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# PRODUCT SPECIFICATION SHEET

| | | |
|---|---|---|
| CUSTOMER | : | |
| PRODUCT TYPE | : | SMD TCXO 2.5X2.5(4PAD) |
| NOMINAL FREQ. | : | 26.000000 MHz |
| FL P/N | : | 2T26000003 |
| REVISION | : | SAMPLE |
| CUSTOMER P/N | : | |

CUSTOMER'S APPROVAL&DATE

FL CORPORATION

| APPROVED | CHECKED | DESIGNED |
|---|---|---|
| Liu GuoQiang | Jin Qi | Weng QiuLin |

RoHS Compliant

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**ATTACHMENT（optional）**

- ELECTRICAL CHARACTERISTICS TEST A ☐ YES ☑ NO
- TEMPERATURE CHARACTERISTICS TEST B ☐ YES ☑ NO

## ELECTRICAL SPECIFICATIONS

**Standard atmospheric conditions**

Unless otherwise specified. The standard range of atmospheric conditions for making measurement and tests are as follow:

Ambient temperature 25±2℃

Relative humidity 40%~70%

If there is no doubt the results, measurement shall be made within the following limits:

Ambient temperature 25±2℃

Relative humidity 40%~70%

**Measure equipment**

Electrical characteristics measured by S&A250B or equivalent.

**Crystal cutting type**

The crystal is using AT CUT (thickness shear mode)

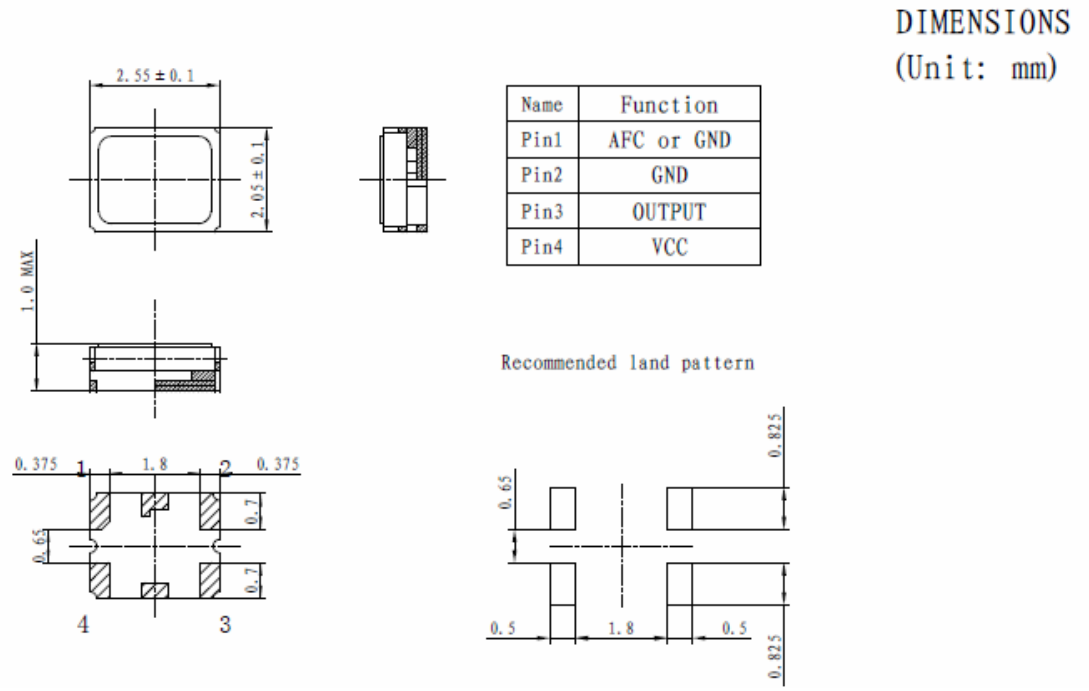
**OPERATING CONDITION**

| Parameters | | Symbol | Electrical Spec. | UNITS | Notes |
|---|---|---|---|---|---|
| Supply Voltage | | Vcc | 2.8 | V | ±5% |
| Output Load | Resistance | - | 10.0 | K-ohm | ±10% |
| | Capacitance | - | 10.0 | p F | ±10% |
| Control Voltage | | Vcont | NA | V | - |

