

客户 CUSTOMER:

日期 DATE:

# 纳入仕様书 SPECIFICATION

产品名称 PRODUCT NAME: Diplexer

贵司料号 YOUR PART NO.:

敝司料号 OUR PART NO.: MDPX21M0917P69-D15M

版本号 VERSION.: V2.1

接受 RECEPTION

THE SPECIFICATION HAS BEEN ACCEPTED.

该纳入仕様书已被我司接受

日期:  
DATE:

公司:  
COMPANY:

批准  
CFMD

审核  
CHKD

接收  
RCVD

本纳入仕様书共 12 页

MANUFACTURING NAME

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纳入仕様书改定履历 MODIFY HISTORY OF SPECIFICATION

Ver.	DATE	CONTENT	APPROVED
1.0	2018.01.23	初稿 Constitute	梁启新
2.0	2019.01.08	增加全温插损 Add Full Temperature Insertion Loss	梁启新
2.1	2020.08.21	更新电性能参数 Modify Electrical Characteristics	付迎华

## 目录 CATALOG

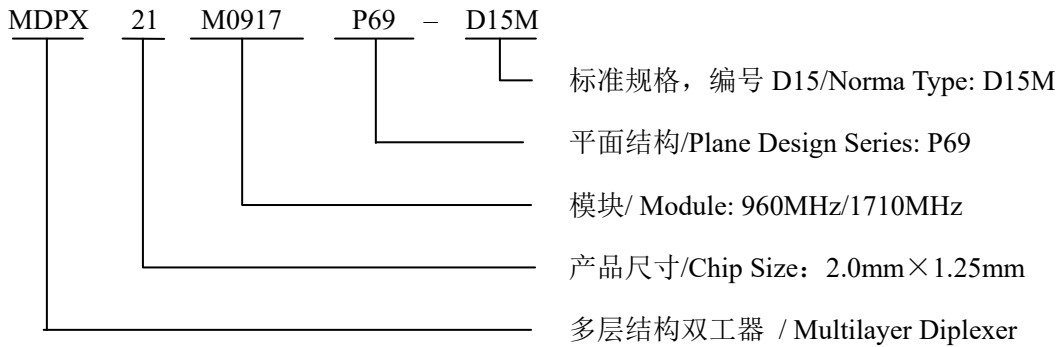
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## 1 适用范围 Scope

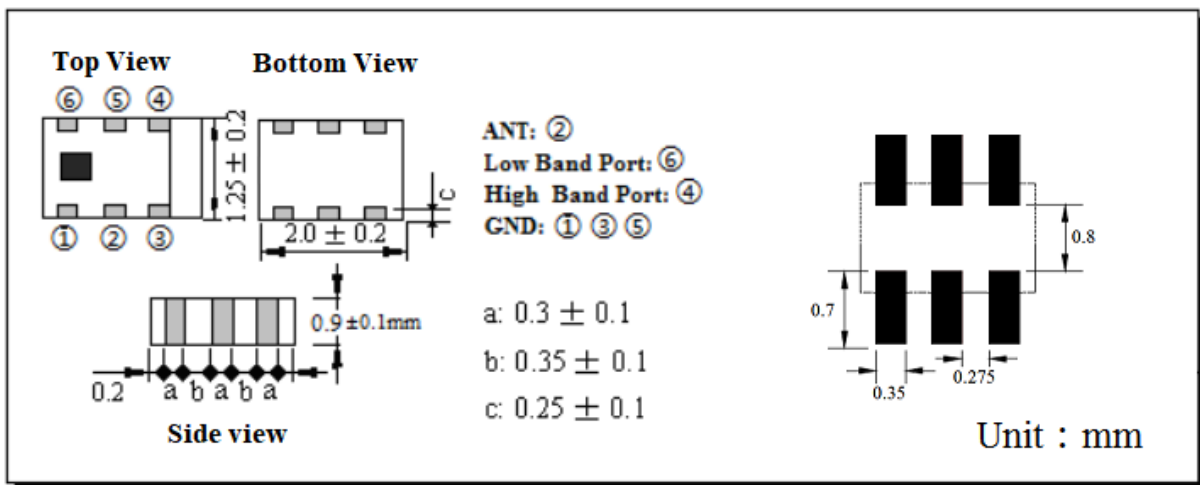
麦捷 Diplexer (MDPX 系列) 产品设计用于 5G、LTE、WIFI、Bluetooth、PDA 和无绳电话机中，具有低的插入损耗、高的衰减和小体积 SMD 片式设计，能减少复杂的调校工作，可以简化电路设计。

“Microgate” Microwave Diplexer 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



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°C)

