



广东惠伦晶体科技股份有限公司
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PRODUCT SPECIFICATION SHEET

CUSTOMER : _____
PRODUCT TYPE : SMD X'TAL 2.5*2.0(4PAD)
NOMINAL FREQ. : 26.000000 MHz
FL P/N : 2S26000168
REVISION : S1
CUSTOMER P/N : _____

CUSTOMER'S APPROVAL&DATE

| |
|--|
| |
|--|

FL CORPORATION

| APPROVED | CHECKED | DESIGNED |
|----------|---------|-------------|
| Jay Lee | Jin Qi | Chen XuanRu |

MSL1
RoHS Compliant



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ATTACHMENT (optional)

| | | | |
|------------------------------------|----------------------------|---|----|
| - ELECTRICAL CHARACTERISTICS TEST | A <input type="checkbox"/> | YES <input checked="" type="checkbox"/> | NO |
| - TEMPERATURE CHARACTERISTICS TEST | B <input type="checkbox"/> | YES <input checked="" type="checkbox"/> | NO |

PRODUCT DESCRIPTION

Standard atmospheric conditions

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

Ambient temperature : $25\pm 2^{\circ}\text{C}$
Relative humidity 40%~70%

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

Ambient temperature : $25\pm 2^{\circ}\text{C}$
Relative humidity : 40%~70%

Measure equipment

Electrical characteristics measured by S&A250B or equivalent.

Crystal cutting type

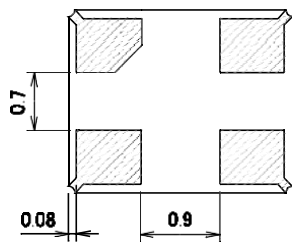
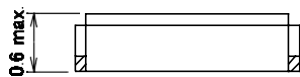
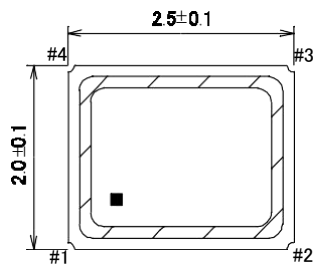
The crystal is using AT CUT (thickness shear mode)

ELECTRICAL SPECIFICATIONS

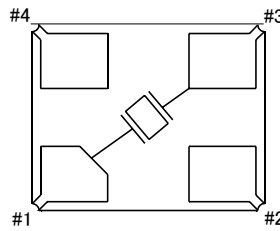
| No. | Items | Electrical Spec. | | | | | Remarks |
|-----|------------------------------|------------------|-------------|-----|-----|--------------------|---|
| | | Symbol | Min | Typ | Max | Units | |
| 1 | Nominal Frequency | FL | 26.000000 | | | MHz | - |
| 2 | Oscillation Mode | - | Fundamental | | | - | - |
| 3 | Load Capacitance | CL | 9.0 | | | pF | - |
| 4 | Frequency Tolerance | - | ± 10 | | | ppm | at $25\pm 2^{\circ}\text{C}$ |
| 5 | Frequency Stability | - | ± 15 | | | ppm | at $-40\sim +85^{\circ}\text{C}$ (reference 25°C) |
| 6 | Shunt Capacitance | C0 | - | - | 2 | pF | |
| 7 | Aging (/1 year) | - | ± 2 | | | ppm/year | at $25\pm 2^{\circ}\text{C}$ |
| 8 | Operating Temperature | - | -40 | | 85 | $^{\circ}\text{C}$ | - |
| 9 | Storage Temperature | - | -40 | | 105 | $^{\circ}\text{C}$ | - |
| 10 | Equivalent series resistance | ESR | - | | 50 | ohms | - |
| 11 | Insulation Resistance | IR | 500 | - | - | M-ohms | at DC 100V |
| 12 | Drive Level | DL | 10 | 50 | 100 | μW | - |
| 13 | Pulling Sensitivity | TS | 15 | | | ppm/pf | - |
| 14 | Q | | 75000 | | | | - |
| 15 | Frequency drift after reflow | - | 3 | | | ppm max | with 4 hours settling at 25°C |



DIMENSIONS unit:mm

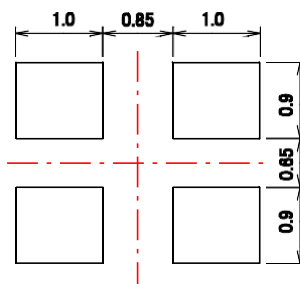


CONNECTION DIAGRAM (TOP VIEW)

