

规格书

SUBMISSION OF SPECIFICATION

产品名称 (PRODUCT NAME): 步进电机

产品型号 (PRODUCT MODEL): 28BYJ48

客户部品号 (CUSTOMER PART NUMBER): 28BYJ48

编制 DRAWN	校对 CHECKED	审核 APPROVED
产品供货单位 (SUPPLIER):		
产品用户单位 (CUSTMER):		

用户确认 (ACKNOWLEDGEMENT):

于____年____月____日确认此规格书
ACKNOWLEDGEMENT DATE:
 /MONTH /DAY /YEAR

确认人 (ACKNOWLEDGED):

盖 章 (SEALED):

确认记载项目:

AFFIRM THE FOLLOWING ITEMS

1、电性能及参数:

1、ELECTRIC PERFORMANCE AND PROPERTIES

2、机械性能:

2、MECHANICAL PERFORMANCE AND PROPERTIES

3、环境性能:

3、ENVIRONMENTAL PERFORMANCE AND PROPERTIES

4、使用寿命试验:

4、ENDURANCE TEST

5、摩擦耐久试验:

5、FRICTION MECHANISM ENDURANCE TEST

规格书 (Specification)

		编制日期 (ISSUE DATE) : 2011.03.22										
型号 (MODEL)	28BYJ48	图号 (DWG.No.)	28BYJ48									
(1)	电性能及参数 (ELECTRICAL PERFORMANCE AND PROPERTIES)											
1-1	相数 Number of phase	4相 4 phase										
1-2	驱动方式 Drive mode	1-2 相励磁单极驱动 1-2 phase excitation unipolar drive										
1-3	步距角 Step angle (output shaft)	5.625 ⁰ /64 (输出轴), 减速比1/64 5.625 ⁰ /64 (output shaft) ,gear reduction ration1/64										
1-4	电压 Voltage	5VDC(电机端子) 5VDC(motor energized voltage)										
1-5	线圈电阻 Resistance per phase	50 Ω ± 7%/相 25℃ 50 Ω ± 7%/phase at 25℃										
1-6	最大空载牵出频率 Max response frequency	>900pps >900pps										
1-7	最大空载牵入频率 Max starting frequency	>500pps >500pps										
1-8	牵入转矩 Pull in torque	>300gf.cm / 5VDC 100pps >300gf.cm / 5VDC 100pps										
1-9	绝缘电阻 (Insulation resistance) 在引接线和外壳之间施加500VDC, 测得绝缘电阻大于10MΩ。 Insulation resistance between motor leadwire and dead metal parts shall be over 10MΩ measured with 500 VDC megaohmmeter.											
1-10	电气强度 (Dielectric breakdown of insulation) 在引接线和外壳之间施加50/60Hz 500VAC, 时间1分钟, 泄漏电流设置为1mA, (或50/60 Hz 600VAC, 时间1秒钟, 泄漏电流设置为1mA), 应无击穿或闪络。 following condition and requirement. Product shall show no abnormality.											
	<table border="1"> <thead> <tr> <th>Applied voltage</th> <th>Time</th> <th>Leak current</th> </tr> </thead> <tbody> <tr> <td>600 VAC 50/60Hz</td> <td>1 second</td> <td>1 mA</td> </tr> <tr> <td>Or 500 VAC 50/60 Hz</td> <td>1 minute</td> <td>1 mA</td> </tr> </tbody> </table>			Applied voltage	Time	Leak current	600 VAC 50/60Hz	1 second	1 mA	Or 500 VAC 50/60 Hz	1 minute	1 mA
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600 VAC 50/60Hz	1 second	1 mA										
Or 500 VAC 50/60 Hz	1 minute	1 mA										
1-11	电机绕阻温升 (Temperature rise of motor bobbin coil) 电机在5VDC 100HZ, 空载运行条件下, 电机温升达到稳定状态时, 用电阻法测量电机 Temperature rise of motor bobbin coil shall not exceed 60 deg K when operated in 温升应不大于60K。 no load condition at 5 VDC and 100pps (pulse per sec)until temperature rise of. motor bobbin coil gets constant,measured by resistance method.											
(2)	机械特性 (MECHANICAL PERFORMANCE AND PROPERTIES)											
2-1	外观 (Outside view) 电机在规定使用状态下, 应无影响使用的生锈, 变形等缺陷。 Outside view shall be free from any damage and discoloration which may cause failure at rated operating conditions.											