**ELECTRICAL SPECIFICATIONS**

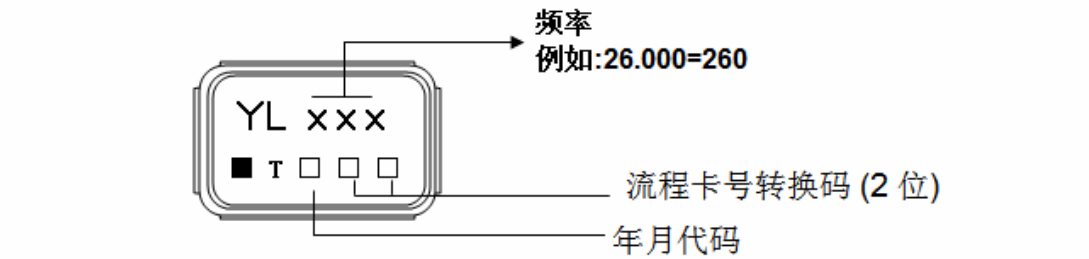
| Parameters | | Symbol | Electrical Spec. | UNITS | Notes |
|---|---|---|---|---|---|
| Nominal Frequency | | FL | 26.000000 | MHz | - |
| Frequency Tolerance | | – | +/-1.5 | ppm | at 25±2℃ |
| Voltage Control Range | | | NA | ppm | - |
| Output Level | | Vp-p | Min 0.8 | V | Clipped sine wave(DC-coupled) |
| Current Drain | | - | 1.5 | m A | Max |
| Operating Temperature | | TOPR | -30～+80℃ | ℃ | - |
| Frequency Stability | vs. Temperature | | +/-2.0 | ppm | Referenced to 25℃ frequency |
| | vs. Supply Voltage | | +/-0.3 | ppm | +2.8V±5% |
| | vs. Load | | +/-0.3 | ppm | 10K-ohm±10%/10pF±10% |
| | vs. Aging | | +/-1.0 | ppm | 1st Year |
| | vs. Reflow soldering | | +/-1.0 | ppm | 2 times |
| Harmonics | | | -10 | dBc | Max |
| Storage Temperature Range | | - | -40～+85℃ | ℃ | - |
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## DIMENSIONS




| Name | Function |
|---|---|
| Pin1 | AFC or GND |
| Pin2 | GND |
| Pin3 | OUTPUT |
| Pin4 | VCC |

## MEASUREMENT CIRCUIT

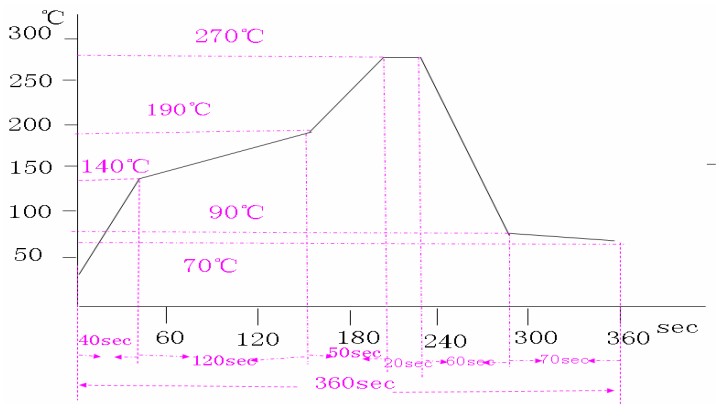



| 年份 \ 月份 | | 一月 | 二月 | 三月 | 四月 | 五月 | 六月 | 七月 | 八月 | 九月 | 十月 | 十一月 | 十二月 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2009 | 2013 | A | B | C | D | E | F | G | H | J | K | L | M |
| 2010 | 2014 | N | P | Q | R | S | T | U | V | W | X | Y | Z |
| 2011 | 2015 | a | b | c | d | e | f | g | h | j | k | l | m |
| 2012 | 2016 | n | p | q | r | s | t | u | v | w | x | y | z |