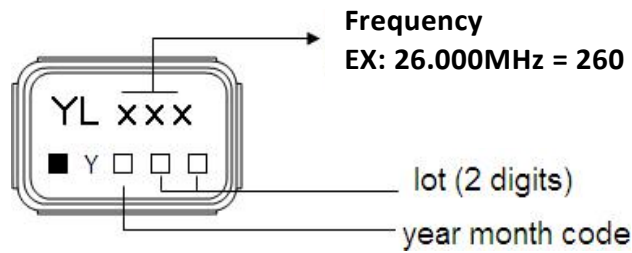


| Pin | Function |
|-----|------------------------|
| #1 | Xtal terminal (Input) |
| #2 | GND terminal |
| #3 | Xtal terminal (Output) |
| #4 | GND terminal |

LAND PATTERN unit:mm



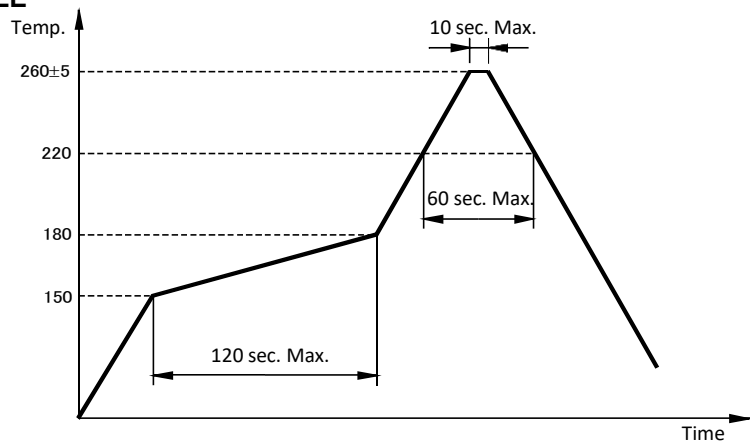
MARKING



| year | month | | | | | | | | | | | | |
|------|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---|
| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | |
| 2017 | 2021 | A | B | C | D | E | F | G | H | J | K | L | M |
| 2018 | 2022 | N | P | Q | R | S | T | U | V | W | X | Y | Z |
| 2019 | 2023 | a | b | c | d | e | f | g | h | j | k | l | m |
| 2020 | 2024 | n | p | q | r | s | t | u | v | w | x | y | z |

