

# Wenzhou Super Co M&E CO., LTD

## 产品规格书

### PRODUCT SPECIFICATION

客户名称Buyer Name	
客户料号Buyer Part No.	
客户承认签章 Buyers Approval & Signatures	

文件编号Spec No.		版本	A/1
品名描述 Product Description	圆柱直流马达 Cylindrical DC motor		
型号Part No.	JP12-95F100		
送样日期Date			
设计Designed by	审核Checked by	批准Approved by	
王生	蓝羽	林天癸	
2020.07.01	2020.07.01	2020.07.01	

supercoelectronic.com

## 1. Standard Operating Conditions 标准使用条件

<b>1-1</b>	Rated voltage: 额定电压:	3.0v DC CONSTANT between motor terminals 电机端子间加3.0v DC
<b>1-2</b>	Operating voltage range 使用电压范围	1.0v-4.5v DC CONSTANT between motor terminals 1.0v-4.5 V (电机端子间)
<b>1-3</b>	Rated load 额定负载	Eccenter by pulley load R4.5*5.5偏心轮负载
<b>1-4</b>	Direction of rotation 旋转方向	CW & CCW viewed from protruded shaft side 从轴伸端看进去为顺时针或逆时针方向
<b>1-5</b>	Radial force 径向力	Less than 1N(100g) measured at bearing of protruded shaft side (Distance of both bearings is 11.5mm) 从出力轴端测小于1N(100g).(二轴承间距为11.5mm)
<b>1-6</b>	Operating Temperature Range 使用温度范围	-10°C - +50°C
<b>1-7</b>	Storage Temperature Range: 储存温度范围	-40°C - +85°C
<b>1-8</b>	Motor Position 电机姿势	All direction of protruded shaft 出力轴所有方向

## 2. Measuring conditions 测试条件

<b>2-1</b>	Motor Position 电机姿势	Motor to be held, with shaft horizontally 出力轴水平放置
<b>2-2</b>	Power Supply 电源	Regulated power supply which assures unquestionable measurement 可调节直流稳压电源，确保测量时无疑问
<b>2-3</b>	Environmental Temperature and Humidity 温度和湿度	The test is made in principle of a temperature between 10°C to 30°C, And at relative humidity between 30% and 95%, If the test result is questionable, it shall be judged from the test made at JIS Standard Testing Condition (20°C±2°C, 65%±5%RH) 原则上温度为10°C-30°C，湿度为30-95%。如果测试结果有疑问，则按JIS标准(20°C±2°C, 65%±5%RH)

### 3.Electrical Characteristics 电气性能

3-1	Rated Load Current  额定负载电流	Regulated power supply which assures 3.0V DC,constant between motor terminal,rated load  调节电源使得电机端电压为3.0V DC, 额定负载	380mA max
3-2	Rated Load Speed  额定负载转速	Regulated power supply which assures 3.0V DC,constant between motor terminal,rated load  调节电源使得电机端电压为3.0V DC, 额定负载	9450±1500rpm
3-3	Starting torque  起动力矩	Rated Voltage . by pulley Load  额定电压. 挂法码方式	1.176mN.m (12g.cm) min
3-4	Starting Current  起动电流	Rated voltage , rotor position to be 2/3R (R means the resistance in one pole)  额定电压下,转子位置2/3R处 (R: 极性电阻)	1200mA max
3-5	Starting voltage  起动电压	No load  空载时	1.5v max
3-6	Insulation resistance  绝缘电阻	DC 100V, between motor terminal and motor metal housing.  电机端子和机壳间加100v DC	1.0MΩ min
3-7	Rotor resistance  转子电阻	At +20℃ rotor position to be 2/3R (R means the resistance in one pole)  +20℃时,转子位2/3R处 (R: 极性电阻)	2.7±1.5Ω
3-8	Electrical noise  电气噪音	Motor to be equipped with varistor  电机装有噪音抑制元件压敏电阻器	
3-9	Reference curve  参考曲线	See Fig  见图	

