	SPECIFICATION	PRODUCT	SMT VIBRATOR MOTOR
		MODEL	LD-SM-430
		REVISION NO.	REV.01

立得微电子（惠州）有限公司
Leader Micro Electronics (Huizhou) Co., Ltd.

产品规格说明书

PRODUCT SPECIFICATION

客户信息 Customer Information	客户名称/Customer	
	客户料号/Part No.	
	客户承认签/Customer Approved Signatures	

产品信息 Product Information	文件编号/Spec No.	LEADER-SM-430	
	品名/Description	SMT Motor	
	规格型号/Model	LD-SM-430	
	日期/Date	2024.02.21	
	编制/Designed	审核/checked	批准/Approved
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1.应用/ Applications

本规格书适用于 LEADER 公司提供的 LD-SM-430 型直流铁芯振动电机。

This specification can apply to model LD-SM-430 DC core vibration motor, provided by LEADER.

2.结构形式 Construction-form



No	项目/Item	规格/Specifications
2-1	电机结构 Motor construction	4mm*3.6mm*11mm 的铁芯贴片马达 4mm*3.6mm*11mm cylindrical core SMT motor
2-2	磁极极数 Number of magnet poles	2 极(磁钢内置) 2-poles (inner magnet type)
2-3	换向方式 Rectifying method	金属电刷换向器装置 Metal brush and commutator

3.使用条件/Standard Operating conditions

No	项目/Item	规格/Specifications
3-1	额定电压/Rated voltage	2.7V
3-2	工作电压范围/Operating voltage range	2.3-3.2V DC
3-3	电机位置/Motor position	任意位置/All position
3-4	额定负荷/Rated Load	振子(R1.7 T=2.8)eccentric weight
3-5	旋转/Rotation	C.W
3-6	环境/Operating environment	-20°C~+70°C(0~95%RH)
3-7	储存环境/Storage environment	-40°C~+85°C(0~95%RH)



4.测试条件/Measuring conditions

No	项目/Item	规格/Specifications
4-1	常温/Normal temperature	20°C±2°C
4-2	正常湿度/Normal humidity	65±5%
4-3	电机体位 Motor Position	轴伸水平 Shaft Horizontal
4-4	电源 Power Supply	直流稳压电源 DC Power Supply DC2.7V±2%

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5.机械特性/Mechanical characteristics

No	项目/Item	规格 Specifications	条件/Conditions
5-1	外观/Appearance	目测/Visual	无划痕、锈迹、污渍和凹痕/No scar, rust, stain and dent
5-2	重量/Weight	0.6g(Approx)	架盘天平 精度 0.1g Plate balance 0.1g
5-3	振子固定力 Holding strength Of eccentric weight	50N (5.6kgf) Min	测力计 Pulling force testing machine
5-4	轴向间隙 Axial play of shaft	(0.05- 0.3) mm	
5-5	振动量 Vibration acceleration	$\geq 0.4G$	 <p>(测试方法: 将夹具放在海绵上, 测试马达固定在夹具上位置, 转轴与顶面平行; 传感器固定在夹具底面。2.7V 驱动马达, 起振 5S 后, 用加速度测量仪读取数值。/Place the fixture on the sponge, and fix the test motor on the top surface of the fixture, with the rotating shaft perpendicular to the top surface; fix the sensor in the bottom of the fixture. 2. 2.7V drive motor, 5 s after vibration, use acceleration meter to read the value.)</p>
5-6	机械噪音 Mechanical noise	50dB Max (Background noise: 25dB Max)	<p>Measure at rated voltage and rated load (counterweight), according to shaft direction the distance between microphone and motor is 10cm.</p> 



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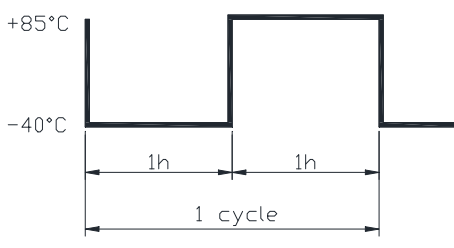
6.电气性能/Electrical characteristics

No	项目/Item	规格/Specifications
6-1	额定电压/Rated voltage	2.7V
6-2	额定电流/Rated current	85mA Max
6-3	额定转速/Rated speed	14000±2500rpm
6-4	堵转电流/Stall current	95mA Max
6-5	启动电压/Starting voltage	2.3V Max
6-6	终端电阻/Terminal resistance	32±6Ω
6-7	绝缘电阻/Insulation resistance	1MΩMin (在 50V DC 下)

