



BOSIN HOLDINGS LTD

DONGGUAN BOSIN ELECTRONICS CO.LTD

承認書 FOR APPROVAL

客戶名稱 Customer's Name: ELECTRONICS SOURCE CO., LTD

客戶料號 Customer's No: _____

客戶確認回復 Customer Approval Status:

簽核 Signature:

合格 PASSED

拒收 REJECTED

如蒙承認請簽核後回傳，謝謝！ Please signed and fax back to us to signify your acceptance, Thanks!

機種類別 編碼器 電位器 開關

Product: ENCODER VR SWITCH

產品型號:

Our Part No: RE1202-24P2-F25-019

製造批號:

Sample lot No: _____

送樣日期:

Sample Date: _____

本承認書由以下內容組成

This Specification is composed of under mentioned

1. 產品外形圖

Product external dimensions

2.. 電氣特性

Electrical characteristics

3 機械特性

Mechanical characteristics

4 輸出曲線圖

Output graph

承辦 Prepared By	校對 Checked By	審核 Approved

摘要 Note

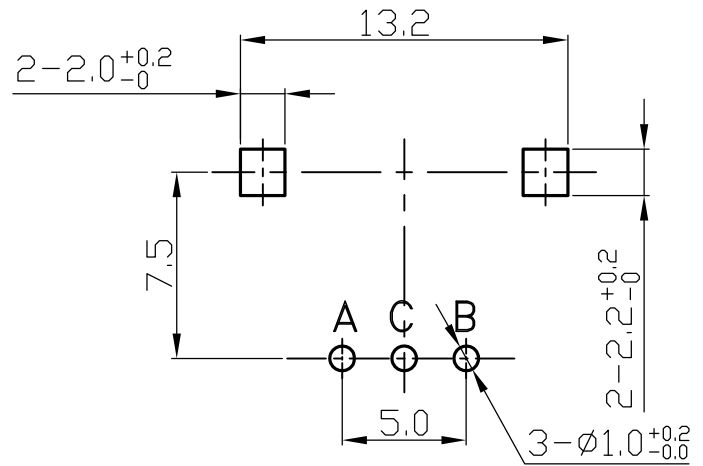
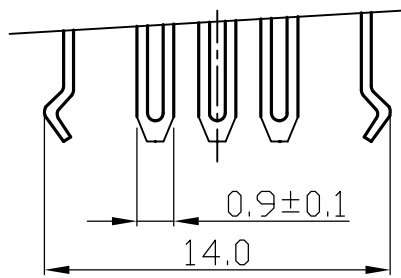
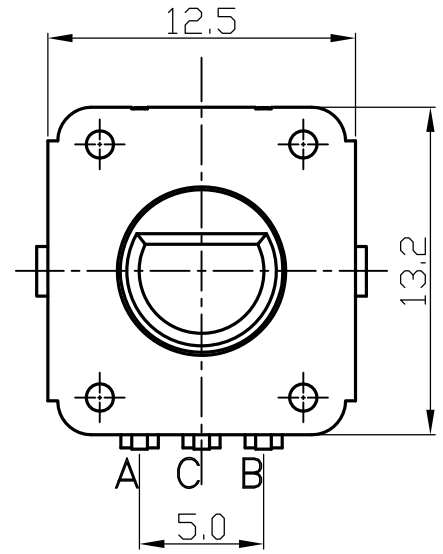
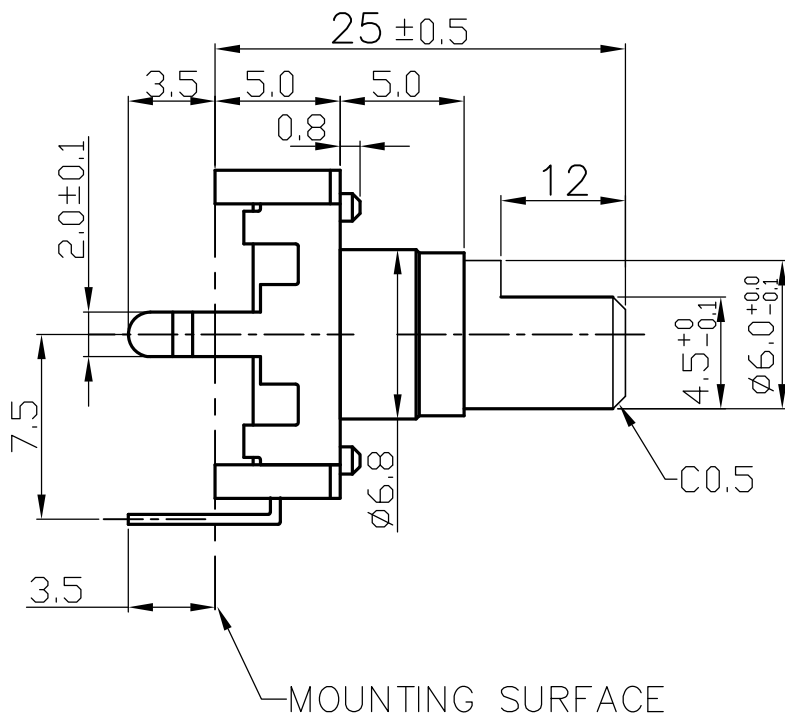
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P.C.B MOUNTING HOLE DETAIL

