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|               |   |                         |
|---------------|---|-------------------------|
| CUSTOMER      | : |                         |
| PRODUCT TYPE  | : | SMD X'TAL 3.2*2.5(4PAD) |
| NOMINAL FREQ. | : | 26.000000 MHz           |
| FL P/N        | : | 3S26000266              |
| REVISION      | : | A0                      |
| CUSTOMER P/N  | : |                         |

CUSTOMER'S APPROVAL&DATE

[illegible]

FL CORPORATION

|                 |         |             |
|-----------------|---------|-------------|
| APPROVED        | CHECKED | DESIGNED    |
| Yasuda Katsushi | Jin Qi  | Chen XuanRu |

## 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 |



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[illegible]



## 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  $40\%\sim 70\%$

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 :  $40\%\sim 70\%$

### Measure equipment

Electrical characteristics measured by S&A250B or equivalent.

### Crystal cutting type

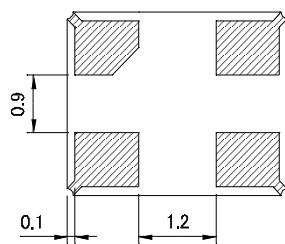
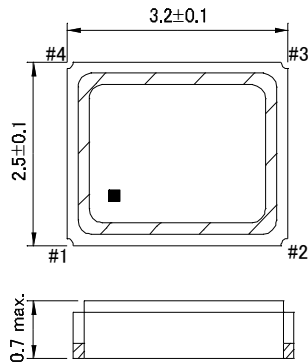
The crystal is using AT CUT (thickness shear mode)

## ELECTRICAL SPECIFICATIONS

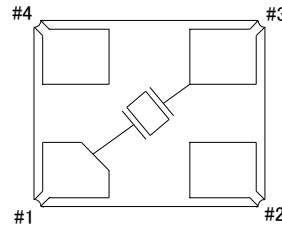
| No. | Items                        | Electrical Spec. |                    |     |     |                    | Remarks                                                               |
|-----|------------------------------|------------------|--------------------|-----|-----|--------------------|-----------------------------------------------------------------------|
|     |                              | Symbol           | Min                | Typ | Max | Units              |                                                                       |
| 1   | Nominal Frequency            | FL               | -                  | 26  | -   | MHz                | -                                                                     |
| 2   | Oscillation Mode             | -                | AT-cut Fundamental |     |     | -                  | -                                                                     |
| 3   | Load Capacitance             | CL               | -                  | 9.0 | -   | pF                 | -                                                                     |
| 4   | Frequency Tolerance          | -                | -10                | -   | 10  | ppm                | at $25\pm 2^{\circ}\text{C}$                                          |
| 5   | Frequency Stability          | -                | -10                | -   | 10  | ppm                | at $-20\sim +70^{\circ}\text{C}$<br>(reference $25^{\circ}\text{C}$ ) |
| 6   | Shunt Capacitance            | C0               | -                  | -   | 5   | pF                 |                                                                       |
| 7   | Motional Capacitance         | C1               | -                  | -   | -   | fF                 |                                                                       |
| 8   | Motional Inductance          | L1               | -                  | -   | -   | mH                 |                                                                       |
| 9   | Aging (/1 year)              | -                | -3                 | -   | 3   | ppm/year           | at $25\pm 2^{\circ}\text{C}$                                          |
| 10  | Reflow                       | -                | -3                 | -   | 3   | ppm                | after 24Hrs                                                           |
| 11  | Operating Temperature        | -                | -20                |     | 70  | $^{\circ}\text{C}$ | -                                                                     |
| 12  | Storage Temperature          | -                | -40                |     | 85  | $^{\circ}\text{C}$ | -                                                                     |
| 13  | Equivalent series resistance | ESR              | -                  |     | 40  | ohms               | -                                                                     |
| 14  | Insulation Resistance        | IR               | 500                | -   | -   | M-ohms             | at DC 100V                                                            |
| 15  | Drive Level                  | DL               |                    |     | 100 | uW                 | into 10 $\Omega$                                                      |



