

客户 Customer: _____

日期 Date: _____

纳入仕様书 SPECIFICATION

产 品 名 称 PRODUCT NAME: 叠层片式双工器

Multilayer Chip Diplexer

贵 司 料 号 YOUR PART NO.: _____

敝 司 料 号 OUR PART NO.: MDPX18M1524P69-D07

版 本 号 VERSION.: V 2.0

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 14 页

MANUFACTURING NAME

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电话(Tel): 0755-28085000 传真(Fax): 0755-28085605

邮编(Postcode): 518118

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

Ver.	DATE	CONTENT	APPROVED
1.0	2016.05.09	初稿 Constitute	梁启新
2.0	2019.05.20	更改电性曲线 Modify Electrical Characteristics	付迎华

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1 适用范围 Scope

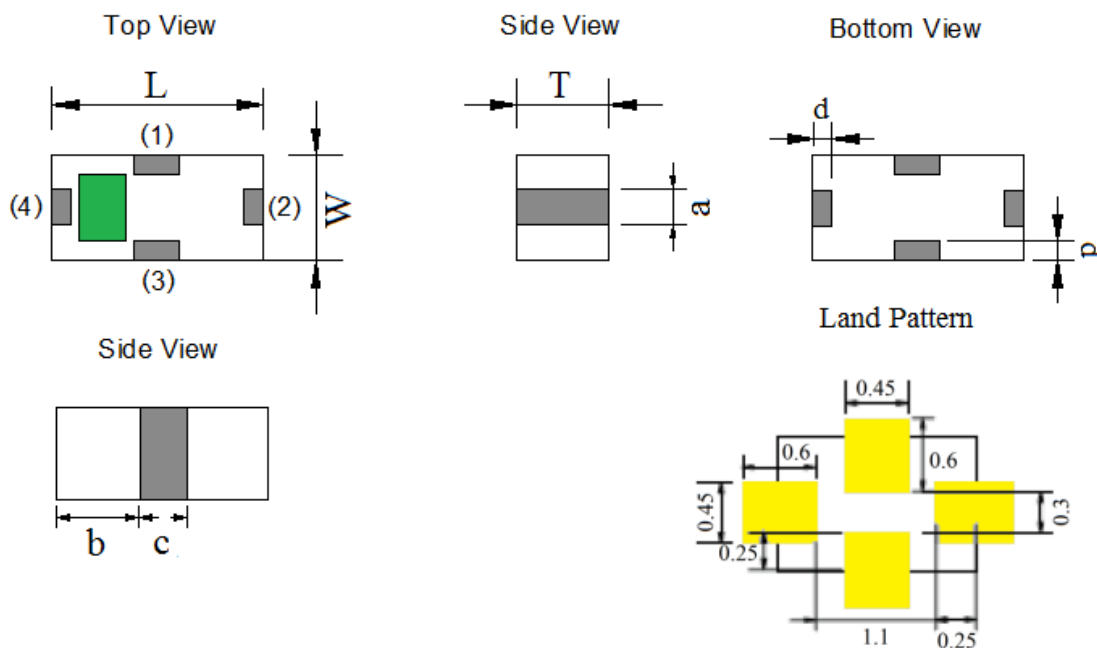
“麦捷”微波双工器系列产品设计用于 5G、LTE、WIFI、Bluetooth、PDA 和无绳电话机中，具有低的插入损耗、高的衰减和小体积 SMD 片式设计，能减少复杂的调校工作，可以简化电路设计。

“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



PIN Configuration

(1)	(2)	(3)	(4)
GND	High-Band	Common	Low-Band

Dimension

L	W	T	a	b	c	d
1.6±0.1	0.80+0.2/-0.1	0.65±0.1	0.3+0.1/-0.15	0.65+/-0.15	0.40±0.1	0.15±0.1

深圳市麦捷微电子科技股份有限公司

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电话(Tel): 0755-28085000

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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/Ni 镍/Sn 锡
Ground Base 接地面	Ag 银/Ni 镍/Sn 锡

