



# Kunshan Jiahua Electronics Co., Ltd.

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|-----------------------|-------------------------|--------------------|---------|------|----|
| 文件名称 System Name:     | 产品品名 Description:       | 文件编号 Document No.: |         |      |    |
| Product specification | RF SWITCH 2*2 CONNECTOR | PS-0073            |         |      |    |
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\*\*\*\*\* Revised history \*\*\*\*\*

| Edition | ECN NO.    | Revised Page | Remark          |
|---------|------------|--------------|-----------------|
| X1      | ECN1301022 | None         | Initial Release |
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## 1. 适用范围 SCOPE

本技术规范适用于 RF SWITCH 2\*2(料号:7.022A0-000-1R0)连接器, 其中包括产品性能, 品质要求和测试方法

The specification covers performance, tests and quality requirements for RF SWITCH (P/N:7.022A0-000-1R0) CONNECTOR.

## 2. 参考文件 APPLICABLE DOCUMENT

以下参考文件有 MIL-STD-202, EIA-364, UL-498, JIS C0020

The following documents form a part of this specification to the extent specified herein. In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements of this specification and the referenced documents, this specification shall take precedence.

MIL-STD-202, EIA-364, JIS C0020.

## 3. 产品构成/材料 CONSTRUCTION AND MATERIAL.

塑胶主体 HOUSING : 热塑性塑胶 (THERMOPLASTIC) ;

导体端子 CONTACT : 铜合金 (COPPER ALLOY)

外壳 SHELL : 黄铜 (BRASS BRONZE)

## 4. 额定值 Ratings

- A. 额定电压 Voltage Rating: 30VAC
- B. 额定功率 Power Rating:2W
- B. 公称特性 Nominal characteristic impedance:50Ω
- C. 周波数 Frequency:DC0.1~9GHz
- D. VSWR:1.2Max.(0.1~3GHz),1.3Max.(3~6GHz), 1.5Max.(6~9GHz),
- E. 使用温度范围 Service Temperature:233~358K(-40℃ to 85℃)
- F. 存储温度范围 Storage Temperature:263~313K(-10℃ to 40℃)

## 5. 产品性能及测试要求和规范 PERFORMANCE, TEST REQUIREMENT AND PROCEDURES

### SUMMARY

#### 5-1 试验条件 Test condition

温度 Temperature:288~308K(15℃ to 35℃)

湿度 Humidity:45~75%RH

#### 5-2. 产品性能及测试要求和规范 PERFORMANCE, TEST REQUIREMENT AND PROCEDURES

### SUMMARY



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| 项目 ITEM                                 | 规格 STANDARD   | 测试规范 PROCEDURES  |
|---|---|--|
| <b>电性能 ELECTRICAL</b>                   |   |  |
| 低功率接触阻抗<br>Low Level Contact Resistance | 初值最大 70mΩ, 试验后最大 80 mΩ.<br>Contact resistance initial 70 mΩ Max, after testing 80 mΩ Max.                           | 公母端连接器配合后使用最大 20 mV 电压, 开路最大 100mA 电流进行测试. 参考 MIL-STD-202, Method 307<br>Mated connector, 20 mV Max. Open circuit at 100mA Max.<br>MIL-STD-202, Method 307 |
| 绝缘阻抗<br>Insulation Resistance           | 初期最小 500 MΩ<br>500 MΩ Min Initial<br>终期最小 100 MΩ<br>100 MΩ Min Final  | 使用直流电 250V±25V, 保持 1 分钟, 测试端子与外壳间.<br>参考 MIL-STD-202, Method 302<br>250V±25VDC for 1 minute. Test between shell and contact.<br>MIL-STD-202, Method 302    |
| 耐电压<br>Dielectric withstanding Voltage  | 不能有电火花产生, 绝缘不能破坏, 漏电流不能超过 0.5mA<br>No creeping discharge or flash over shall occur, Current leakage: 0.5mA Max.     | 使用交流 300V±20V, 保持 1 分钟, 测试端子与外壳间. 参考 MIL-STD-202 Method 301<br>300V±20V AC 1 minute. Test between shell and contact.<br>MIL-STD-202 Method 301             |
| 驻波比<br>VSWR                             | 0.1~3GHz: 1.2 最大<br>3~6GHz: 1.3 最大<br>6~9GHz: 1.5 最大<br>1.2Max.at 0.1~3GHz,<br>1.3Max.at 3~6GHz<br>1.5Max.at 6~9GHz | 周波数: 0.1GHz~6GHz 见图 1<br>Analyzer.Frequency: 0.1GHz ~6GHz<br>See fig.1   |