03			DONGGUAN CITY BOSIN ELECTRONICS CO.,LTD		
02					
01					
00			NAME	RE1202-24P2-F25-019	
NO	DATE	DESCRIPTION	DRAWING NO		
SCALE		TOLERANCE			
UNIT	mm	L ≤ 10 ± 0.3	DRAWN BY	CHECK BY	APPROVED BY
		10 < L ≤ 30 ± 0.5			
		30 < L ≤ 100 ± 1.0			
		ANGLE ± 5°			

1、General 一般事项

1-1、Scope 适用规格

This specification applies to 12mm size low-profile thin rotary encoder (incremental type) for microscopic current circuits used in electronic equipment.

本规格书适用于电子设备用微小电流回路12型回转式编码器。

1-2、Standard atmospheric conditions标准状态

Unless otherwise specified ,the standard range of atmospheric conditions for making measurements and test is as following limits:

除另有规定外，测量应在以下状态下进行：

Ambient temperature温度：15°C to 35°C

Relative humidity相对湿度：25% to 85%

Air pressure气压：86kPa to 106kPa

1-3、Operating temperature range

使用温度范围：-10°C to 70°C

1-4、Storage temperature range

保存温度范围：-40°C to 85°C

2、Construction 构造

2-1 Dimensions 尺寸

Refer to attached drawing 见所附成品图

3、Rating 额定值

3-1、Rated voltage 额定电压: DC 5V

3-2、Maximum operating current (resistive load)最大额定电流（阻抗负载）

Each lead 各相导线：0.5mA (MAX 5mA; MIN 0.5mA)

Common lead 公共导线：1mA (MAX 10mA; MIN 0.5mA)

4、Application Notes 使用上的事项

4-1、Avoid storing the products in a place at high temperature, high humidity and in Corrosive gases. Please use this product as soon as possible with 6 months limitation . If any remainder left after packing is opened, please store it with proper moistureproofing, gasproofing etc.

避免储藏于高温, 潮湿及腐蚀的场所. 产品购入后尽可能在6个月内使用完. 拆包装后未使用完的剩余产品需储藏于防潮防毒的环境下.

4-2、The encoder pulses count method should be designed with taking operating speed ,sampling time and design of the microcomputer software into cosideration.

编码器信号的计算方法应将操作的速度, 信号的取样时间及电子回路中的微电脑软件等考虑进去.

4-3、With this products ,detent positon will always be aligned with A-OFF phase. Therefore make the A phase the reference at the soft ware design stage.

此产品在定位点状态时A相波形是处于OFF状态, 因此在设计软体时请留意此现象.

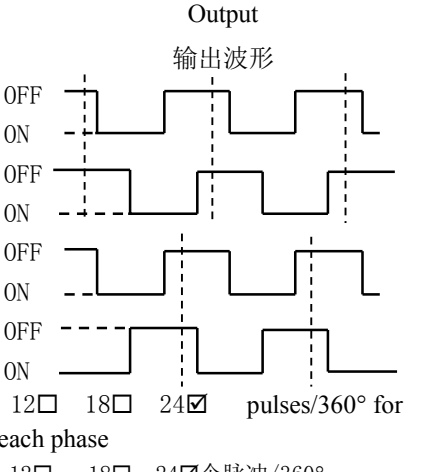
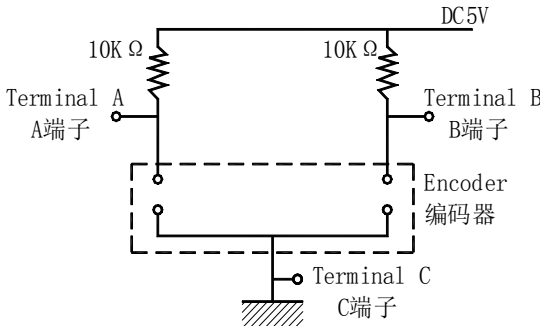
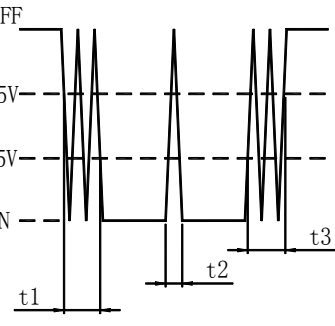
4-4、At design of the pulse count process. Using the C/R filter circuit is Recommended.