### DIMENSIONS unit:mm

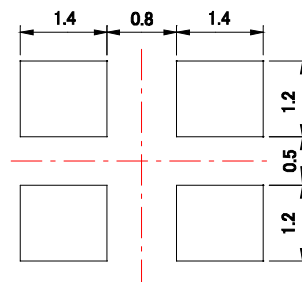


### CONNECTION DIAGRAM (TOP VIEW)

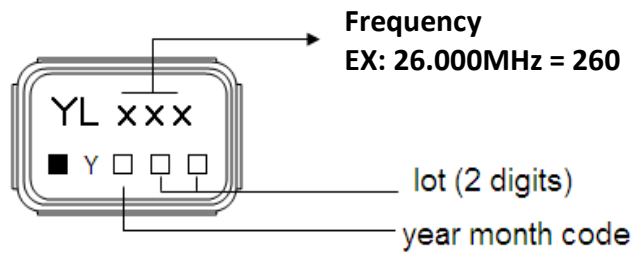


| Pin | Function               |
|-----|------------------------|
| #1  | Xtal terminal (Input)  |
| #2  | GND terminal           |
| #3  | Xtal terminal (Output) |
| #4  | GND terminal           |

### LAND PATTERN unit:mm



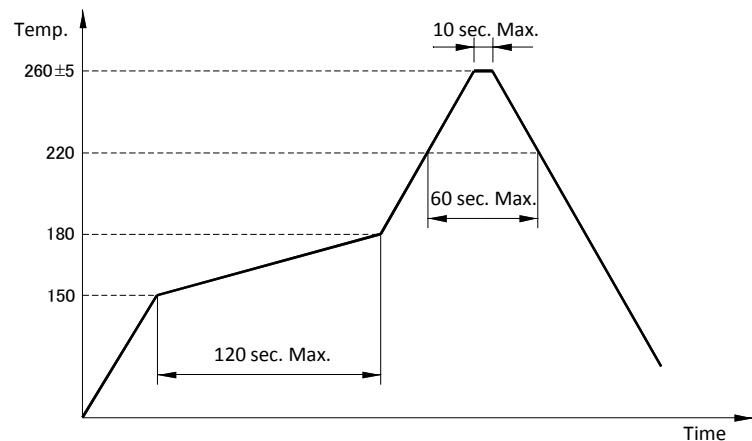
### MARKING



| month<br>year |      | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---------------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 2013          | 2017 | A   | B   | C   | D   | E   | F   | G   | H   | J   | K   | L   | M   |
| 2014          | 2018 | N   | P   | Q   | R   | S   | T   | U   | V   | W   | X   | Y   | Z   |
| 2015          | 2019 | a   | b   | c   | d   | e   | f   | g   | h   | j   | k   | l   | m   |
| 2016          | 2020 | n   | p   | q   | r   | s   | t   | u   | v   | w   | x   | y   | z   |