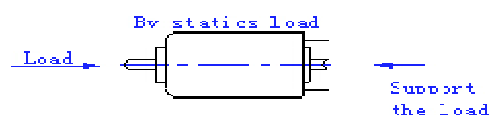
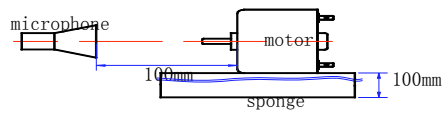
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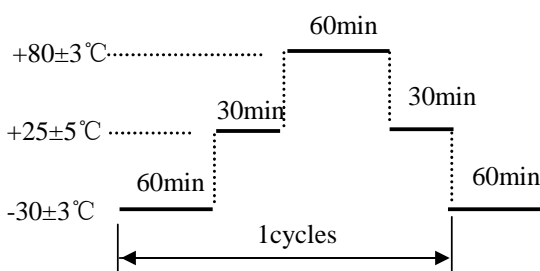
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4、External & Functional Characteristics . 结构及机械性能

<p>4-1</p>	<p>External appearance  外观</p>	<p>Outer dimensions to be within the tolerances specified in the attached Drawing page 13No remarkable deformation or superficial defects to be observed by visual check.  Fastened parts to be fixed firmly 外形尺寸符合附图 P13外观应无明显变形或表面损伤，紧固件应安装牢固。</p>	
<p>4-2</p>	<p>Shaft end play  轴向间隙</p>	<p>End play for thrust direction of protruded shaft 向轴伸方向拉动出力轴</p>	<p>0.05-0.40mm</p>
<p>4-4</p>	<p>Weights 重量</p>		<p>Approx 10.0±0.5g 约10.0±0.5g</p>
<p>4-5</p>	<p>Mechanical Noise  机械噪音</p>	<p>No load、Rated voltage and motor horizontally held, measured by JIS-A (RMS) at 10cm away from metal housing on protruded side, scale, and back ground noise to be 26dB(max),clearance noise when if disappear with 50g radial force onto shaft to be excluded.  额定电压、空载，电机水平放置（见下图）按JIS-A(RMS)测试，测试时排除间隙噪音，方法为在轴上加50g径向力，背景噪音不大于26dB.</p>	<p>60dB max</p>
<p>4-6</p>	<p>Maximum Axial Load 最大轴向力</p>	<p>Direction of static load and support of load as shown below 轴向静推力和支撑位置的方向如图</p>	<p>5kg max</p>



