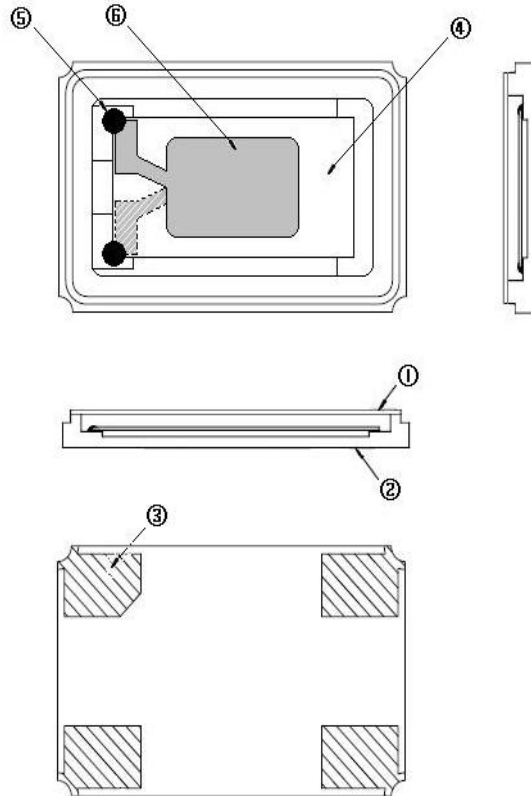
2. Solder Dimension And Pattern



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 + Au plating |
| 4 | Crystal Blank | SiO ₂ | 1 | - |
| 5 | Conductive Adhesive | Ag | 4 | Silicone |
| 6 | Electrode | Ag + Cr | 2 | - |



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5. Reliability Specification

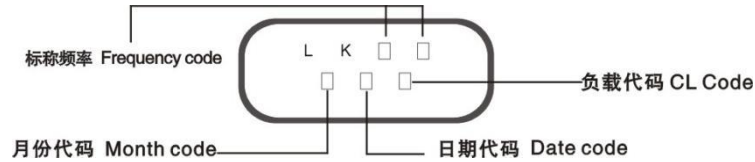
| | Item | Condition | Standard |
|----|----------------------------------|--|---|
| 1. | Drop characteristics | Free drop from 75cm height on a hard wooden board for 3 times. (Board is thickness more than 30 mm.) | Frequency change: $\leq \pm 5\text{ppm}$ Rr as specification |
| 2 | Mechanical shock | Device are shocked to half sine wave (1000g) three mutually perpendicular axes each 3 times | Frequency change: $\leq \pm 5\text{ppm}$ Rr as specification |
| 3. | Shake characteristics | Shake frequency 10~55Hz, cyc1~2 minutes, swing 1.5mm, direction x/y/z, all 30 minutes, test after 1 hours. | Frequency change: $\leq \pm 5\text{ppm}$ Rr as specification |
| 4. | Humidity characteristics | +40 \pm 2 $^{\circ}\text{C}$ & 90%~95% R.H. 250 hours | Frequency change: $\leq \pm 5\text{ppm}$ 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: $\leq \pm 5\text{ppm}$ 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: $\leq \pm 5\text{ppm}$ 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: $\leq \pm 5\text{ppm}$ Rr as specification |
| 8. | Reflux examination | <p>1- Max 180 sec 2- Max 10 sec 3- Max 80 sec 4- Max 90 sec</p> | Frequency change: $\leq \pm 5\text{ppm}$ 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 |