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

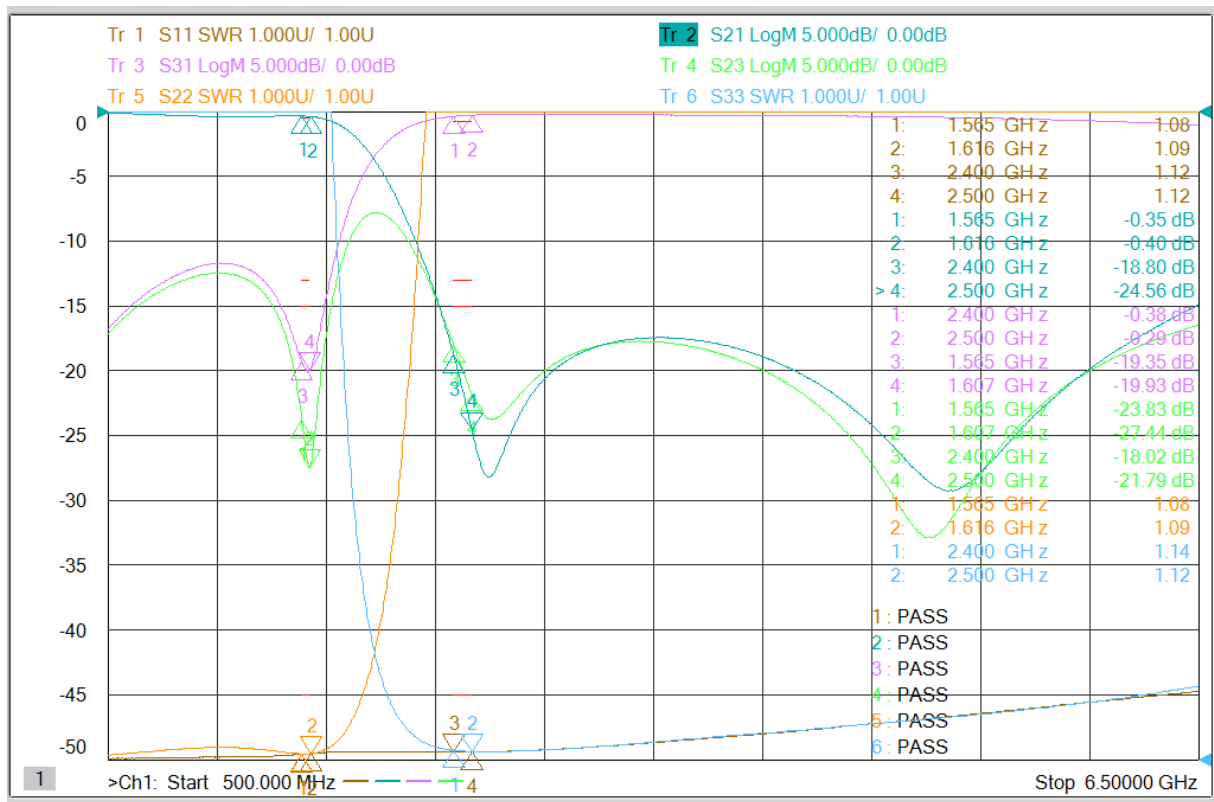
5 电气性能 Electrical Characteristics

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

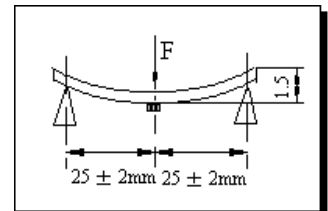
No.	Item (项目)	Specifications (特性)		
5.1	Frequency Range 频率范围	f1	824-960 MHz	$\leq 0.6\text{dB}$ (@ -40~+85°C)
			1166~1299MHz	$\leq 0.5\text{dB}$ (@ -40°C~85°C)
			1525~1616MHz	$\leq 0.6\text{dB}$ (@-40~+85°C)
5.2	Frequency Range 频率范围	f2: 2400-2500 MHz		$\leq 0.7\text{dB}$ (@-40~+85°C)
5.3	V.S.W.R (in BW) 驻波比 (in f1 & f2)	≤ 2.0		
5.4	Attenuation 阻带衰耗 (in f1)	$\geq 12\text{dB}$ (824~960 MHz)		
		$\geq 12\text{dB}$ (1166~1299 MHz)		
		$\geq 19\text{dB}$ (1525~1616 MHz)		
5.5	Attenuation 阻带衰耗 (in f2)	$\geq 13\text{dB}$ (2400~2500MHz)		
5.6	In/Output Impedance 输入/输出阻抗	50 Ω		
5.7	Power Capacity 功率容量	2.0 W max.		