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| 插入损耗<br>Insertion Loss                         | 0.1~3GHz: 0.1dB 最大<br>3~6GHz : 0.2dB 最大<br>6~9GHz : 0.5dB 最大<br>0.1dB Max. at 0.1~3GHz<br>0.2dB Max. at3~6GHz<br>0.5dB Max. at6~9GHz | 周波数:0.1GHz~6GHz 见图 2<br>Analyzer.Frequency: 0.1GHz ~6GHz<br>See fig.2  |
| 隔离度<br>Isolation                               | 0.1~3GHz: 20dB 最小,<br>3~6GHz : 15dB 最小,<br>6~9GHz : 10dB 最小,<br>20dB Min. at 0.1~3GHz,<br>15dB Min. at 3~6GHz<br>10dB Min. at 6~9GHz | 周波数:0.1GHz~6GHz 见图 3<br>Analyzer.Frequency: 0.1GHz ~6GHz<br>See fig.3  |
| <b>机械性能 MECHANICAL</b>                         |  |  |
| 可焊性<br>Solderability.                          | 焊锡表面浸渍超过 95%.<br>Wet solder coverage: 95%Min   | 焊锡温度: 245℃<br>焊锡时间: 3 秒<br>参考 MIL-STD-202 方法 208H<br>Solderability temperature: 245℃.<br>Immersion duration: 3 seconds.<br>MIL-STD-202 Method 208H   |
| 耐回焊炉焊锡热<br>Resistance to Reflow<br>Solder Heat | 产品无外观及其它异常<br>No physical abnormalities shall be<br>Present after test   | 回流焊接曲线 见图 4<br>Reflow soldering by fig4  |
| 耐久性<br>Durability                              | 接触阻抗: 初期 70 mΩ,以下, 试验后 80<br>mΩ 以下<br>Contact resistance initial 70 milli-ohm<br>MAX.<br>after testing80milli-ohm MAX.               | 将连接器焊接在板上以每分钟 25±3mm 的<br>速度插拔 100 次<br>Mate and un-mate the receptacle<br>connector (soldered to the test board)and<br>plug 100cycles at a speed<br>25±3mm/minutes along the mating by the<br>push-on/pull-off machine. |



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| 插拔力<br>Mating/Unmating Force | <p>插入力: 初回插入力最大 20N;<br/>30 次插拔后插入力最大 25N<br/>拔出力: 初回拔出最小 3N, 最大 25N;<br/>30 次插拔后拔出最小 2.5 N, 最大 25N。</p> <p>Mating force; Initial 20N Max. after 30 cycles 25N Max.</p> <p>Un-mate force: Initial 3N Min.,25N Max.;after 30 cycles 2.5N Min. 25N Max.</p>   | <p>插拔试验机以每分 25±3mm 的速度进行插拔</p> <p>Un-mate the receptacle connector(soldered to the test board)and plug at a speed 25±3mm/minutes along the mating by the push-on/pull-off machine</p>   |
| 振动<br>Vibration              | <p>外观无异常</p> <p>Apply the following vibration to the mating connector.</p> <p>试验中不得有超过 1 微秒的瞬断产生</p> <p>Electrical discontinuity: No electrical discontinuity grater than 1 micro-sec.shall occur.</p> <p>接触阻抗: 初期 70 mΩ,以下, 试验后 80 mΩ 以下</p> <p>Contact resistance initial 70 milli-ohm MAX.<br/>after testing 80 milli-ohm MAX.</p> | <p>嵌合状态下振动, 试验中 DC100mA 电流的瞬断确认。</p> <p>Apply the following vibration to the mating connector.</p> <p>测试方向: 3 个相互垂直方向;</p> <p>Test directions:<br/>3 mutually perpendicular directions;</p> <p>周波数:10Hz-100Hz-10Hz 约 20 分<br/>10Hz-30Hz :3mm(0.12 inch)<br/>30Hz-100Hz :60m/ s<sup>2</sup></p> <p>Frequency:10Hz-100Hz-10Hz/approx 20 minutes.<br/>10Hz-30Hz :3mm(0.12 inch) peak to peak<br/>30Hz-100Hz :60m/ s<sup>2</sup></p> <p>测试次数:一个方向 3 次, 共 9 次;</p> <p>Test cycles:1 direction 3cycles total 9cycles;</p> |