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

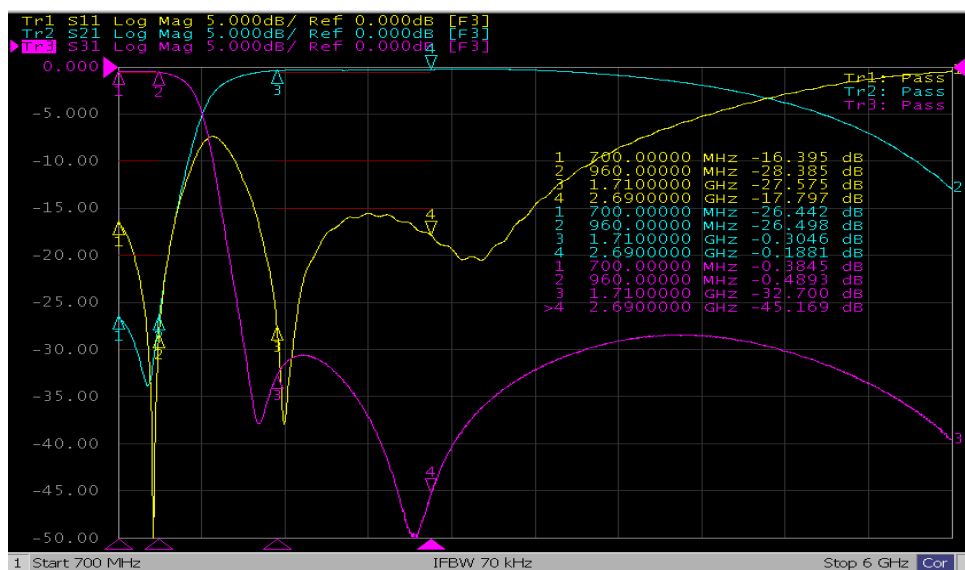
大气压强 Atmospheric Pressure : 86 to 106 kPa

## 5 电气性能 Electrical Characteristics

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

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

No.	Item (项目)	Frequency (MHz)	Specifications (特性)
5.1	Insertion Loss (in f1) 插入衰耗	698~746 MHz	≤0.5dB@ (25°C±5°C) ≤0.6dB@ (-40°C~85°C)
		746~960 MHz	≤0.65dB @ (25°C±5°C) ≤0.75dB@ (-40°C~85°C)
5.2	Insertion Loss (in f2) 插入衰耗	1710~2700 MHz	≤0.5dB@ (25°C±5°C) ≤0.6dB@ (-40°C~85°C)
5.3	V.S.W.R (in BW) 驻波比 (in f1 & f2)	698~960 MHz	≤2.0
		1710~2700 MHz	
5.4	Attenuation 阻带衰耗 (in f1)	1710~2170MHz	≥30dB
		2170~2400MHz	≥30dB
		2400~2700MHz	≥35dB
5.5	Attenuation 阻带衰耗 (in f2)	698~960MHz	≥25dB
5.6	In/Output Impedance 输入/输出阻抗		50 Ω
5.7	功率容量 Power Capacity		3.0 W



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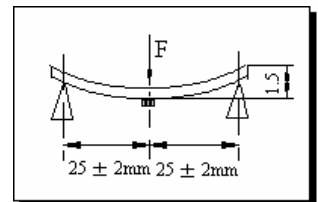
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## 6 信赖性试验 Reliable Performance

NO.	Item	Specifications	Test Methods	
6-1	Solder-Ability 可焊性	More than 90% of termination should be covered with new solder. 端电极焊锡覆盖率为90%以上。	焊锡 Solder: Sn: Pb=	100:0
			焊锡温度 Temperature:	255°C+5°C/-0°C
			助焊剂 Flux: 松香 rosin	
			浸渍时间 Duration:	5±0.5s
6-2	Leaching Resistance 耐焊性	More than 75% of termination Should be covered with new solder. 端电极焊锡覆盖率为75%以上	焊锡 Solder: Sn: Pb=	100:0
			焊锡温度 Temperature:	270°C+2°C/-0°C
			助焊剂 Flux: 松香 rosin	
			浸渍时间 Duration:	10±0.5s
6-3	Terminal Strength 端头强度	The terminal and body should be no damage 端头和瓷体不应见损伤	<p>The device should not be broken after tensile force of 1.0kg is slowly applied to pull a lead pin of the fixed device in the lead axis direction for 10±1 seconds.</p> <p>在产品电极端子上或表面上应能承受 1kg 垂直拉力 10±1 秒</p>	
6-4	Bending Strength 弯曲试验	No mechanical damage should be noticed 不应见机械损伤	<p>Weld the product to the center part of the PCB with the thickness 1.6±0.2mm as the illustration shows, and keep exerting force arrow-ward on it at speed of: 1mm/S, and hold for 5±1S at the position of 1.5mm bending distance, so far, any peeling off of the product metal coating should not be detected.</p> <p>将产品按图焊在 1.6±0.2mm 的 PCB 板中间, 由箭头方向施力 1mm/S, 弯曲距离 1.5mm, 保持 5±1S, 产品金属层无脱落。</p>	