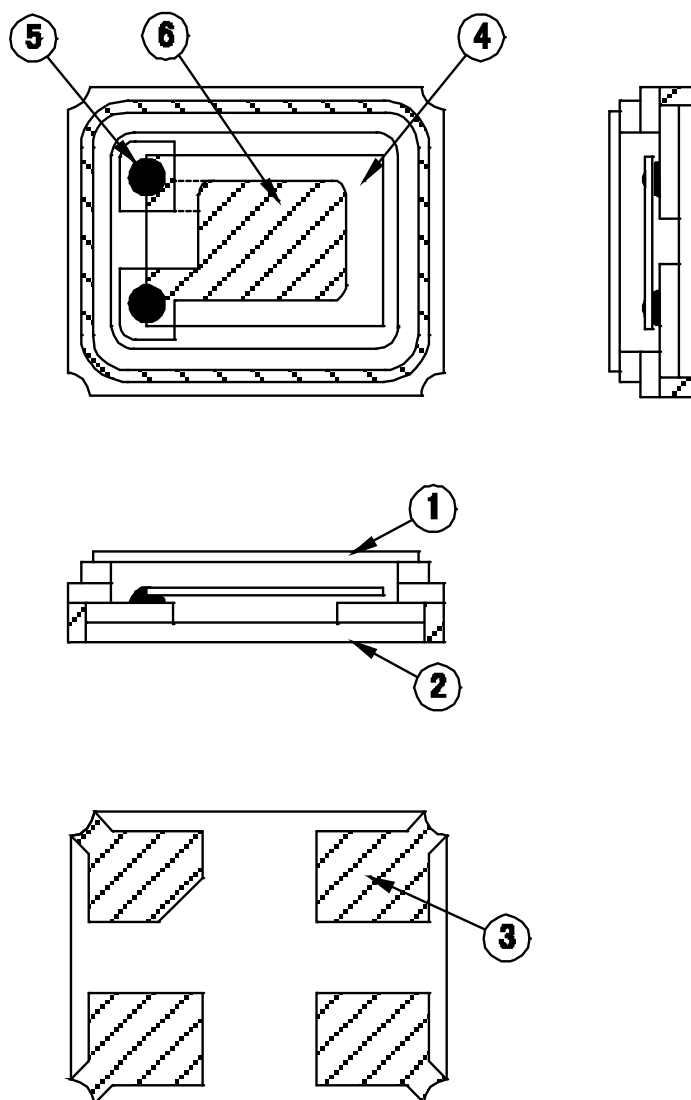
### SUGGESTED REFLOW PROFILE

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 <sub>2</sub> O <sub>3</sub> ) | 1   |                       |
| 3  | Pad(Package)        | Ni + Au                                           | 4   | Ni+Au plating         |
| 4  | Crystal blank       | SiO <sub>2</sub>                                  | 1   | -                     |
| 5  | Conductive adhesive | Ag                                                | 2   | Silicone resin        |
| 6  | Electrode           | Cr + Nobel material                               | 2   | -                     |

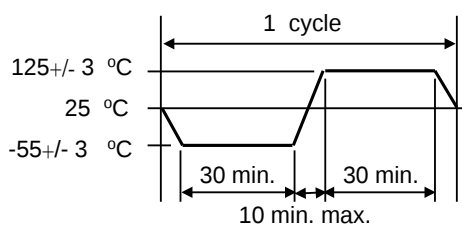


## RELIABILITY SPECIFICATIONS

### 1.MECHANICAL ENDURANCE

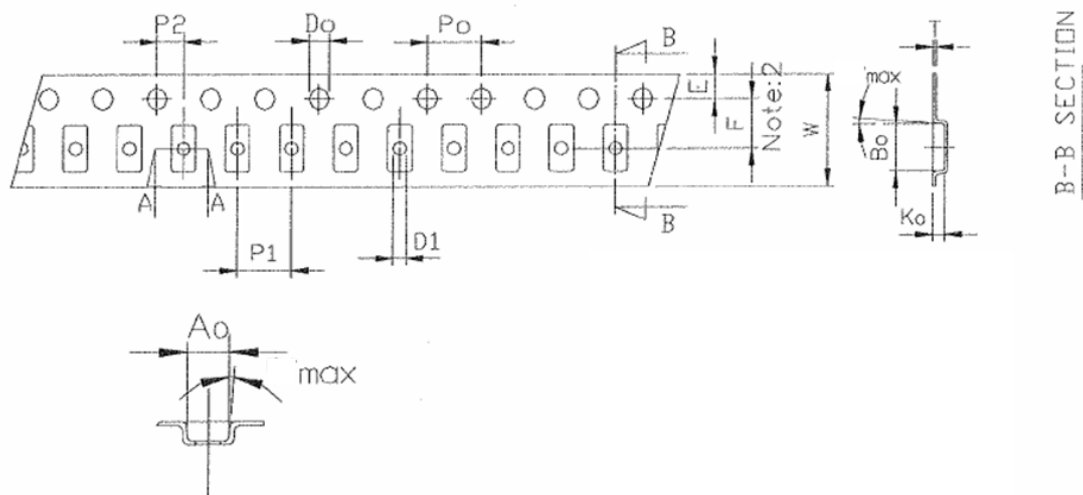
| No. | Test Item                    | Test Methods                                                                                                                                                |              |
|-----|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| 1   | Drop Test                    | 150 cm height SMD X'TAL 3.2*2.5(4PAD)                                                                                                                       | 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<br>Amplitude 1.52 mm<br>Perpendicular axes each test time 2 hours ( x,y,z Axis )<br>Total test time 6 hours                      | MIL-STD-883E |
| 5   | Gross Leak                   | Standard Sample For Automatic Gross Leak Detector Test<br>Pressure 2kg/cm <sup>2</sup>                                                                      | MIL-STD-883E |
| 6   | Fine Leak                    | Helium Bombing 4.5kgf/cm <sup>2</sup> for 2 hr                                                                                                              | MIL-STD-883E |
| 7   | Solderability                | Temperature 215 °C $\pm$ 5 °C<br>Immersing depth 0.5 mm minimum<br>Immersion time 10 $\pm$ 0.5 seconds<br>Flux Rosin resin methyl alcohol solvent ( 1 : 4 ) | MIL-STD-883E |
| 8   | Resistance To Soldering Heat | Pre-heat temperature 125 °C<br>Pre-heat time 60 ~ 120 sec.<br>Test temperature 260 $\pm$ 5 °C<br>Test time 5 $\pm$ 1 sec.                                   | MIL-STD-202F |