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| 物理冲击<br>Physical shock   | <p>外观无异常<br/>Appearanec:Looseness between the parts, chipping, breakage or other abnormality shall not occur.</p> <p>试验中不得有超过 1 微秒的瞬断产生<br/>Electrical discontinuity: No electrical discontinuity grater than 1 micro-sec. shall occur.</p> <p>接触阻抗:初期 70 mΩ 以下, 试验后 80 mΩ 以下.<br/>Contact resistance initial 70 milli-ohm MAX.<br/>after testing 80milli-ohm MAX</p> | <p>嵌合状态在冲击试验机下冲击, 试验中 DC100mA 电流的瞬断确认。MIL-STD-202 试验法 203, 试验条件 B</p> <p>Apply the following vibration to the mating connector in accordance with MIL-STD-202, Method 213, Condition B. During the testing, run 100mA DC to check electrical</p> <p>最大加速度:735m/s<sup>2</sup>(75G)<br/>Peak value of acceleration:735m/s<sup>2</sup>(75G).<br/>时间: 6 毫秒: Duration:6 msec<br/>波形: 半正弦冲击波<br/>Wave Form: half sinusoidal</p> <p>冲击次数/方向:以 fig5 图示方向正反冲击各 3 次, 共 6 次.<br/>Diretions, cycle:<br/>pcrpendicular, 3 cycles each to normal and reversed directions of fig5 direction. totally 6 drops</p> |
| 环境性能 ENVIRONMENTAL       |   |   |
| 盐水喷雾<br>Salt water spray | <p>外观无异常, 性能良好<br/>Appearance no abnormality adversely affecting the performance shall occur</p> <p>接触阻抗: 初期 70 mΩ, 以下, 试验后 80 mΩ 以下.<br/>Contact resistance<br/>Initial: 70 milli-ohm MAX.<br/>after testing<br/>80 milli-ohm MAX.</p>   | <p>嵌合状态的连接器放置于以下条件下:<br/>Apply the following environment to the mating connector in accordance with MIL-STD-202, Method 101, Condition B</p> <p>温度: 308+/-2K(35+/-2°)<br/>Temperature:308+/-2K(35+/-2°)</p> <p>盐水浓度:5+/-1%(重量比)<br/>Salt water density by weight:5+/-1%</p> <p>时间:48 小时<br/>Duration:48 hours</p>   |