NO.	Item	Specifications	Test Methods
6-5	Drop 跌落		Drop 10 times on a concrete floor from a height of 1m. 从距混凝土地面 1m 高度自由落下，重复 3 次。
6-6	Vibration 振动		频率 Frequency: 10 to 55Hz 振幅 Amplitude: 1.5mm 方向及时间 Direction and time: X, Y and Z directions for 2 hours each.
6-7	Humidity resistance 耐潮湿	Post Environmental Tolerance (环境试验后允许附加误差) 1 Center Frequency 中心频率 $f_0$ : $\pm 2.0$ MHz;	a. 试验条件 Test condition 温度 Temp.: $60 \pm 2^\circ\text{C}$ 湿度 Humidity: 90%~95% 试验时间 Test time: $96 \pm 2$ h b. 测量条件 Measurement method: 试验后常温常湿环境中放置 ( $24 \pm 2$ ) 小时后测量。 The component should be stabilized at normal condition for ( $24 \pm 2$ ) hours before test.
6-8	High temperature resistance 耐高温	2 Insertion Loss 插入衰耗: $\pm 0.5$ dB; 3 Band Width 通带宽度: $\pm 1.0$ MHz 4 Ripple (in BW) 通带波动: $\pm 0.5$ dB; 5 V.S.W.R (in BW) 驻波比: $\pm 0.2$	a. 试验条件 Test condition 温度 Temp.: $+85 \pm 2^\circ\text{C}$ 试验时间 Test time: $96 \pm 2$ h b. 测量条件 Measurement method: 试验后常温常湿环境中放置 ( $24 \pm 2$ ) 小时后测量。 The component should be stabilized at normal condition for ( $24 \pm 2$ ) hours before test.
6-9	Low temperature resistance 耐低温	6 Attenuation 阻带衰耗: $\pm 2.0$ dB	a. 试验条件 Test condition 温度 Temp.: $-40 \pm 2^\circ\text{C}$ 试验时间 Test time: $96 \pm 2$ h b. 测量条件 Measurement method: 试验后常温常湿环境中放置 ( $24 \pm 2$ ) 小时后测量。 The component should be stabilized at normal condition for ( $24 \pm 2$ ) hours before test.
6-10	Thermal shock (Temperature cycle) 热冲击 (温度循环)		a. 试验条件 Test condition 1) 温度 Temp.: $-40^\circ\text{C}$ , 时间 time: $30 \pm 3$ min 2) 温度 Temp.: $+85^\circ\text{C}$ , 时间 time: $30 \pm 3$ min 5 cycles b. 测量条件 Measurement method: 试验后常温常湿环境中放置 ( $24 \pm 2$ ) 小时后测量。 The component should be stabilized at normal condition for ( $24 \pm 2$ ) hours before test.

## 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超过 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).

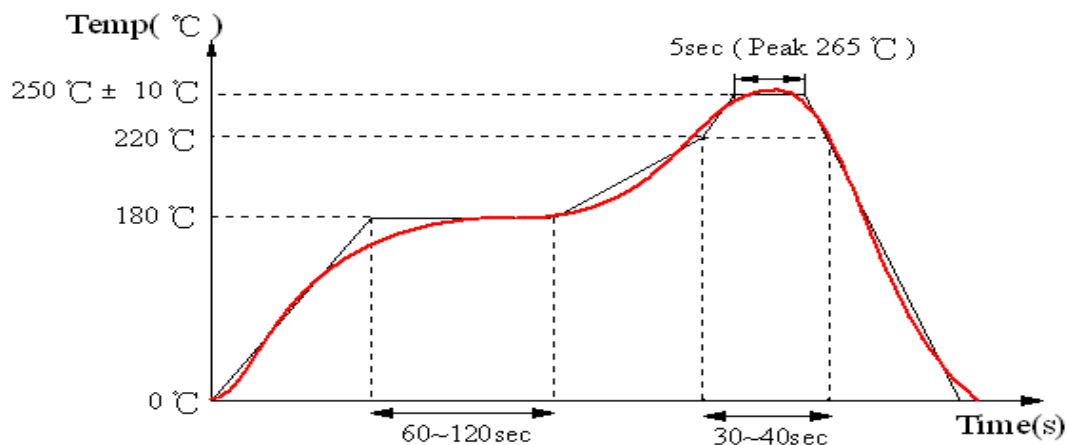
② 使用纯锡焊料 Use Sn solder.