**5. Environmental Tests.环境试验**

<p><b>5-1</b></p> <p>Vibration Test</p> <p>振动试验</p>		<p>All of the specifications in Item 3 and 4 are to be satisfied after motor is subjected to the sine wave of 2 mm p-p amplitude and 16.7 HZ in the three directions for 2 hours each.</p> <p>电机在X、Y、Z三个方向经过双振幅为2 mm,16.7 HZ的正弦波扫描振动各2小时后3和4的性能指标不变。</p>
<p><b>5-2</b></p> <p>Shock Test</p> <p>冲击试验</p>		<p>All of the specification in Item 3 and 4 are to be satisfied after motors subjected to the maximum acceleration 981m/s<sup>2</sup> under interaction item time of 6 ms in X.Y.Z directions for 3 time each.</p> <p>加速度为981 m/s<sup>2</sup>，作用时间6 ms，在X.Y.Z三个方向各作用3次，电机性能3和4的性能指标不变。</p>
<p><b>5-3</b></p> <p>Storage Test under high temperature</p> <p>高温放置试验</p>		<p>All of the specifications in Item 3 and 4 are to be satisfied after motors exposed to +85±2℃ for 250 hours, and then to temperature/humidity of Item 2-3 for 24hours.</p> <p>电机放于+85±2℃环境中250小时，再在常温、常湿下放置24小时，电机性能3和4的指标不变。</p>
<p><b>5-4</b></p> <p>Storage Test under low temperature</p> <p>低温放置试验</p>		<p>All of the specifications in Item 3and 4 are to be satisfied after motors exposed to -40±3℃ for 96hours, and then to temperature / humidity of Item 2-3 for 24 hours.</p> <p>电机放于-40±3℃环境中96小时，再在常温、常湿下放置24小时，电机性能3和4的指标不变。</p>
<p><b>5-5</b></p> <p>Under high temperature / humidity</p> <p>高温、高湿放置试验</p>		<p>All of the specifications in Item 3and 4 are to be satisfied after motors exposed to +60±2℃ / 90%-95% RH for 168 hours, and then to temperature / humidity of Item 2-3 for 24 hours.</p> <p>电机放于+40℃相对湿度为90%的环境中168小时，再在常温、常湿下放置24小时，电机性能3的4的指标不变。</p>
<p><b>5-6</b></p> <p>Shocked testby low / high temperature</p> <p>高温低温放置试验</p>		<p>All of the specifications in Item 3 and 4 are to be satisfied after motors exposed to 100 cycles at duty cycle of temperature (as sketched) and then to temperature /humidity of Item 2-3 for 24 hours.</p> <p>电机在下列周期条件下经过100个周期后,再在常温、常湿下放置24小时后,电机性能3和4的指标不变。</p>  <pre>             graph TD                 T1[+80±3°C] --- 60min  T2[+25±5°C]                 T2 --- 30min  T3[-30±3°C]                 T3 --- 60min  T4[+25±5°C]                 T4 --- 30min  T5[+80±3°C]                 T5 --- 60min  End[...]                 subgraph Cycle1 [1cycles]                     T1                     T2                     T3                 end             </pre>

## 6、Life test 寿命试验

6-1	Continue running (at 25°C±5°C) 常温连续	Environmental condition:25°C±5°C /65%±20%RH,Equipped rated load, Rated voltage, Continue running。 环境条件:25°C±5°C/65%±20%RH 额定电压、装上额定负载连续运转	70H max
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Before/After life test, measuring the rated load specification. Motor life is judged to come to an end. When

寿命试验前后测定电机的额定负载特性,出现下列情况之一时,判为寿命终止:

- 1) Rated-load speed gets varied over±20% against the initial figure  
额定负载转速超过初始值的±20%
- 2) Rated load current gets varied over +30% against the initial figure  
额定负载电流超过初始值的+30%
- 3) motor is unquestionable recognized as unusable  
当电机出现异常被确认无疑时
- 4) motor is brush cut off terminal open  
当电机电刷切断、端子间断开

## 7、Rejects: 拒收

Motors which do not meet with the specifications mentioned above or which are apparently judged as faulty due to poor workmanship.

当电机性能不符合上述条件或制造上存在缺陷时,电机被判为不良。

## 8、Environment-related substance 环境物质:

The part should not contain any environment-related substance.

马达部品不含有任何的环境有害物质。

The details of use prohibition parts or exclusion items as below:

禁止使用的环境物质如下所示:

(1) Heavy metals	重金属
1) Cadmium and its compounds(Cd);	镉及其化合物 (<5ppm)
2) Lead and its compounds(Pb);	铅及其化合物 (<100ppm)
3) Mercury and its compounds(Hg);	汞及其化合物 (禁止含有)
4) Hexavalent chromium compounds(Cr+6);	六价铬及其化合物 (禁止含有)
(2) Chlorinated organic compounds	有机氯化物
1) Polychlorinated biphenyls(PCBs);	多氯联苯 (禁止含有)
2) Polychlorinated terphenyls(PCTs);	多氯三联苯 (禁止含有)
3) Polychlorinated naphthalenes(PCNs);	多氯化萘 (禁止含有)
4) Short-chain chlorinated paraffins;	短链氯化石蜡 (C: 10-13) (<1000ppm)
(3) Brominated organic compounds	有机溴化合物
1) Polybrominated biphenyls(PBBs);	多溴联苯 (禁止含有)
2) Polybrominated diphenylethers(PBDEs);	多溴二苯醚 (禁止含有)
3) Terabromobisphenol A(TBBP-A);	四溴双酚-A (<900ppm)
4) Hexabromocyclododecane (HBCDD)	六溴环十二烷 (<1000ppm)
(4) Azo compounds	偶氮化合物 (<30ppm)
(5) Ozone depleting substances;	破坏臭氧层的物质 (不使用)
(6) Asbestos	石棉 (不使用)
(7) Ni and compounds;	镍及其化合物 (0.5ug-Ni/cm <sup>2</sup> /周)
(8) Organic tin;	有机锡化合物 (不使用)
(9) Arsenic ;	砷及其化合物 (不使用)
(10) Perfluorooctane Sulfonates (PFOS) ;	全氟辛烷磺酰基化合物 (<1000ppm)
(11) Brominated Flame Retardants;	溴类阻燃剂 (<900ppm)
(12) Formaldehyde;	甲醛 (<1000ppm)

## 9、Precautions in using the motor 马达使用注意事项:

(1) If silicon materials, which contain low molecular silicon compounds, adhere to the motor's commutator, brush or other parts, then upon rectification of the electric energy the silicon breaks down into  $\text{SiO}_2$ ,  $\text{SiC}$  and other constituents which produce a rapid increase in the contact resistance between the commutator and brush. Therefore great care should be taken when silicon material is used in a unit and check well at the same time that such binding agents or sealing materials are not generating gases of detrimental nature, whether used for motor mounting or applied during your product assemblies. Care must be taken for an optimum selection, especially when using those of cyanic adhesive and sulfur gas.

如果马达部品或周边环境和物体中含有Si、S等微量元素时可能造成换向器与电刷间阻抗增加,即形成氧化物,使之不通电。

(2) When mounting your motors by means of binding agents, DON'T allow any adherence to the bearings nor intrusion into the motors.

马达安装后不允许有包装粘结到轴承或异物落入马达内。

(3) Axial thrust on the output shaft could have an adverse effect on the motor life .i.e. As is produced by worm gears, fans, etc.

Check the service life expected under the actual operating conditions by testing the motors installed in your application products. For heavy thrust loads, consider using something mechanical to retain the shaft end.

当蜗杆、风叶对马达轴有轴向猛推力时对马达寿命有影响,应利用其它设施减少对马达轴向推拉力以保证其串量。

(4) There are occasions when the internal resistance of the motor driving power source (Which contains an electrical circuit) can influence the life span of the motor.

In instances where there is a low input of voltage to the motor, the internal resistance of the power source is large which may well result in an inferior motor after a short time, conversely in instances where high cyclic voltages are applied, this internal resistance is small and the motor life span is shortened. When the temperature deviates from the normal room temperature as is the case in low and high temperature situations, please note the conditions.

电源内阻偏大或偏小会导致马达运行不良或寿命减短,另当温度高或低于室温情况下请记录环境温度。

(5) Motor life may be affected adversely by heavy radial load such as produced by rotating eccentric cams, etc., and also by vibration given from outside.

Do check over such negative factors by testing the motors to the actual operating conditions in your application products.

马达寿命在超负荷或非正常使用时所产生的不良结果,我们不以确认。



(6) If when mounting the motor and assembling the unit, equipment which emits ultrasonic waves is used there is a danger that some of the internal parts of the motor might be damaged so please take care.

请注意马达组装后，设备若发出超声波将对马达内部造成影响。

(7) DON'T store motors under environmental conditions of high temperature and extreme humidity. DON'T keep them also in an atmosphere where corrosive gas may be present, as it may result in malfunction.

