客户 CUSTOMER: 日期 DATE:

# 规格书
# SPECIFICATION

| |
|---|
| 产 品 名 称 PRODUCT NAME: Triplexer |
| 贵 司 料 号 YOUR PART NO.: |
| 敝 司 料 号 OUR PART NO.: MTPX22M091433P69-T13 |
| 版 本 号 VERSION.: V2.4 |

| | | |
|---|---|---|
| 接受 RECEPTION<br>THE SPECIFICATION HAS BEEN ACCEPTED.<br>该规格书已被我司接受<br><br>日期:<br>DATE：<br><br>公司：<br>COMPANY： | | |
| 批准<br>CFMD | 审核<br>CHKD | 接收<br>RCVD |

本规格书共 11 页


MANUFACTURING NAME

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| CFMD.<br>批准 | CHKD.<br>审核 | DSGD.<br>担当 |
|---|---|---|
| 梁启新 | 付迎华 | 曾艳峰 |

## 规格书改定履历 MODIFY HISTORY OF SPECIFICATION

| Ver. | DATE | CONTENT | APPROVED |
|---|---|---|---|
| 1.0 | 2019.11.25 | 初稿 Constitute | 梁启新 |
| 2.0 | 2020.12.31 | 更新产品焊盘尺寸和产品厚度、增加电性曲线和包装信息<br>更新高频段 10300~11850MHz 抑制<br>1、Modify the size of pad<br>2、Modify the thickness T：0.65 mm Max→ 0.90±0.10 mm<br>3、Add Characteristic Curve<br>4、Add Packaging<br>5、Modify HB Electrical Characteristic<br>Att@10300~11850MHz ≥14dB →≥10dB | 付迎华 |
| 2.1 | 2021.11.21 | 更新电性曲线<br>Update the Characteristic Curve | 付迎华 |
| 2.2 | 2023.12.05 | 更新功率容量 2W→3W<br>Update the Power Capacity 2W→3W | 付迎华 |
| 2.3 | 2024.09.19 | 更新尺寸标注 Update the dimensions | 付迎华 |
| 2.4 | 2024.09.26 | 增加典型值<br>Add the Typical Value | 付迎华 |
| | | | |

# 目录 CATALOG

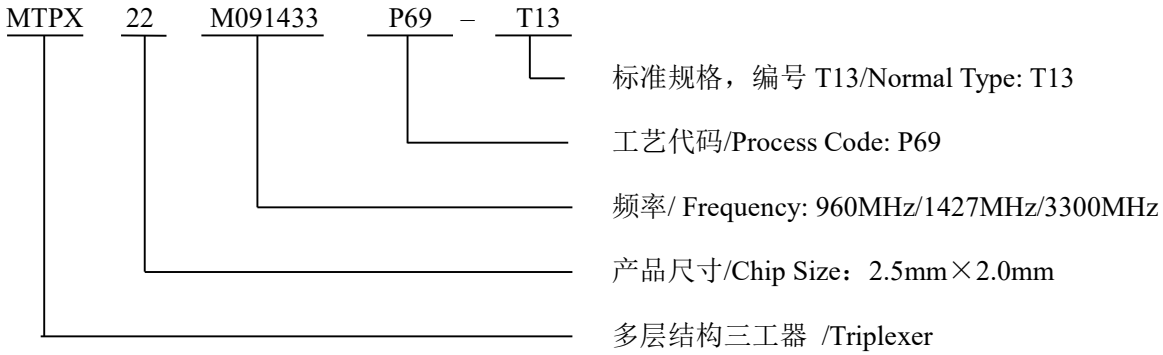
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## 1 适用范围 Scope

麦捷 Triplexer（MTPX 系列）产品设计用于 5G、LTE、WiFi、Bluetooth、PDA 和无绳电话机中，具有低的插入损耗、高的衰减和小体积 SMD 片式设计，能减少复杂的调校工作，可以简化电路设计。