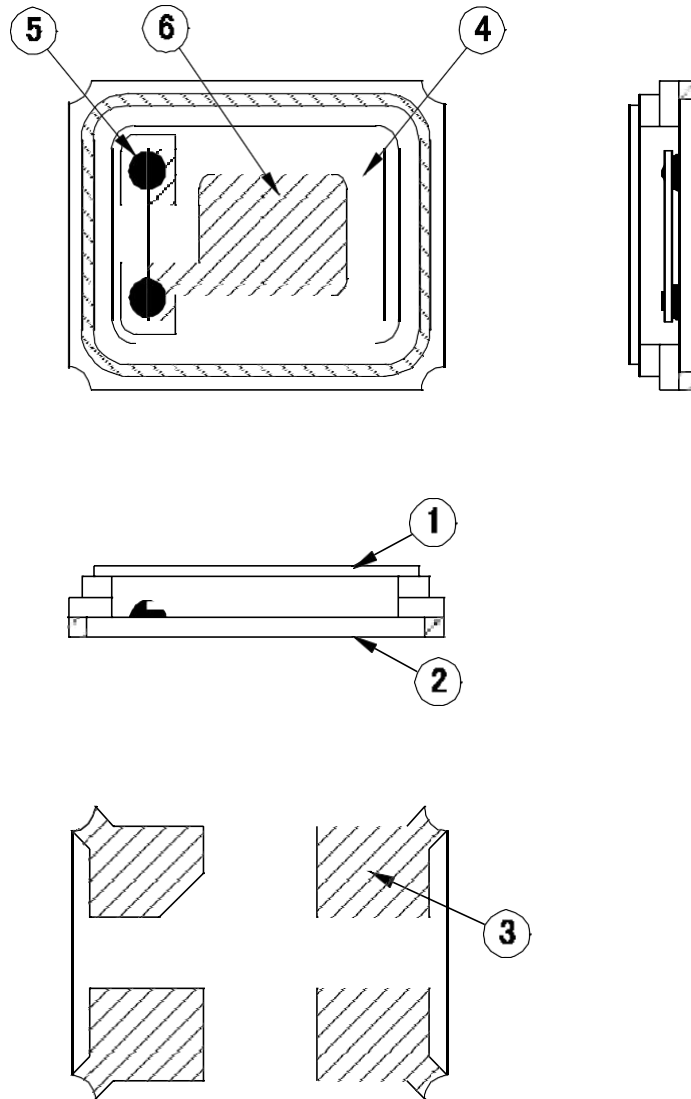
SUGGESTED REFLOW PROFILE

Total time : 360 sec. Max.
Solder melting point :225 °C





STRUCTURE ILLUSTRATION



| NO | COMPONENTS | MATERIALS | QTY | FINISH/SPECIFICATIONS |
|----|---------------------|---|-----|-----------------------|
| 1 | Cap(Lid) | Kovar(Fe+Co+Ni) | 1 | Ni plating |
| 2 | Base(Package) | Almina Ceramics (Al ₂ O ₃) | 1 | |
| 3 | Pad(Package) | Ni + Au | 4 | Ni+Au plating |
| 4 | Crystal blank | SiO ₂ | 1 | - |
| 5 | Conductive adhesive | Ag | 2 | Silicone resin |
| 6 | Electrode | Noble metal | 2 | - |

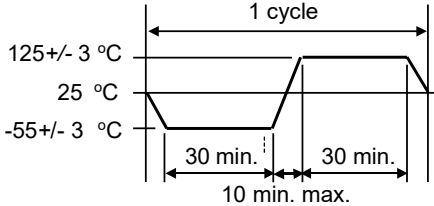


RELIABILITY SPECIFICATIONS

1. MECHANICAL ENDURANCE

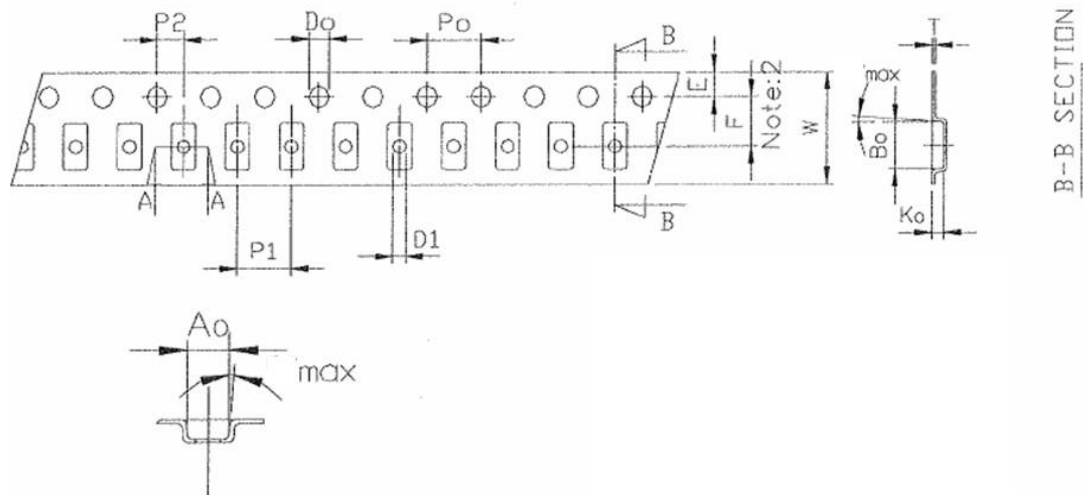
| No. | Test Item | Test Methods | |
|-----|------------------------------|---|--------------|
| 1 | Drop Test | 150 cm height, fall freely onto stainless plate 3 times. | JIS C6701 |
| 2 | Shock Test | 150g/150cm Height, 3 times in the direction of $\pm x$, $\pm y$, $\pm z$ on concrete floor | IEC-68-02-27 |
| 3 | Mechanical Shock | Device are shocked to half sine wave (1000 G) three mutually perpendicular axes each 3 times. 1.0m sec. duration time | MIL-STD-202F |
| 4 | Vibration | Frequency range 10 ~ 55 Hz Amplitude 1.52 mm Perpendicular axes each test time 2 hours (x,y,z Axis) Total test time 6 hours | MIL-STD-883E |
| 5 | Gross Leak | Standard Sample For Automatic Gross Leak Detector Test Pressure 2kg/cm ² | MIL-STD-883E |
| 6 | Fine Leak | Helium Bombing 4.5kgf/cm ² for 2 hr | MIL-STD-883E |
| 7 | Solderability | Temperature 245 °C +/- 5 °C Immersing depth 0.5 mm minimum Immersion time 10 +/- 0.5 seconds Flux Rosin resin methyl alcohol solvent (1 : 4) | MIL-STD-883E |
| 8 | Resistance To Soldering Heat | Pre-heat temperature 125 °C Pre-heat time 60 ~ 120 sec. Test temperature 260 +/- 5 °C Test time 5 +/- 1 sec. | MIL-STD-202F |