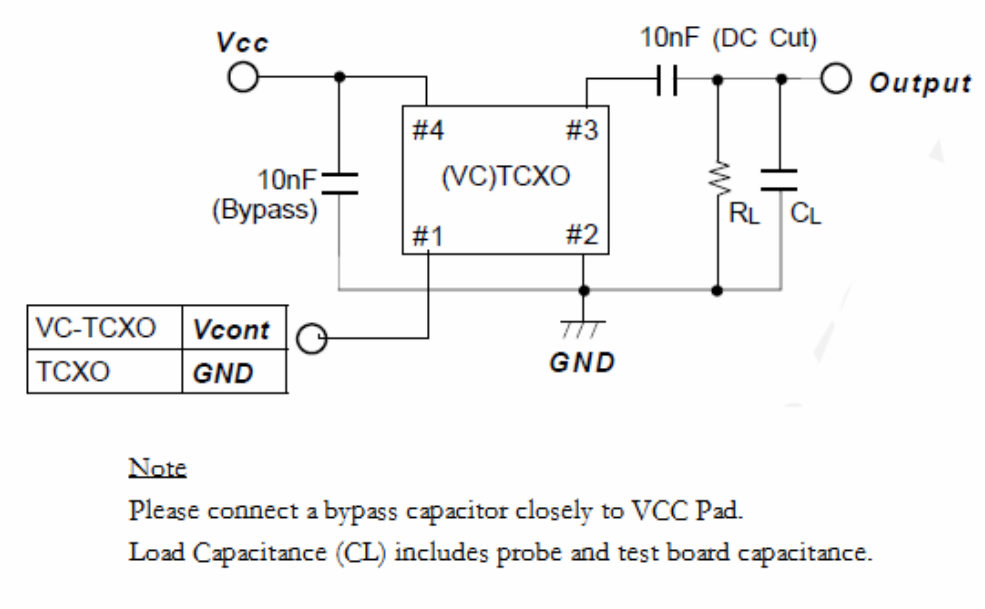
## SUGGESTED REFLOW PROFILE

Total time : 360 sec. Max.

Solder melting point :185 °C



**MEASUREMENT CIRCUIT**




Note

Please connect a bypass capacitor closely to VCC Pad.

Load Capacitance (CL) includes probe and test board capacitance.

**CAUTION TO HANDLE / STORAGE**

1)Storage

Please keep products at the room temperature(+5~+35'C) and normal humidity(45~75%RH).
Recommend to use products within 6 months after manufacturing of TCXO.
Recommend to use products within 48 hours after opening the product box.

2)Please be cautious of static electricity and pin connection.

3)By over-pressure on the product, crack can be happened to product.

4)Please arrange TCXO far away from resin in case of the use of resin on the SET board.
The performance may be affected by resin because of crack on ceramic substrate.

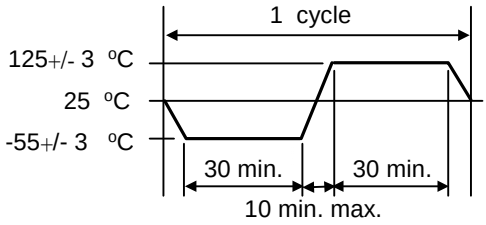
5)Take care not to separate crystal unit and base substrate in case of the use of hot-gun for repair. Please always hold base substrate with tweezers, otherwise crystal unit may be separated.