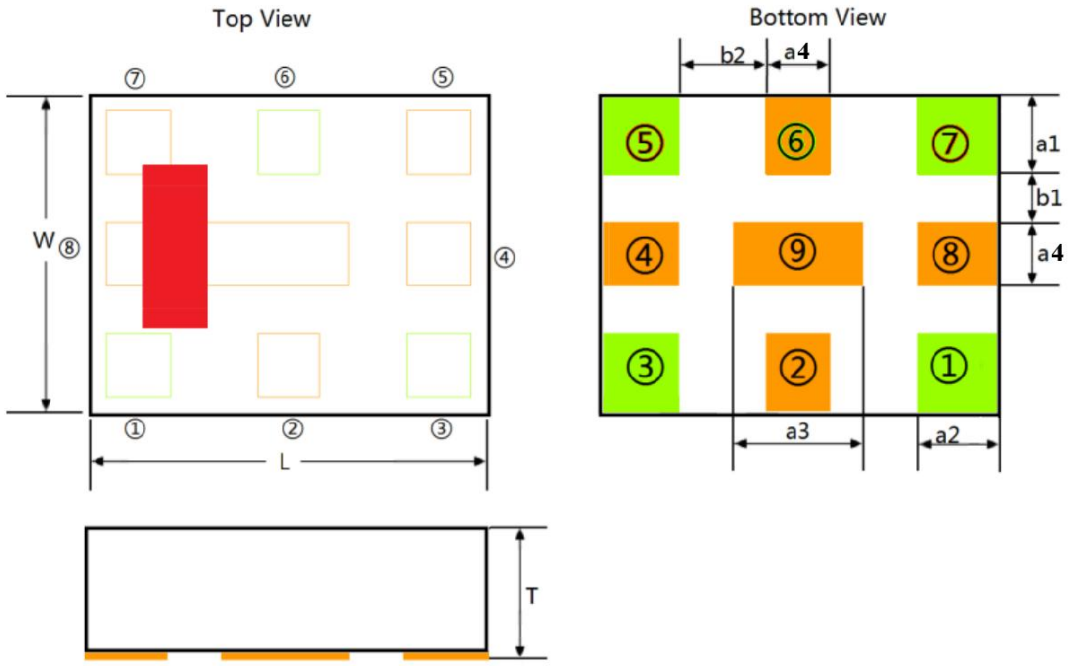
"Microgate" Microwave Triplexer series are designed to be used in 5G、LTE、WiFi、, Bluetooth、PDA & Cordless phones with low insertion loss and high attenuation as well as small size SMD chip design, which can simplify your complex tuning and circuit design.

## 2 品名构成 Product Identification




## 3 形状、尺寸和材料 Appearance, Dimensions and Material

Unit：mm




### Pin Configuration

| ① | ② | ③ | ④ | ⑤ | ⑥ | ⑦ | ⑧ | ⑨ |
|---|---|---|---|---|---|---|---|---|
| High Band | GND | Middle Band | GND | Low Band | GND | Common | GND | GND |

### Dimension

| L | W | T | a1 | a2 | a3 | a4 | b1 | b2 |
|---|---|---|---|---|---|---|---|---|
| 2.50±0.20 | 2.00±0.20 | 0.90±0.10 | 0.475±0.10 | 0.475±0.10 | 0.90±0.15 | 0.45±0.10 | 0.30±0.10 | 0.55±0.15 |

| Part Name 名称 | Structure and Material 结构及材料 | |
|---|---|---|
| Resonator 谐振体 | Dielectric Material LTCC 介质材料 | |
| In/Output Terminals 输入/输出 | Ag 银 | |
| Ground Base 接地面 | Ag 银 | |

## 4 测试条件 Testing Conditions

除非另有规定，否则在以下条件下测试 <Unless otherwise specified>

温度 Temperature : Ordinary Temperature (-40 to +85℃)

湿度 Humidity : Ordinary Humidity (25 to 85% RH)