7.可靠性试验/Reliability test



No	项目/Item	规格/Specifications	判断基准 Requirements
7-1	寿命测试 Life test	电压/Voltage: 2.7VDC 负荷/Load: 振子/ eccentric weight (R1.7 T=2.8 约 0.24g) 温度/Temperature: 20±2°C 相对湿度/Relative humidity: 60~70%RH 将马达固定在试验台上(轴向) Lock the motor in a test fixture(Shaft horizontal) 试验方法 1/Test mode1:连续运转至少 10 小时 /10hrsnet running time 试验方法 2/Test mode2:一个周期, 开 2.5 秒, 关 2.5 秒; 共 200000 个周期 1cycle, 2.5sec ON, 2.5sec OFF; 200000 cycles totally	在常温常湿下放置 4h 后, 马达应符合 8-1、8-2 的要求。 After 4 hours exposure in ordinary temperature and humidity, Motors shall be approved as specified in item 8-1、8-2
7-2	低温储存 Low temperature	温度/Temperature: -40±5°C; 时间/Time: 96h 湿度/Humidity: 常湿/ Ordinary Humidity	
7-3	高温储存 High temperature	温度/Temperature: +85±5°C; 时间/Time: 96h 湿度/Humidity: 常湿/ Ordinary Humidity	

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7-4	湿度测试 Humidity test	温度/Temperature: +40±5°C; 时间/Time: 96h 湿度/Humidity: 90±5%RH	
7-5	热冲击试验 Thermal Shock test	温度 Temperature : -40°C~ 85°C 时间 Time: 2h 循环周期数 Circle cycle: 30cycles 	测试结果应符合项 8-1、8-2 的要求。 After the test motors shall be approved as specified in item 8-1、8-2.
7-6	振动 Vibration	全振幅 /Displacement :1.5mm (p-p) 频率/Frequency:10 to 55Hz 周期/Period :20min 范围内 (10~55~10Hz) /20 Minutes log sweep(10~55~10Hz) 方向/Direction:x、y、z 时间/Time:每 2h/Each 2 hours	
7-7	跌落试验 Drop test	方向 Direction: x,y,z 高度 High: 1.5m 跌落次数 Times: 每个方向各 2 次/2 times each direction 试验状态: 将电机放在重约 100 克的刚性较好的塑料盒子里, 自由地跌落至混凝土地面上 Test state: The motor is set into a rigid cubic plastic housing approximately weight 100g and fall free on the concrete floor	测试结果应符合项 8-1、8-2、8-3 的要求。 After the test motors shall be approved as specified in item 8-1、8-2、8-3.