6 特性曲线 Characteristic Curve



7 信赖性试验 Reliable Performance

NO.	Item	Specifications	Test Methods	
7-1	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℃+5℃/-0℃
			助焊剂 Flux: 松香 rosin	
			浸渍时间 Duration:	5±0.5s
7-2	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℃+2℃/-0℃
			助焊剂 Flux: 松香 rosin	
			浸渍时间 Duration:	10±0.5s
7-3	Terminal Strength 端头强度	The terminal and body should be no damage 端头和瓷体不应见损伤	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. 在产品电极端子上或表面上应能承受 1kg 垂直拉力 10±1 秒	
7-4	Bending Strength 弯曲试验	No mechanical damage should be noticed 不应见机械损伤	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. 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。	



NO.	Item	Specifications	Test Methods
7-5	Drop 跌落	Post Environmental Tolerance (环境试验后允许附加误差) 1 Center Frequency 中心频率 fo: ±2.0 MHz; 2 Insertion Loss 插入损耗: ±0.5 dB; 3 Band Width 通带宽度: ±1.0 MHz 4 Ripple (in BW) 通带波动: ±0.5 dB; 5 V.S.W.R (in BW) 驻波比: ±0.2 6 Attenuation 阻带衰耗: ±2.0 dB	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。
7-6	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.
7-7	Humidity resistance 耐潮湿		a. 试验条件 Test condition 温度 Temp.: 60±2℃ 湿度 Humidity: 90%~95% 试验时间 Test time: 96±2 h b. 测量条件 Measurement method: 试验后常温常湿环境中放置 (24±2) 小时后测量。 The component should be stabilized at normal condition for (24±2) hours before test.
7-8	High temperature resistance 耐高温		a. 试验条件 Test condition 温度 Temp.: +85±2℃ 试验时间 Test time: 96±2 h b. 测量条件 Measurement method: 试验后常温常湿环境中放置 (24±2) 小时后测量。 The component should be stabilized at normal condition for (24±2) hours before test.
7-9	Low temperature resistance 耐低温		a. 试验条件 Test condition 温度 Temp.: -40±2℃ 试验时间 Test time: 96±2 h b. 测量条件 Measurement method: 试验后常温常湿环境中放置 (24±2) 小时后测量。 The component should be stabilized at normal condition for (24±2) hours before test.
7-10	Thermal shock (Temperature cycle) 热冲击 (温度循环)		a. 试验条件 Test condition 1) 温度 Temp.: -40℃, 时间 time: 30±3min 2) 温度 Temp.: +85℃, 时间 time: 30±3min 5 cycles b. 测量条件 Measurement method: 试验后常温常湿环境中放置 (24±2) 小时后测量。 The component should be stabilized at normal condition for (24±2) hours before test.

8 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).

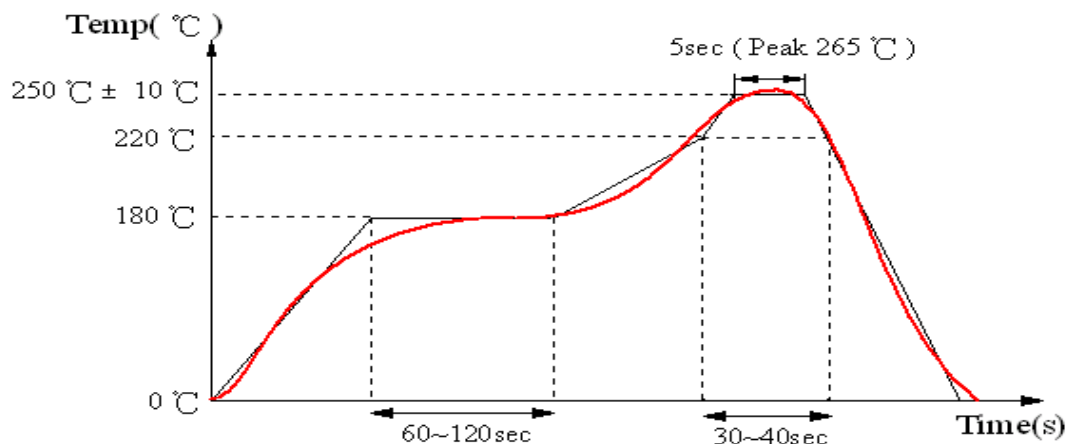
② 使用纯锡焊料 Use Sn solder.