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| <p>冷热冲击<br/>Thermal shock</p>    | <p>部品无外观及其它异常<br/>Appearance: Looseness between the parts, chipping, breakage or other abnormality shall not occur.</p> <p>接触阻抗: 初期 70 mΩ,以下, 试验后 80 mΩ 以下<br/>Contact resistance initial 70 milli-ohm MAX.<br/>after testing<br/>80milli-ohm MAX.</p> <p>绝缘阻抗:初期 500MΩ 以上,试验后 100MΩ 以上.<br/>Insulation resistance: initial 500 mega-ohm MIN.after testing 100 mega-ohm MIN.</p>    | <p>嵌合状态的连接器在以下环境<br/>Apply the following environment to the mating connector. MIL-STD-202,Method 107.</p> <p>温度, 持续时间:<br/>Temperature, duration:</p> <ol style="list-style-type: none"> <li>1). 233K(-40°)/30 分钟</li> <li>2). 298K(25°)/5 分钟以下</li> <li>3). 358K(85°)/30 分钟</li> <li>4). 298K(25°)/5 分钟以下</li> </ol> <ol style="list-style-type: none"> <li>1). 233K(-40°)/30minutes</li> <li>2). 298K(25°) /5minutes MAX.</li> <li>3). 358K(85°)/30minutes</li> <li>4). 298K(25°)/5minutes MAX</li> </ol> <p>实施 50 个循环<br/>No. of cycles: 50 cycles</p> |
| <p>高温寿命<br/>Temperature Life</p> | <p>部品无外观及其它异常<br/>Appearance: Looseness between the parts, chipping breakage or other abnormality shall not occur</p> <p>接触阻抗: 初期 70 mΩ,以下, 试验后 80 mΩ 以下<br/>Contact resistance<br/>Initial: 70milli-ohm MAX.<br/>after testing:<br/>80milli-ohm MAX.</p> <p>绝缘阻抗:初期 500MΩ 以上,试验后 100MΩ 以上.<br/>Insulation resistance: initial 500 mega-ohm MIN.after testing 100 mega-ohm MIN.</p> | <p>嵌合状态的连接器放置以下环境<br/>Apply the following environment to the mating connector in accordance</p> <p>温度 358K(85°)<br/>Temperature:358K(85°)</p> <p>时间:96 小时<br/>Duration:96 hours</p>   |





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| 耐湿性<br>Humidity | <p>部品无外观及其它异常</p> <p>Appearance: Looseness between the parts, chipping, breakage or other abnormality shall not occur.</p> <p>接触阻抗: 初期 70 mΩ,以下, 试验后 80 mΩ 以下</p> <p>Contact resistance initial 70 milli-ohmMAX.</p> <p>after testing</p> <p>80milli-ohm MAX.</p> <p>绝缘阻抗:初期 500MΩ 以上,试验后 100MΩ 以上.</p> <p>Insulation resistance: initial 500 mega-ohm MIN.after testing 100 mega-ohm MIN.</p> <p>耐电压:无发生沿面放电,空中放电,绝缘破坏等异常.</p> <p>D.W.Voltage:No creeping discharge,flashover,nor insulator breakdown shall occur</p> | <p>嵌合状态的连接器在以下环境放置.MIL-STD-202.试验法 103,条件 B</p> <p>Apply the following environment to the mating connector in accordance with MIL-STD-202,Method103,Condition B.</p> <p>温度:358K(85°)</p> <p>Temperature:358K(85°)</p> <p>湿度:85%RH</p> <p>Humidity:85%RH</p> <p>时间:96 小时(50 小时*)</p> <p>Duration:96 hours ( 50 hours*)</p> <p>备注: 1).在有转接器插合状态下测试为“ * ”值。2). 所有测量应在完成湿度测试 2 小时内完成。</p> <p>Note: The condition is under the “*”value when test is done with adaptor. Measurements should be done within 2hours.</p> |
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## 6. 产品认定和测试群组 PRPDUCT QUALIFICATION AND TEST SEQUENCE