勿将马达储藏放置在高温高湿有腐蚀性气体处。

(8) Ambient and operating temperatures exert an affect more or less on motor performance and life. Do pay particular attention the surroundings when it is hot and damp.

为防止工作环境的温度变化会影响到马达功能或寿命，所以当天气湿热时请特别注意。

(9) When press fitting a pulley , gear etc., onto the motor output shaft, always support the shaft at the other end or its retaining metal pad in a proper and correct way.

安装滑轮或齿轮时请给马达轴正确方式定位，应将马达轴另一端即端盖轴承室用铁块顶住。

(10) When soldering, BE SURE to finish your work quickly so as not to develop plastic deformation around the motor terminals nor to give them any forced bend or inward depression. In doing so, special care must be taken not to allow solder debris and flux to spatter into motors and precautionary measures should be taken if necessary, by covering up all the nearby holes and apertures. Any motors having snap-in terminals must also be attended carefully so as not to get flux in along the terminals, as it may cause failure in electrical conduction.

当焊接时时间勿太长，不要让围绕端子的塑料件变形或使端子弯曲，需保证不能让焊接碎屑或焊锡熔化物进入马达内部。不得已时，须将塑料件附近的孔径或缝隙遮盖。任何马达均需保证焊锡熔化物不得顺端子进入其内部，否则可能会引起马达电气故障。

(11) DON'T leave motor shaft locked while power is applied , as even a short-time lock-up may cause excess heat build up resulting damage to the motor depending on its specifications.

切勿在马达接通电源时当马达轴堵住，这样可能会使马达温度升高而产生火灾。

(12) Intensive pressure on the endbell boss might cause starting disability of motor. So please take care for motor mounting not to push endbell boss.

If the endbell boss must be pushed,the load should be put on the center of the boss.

Please ask us for the suitable value of the load.

强烈的挤压端盖轴承室可能会造成马达无法转动。所以请尽量不要推盖板轴承室。

如果轴承室无法避免要被推压，请将负荷加于轴承室中心位置。

必要时请预先通知我们做上述评估。

(13) Please do not touch motor bearing as otherwise bearing oil will be drawn out, which might cause bearing noise.

请勿触摸马达轴承，否则轴承油被吸干容易引起燥音。

(14) Because of normal volatilization of the bearing oil may cause making noise, but the noise will disappear because the bearing oil spill after a few seconds, if the motor didn't be used more than three months.

当马达库存超过三个月未被使用时，轴承油正常挥发会引起噪音，但马达运转一会儿，轴承油会溢出，噪音就会消失。

(15) Fumigant and its gas may affect motor performance. Then, motors shall not be exposed to fumigant and its gas, if fumigation shall be made for packaging material etc.

薰剂及其气体可能会影响马达正常运行。勿将马达暴露在薰剂或其气体中。如包装材料中可能含有薰剂。

(16) Identification marking drawn on motor housing with dyestuff marker may be blurred or may fade out when rubbing.

马达机壳上的捺印标识可能会慢慢褪色。

For more information, please contact us directly or through our sales and representative offices.

若有其它疑问，请直接联系我们或通过我们的销售、客服与我们联系。

## 10、Others其它

1) Temperature of soldering Tip: 焊接温度

Soldering temperature and time must be 380°C (max). within 3 seconds. 焊接时烙铁温度不超过380°C，焊接时间不超过3秒。

2) When machine material and method are changed, customers will be notified in advance.