### 2.ENVIRONMENTAL ENDURANCE

| No. | Test Item               | Test Methods                                                                                                                                |              |
|-----|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| 9   | High Temp. Storage      | + 125 °C $\pm$ 3 °C for 500 $\pm$ 12 hours                                                                                                  | MIL-STD-883E |
| 10  | Low Temp. Storage       | - 40 °C $\pm$ 3 °C for 500 $\pm$ 12 hours                                                                                                   |              |
| 11  | Thermal Shock           | Total 100 cycles of the following temperature cycle<br> | MIL-STD-883E |
| 12  | High Temp&Humidity      | 85°C $\pm$ 3°C, RH 85%, 500Hrs                                                                                                              | JIS C5023    |
| 13  | Pressure Cooker Storage | 120 $\pm$ 3°C, RH100%, 2 bar, for 240 hours                                                                                                 | JIS C6701    |



PACKING : (EIA-481-2)



| Dimension<br>PKG Type | Unit : mm |          |         |           |       |          |          |
|-----------------------|-----------|----------|---------|-----------|-------|----------|----------|
|                       | A0        | B0       | K0      | T         | W     | E        | F        |
| 3225(8mm)             | 2.70±0.1  | 3.40±0.1 | 1.4±0.1 | 0.25±0.5  | 8±0.3 | 1.75±0.2 | 3.50±0.1 |
|                       | P1        | P2       | D1      | D0        | P0    |          |          |
|                       | 4±0.1     | 2±0.1    | 1±0.05  | 1.55±0.05 | 4±0.1 |          |          |

Standard Reel Quantity is 3,000 pcs per reel.

THE INSPECTION FOR TAPE TENSION

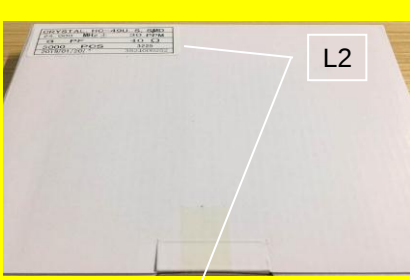
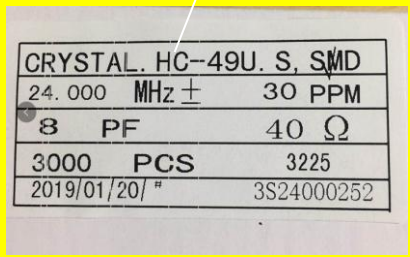
| ITEM         |                                                  | Defect                                        | Method            |
|--------------|--------------------------------------------------|-----------------------------------------------|-------------------|
| Appearance   | ALL                                              | 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

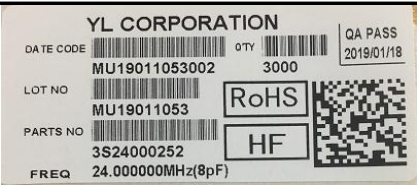
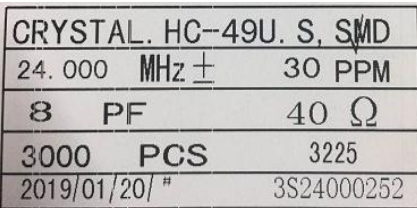
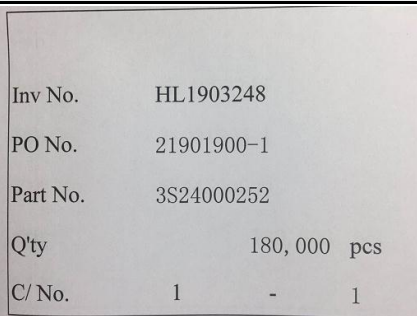


## SMD PRODUCT PACKING STANDARD

### 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<br>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

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                 | 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.<br>(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>Chlorinated paraffin                                                                                                                                                                                       | 5                                | 5                                |                                                                                                                                                                  |
| 10.其他有机氯化物<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. |                                  |                                  |                                                                                                                                                                  |