2. ENVIRONMENTAL ENDURANCE

| No. | Test Item | Test Methods | |
|-----|--------------------|---|--------------|
| 9 | High Temp. Storage | + 125 °C +/- 3 °C for 500 +/- 12 hours | MIL-STD-883E |
| 10 | Low Temp. Storage | - 40 °C +/- 3 °C for 500 +/- 12 hours | |
| 11 | Thermal Shock | Total 100 cycles of the following temperature cycle  | MIL-STD-883E |
| 12 | High Temp&Humidity | 85 °C ± 3 °C, RH 85%, 500 Hrs | JIS C5023 |



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 | 0.75±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


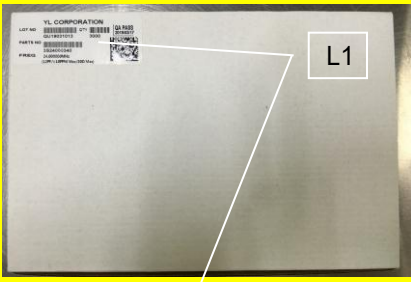


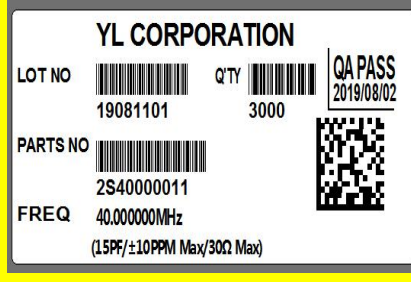

| ITEM | | Defect | Method |
|--------------|--|---|-------------------|
| Appearance | ALL | 1.The tape is not coincidence 2.The bubble | Visual inspection |
| Tape Tension | 8045、7050 6035-12mm 5032-12mm 3225-12mm | overstep 61±6g(55~67g) | Pull test |
| | 3225-8mm | overstep 40±5g(35~45g) | |
| |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

REMARK : NA

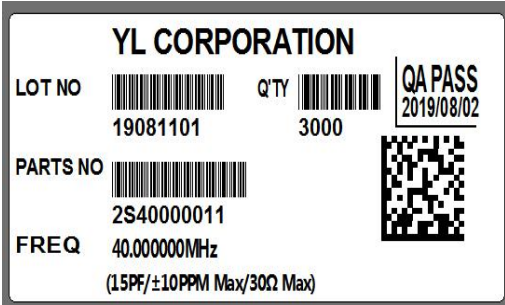


SMD PRODUCT PACKING STANDARD

Out-going packing instruction

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

The label instruction

| Label Drawing | Mark | Name of Article | Spec. | Size | Printing |
|---|------|---|--|---------|----------|
|  | L1 | 条码标签 Bar Code Label (Chintz Paper) | 1.Date Code 2.Lot No. 3.Part No. 4.Freq 5.Q'ty | 75x35mm | White |

Remark

Specifications on the label is for the use of templates with different product specifications may vary.
If customer specified requirements for labels packaging. please provide the operation procedure.

| Range | Products | Packing Material |
|---|----------------------------------|---|
| Banned Substances | Maximum concentration ppm(mg/kg) | Maximum concentration ppm(mg/kg) |
| 1.镉及镉化合物 Cadmium and cadmium compounds | 100 | 100 |
| 2.铅及铅化合物 Lead and lead compounds | 1000 | 100 |
| 3.汞及汞化合物 Mercury and mercury compounds | 1000 | 100 |
| 4.六价铬化合物 Hexavalent-Chromium VI (Cr+6) | 1000 | 100 |
| 5. 聚 溴 联 苯 PBB Polybrominated biphenyls | 1000 | N/A |
| 6. 聚 溴 二 苯 醚 PBDE Polybrominated diphenyl ethers | 1000 | N/A |
| 7.邻苯二甲酸二(2-乙基己基)酯 DEHP Di (2-ethylhexyl) phthalate | 1000 | N/A |
| 8.邻苯二甲酸丁苄酯 BBP Butyl Benzyl Phthalate | 1000 | N/A |
| 9.邻苯二甲酸二丁酯 DBP Dibutyl Phthalate | 1000 | N/A |
| 10 邻苯二甲酸二异丁酯 DIBP Diisobutyl Phthalate | 1000 | N/A |
| 11. 氟 (F)、氯 (Cl)、溴 (Br)、碘 (I) Fluorine、Chlorine、 Bromine、 Iodine | 900、900、900、900 注: Br+Cl<1000 | N/A |
| 12.包装材料中重金属(汞、镉、六价铬、铅、PBB、PBDE)之总量 Heavy metals (mercury, cadmium, lead, Cr+6,PBB and PBDE) in packing materials | N/A | 100 铅(Pb) + 镉(Cd) + 汞(Hg) + 六价铬 (Cr+6) <100ppm |
| 13.高度关注物质 SVHC-Substances of Very High Concern | 1000 | N/A |



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