| Test of Examination                                   | 测试群组 Test Group    |     |     |     |     |     |     |     |     |     |     |  |  |
|---|--------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|
|   | A                  | B   | C   | D   | E   | F   | G   | H   | I   | J   | K   |  |  |
|   | 测试序列 Test Sequence |     |     |     |     |     |     |     |     |     |     |  |  |
| 1. 产品细查<br>Examination of product                     | 1,3                | 1,5 | 1,3 | 1,3 | 1,5 | 1,5 | 1,7 | 1,9 | 1,4 | 1,7 | 1,5 |  |  |
| 2. 接触阻抗(低功率)<br>Termination resistance<br>(Low Level) |                    | 2,4 |     |     | 2,4 | 2,4 | 2,5 | 2,6 | 2,5 | 2,5 |     |  |  |
| 3. 绝缘阻抗<br>Insulation resistance                      |                    |     |     |     |     |     | 3,6 | 3,7 |     | 3,6 |     |  |  |
| 4. 耐电压<br>Dielectric withstanding voltage             |                    |     |     |     |     |     |     | 4,8 |     |     |     |  |  |
| 5. 驻波比<br>V.S.W.R                                     |                    |     |     |     |     |     |     |     |     |     | 2   |  |  |
| 6. 插入损耗<br>Insertion Loss                             |                    |     |     |     |     |     |     |     |     |     | 3   |  |  |
| 7. 隔离度<br>Isolation                                   |                    |     |     |     |     |     |     |     |     |     | 4   |  |  |
| 8. 插拔力<br>Mate/Unmating force                         | 2                  |     |     |     |     |     |     |     |     |     |     |  |  |
| 9. 可焊性<br>Solderability.                              |                    |     | 2   |     |     |     |     |     |     |     |     |  |  |
| 10. 耐回流焊锡热<br>Resistance to Reflow Solder Heat        |                    |     |     | 2   |     |     |     |     |     |     |     |  |  |
| 11. 耐久性<br>Durability                                 |                    | 3   |     |     |     |     |     |     |     |     |     |  |  |
| 12. 振动<br>Vibration                                   |                    |     |     |     | 3   |     |     |     |     |     |     |  |  |
| 13. 物理冲击<br>Physical shock                            |                    |     |     |     |     | 3   |     |     |     |     |     |  |  |
| 14. 盐水喷雾<br>Salt spray                                |                    |     |     |     |     |     |     |     | 3   |     |     |  |  |
| 15. 温度寿命<br>Temperature life                          |                    |     |     |     |     |     |     |     |     | 4   |     |  |  |
| 16. 热冲击<br>Thermal Shock                              |                    |     |     |     |     |     | 4   |     |     |     |     |  |  |
| 17. 耐湿性<br>Humidity                                   |                    |     |     |     |     |     |     | 5   |     |     |     |  |  |

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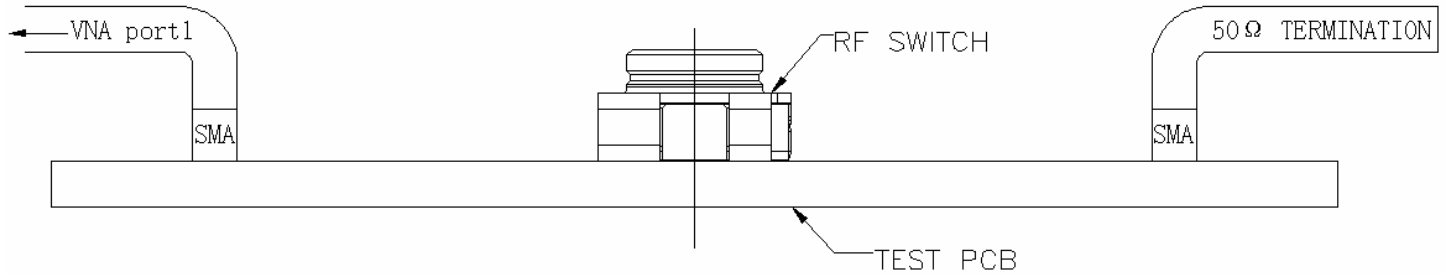