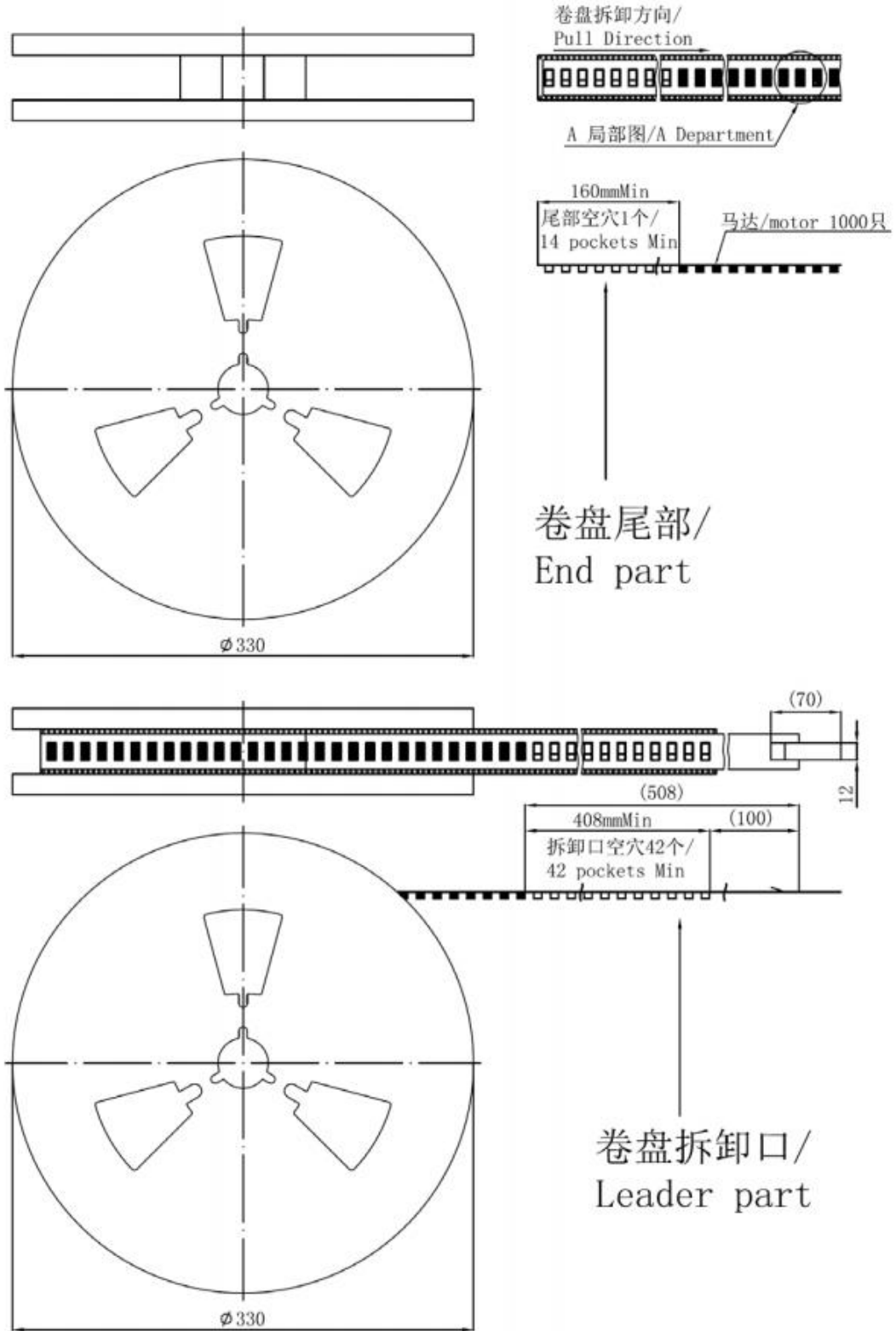
8.可靠性试验后要求/Requirement After Reliable Test



No	项目/Item	规格/Specification
8-1	额定转速/Rated speed	初始值/Initial data±30%
8-2	额定电流/Rated Current	初始值/Initial data±35%
8-3	启动电压/Starting voltage	≤ 2.3V