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.



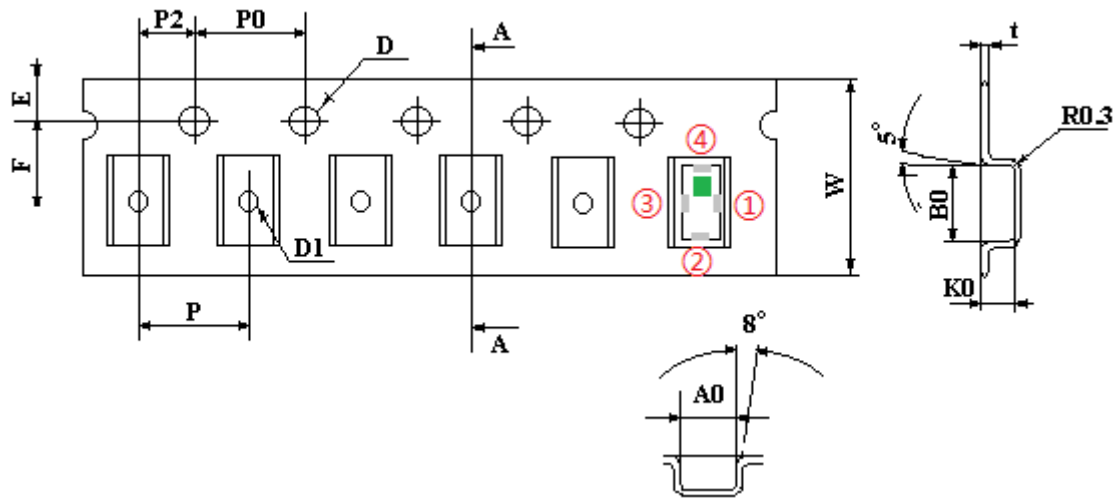
3、手工返工 Reworking with soldering iron

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℃, 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

9 包装 Packaging

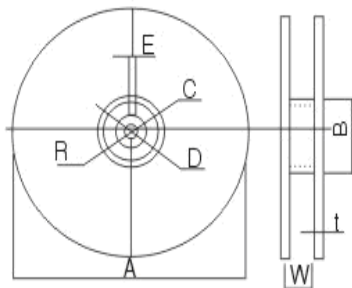
① 编带尺寸 Dimensions of Tape:



W	P	E	F	P2	D	D1
8.00+0.30/-0.10	4.00±0.10	1.75±0.10	3.50±0.05	2.00±0.05	1.50+0.10/-0.00	0.70+0.25/-0.10
P0	10P0	A0	B0	K0	T	Tape Material
4.00±0.10	40.00±0.20	0.95±0.10	1.82±0.10	0.75±0.10	0.22±0.05	塑带 plastic carrier tape

② 带轮尺寸 Dimensions of Reel

Unit: mm



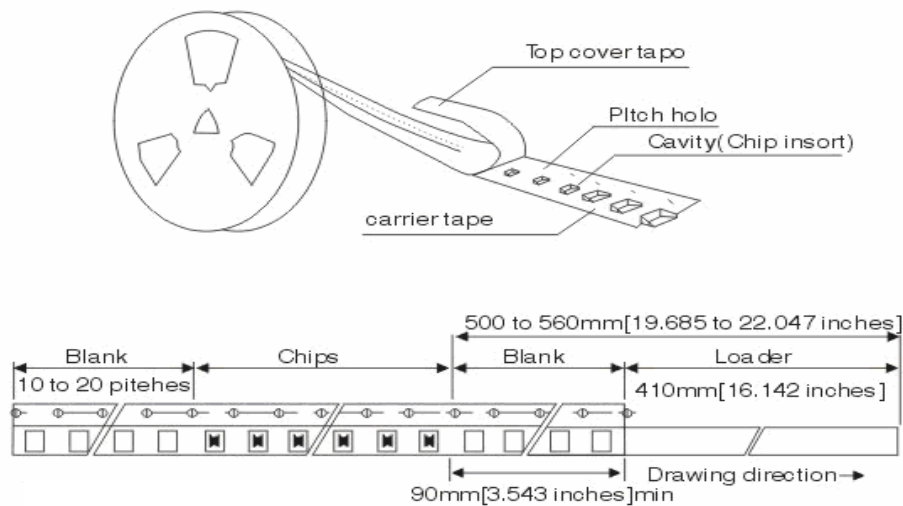
Reel material: PS (Polystyrene)