Fig. 1 VSWR TEST

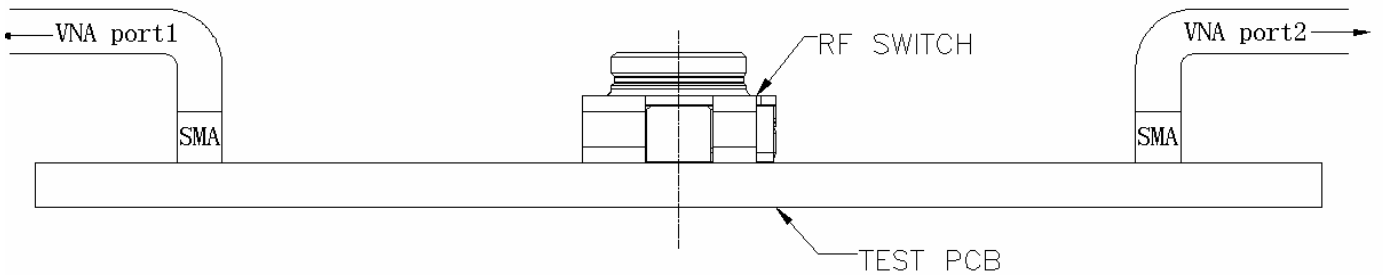


Fig. 2 INSERTION LOSS TEST

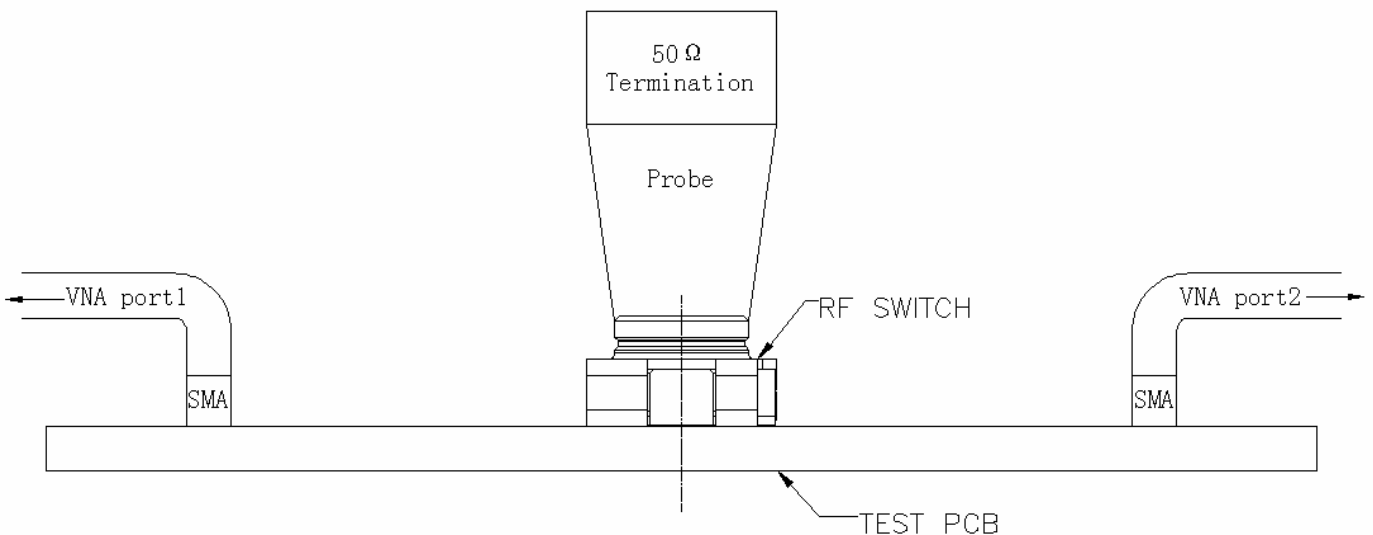


Fig. 3 ISOLATION TEST



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|                       |                         |                    |         |      |    |
|-----------------------|-------------------------|--------------------|---------|------|----|
| 文件名称 System Name:     | 产品品名 Description:       | 文件编号 Document No.: |         |      |    |
| Product specification | RF SWITCH 2*2 CONNECTOR | PS-0073            |         |      |    |
|                       |                         | Page               | 12 OF13 | Rev. | X1 |