当设备、材料和工艺要做变动时，用户将会提前得到通知。

PRODUCT SPECIFICATION

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NO: 11/13

工作令号: 0

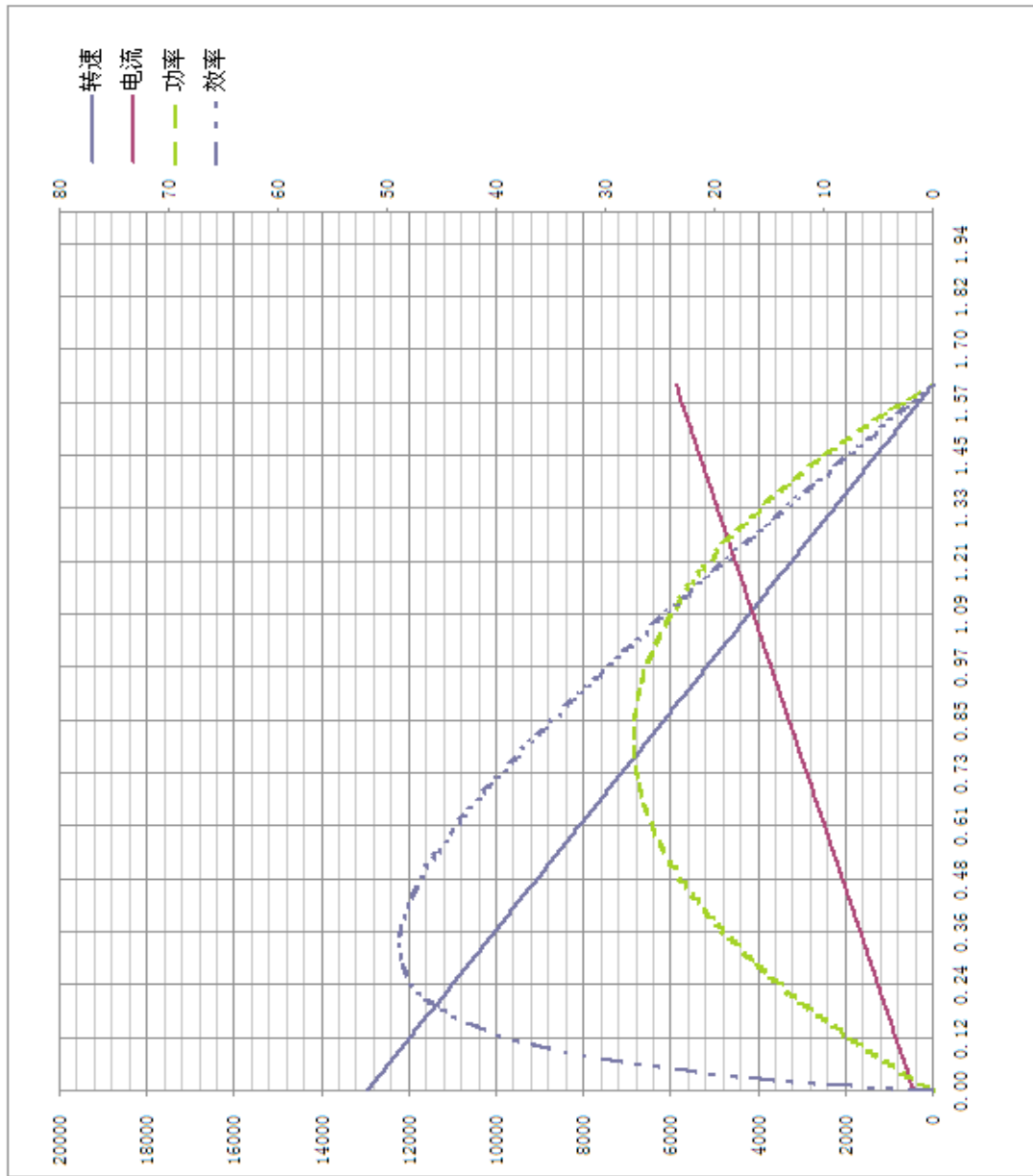
数量: 5

产品型号: VJP12-95J100A

日期: 2015-11-6

全尺寸:

100% Eff  
1.0 Watts  
1.0 AMP.