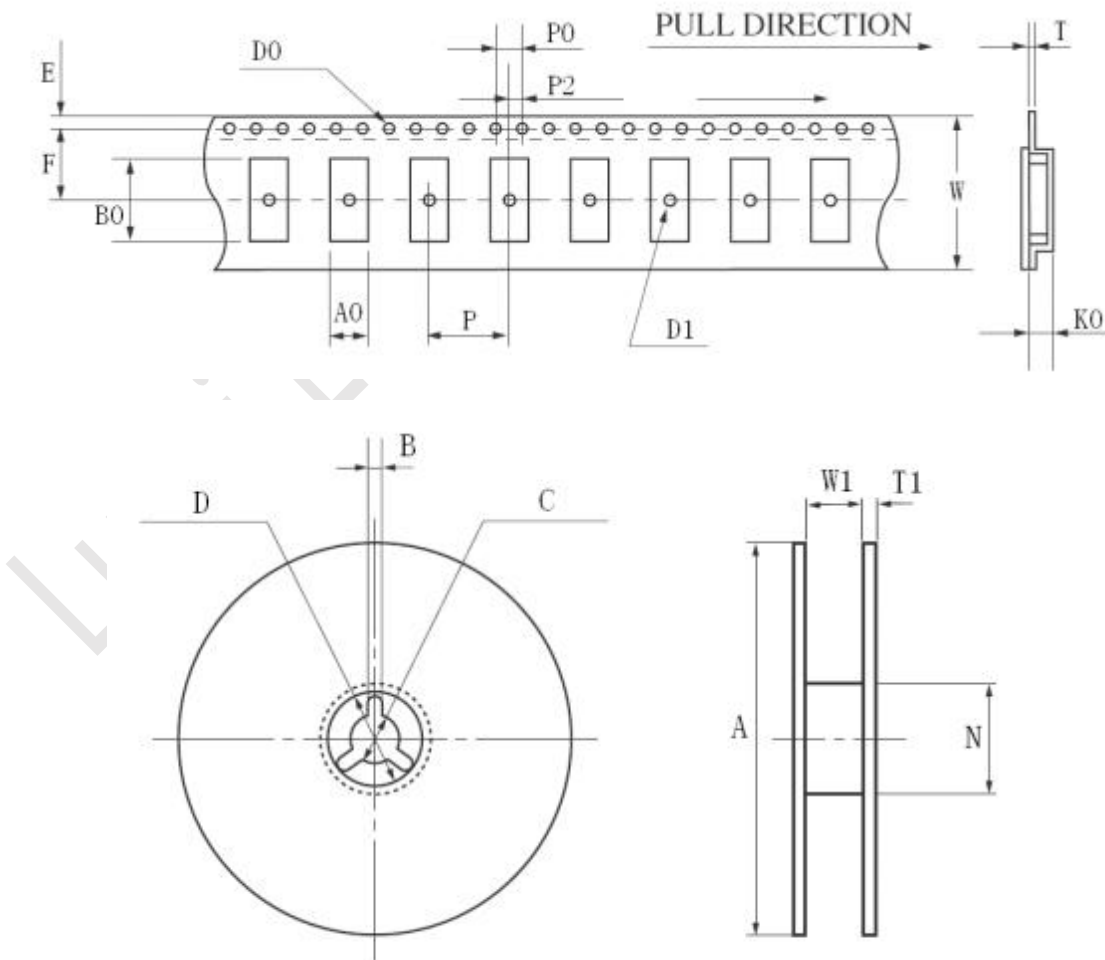


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7. Type & Reel

| | 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 ± 0.20 | 2.00 ± 0.50 | 2.00 ± 0.50 | 2.00 ± 0.50 | 2.50 ± 0.50 | 2.50 ± 0.50 | 2.50 ± 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 | $\phi 100.0 \pm 0.5$ | $\phi 60.5 \pm 1.0$ | $\phi 60.5 \pm 1.0$ | $\phi 60.5 \pm 1.0$ | $\phi 60.5 \pm 1.0$ | $\phi 60.5 \pm 1.0$ | $\phi 60.5 \pm 1.0$ |
| W1 | 24.5 ± 0.20 | 16.5 ± 0.20 | 12.5 ± 0.20 | 12.5 ± 0.20 | 9.4 ± 0.30 | 8.0 ± 0.30 | 8.0 ± 0.30 |
| T1 | 2.30 ± 0.20 | 1.80 ± 0.20 | 1.80 ± 0.20 | 1.80 ± 0.20 | 1.40 ± 0.20 | 1.40 ± 0.20 | 1.40 ± 0.20 |

8. Packing Specification