**RELIABILITY SPECIFICATIONS**

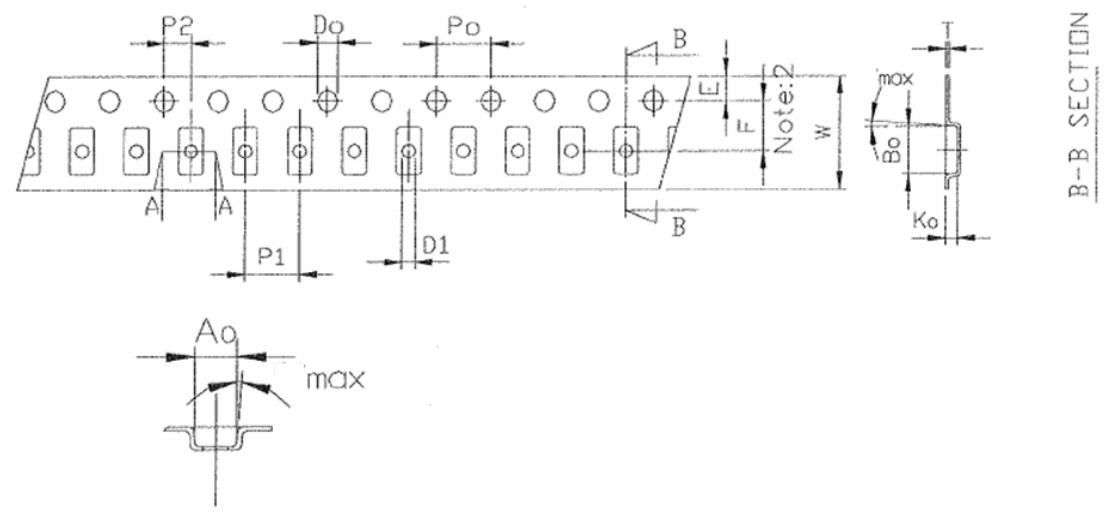
1.MECHANICAL ENDURANCE

| No. | Test Item | Test Methods | | |
|---|---|---|---|---|
| 1 | Drop Test | 75 cm height, fall freely onto stainless plate 3 times. | | JIS C6701 |
| 2 | Mechanical Shock | Device are shocked to half sine wave ( 1000 G ) three mutually pendicular axes each 3 times. 0.5m sec. duration time | | MIL-STD-202F |
| 3 | Vibration | Frequency range<br>Amplitude<br>Sweep time<br>Pendicular axes each test time | 10 ~ 2000 Hz<br>1.52 mm<br>20 minute<br>4 hours<br>(Total test time 12 hours) | MIL-STD-883E |
| 4 | Solderability | Temperature<br>Immersing depth<br>Immersion time<br>Flux | 215 °C +/- 5 °C<br>0.5 mm minimum<br>10 +/- 0.5 seconds<br>Rosin resin methyl alcohol solvent ( 1 : 4 ) | MIL-STD-883E |
| 5 | Resistance To Soldering Heat | Pre-heat temperature<br>Pre-heat time<br>Test temperature<br>Test time | 125 °C<br>60 ~ 120 sec.<br>260 +/- 5 °C<br>5 +/- 1 sec. | MIL-STD-202F |

2.ENVIRONMENTAL ENDURANCE

| No. | Test Item | Test Methods | |
|---|---|---|---|
| 6 | High Temp. Storage | + 125 °C +/- 2 °C for 1000 +/- 12 hours | MIL-STD-883E |
| 7 | Low Temp. Storage | - 40 °C +/- 2 °C for 1000 +/- 12 hours | |
| 8 | Thermal Shock | Total 10 cycles of the following temperature cycle   | MIL-STD-883E |
| 9 | High Temp. Operation | + 85°C, VCC, for 1000 hours | MIL-STD-883E |
| 10 | Low Temp. Operation | - 40°C, VCC, for 1000 hours | MIL-STD-883E |
| 11 | Pressure Cooker Storage | 120 +/- 3°C, RH100%, 2 bar, for 240 hours | |

**PACKING : (EIA-481-2)**




| Dimension / PKG Type | Unit : mm | | | | | | |
|---|---|---|---|---|---|---|---|
| | **A0** | **B0** | **K0** | **T** | **W** | **E** | **F** |
| **2520(8mm)** | 2.25±0.1 | 2.70±0.1 | 1.25±0.1 | 0.25±0.05 | 8±0.3 | 1.75±0.1 | 3.50±0.1 |
| | **P1** | **P2** | **D1** | **D0** | **P0** | | |
| | 4±0.1 | 2±0.1 | 1±0.1 | 1.55±0.05 | 4±0.1 | | |

Standard Reel Quantity is 3,000 pcs per reel.

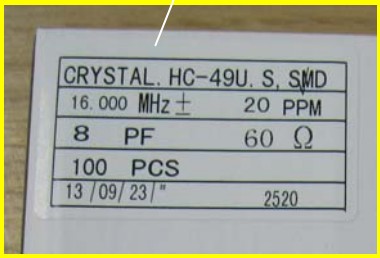
**THE INSPECTION FOR TAPE TENSION**

| ITEM | | Defect | Method |
|---|---|---|---|
| Appearance | ALL | 1.The tape is not coincidence<br>2.The bubble | Visual inspection |
| Tape Tension | 8045、7050<br>6035-12mm<br>5032-12mm<br>3225-12mm | overstep 61±6g(55～67g) | Pull test |
| | 3225-8mm | overstep 40±5g(35～45g) | |
| | 2520-8mm | overstep 55±6g(49～61g) | |
| | 2016-8mm | overstep 34±6g(28～40g) | |
| | 1612-8mm | overstep 34±6g(28～40g) | |
| | 6035-16mm<br>5032-16mm | overstep 60±6g(54～66g) | |

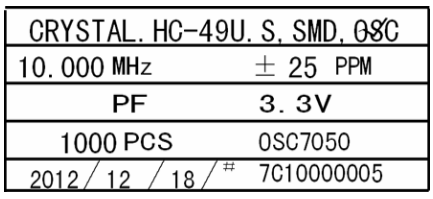
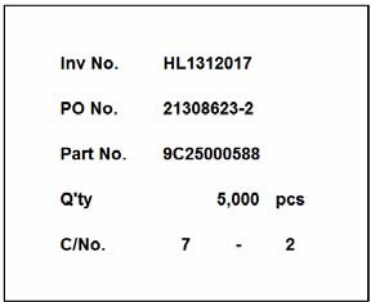
**REMARK : NA**