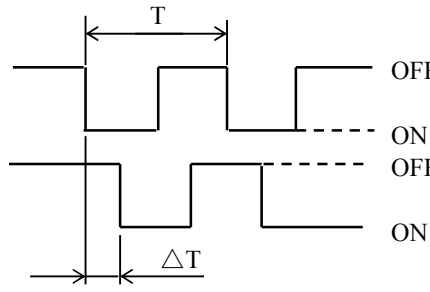
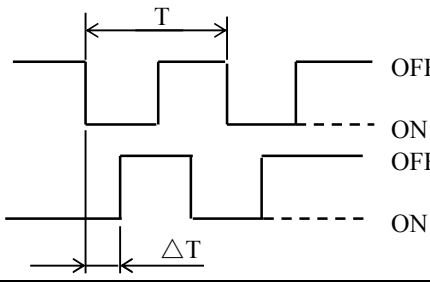
在设计时要考虑到杂讯, 建议使用C/R滤波电路.

4-5、Care must be taken not to expose this product to water or dew to prevent possible problem in pluses output waveform.

本产品请勿碰触到水, 可能会导致输出波形的异常.

5、 ELECTRICAL CHARACTERISTICS 电气性能

ITEM 项目	CONDITIONS 条件	SPECIFICATIONS 规格
<p>5-1、 Output signal format 输出信号</p> <p>5-2、 Resolution 分解能力</p>	<p>Note: Output signal is 1 pulse per 1 detent. And terminal A-C is pulse OFF at detent position. No specified output of terminal B-C at detent position. 注意事项：输出信号方式是1个定位1个脉冲。在定位点位置时A-C端子处于OFF状态，而B-C端子间不作特定要求。</p> <p>Shaft rotational direction 轴回转方向</p> <p>C.W. 顺时针方向</p> <p>C.C.W. 逆时针方向</p> <p>Signal 信号</p> <p>A(Terminal A-C) A(A-C端子间)</p> <p>B(Terminal B-C) B(B-C端子间)</p> <p>A(Terminal A-C) A(A-C端子间)</p> <p>B(Terminal B-C) B(B-C端子间)</p> <p>Number of pulses in 360° rotation. 回转360°的输出脉冲数。</p>	<p>2 Phase-different signals (signal A, signal B) Details shown in 〈fig.1〉 (The broken line shows detent position.) A、B两信号输出相位差,输出波形详见(图1)。虚线表示带卡点装置的上擎子处位置。</p> <p>Output 输出波形</p>  <p>12 <input type="checkbox"/> 18 <input type="checkbox"/> 24 <input checked="" type="checkbox"/> pulses/360° for each phase 12 <input type="checkbox"/> 18 <input type="checkbox"/> 24 <input checked="" type="checkbox"/> 个脉冲/360°</p>
<p>5-3、 Switching characteristics 开关特性</p>	<p>Measurement shall be made under the condition as follows. 1)Shaft rotational speed : 360°/S 2)Test circuit : (fig.2) 下(图2)所示回路,轴以360°/秒的速度回转测定。</p>  <p>(Note) Code-OFF area :The area which the voltage is 3.5V or more. Code-ON area :The area which the voltage is 1.5V or less. (注) 编码器OFF指输出电压3.5V以上的状态。 编码器ON指输出电压1.5V以下的状态。</p>	<p>〈fig.3〉 图3</p> 
<p>5-3-1、 Chattering 振荡</p>	<p>Specified by the signal's passage time from 1.5V to 3.5V of each switching position (code OFF~ON or ON~OFF) 编码从OFF → ON 或 ON → OFF时, 输出1.5V~3.5V通过的时间应符合规定。</p>	<p>On the case within detent, B signal will be irregular oscillation.带卡点时,在卡点位置上的B信号振荡无规定。 $t1, t3 \leq 3mS$</p>
<p>5-3-2、 Sliding noise (Bounce) 滑动杂音(突跳)</p>	<p>Specified by the time of voltage change exceed 1.5V in code-ON area. When the bounce has code-ON time less than 1mS between chattering (t1 or t3),the voltage change shall be regarded as a part of chattering. When the code-ON time between 2 bounces is less than 1mS,they are regarded as 1 linked bounce. 编码ON部分的1.5V以上的电压变动时间在振荡t1,t3之间会产生1毫秒以上1.5V以下的ON部分. 另外, 如果各突跳间1.5V以下的范围在1毫秒以上时,则判定为另一个突跳。</p>	<p>$t2 \leq 2mS$</p>