### 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

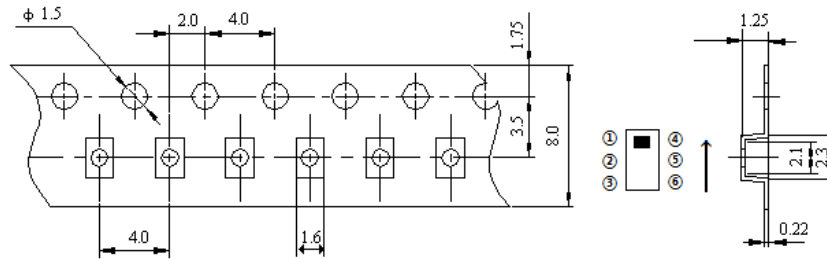
当使用电烙铁进行手工焊接时，以下条件必须严格遵守 The following conditions must be strictly followed when using a soldering iron.

预热 Pre-heating	150°C, 1 minute
尖端温度 Tip temperature	350°C 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



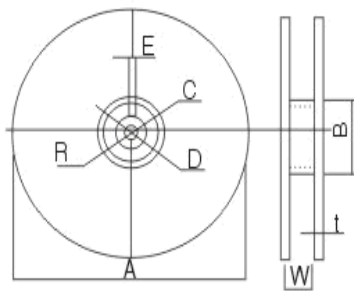
## 8 包装 Packaging

### ① 编带尺寸 Dimensions of Tape:



### ② 带轮尺寸 Dimensions of Reel

Unit: mm



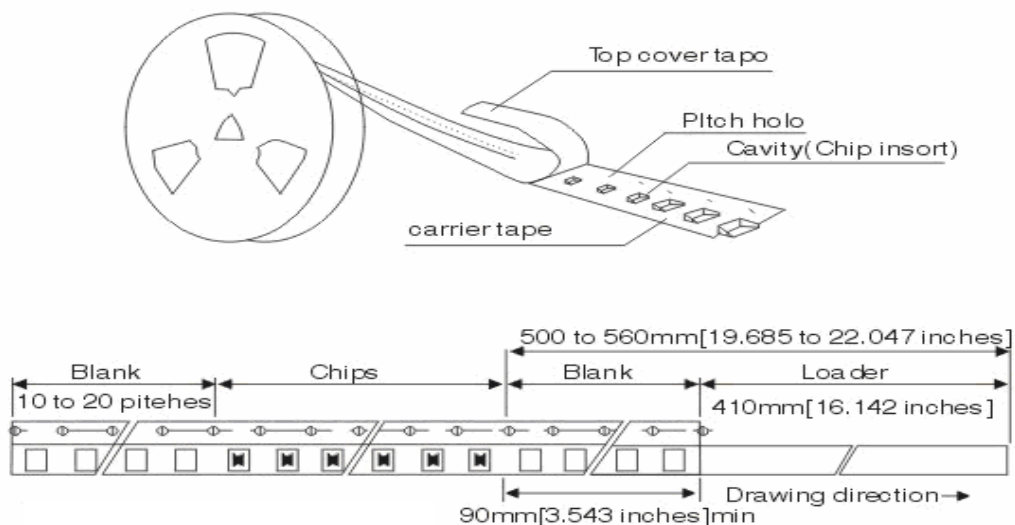
Reel material: PS (Polystyrene)

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:



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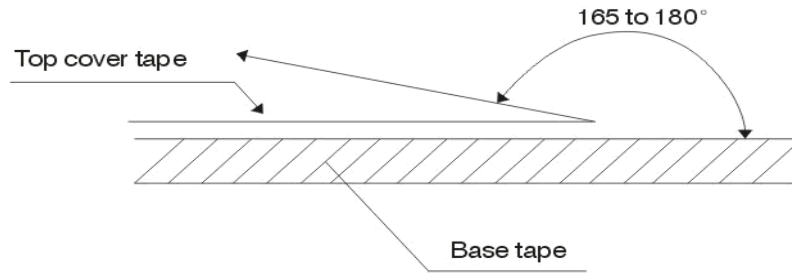
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⑤ 盖带的剥离强度 Peeling strength of cover tape:

盖带 Cover tape	0.3~0.7N (30gf~70gf)
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测试条件

- 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

## 9 装箱清单及标志 Packing documents and marking

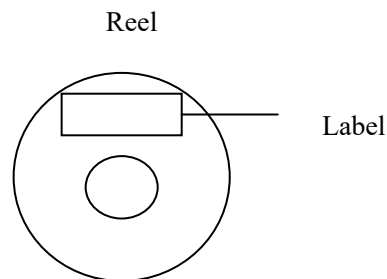
1. 包装文件 Packing documents

Packing includes the following:

- a. 装箱清单 Packing list.
- b. 合格证书 Certificate of compliance.