大气压强 Atmospheric Pressure : 86 to 106 kPa

## 5 电气性能 Electrical Characteristics

操作温度范围 Operating Temperature Range : -40 to +85℃

保存温度范围 Storage Temperature Range : -40 to +85℃

**LB:Low Band Port MB: Middle Band Port HB: High Band Port ANT: Common Port**

**Low Band Port**

| No. | Item | | Unit | Specifications | | | Note |
|---|---|---|---|---|---|---|---|
| | | | | Min. | Typ. | Max. | |
| 1 | Insertion Loss （ANT-LB） | 500~798 MHz | dB | | 0.33 | 0.54 | +25±5° C |
| 2 | | 815~894 MHz | | | 0.39 | 0.60 | |
| 3 | | 880~915 MHz | | | 0.42 | 0.63 | |
| 4 | | 915~960MHz | | | 0.48 | 0.65 | |
| 5 | Insertion Loss （ANT-LB） | 500~798 MHz | dB | | | 0.64 | －40 to +85 ° C |
| 6 | | 815~894 MHz | | | | 0.7 | |
| 7 | | 880~915 MHz | | | | 0.73 | |
| 8 | | 915~960MHz | | | | 0.75 | |
| 9 | Attenuation （ANT-LB） | 1427~2690 MHz | dB | 12 | 23.37 | | |
| 10 | | 3300~3400 MHz | | 24 | 40.26 | | |
| 11 | | 3400~3800 MHz | | 27 | 40.8 | | |
| 12 | | 3800~4200 MHz | | 30 | 42.27 | | |
| 13 | | 4400~5000 MHz | | 30 | 43.24 | | |
| 14 | | 5150~5925 MHz | | 30 | 43.62 | | |
| 15 | VSWR (LB) | 500~ 960 MHz | | | 1.11 | 2.0 | |
| 16 | VSWR(Common) | | | | 1.11 | 2.0 | |
| 17 | Input Power :ANT-LB | | W | 2.0 Max. | | | |

**Middle Band Port**

| No. | Item | | Unit | Specifications | | | Note |
|---|---|---|---|---|---|---|---|
| | | | | Min. | Typ. | Max. | |
| 1 | Insertion Loss （ANT-MB） | 1427~1511 MHz | dB | | 0.81 | 1 | +25±5° C |
| 2 | | 1710~1880 MHz | | | 0.48 | 0.85 | |
| 3 | | 1880~1920 MHz | | | 0.48 | 0.85 | |
| 4 | | 1930~2200 MHz | | | 0.53 | 0.85 | |
| 5 | | 2300~2400 MHz | | | 0.59 | 0.85 | |
| 6 | | 2496~2690 MHz | | | 0.89 | 1 | |
| 7 | Insertion Loss （ANT-MB） | 1427~1511 MHz | dB | | | 1.1 | -40 to +85 ° C |
| 8 | | 1710~1880 MHz | | | | 0.95 | |
| 9 | | 1880~1920 MHz | | | | 0.9 | |
| 10 | | 1930~2200 MHz | | | | 0.95 | |
| 11 | | 2300~2400 MHz | | | | 0.95 | |
| 12 | | 2496~2690 MHz | | | | 1.1 | |
| 13 | Attenuation （ANT-MB） | 500 ~960 MHz | dB | 18 | 23.43 | | |
| 14 | | 3300~3400 MHz | | 9 | 18.19 | | |
| 15 | | 3400~3800 MHz | | 15 | 22.44 | | |
| 16 | | 3800~4200 MHz | | 20 | 22.52 | | |
| 17 | | 4400~5000 MHz | | 24 | 26.4 | | |
| 18 | | 5150~5925 MHz | | 21 | 33.61 | | |
| 19 | VSWR (MB) | 1427~2690MHz | :1 | | 1.35 | 2 | |
| 20 | VSWR (Common) | | | | 1.35 | 2 | |
| 21 | Input Power:ANT-MB | | W | 2.0 max. | | | |

**High Band Port**

| No. | Item | | Unit | Spec. | | | Note |
|---|---|---|---|---|---|---|---|
| | | | | Min. | Typ. | Max. | |
| 1 | Insertion Loss （ANT-HB） | 3300~3400 MHz | dB | | 1.06 | 1.45 | +25±5° C |
| 2 | | 3400~3600 MHz | | | 0.85 | 0.95 | |
| 3 | | 3600~3800 MHz | | | 0.7 | 0.8 | |
| 4 | | 3800~4200 MHz | | | 0.58 | 0.7 | |
| 5 | | 4400~5000 MHz | | | 0.39 | 0.7 | |
| 6 | | 5150~5925 MHz | | | 0.38 | 0.8 | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 7 | Insertion Loss （ANT-HB） | 3300~3400 MHz | dB | | | 1.55 | －40 to +85 ° C |
| 8 | | 3400~3600 MHz | | | | 1.05 | |
| 9 | | 3600~3800 MHz | | | | 0.9 | |
| 10 | | 3800~4200 MHz | | | | 0.8 | |
| 11 | | 4400~5000 MHz | | | | 0.8 | |
| 12 | | 5150~5925 MHz | | | | 0.9 | |
| 13 | Attenuation （ANT-HB） | 500~ 960 MHz | dB | 20 | 28.89 | | |
| 14 | | 1427~2690MHz | | 11 | 26.35 | | |
| 15 | | 10300 ~ 11850 MHz | | 8 | 8.81 | | |
| 16 | VSWR (HB) | 3300~5925 MHz | :1 | | 1.37 | 2 | |
| 17 | VSWR(Common) | | | | 1.37 | 2 | |
| 18 | Input Power :ANT-HB | | W | 2.0 max. | | | |