性能 (环境温度在25-30°C)

额定电压: 3 Volts

旋转方向: CW

空载转速: 12950 RPM

空载电流: 0.065 AMPS

堵转力矩: 1.615 mN.m

堵转电流: 0.936 AMPS

最大效率点

效率: 48.8 %

力矩: 0.339 mN.m

转速: 10231 RPM

电流: 0.248 AMPS

功率: 0.363 Watts

最大功率点

功率: 0.559 Watts

力矩: 0.808 mN.m

转速: 6475 RPM

电流: 0.501 AMPS

特征

转矩常数: 1.725 mN-m/AMP

电动势常数: 1.725 mV/rad/sec

动态电阻: 3.2045 Ohms

电机调节: 8017.49 RPM/mN.m

备注

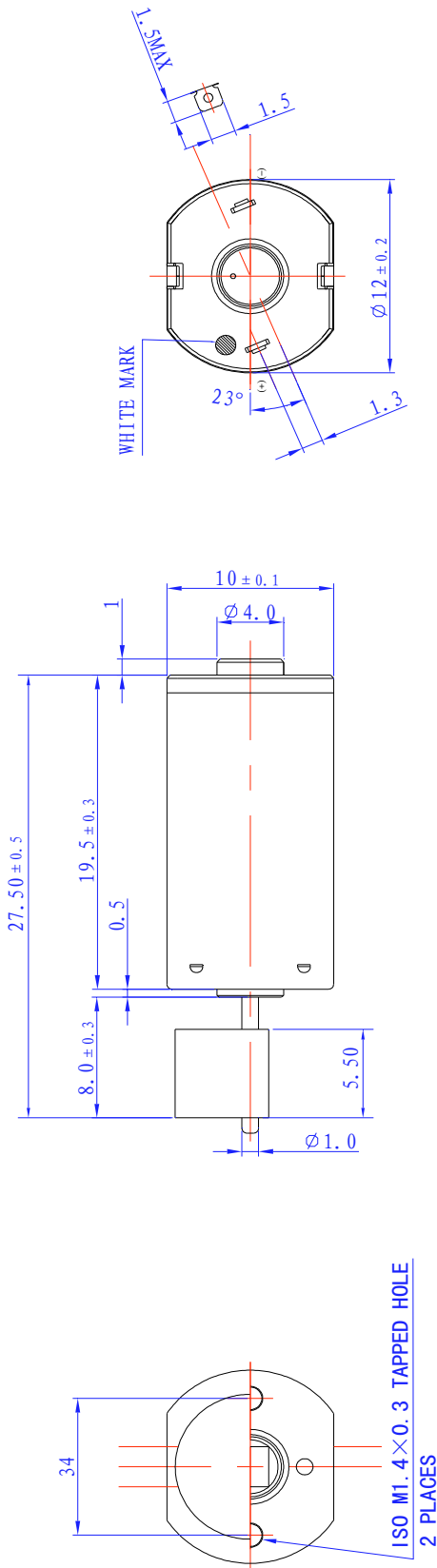
- 1、测量时快速测量, 以防止转子温度升高带来的误差
- 2、以上性能和特征基于有限的样品测试数据, 仅供参考

PRODUCT SPECIFICATION

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NO: 12/13

DIRECTION OF ROTATION



NOTES:

- 1, DIMENSION, MODIFICATIONS OR CHANGES NOT INDICATED ON THIS DRAWING DO NOT APPLY UNLESS CONFIRMED BY US IN WRITING.
- 2, SHAFT END PLAY 0.05-0.4.
- 3, USABLE WALE SCREEN LENGHT 0.9MAX. FROM MOTOR MOUNTING SURFACE.
- 4, ALLOWABLE TORQUE FOR SCREWING OF TAPPED HOLE: 98mN.m (1.0kgf-cm).

		JP12-95F100 马达外形图		等级标记	重量	比例
更改标记	数量	更改标记	签名	第 张	共 张	
设计						
审核						
工艺						
标准化						
批准						
			日期			