## SMD PRODUCT PACKING STANDARD

### Out-going packing instruction

| Reel Packing | Inner Packing | Carton |
|---|---|---|
| name：reel<br>standard：diameter 18cm<br>material：plastics | name：inner box<br>standard：L19.0xW19.0xH2.5cm<br>material：B corrugated paper | name：carton<br>standard：L34.0xW22.0xH22.0cm<br>material：AB corrugated paper(10 boxes enter) |
|  |  |  |
|  |  |  |

### The label instruction

| Label Drawing | Mark | Name of Article | Spec. | Size | Printing |
|---|---|---|---|---|---|
|  | L1 | 条码标签<br>Bar Code Label<br>(Chintz Paper) | 1.Date Code<br>2.Lot No.<br>3.Part No.<br>4.Freq<br>5.Q'ty | 75x35mm | White |
|  | L2 | 机打标签<br>Printing Label<br>(Printing Paper) | 1.Freq<br>2.Electrical Parameters<br>3.Q'ty<br>4.Part No.<br>5.Packing Date | 75x35mm | White |
|  | L3 | 运输标签(唛头)<br>Shipping Mark<br>(Printing Paper) | 1.inv No.<br>2.PO No.<br>3.Part No.<br>4.Q'ty<br>5.C/No. | 100x100mm | White |

**Remark**

Customer specified requirements for labels.packaging. please provide the operation procedure.

| Range | Products | Packing Material | Test Method |
|---|---|---|---|
| **Banned Substances** | **Maximum concentration ppm(mg/kg)** | **Maximum concentration ppm(mg/kg)** | |
| 1.镉及镉化合物<br>Cadmium and cadmium compounds | 5 | 5 | ICP-AES as per EN1122, method B2001 or other acid digestion. |
| 2.铅及铅化合物<br>Lead and lead compounds | 40 | 100 | ICP-AES after as per EPA 3050B or other acid digestion. |
| 3.汞及汞化合物<br>Mercury and mercury compounds | 5 | 5 | ICP-AES after as per EPA 3052 or other acid digestion. |
| 4.六价铬化合物<br>Hexavalent-Chromium VI (Cr+6) | 10 | 10 | As per US EPA 7196A and US EPA 3060A. |
| 5.聚溴联苯 PBB<br>Polybrominated biphenyls | 5 | 5 | With reference to USEPA 3540 or USEPA3550.<br>Analysis was performed by LPLC/DAD, LC/MS or GC/MS. (prohibited by 2002/95/EC (RoHS),83/261/EEC, and76/769/EEC) |
| 6.聚溴二苯醚 PBDE<br>Polybrominated diphenyl ethers | 5 | 5 | With reference to USEPA3540or USEPA3550.<br>Analysis was performed by HPLC/DAD<br>LC/MS or GC/MS.(prohibited by 2002/95/EC(RoHS), 83/264/EEC, and 76/769/EEC) |
| 7.多氯联苯 (PCB)<br>Polychlorinated biphenyl | 5 | 5 | |
| 8.多氯化萘 (PCN)<br>Polychlorinated naphthalene | 5 | 5 | |
| 9.氯代烷烃 (CP)<br>Chiorinated paraffin | 5 | 5 | |
| 10.其他有机氯化合物<br>Other chlorinated organic compounds | 5 | 5 | |
| 11.其他有机溴化合物<br>Other brominated organic compounds | 5 | 5 | |
| 12.有机锡化合物 (三丁基锡化合物,三苯基锡化合物)<br>Organic tin compounds (Tributyl tin category & Triphenyl tin category ) | 5 | 5 | |
| 13.石棉<br>Asbestos | 5 | 5 | |
| 14.偶氮化合物<br>Azo compounds | 5 | 5 | |
| 15.甲醛<br>Formaldehyde | 5 | 5 | |
| 16.聚氯乙烯(PVC)以及聚氯乙烯混合物<br>Polyvinyl chloride (PVC) and PVC blends | No detect | No detect | |
| 17.包装材料中重金属(汞、镉、六价铬、铅、PBB、PBDE)之总量<br>Heavy metals (mercury, cadmium, lead, Cr+6,PBB and PBDE) in packing | N/A | <100 | |

Lead Free Products are “Directive 2002/95/EC of The European Parliament of 27 January 2003 on the restriction of certain hazardous substances (RoHS) in electrical and electronic equipment” and Sony SS-00259 Compliant.


惠伦晶体
FAILONG CRYSTAL