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2-2	电机结构及尺寸 (Motor structure and size) 电机外形, 结构及尺寸应符合图纸要求 Outside view, structure and size shall match the drawing.						
2-3	重量 (Weight) 电机重约45克 Product shall weight about 45 g.						
2-4	输出轴摩擦力矩 (Frictional torque of output shaft) 输出轴摩擦力矩为1000-2000gf.cm. Frictional torque shall be as follows 1000-2000gf.cm						
2-5	噪音 (Noise level) 电机在5VDC/100Hz条件下空载运行, 距电机10cm处测得噪音值不大于40dB (A计权) Noise level of motor shall be less than 40 dB energized with 5 VDC and 100 pps in no load condition, measured 10 cm from motor.						
2-6	输出轴强度 (Shaft Strength) 径向强度 承载2kgf以上历时10秒。 Radial strength more than 2 kgf without failure for 10 sec. 抗拉强度 承载2kgf以上历时10秒。 Pull out strength more than 2 kgf without failure for 10 sec. 抗压强度 承载2kgf以上历时10秒。 Push out strength more than 2 kgf without failure for 10 sec.						
2-7	引出线抗拉强度 (Leadwire pulling strength) 电机和引出线之间 承载大于1kgf历时10秒 (初回, 静负荷) Motor and leadwire more than 1kgf/strand. 引出线和端子之间 承载大于1kgf历时10秒 (初回, 静负荷) Leadwire and connector more than 1kgf/strand.						
2-8	齿轮运行强度 (Gear post strength) 30个循环耐久试验后, 齿轮应无阻滞, 卡死等现象。1个循环包括输出轴以180°/秒的速度正反方向旋转。 Gear post shall withstand without mechanical failure through 30 cycle endurance test. 1 cycle comprised of 180° back and forth rotation of output shaft at speed of 1 second.						
2-9	自定位转矩 (Detent torque) 电机在不通电状态下自定位转矩应大于450gf.cm Static detent torque shall be more than 450gf.cm measured with pulley weight method.						
(3)	环境性能 (ENVIRONMENTAL PERFORMANCE AND PROPERTIES)						
3-1	使用条件 (Operating conditions) 使用条件如下 (Operating condition shall be as follows): <table border="1" data-bbox="485 1765 1331 1850" style="margin-left: 40px;"> <tr> <td>温度 (Temperature)</td> <td>-5°C ~ 40°C</td> </tr> <tr> <td>相对湿度 (Relative Humidity)</td> <td>35% ~ 85%</td> </tr> </table>			温度 (Temperature)	-5°C ~ 40°C	相对湿度 (Relative Humidity)	35% ~ 85%
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	在此条件下, 电机应能满足1-5, 1-9, 1-10, 1-11, 2-1, 2-3, 2-5, 的要求。 Motor shall satisfy requirements in 1-5, 1-9, 1-10, 1-11, 2-1, 2-2, 2-3, 2-5 in operating conditions.						
3-2	保存条件 (Storage conditions) 保存温度-20°C~60°C或 80°C小于48小时 Storage temperature -20°C~60°C.or 80°C, Less than 48H						