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:

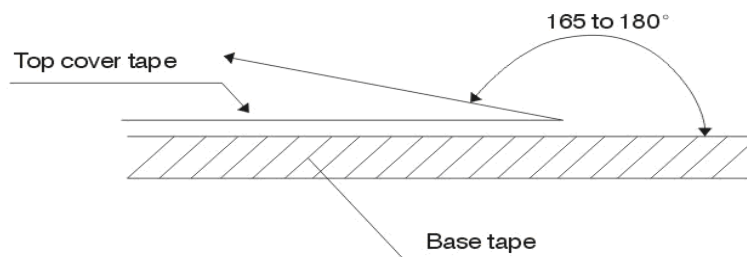
载带 Carrier tape	10N or more (1kgf or more)
上盖带 Cover tape	5N or more (1kgf or more)

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



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 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: 4000 PCS / Reel

10 装箱清单及标志 Packing documents and marking

1. 包装文件 Packing documents

Packing includes the following:

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

2. 盘上标记 Marking on reels:

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

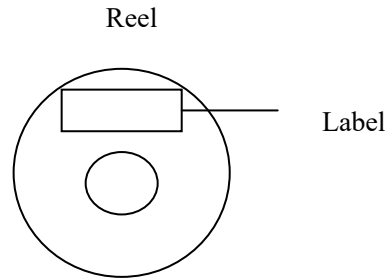
以上内容必须在标签上注明.All above shall be shown on marking label

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

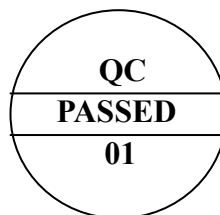
MICROGATE		
CUSTOMER:	P. O. NO	
CUSTOMER PART NO:	DATE CODE	LOT NO
MG PART NO:	QUANTITY	INSP. NO

||||| ||||| ||||| |||||

MG PART NO



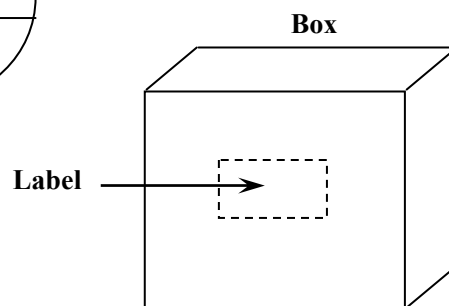
检验合格后,检验员在标签上盖上合格章。合格章如下所示: The eligible reels will be pressed a mark onto the surface. The mark will be as following:



3. 内包装盒标记:Marking on inner box

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

以上内容必须在标签上注明(标签见 10.2 所示)。Above shall be shown on marking label (The marking label is shown in item 10.2).



4. 外包装箱标记 Marking on outer case:

深圳市麦捷微电子科技股份有限公司

地址: 深圳市坪山新区坪山大道 6075 号龙田科技园二巷 6 号

电话(Tel): 0755-28085000

传真(Fax): 0755-28085605

邮编(Postcode): 518118

1) 制造商 Manufacturer: “MICROGATE” ①

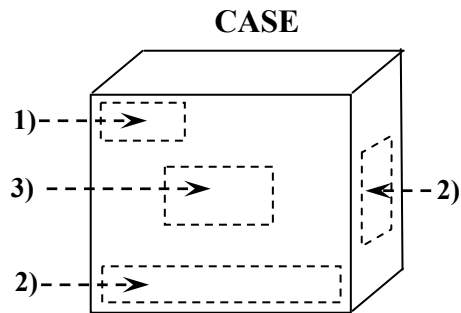
“中国深圳制造” “Made in Shenzhen CHINA”②

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 10.2 所示)

All above shall be shown on marking label.

(The marking label is shown in item 10.2)

11 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.