**Isolation**

| No. | Item | | | Unit | Spec. | | | Note |
|---|---|---|---|---|---|---|---|---|
| | | | | | Min. | Typ. | Max. | |
| 1 | Isolation | MB-LB | 500~ 960 MHz | dB | 17 | 23.21 | | |
| 2 | | | 1427~2690MHz | | 14 | 24.71 | | |
| 3 | | | 3300~5925 MHz | | 14 | 29.9 | | |
| 4 | | HB-LB | 500~ 960 MHz | | 20 | 29.13 | | |
| 5 | | | 1427~2690MHz | | 30 | 44.73 | | |
| 6 | | | 3300~5925 MHz | | 30 | 39.81 | | |
| 7 | | MB-HB | 500~ 960 MHz | | 30 | 40.95 | | |
| 8 | | | 1427~2690MHz | | 14 | 26.2 | | |
| 9 | | | 3300~5925 MHz | | 11 | 22.4 | | |

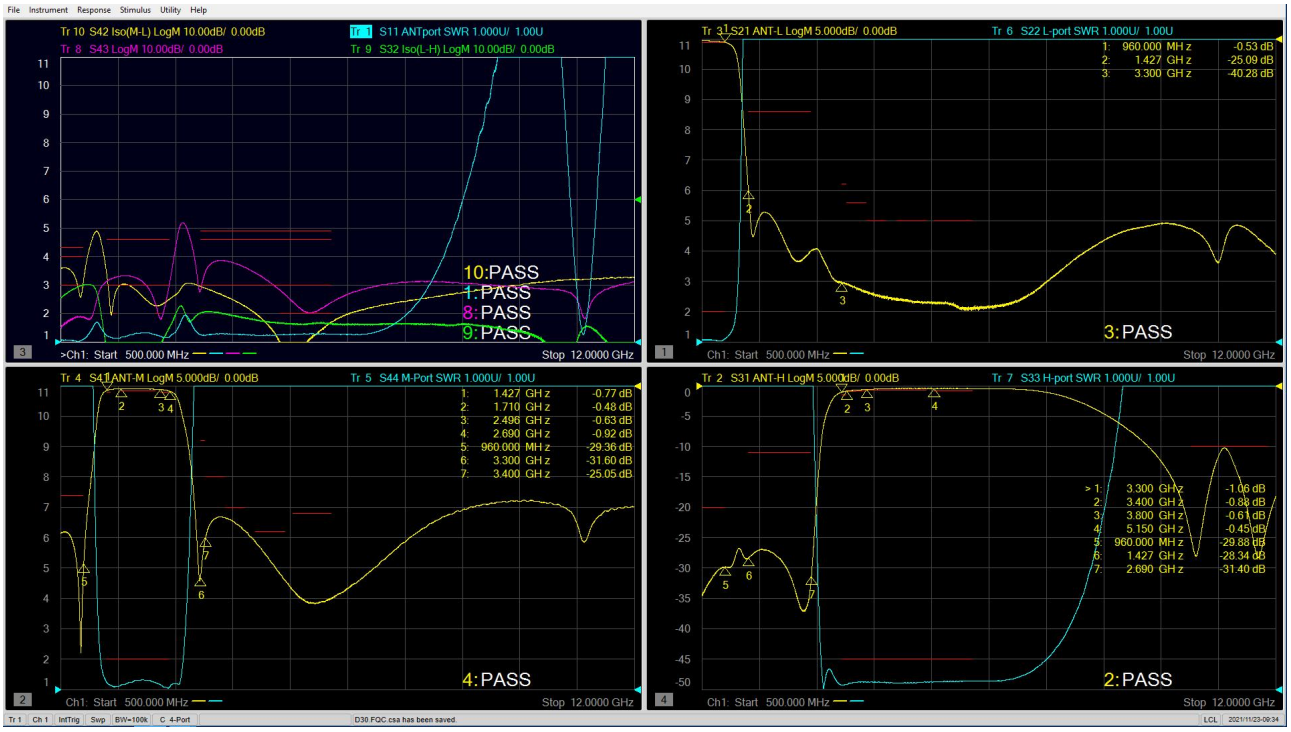
## 6 特性曲线 Characteristic Curve

曲线说明：1 端口 ANT， 2 端口 LB, 3 端口 HB，4 端口 MB

S11：ANT VSWR　S21：LB 传输曲线　S22：LB VSWR　S41：MB 传输曲线　S44 MB VSWR

S31：HB 传输曲线　S33：HB VSWR

S42：Isolation MB-LB　S43：Isolation MB-HB　S32：Isolation HB-LB



## 7 焊接条件 Recommended Soldering Conditions

1、焊剂 Flux, Solder

① 使用松香助焊剂，禁止使用卤化物含量起过 0.2wt%的强酸性助焊剂。