2. 盘上标记 Marking on reels:


- a 麦捷料号 MICROGATE Part No.
- b 生产批号 Lot number
- c 盘装数量 Quantity per reel
- d 检验员号 Inspector No.



以上内容必须在标签上注明.All above shall be shown on marking label

麦捷公司标签如下所示: MICROGATE marking label will be as following:

MICROGATE		
CUSTOMER:	P. O. NO	
CUSTOMER PART NO:	DATE CODE	LOT NO
MG PART NO:	QUANTITY	INSP. NO

  
**MG PART NO**

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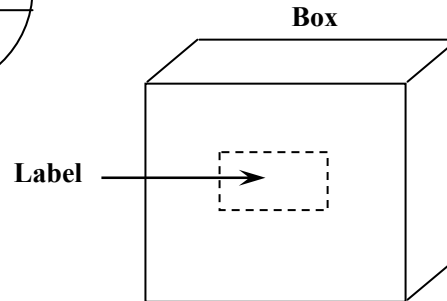
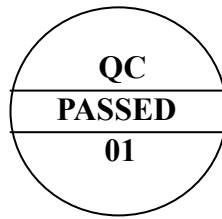
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检验合格后, 检验员在标签上盖上合格章。合格章如下所示: The eligible reels will be pressed a mark onto the surface. The mark will be as following:



3. 内包装盒标记: Marking on inner box

- a. 型号 MICROGATE part No.
- b. 每盒数量 Quantity per box
- c. 包装日期 Date

以上内容必须在标签上注明 (标签见 9.2 所示)。Above shall be shown on marking label (The marking label is shown in item 9.2).

4. 外包装箱标记 Marking on outer case:

1) 制造商 Manufacturer: "MICROGATE" ①

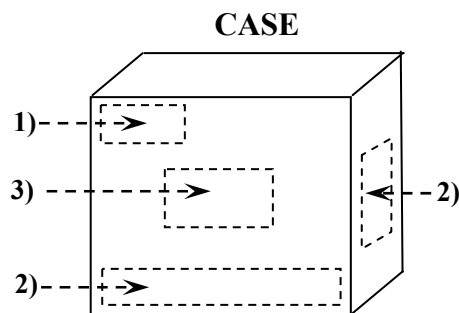
"中国深圳制造" "Made in Shenzhen CHINA" ②

2) 发运标记 Ship marking:

"向上" "UP", "小心轻放" "HAND CARE", "防潮" "MOISTURE-PROOF".

3) 包装标签包括以下内容 Packing label include the following:

- a. 型号 MICROGATE Part No
- b. 总数量 Total quantity per case
- c. 包装日期 Date;



以上内容必须在标签上注明。(参见 9.2 所示)

All above shall be shown on marking label.

(The marking label is shown in item 9.2)

## 10 保管 Storage

### ①. 保管期限 Storage period

距麦捷出厂检验时间六个月内，产品可以使用；检验时间可以通过包装外侧标记的检验号确认；若时间超出六个月，应检查焊接性能后方可使用。Products which inspected in MICROGATE over 6 months ago should be examined and used, which can be confirmed with inspection No. marked on the container. Solder ability should be checked if this period is exceeded.

### ②. 保存条件 Storage conditions

●存放货物的库房应满足以下条件 Products should be storage in the warehouse on the following conditions

温度 Temperature: 10~40℃

湿度 Humidity : 30~70% relative humidity

不允许温、湿度有极剧变化。No rapid change on temperature and humidity

●禁止将产品保管在腐蚀性物质中，例如硫磺、氯气或者酸，否则将引起端头氧化，导致降低焊接性。Don't keep products in corrosive gases such as sulfur, chlorine gas or acid, or it may cause oxidization of electrode, resulting in poor solder ability.

●为了避免受潮气、灰尘等物质的影响，产品应保管于货架上。Products should be storage on the palette for the prevention of the influence from humidity, dust and so on.

●产品保管在库房中时，应避免热冲击，振动以及直接光照等等。Products should be storage in the warehouse without heat shock, vibration, and direct sunlight and so on.

●产品应密封包装 Products should be storage under the airtight packaged condition.