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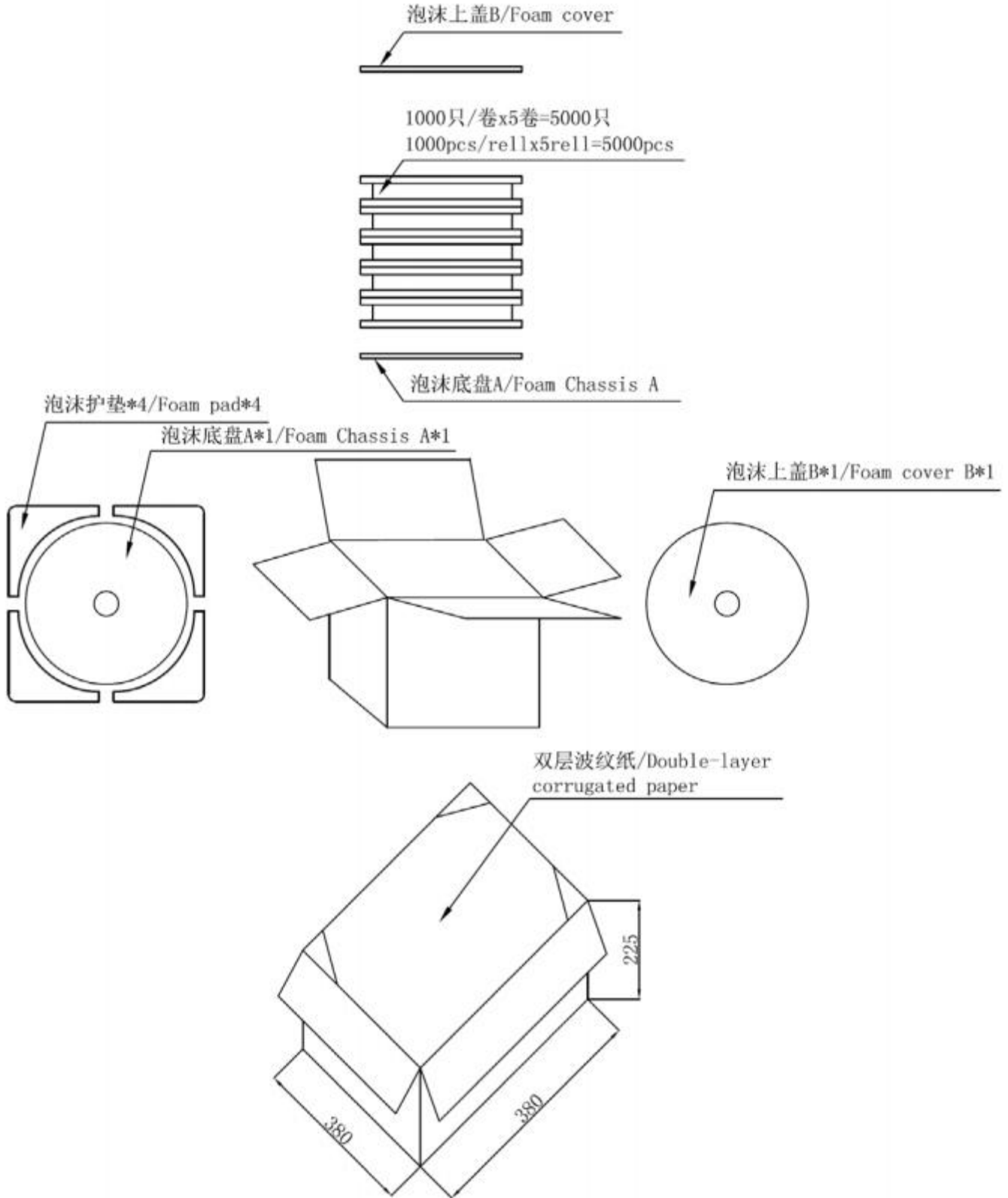
9.包装 Packing



9-1 卷盘包装 Reel Packing



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9-2 最终包装 Final Packaging



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10. 注意事项/ Cautions

10-1 使用容差 ALLOWABLE RANGE FOR USE

注意电压及电流的使用范围，并且在本标准规定情况下使用电机，否则将相应降低电机的使用寿命和性能。

Pay attention to voltage and current ranges for use ,and use the vibration motor in the condition accordance with this specifications ,or the life and performance should be considerably reduced.

10-2 移动电机 MOVE YOUR MOTOR

拿电机时应轻拿轻放,应尽可能地利用外壳部分请勿将其跌落或加以超 5 公斤的压力.否则会引起电机的外部形态和电气特性的改变。

Please deal with the motors gently. you should make use of the outer case as possible as you can.

Do not press the product with more than 0.5 kgf or drop it. It can cause the transformation of performance or external appearance.

电机在运输过程中应小心轻放，避免严重碰撞敲击引起的电机机身和性能受损。

Please lay the motors carefully in transportation to avoid any serious damage to the motor body or its electric function because of collision.

10-3 储存 STORAGE

储存温度：-40°C~85°C

储存湿度：0%RH~95%RH

避免放置在高温、潮湿的环境中。

Storage temperature: -40°C~85°C

Storage relative humidity: 0%RH~95%RH

Avoids storing in high temperature、high humidity

马达应适当的操作、储存和运转环境中均不可存在腐蚀性气体。例如：H2S、SO2、NO2、CL2 等。另外存储环境中不可有诸如硅、氰、甲醛水和苯酚等能放射出腐蚀性气体的物质，在电机的机械构造或装置中，如果存在腐蚀性气体，那么这会引起马达不运转。

For proper operation. storage and operating environment must not contain corrosive gases. For example H2S. SO2. NO2. CL2. etc. In addition storage environment must not have materials that emit corrosive gases especially from silicon. cyanic. formalin and phenol group. In the mechanism or the set. existence of corrosive gases may cause no rotation in motor.