Use rosin-based flux. Don't use highly acidic flux with halide content exceeding 0.2wt% (chlorine conversion value).

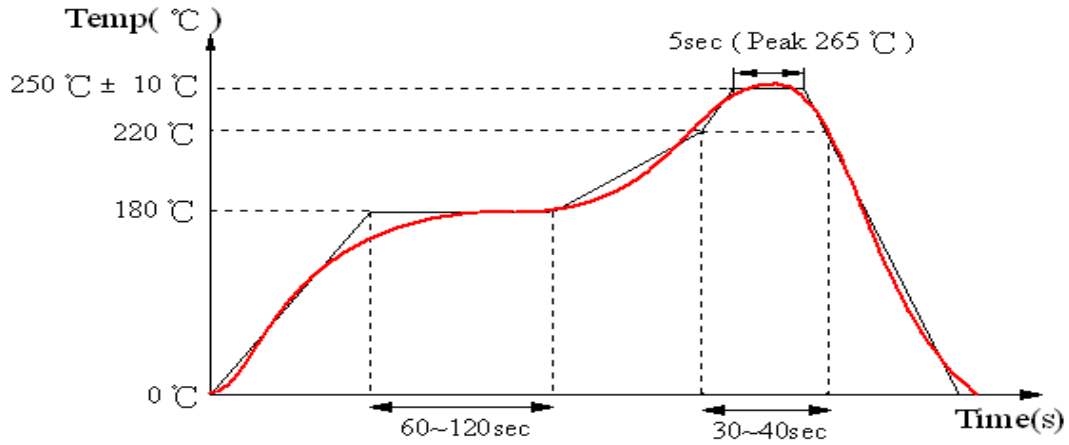
② 使用纯锡焊料 Use Sn solder.

2、回流焊条件 Reflow soldering conditions

●预热时，产品表温与焊料温度的温差最大不允许超出 150℃，焊接完后冷却时，产品表温与溶剂温度之间的温差最大不允许超出 100℃。预热不足有可能引发产品表面裂纹，导致产品品质下降。

Pre-heating should be in such a way that the temperature difference between solder and product surface is limited to 150℃ max. Cooling into solvent after soldering also should be in such a way that temperature difference is limited to 100℃ max. Unwrought pre-heating may cause cracks on the product, resulting in the deterioration of products quality.

●标准回流焊曲线 Standard soldering profile.




3、手工返工 Reworking with soldering iron

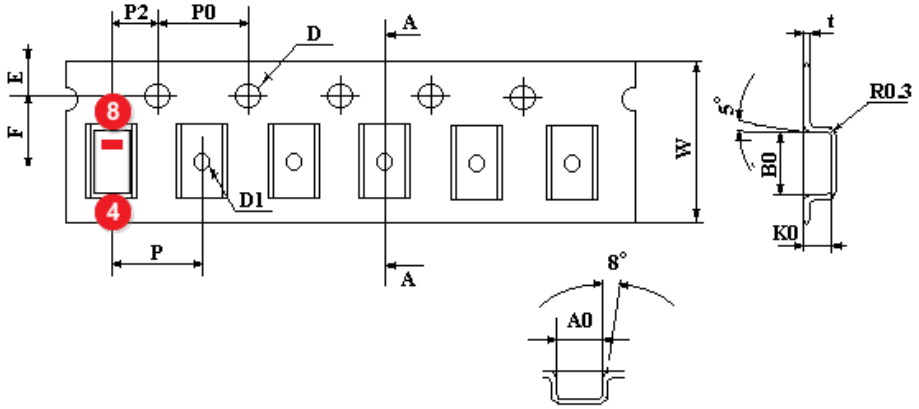
当使用电烙铁进行手工焊接时，以下条件必须严格遵守 The following conditions must be strictly followed when using a soldering iron.