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3-3	<p>标准状态如下 (Test conditions shall be as follows) .</p> <table border="1"> <tr> <td>温度 (Temperature)</td> <td>20±2℃</td> </tr> <tr> <td>相对湿度 (Relative Humidity)</td> <td>65±5%</td> </tr> </table> <p>电机在5~35℃，相对湿度为45%~85%RH的环境中测试应能满足1-5, 1-9, 1-10, 2-1, 2-2 These condition is applied to requirements in 1-5, 1-9, 1-10, 2-1, 2-2 and 2-3. 和2-3的要求。 Actual test conditions of 5℃~35℃, 45%~85% applicable as far as test results are reliable.</p>			温度 (Temperature)	20±2℃	相对湿度 (Relative Humidity)	65±5%
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3-4	<p>环境试验 (Environmental test) 环境试验后电机应能满足1-8, 1-10, 2-1, 和2-5, 2-7的要求。 Motor shall satisfy requirements in 1-8 ~ 1-10, 2-1 and 2-5 ~ 2-7 after environmental test.</p>						
3-4-1	<p>耐湿试验 (Humidity test) 电机在温度为40℃，相对湿度为90% ~ 95%的环境中置放48小时，然后取出在常 Motor stored in ambient condition of 40℃ 90%~95% relative humidity for 温下置放30分钟。 48 hours then retrieved and stored in normal ambient condition for 30 minutes.</p>						
3-4-2	<p>耐高温试验 (High temperature storage test) 电机在温度为80℃，相对湿度为90%~100%的环境中置放48小时，然后取出在常 Motor stored in ambient condition of 80℃, less than 50% relative humidity 温下置放30分钟。 for 48 hours then retrieved and stored in normal ambient condition for 30 minutes.</p>						
3-4-3	<p>耐低温试验 (Low temperature storage test) 电机在温度为-20℃，的环境中置放48小时，然后取出在常温下置放30分钟。 Motor stored in ambient condition of -20℃ for 48 hours then retrieved and stored in normal ambient condition for 30 minutes.</p>						
3-4-4	<p>热冲击试验 (Thermal shock test) 5个循环的热冲击试验. 1个循环包括: 在60℃温度下连续置放2小时，然后取 5 cycles of thermal shock cycles. 1 cycle consists of successional storage 出在常温下置放30分钟; 再在-10℃的温度下置放2小时，然后取出在常温下置 in 60℃ for 2 hours, storage in normal conditions, stored in -10℃ for 2 放30分钟 . 电机测试应在电机在常温下置放30分钟后进行。 hours and finally in normal condition again. Measurement shall be made after storage in normal ambient condition for 30 minutes.</p>						
3-4-5	<p>振动试验 (Vibration test) 全振幅2 mm，振动数1000 c. p. m的正弦波，在电机X, Y, Z三个方向分别进行振动， 历 Motor shall withstand vibration test when subjected to a vibration of 1000 时20分钟 . rpm with 2 mm full wave for 20 minutes in three directions respectively.</p>						

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	<p>3-4-6冲击或跌落试验 (Shock or Dropping test) 电机在X, Y, Z三个方向分别承受80g的冲击力各 1次; 或电机在装箱状态下, 从75cm高处, 以 Motor shall withstand without failure when added 80G shock force 1 time, X, Y and Z direction X, Y, Z三个方向各跌落一次, 电机应正常. respectively, or dropped 1 time in X, Y, and Z direction from height of 75 cm to the concrete floor with motor in packaged condition.</p> <p>(4) 寿命试验 (ENDURANCE TEST) 电机在5 VDC 50 Hz, 150 gf.cm 的负荷状态下, 经过10000小时90° 正反方向旋转, 电机应能 Motor shall satisfy requirements in 1-8, 1-9, 1-10 and 2-5 after 10,000 hours of 90° 能满足1-8, 1-9, 1-10 和 2-5的要求, 牵入转矩应能满足 1-8的要求. Back and forth continuous rotation in 150 gf.cm load, 5 VDC, 50 pps. Pull in torque shall satisfy 1-8.</p> <p>(5) 摩擦机构耐久试验 (FRICTION MECHANISM ENDURANCE TEST) 电机输出轴在经过1000次耐久循环试验后, 摩擦力矩在 800-2500gf.cm , 1 个循环包括180°正 Frictional torque of output shaft shall be from 800gf.cm to 2500gf.cm after 1000 cycles 反两个方向旋转 (1个循环约1.5秒) endurance test. 1 cycles consists of 180° back and forth rotation of output shaft and clutch mechanism must be slipped through this test.</p>		



Rated voltage :	5VDC
Number of Phase	4
Speed Variation Ratio	1/64
Stride Angle	5.625°/64
Frequency	100Hz
DC resistance	50Ω±7%(25°C)
Idle In-traction Frequency	> 600Hz
Idle Out-traction Frequency	> 1000Hz
In-traction Torque	>34.3mN.m(120Hz)
Self-positioning Torque	>34.3mN.m
Friction torque	600-1200 gf.cm
Pull in torque	300 gf.cm
Insulated resistance	>10MΩ(500V)
Insulated electricity power	600VAC/1mA/1s
Insulation grade	A
Rise in Temperature	<40K(120Hz)
Noise	<35dB(120Hz, No load, 10cm)
Model	28BYJ-48 – 5V