10-4 使用电机 HANDLING OF MOTOR

小心拿取、使用，避免放置在磁性物体附近或接触其表面，这将影响其功效。

注意操作环境，尤其注意若铁粉被磁铁吸附，将出现噪音问题，降低使用寿命。

-to handle and hold the vibration motor case softly. do not bring magnetized object near or contact with the surface of motor to avoid of performance being deteriorated.

-pay attention to the handling and working environments of motor, because such objects as iron powder if attracted by motor magnet, will cause noise characteristic deterioration, thus reducing the reliability.

请勿靠近磁体或有磁场的装置存放或运行电机。

Please do not operate or store the motor near magnet or magnetic devices.

请在 6 个月内使用，请不要在高温、低温、高湿环境下存储。在使用和打开马达外包装时请避免水气凝结。

Make arrangement to limit the storage period to 6 months or less. Please do not store motor in high temperature. Low temperature. high humidity environment. Condensation of atmosphere must be avoided in motor usage or opening the packaging of the motor.

10-5 过负荷 OVERLOADS

请通电后不要长时间堵住机轴，并且马达转动时不要触碰振子。

Please don't stall the shaft for a long time after powering, and not to touch the weight when motor is rotating.

10-6 电机接线 CONNECTION YOUR MOTOR



不论使用任何方式将您的电源连接到您的电机，请注意不能用过大的力或过高的温度，否则会造成电机内部零件变形。

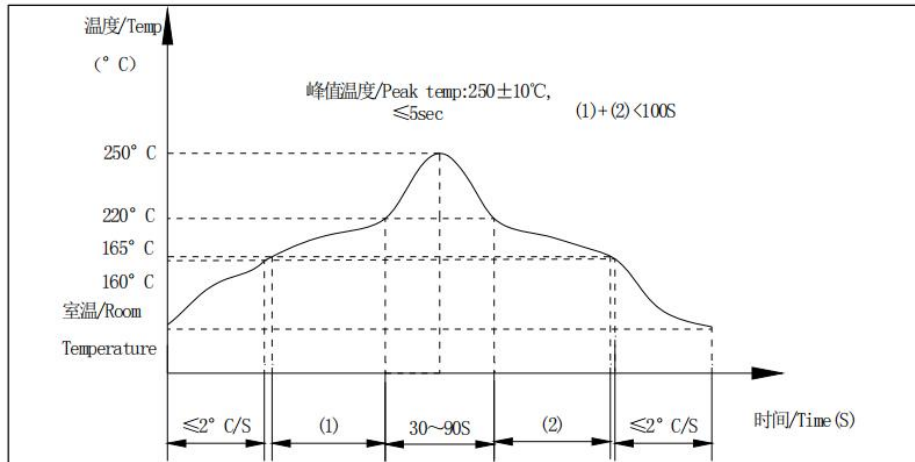
Whatever means you are to use to connect your supply to your motor please take care not to use so much force or heat that you cause distortion to components inside the motor.

(1)电机端子接线： 焊锡温度： 350°C 焊锡时间： 1 秒

Motor terminal: Soldering temperature: 350°C, Soldering time: 1sec.

(2)SMT 温度时间示意图/Reflow temperature-time diagram

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回流焊技术要求/Technical requirements for reflow

焊点最高峰值温度/Solder joint peak value of temperature: 260°C

液态线 (220°C) 以上时间/At the time of liquefaction temperature of more than: 30~90 秒

均温区要求/Average temperature zone requirements: 165°C~217°C <100 秒

预热温区要求/Preheat temperature zone requirements (<160°C): ≤2°C/秒

峰值温升要求/Peak temperature rise required: 1°C~3°C/秒

建议焊锡膏厚度/Suggest solder paste thickness 0.15mm

10-7 危险环境 HAZARDOUS ENVIRONMENTS



我司电机在正常环境中的抗腐蚀能力是符合要求的，但机壳上有少许区域存在的裸露金属对腐蚀比较敏感，因此未经咨询请不要在腐蚀环境中储存或使用电机。

The degree of protection against corrosion on KOTL motors is satisfactory only for normal environments. There are small sections of the housing in which some bare metal is exposed and is susceptible to corrosion. It is advisable not to store or use motors in corrosive environment without consultation with KOTL.

10-8 其它说明 OTHER

马达轴向间隙处不应有杂物（如颗粒、纤维物、头发、胶带、胶水等）

There should be no sundries (such as grain, fibre, hair, small tape, glue etc.) in the shaft end play.

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11. 电机外形图/Motor outline drawing