| | |
|---|---|
| 预热 Pre-heating | 150℃, 1 minute |
| 尖端温度 Tip temperature | 350℃ max |
| 输出功率 Soldering iron output | 80w max |
| 电烙铁头尖端尺寸 End of soldering iron | φ3mm max |
| 焊接时间 Soldering time | 3 seconds max |

## 8 包装 Packaging

①编带尺寸 Dimensions of Tape:

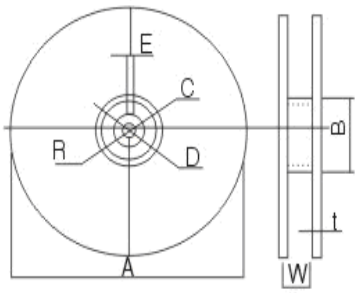
Unit: mm




| Type | W | P | E | F | $P_2$ | D | $D_1$ |
|---|---|---|---|---|---|---|---|
| | 8.00+0.30/-0.10 | 4.00±0.10 | 1.75±0.10 | 3.5±0.05 | 2.00±0.05 | 1.50+0.10/-0.00 | 1.00+0.25/-0.10 |
| 2520 | $P_0$ | $10P_0$ | $A_0$ | $B_0$ | $K_0$ | t | |
| | 4.00±0.10 | 40.00±0.20 | 2.30±0.10 | 2.85±0.10 | 1.20±0.10 | 0.23±0.05 | |

② 带轮尺寸 Dimensions of Reel

Unit: mm



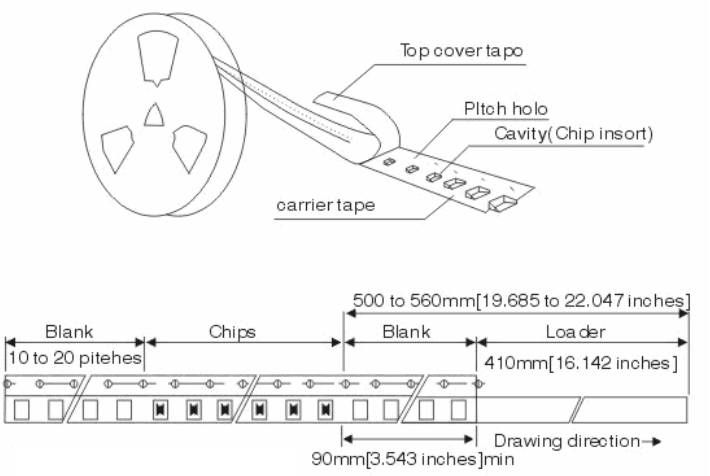

Reel material: PS (Polystyrene)

| | |
|---|---|
| **A** | 178±2 |
| **B** | 60±2 |
| **C** | 13.0±0.5 |
| **D** | 21.0±0.8 |
| **E** | 2.0±0.5 |
| **W** | 8.5±1.0 |
| **t** | 1.2±0.2 |
| **R** | 1.0±0.25 |

③编带抗拉强度 Pulling strength of tapes:

| | |
|---|---|
| 载带 Carrier tape | 10N or more (1kgf or more) |
| 上盖带 Cover tape | 5N or more (1kgf or more) |

④编带简图及拉伸方向 Taping figure and drawing direction:



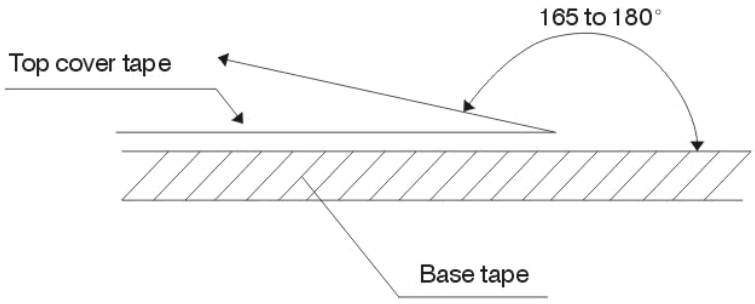

编带材料 Tape material:

基带 Base tape: 塑带 plastic carrier tape

盖带 Cover tape: 聚乙烯 polyethylene

⑤盖带的剥离强度 Peeling strength of cover tape:

| **盖带 Cover tape** | 0.2~0.6N (20gf~60gf) |
|---|---|




测试条件 Test condition:

1) 剥离角度 peel angle: 165°~180° vs. carrier tape.
2) 剥离速度 peel speed: 300mm/min±10%.

⑥ 包装数量 Packaging quantities: 3000 PCS / Reel