5、ELECTRICAL CHARACTERISTICS 电气性能		
ITEM 项目	CONDITIONS 条件	SPECIFICATIONS 规格
5-3-3、Sliding noise 滑动噪音	The voltage change in code - OFF area. 编码OFF部分的电压变动。	3.5V MIN 3.5V 以上
5-4、Phase difference 相位差	<p>Measurement shall be made under the condition which the shaft is rotated in contant speed.以固定的速度操作轴进行回转。 (Fig.4)图4</p> <p>C W 顺时针方向 A信号(A~C间) Signal A</p>  <p>B信号(B~C间) Signal B</p> <p>C C W 逆时针方向 A信号(A~C间) Signal A</p>  <p>B信号(B~C间) Signal B</p>	<p>$\Delta T=0.25\pm 0.17T$</p> <p>In(fig.4) 见图4</p>
5-5、Insulation resistance 绝缘电阻	Measurement shall be made under the condition which a voltage of 50V DC 1min is applied between individual terminals and bushing. 在端子和安装板间施加电压 50V DC 1分钟。	Between individual terminals and bushing 10MΩ MIN. 端子安装板间电阻10MΩ以上。
5-6、Dielectric strength 耐电压	A voltage of 50V AC shall be applied for 1 minute between individual terminals and bushing. 在端子和安装板间施加 AC 50V电压1分钟。	Without arcing or breakdown. 不得有绝缘破坏。
6 Mechanical characteristics 机械性能		
6-1、Total ratational angle 全回转角度		360°(Endless) 360°(无止挡点)
6-2、Detent Torque 定位点力矩	Only suitable for C.C, equipment. 只适用于附卡点装置	30~200gf.cm
6-3、Number and position of detent 定位点数及位置	Only suitable for C.C, equipment. 只适用于附卡点装置	<input type="checkbox"/> 12 detents(Step angle:30°±3°) 12点定位 (间隔角度 30°±3°) <input type="checkbox"/> 18 detents(Step angle:20°±3°) 18点定位 (间隔角度 20°±3°) <input checked="" type="checkbox"/> 24 detents(Step angle: 15°±3°) 24点定位 (间隔角度 15°±3°)
6-4、Push-pull strength of shaft 轴推拉强度	Push and pull static load of 10kgf.cm shall be applied to the shaft in the axial direction for 10S.(After soldering of the PC board) 在轴端,沿轴向施加10kgf. cm的静负荷力推和拉各10秒钟 (焊锡固定在PCB上)。	Without damage or excessive play in shaft No excessive abnormality in rotational feeling.And electrical characteristics shall be satisfied. 轴无破损,回转无异常;电气性能无异常。
6-5、Terminal strength 端子强度	A static load of 3N(0.31kgf) shall be applied to the tip of terminals for 10S in any direction. 端子前端的任意方向施加3N(0.31kgf)的静负荷力10秒钟。	Without excessive play in terminal or poor contact. 端子不得有明显松动及接触不良。
6-6、Shaft wobble 轴摆动	A momentary load of 0.51Kgf.cm shall be applied at the point 5mm from the tip of the shaft in a direction perpendicular to the axis of shaft. 在轴前端5mm处,沿径向瞬间施加0.51Kgf.cm的力。	1.0x L / 30mm p-p MAX(L:shaft length) 1.0 x L / 30mm p-p 以下 (L:安装长度)
6-7、Nut tightening strength 螺母紧固强度	此项不适用	≥8.0kgf.cm