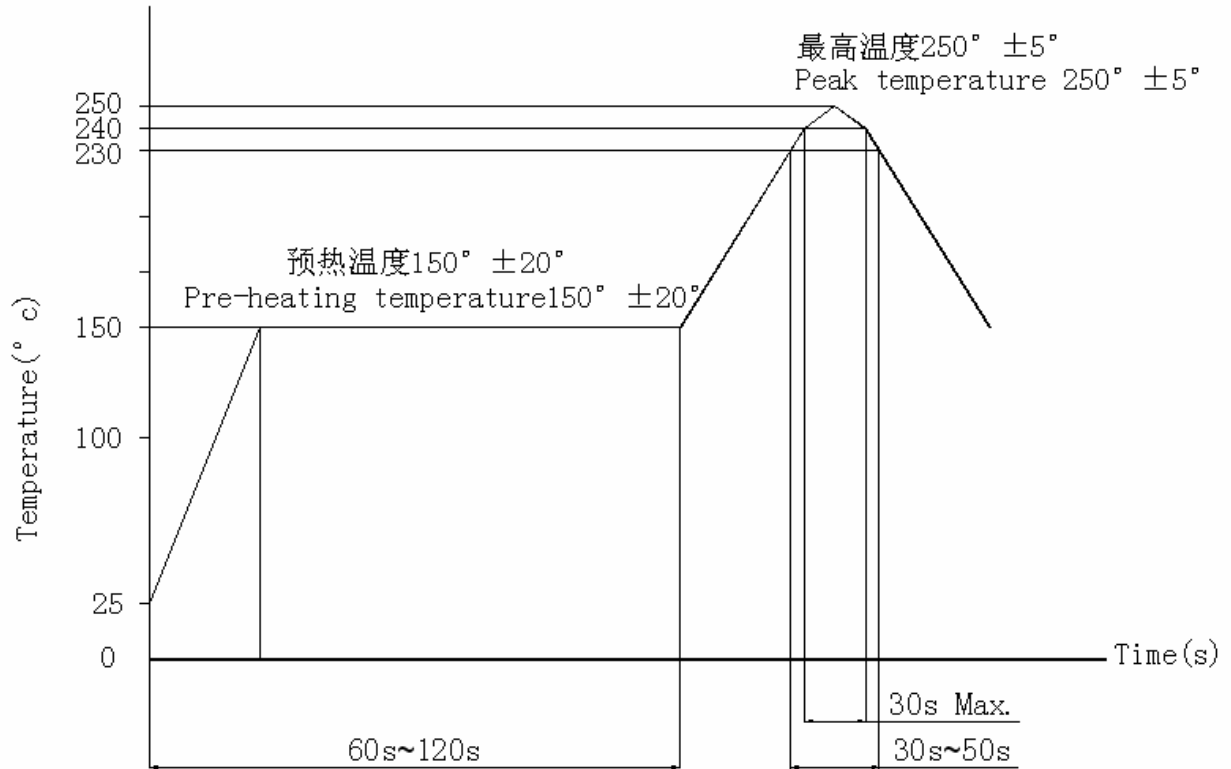


Fig. 4

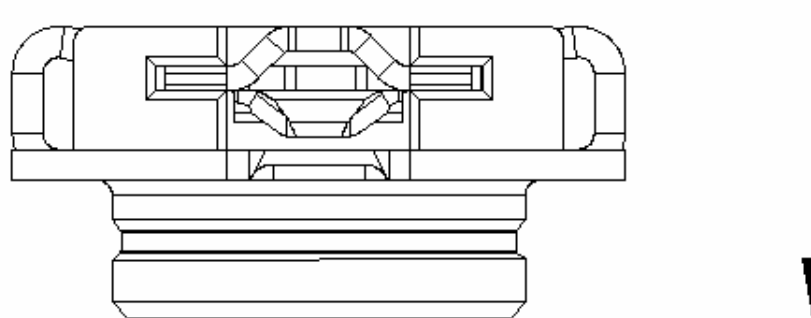


Fig. 5 VIBRATION TEST DIRECTION