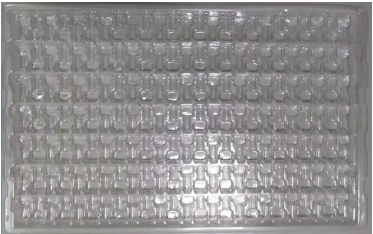
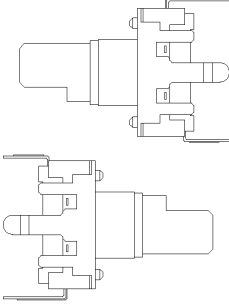
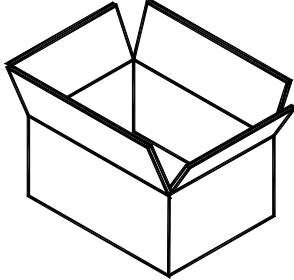
6 Mechanical characteristics 机械性能		
ITEM 项目	CONDITIONS 条件	SPECIFICATIONS 规格
6-8、Side thrust strength of shaft 轴的垂直押引强度	A load of 20N(2.04Kgf) shall be applied at the point 5mm from the tip of the shaft in a direction perpendicular to the axis of shaft for 10S. 在轴前端5mm处加20N(2.04Kgf)的静负荷力10秒钟.	Without excessive play of bending in shaft. No mechanical abnormally. 轴不得有明显松动及接触不良.
6-9、Shaft play in rotational wobble 轴的回转方向摆动	Testing by angle board. 用角度板测定.	4° MAX 4° 以下
7 Endurance characteristics 耐久性能		
7-1、Rotational life 回转寿命	The shaft of encoder shall be rotated to 30,000 cycles at a speed of 600~1000 cycles/H without electrical load,after which measurements shall be made. 在无负荷条件下轴以600~1000周/小时速度回转30,000周。	Chattering t1,t3≤5mS 振荡 t1,t3≤5mS Bounce t2≤3mS 突跳 t2≤3mS Torque: Relative to the previously specified value: -50%~+10% 力矩: 为原始规格值的-50%~+10%
7-2、Brine test 盐雾试验	The encoder shall be stored at condition of brine gas 5% as volumetric concentration,temperature of 40±2°C for 48±2 h in a thermostatic chamber. And the encoder shall be subjected to standard atmospheric conditions for 1.5 h, after which measurements shall be made. 温度 40±2°C, 在装有浓度为5%的盐水气体的恒温恒湿槽中放置 48±2小时后, 在常温、常湿中放置1.5小时后测试。	No substantial abnormality observed , no corrosion on the metal surface. 外观无明显异常, 金属表面无生锈。
7-3、Damp heat 耐湿性	The encoder shall be stored at temperature of 40±2°C with relative humidity of 90% to 95% for 96±4H in a thermostatic chamber .And the encoder shall be subjected to standard atmospheric conditions for 1.5H, After which measurements shall be made. 温度40±2°C,湿度90~95%的恒温恒湿槽中放置96±4小时后,在常温、常湿中放置1.5小时后测试.	Specifications in clause all items is shall be satisfied. 所有项应满足初期规格
7-4、Dry heat 耐热性	The encoder shall be stored at a temperature of 80±3°C for 240±10H in a thermostatic chamber.And then the encoder shall be subjected to standard atmospheric conditions for 1.5H .After witch measurement shall be made.温度80±3°C的恒温箱中放置240±10小时,常温、常湿放置1.5小时后测试.	Specifications in clause all items is shall be satisfied. 所有项应满足初期规格
7-5、Cold 低温特性	The encoder shall be stored at a temperature of -40±3°C for 240±10H in a thermostatic chamber.And then the encoder shall be subjected to standard atmospheric conditions for 1.5H .After witch measurement shall be made .温度-40±3°C的恒温箱中放置240±10小时,常温、常湿放置1.5小时后测试.	Specifications in clause all items is shall be satisfied. 所有项应满足初期规格
7-6、Solder ability 焊锡性	The terminals shall be immersed into solder bath at 260°C±5°C for 3s±0.5s in the same manner as para. 端子在260° C±5°C温度的焊锡槽内浸锡3秒±0.5秒。 Manual soldering手工焊接 Bit temperature of soldering iron: 300°C less than Application time of soldering iron: within 3s 温度300°C以下, 时间3秒以内。	A new uniform coating of solder shall cover 75% minimum of the surface being immersed. 浸渍面须有75%以上焊锡附着
7-7、Resistance to Soldering heat 耐焊接热	Dip soldering槽焊 Printed wiring board : single-sided copper clad laminate board with thickness of 1.6mm. 使用基板: t=1.6mm的单面覆铜板。 Preheating : 1、Surface temperature of board: 100°C or less. 2、Preheating time : within 1 min. 预热: 基板表面温度100°C以下, 时间1分钟以内。 Soldering : Solder temperature : 260±5°C or less Immersion time :within 3S 焊接: 温度260±5°C或以下, 时间3秒以内。	Electrical characteristics shall be satisfied No mechanical abnormality. 不得有绝缘体的破损、变形、接触无异常。

Push switch portion 推动开关部分		
Note: The following specification is only suitable for the one type with switch construction of RE12 encoder series. 注：以下规格只适用于此 RE12编码器系列带开关结构。		
1-1、Rated capacity (Resistance load): DC 5V 10mA (1mA MIN) 额定容量（电阻负荷）：DC 5V 10mA (1mA 以上)		
1-2 Electrical characteristics 电气性能		
ITEM 项目	CONDITIONS 条件	SPECIFICATIONS 规格
1-2-1、Contact resistance 接触电阻	Voltage step-down test at DC 5V 1mA 用DC 5V 1mA 电压降下法测定.	100mΩ MAX 100mΩ 以下
1-2-2、Chattering 振荡	Switch is operated at the rate of 1 cycle 1 sec .The 1 cycle shall be OFF-ON-OFF 以1秒钟1往返（OFF-ON-OFF）操作开关.	10ms MAX 10ms 以下
1-2-3、Insulation resistance 绝缘电阻	Measurement shall be made under the condition which a voltage 50V DC 1min±5S is applied between individual terminals and bracket 在端子与安装板间施加电压DC 50V 1分钟±5秒。	Between individual terminals and bracket 10MΩ MIN. 在端子安装板间10MΩ以上
1-2-4 Dielectric strength 耐电压	A voltage of 50V AC /min or 60 V AC /2S(leak current 1mA) be applied between individual terminals and bracket.在端子与安装板间施加AC 50V 1分钟或AC 60V 2秒钟（漏电流1mA）	Without arcing or breakdown. 不得有绝缘损坏。
1-3 Mechanical characteristics 机械性能		
1-3-1、Switch circuit and number of pulse 开关电路、接点数		Single pole and single throw (push on) 单极单投（推ON）
1-3-2、Travel of switch 开关移动量		0.5 ^{+0.4} _{-0.3} mm
1-3-3、Operating force of switch 开关作动力		450±200gf
1-4 Endurance characteristics 耐久性能		
Push operating life 寿命特性	The encoder's shall be pushed to 20,000 cycles at a speed of 500/H without electrical load.(shaft push load: 1kgf.cm max.) 在无负荷条件下,对轴以每小时500次的速度推动20,000次,（轴按压力1kgf. cm以下）.	Contact resistance : 200mΩ max. Specification in clause 1-2-2~4,1-3-1~2 shall be satisfied. Operating force: 80% of initial value. 接触电阻 : 200mΩ 以下. 1-2-2~4,1-3-1~2 满足初期规格. 开关动力为寿命前的80%.

PACKING SPECIFICATION 包装规格

1. Plastic Board for ea 吸塑板装	175pcs per Board. 每板175pcs
2. Outer carton : 外箱 Outer dimension 外箱尺 Max. Quantity最大数量	46X28X30cm 3500pcs per carton (175pcs x20boards)
3. Marking标签 : Plastic Board for each pie 吸塑板装标签 Outer carton :	<p>A packaging label be attached to the surface of polythylene bag which include the Following 标签放于吸塑板表面, 其内容如下:</p> <p>1) TYPE品名规格 2) PART NO. 客户料号 3) QUANTITY 数量 4) DATE 日期 5) LOT NO.制造批号 6) QC. PASSED QC合格章</p> <p>A packaging label indication following information shall be attached to the side of the inner cartons 标签贴于外箱一侧,内容如下:</p> <p>1) CUSTOMER客户名称 2) CUSTOMER P/N客户料号 3)MODEL 型号 4) QUANTITY 数量 5)REMARKS备注 6) INPORT DATE入库日期 7)CHECKER核货人签名 8) C/NO.箱号</p>

4. Rough sketches of each package 包装略图

Plastic Board 吸塑板	排板示意图	Outer carton 外箱
		

					DOCUMENT NO.文号:
					版本号: 00
					文控编号:
DESCRIPTION	DATE				