

管理号 Spec.No.	LSV-6546
发行日期 ISSUE DATE	2024.6.8

Messrs:

产品规格书

SPECIFICATION

产品名 PRODUCT NAME	自动对焦用的音圈马达 Voice Coil Motor for Auto-focus
产品型号 MODEL	LSV-6546
日期 DATE	2024.6.8

注/NOTE:	客户承认 CUSTOMER APPROVED	
	签字 SIGNATURE	
	日期 DATE	

深圳市联视电子有限公司	认可 APPROVED BY	检查 CHECKED BY	作成 PREPARED BY

产品规格书/SPECIFICATION	机种名 MODEL	LSV-6546
	管理号 Spec.No.	LSV-6546
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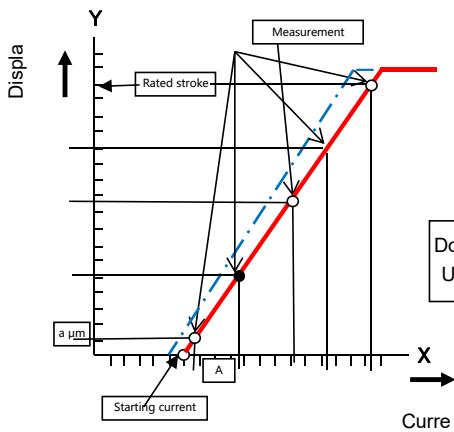
产品规格书/SPECIFICATION		机种名 MODEL	LSV-6546																																						
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<h3>1.范围/Scope</h3> <p>本产品规格书适用于说明深圳市联视电子有限公司生产的音圈马达(业内名称: VCM)(手机自动对焦摄像模组驱动用的马达)的产品性能和要求</p>																																									
<h3>2.产品功能描述/Fuction of the product description</h3> <p>驱动系统: 由通电导线在磁场中产生的电磁力, 驱动含有通电线圈的移动部件 Drive System: The electromagnetic force generated by the electrified wire in a magnetic field, driving the moving parts with the coil</p> <p>驱动方法: 当给VCM"+端子施加"+电压时, 移动部件会从芯片方向向镜头的顶部方向移动 Driving Method: The moving parts move from the sensor side to lens top direction when supplying "+voltage to "+" terminal.</p>																																									
<h3>3.产品规格/Product specification</h3> <h4>3.1.一般规格/General specification</h4> <table border="1"> <thead> <tr> <th>NO.</th> <th>项目/ITEM</th> <th>规格/SPEC</th> <th>备注/REMARK</th> </tr> </thead> <tbody> <tr> <td>3-1-1</td> <td>外形尺寸 Outline dimension</td> <td>8.5×8.5×4.55mm</td> <td>不含端子长度 Without terminal</td> </tr> <tr> <td>3-1-2</td> <td>重量 Weight</td> <td>0.50g(max)</td> <td>不含镜头 Without lens</td> </tr> <tr> <td>3-1-3</td> <td>额定电流 Rated current</td> <td>95mA</td> <td>直流电/DC</td> </tr> <tr> <td>3-1-4</td> <td>最大额定电流 Max related current</td> <td>110mA</td> <td>运行状态 Operatting</td> </tr> <tr> <td>3-1-5</td> <td>绝缘电阻 Insulation resistance</td> <td>1MΩ(min)</td> <td>直流电50V: 外壳和端子间 DC50V: Between Yoke and Terminals</td> </tr> <tr> <td>3-1-6</td> <td>端子间电阻 Resistance between terminals</td> <td>18±15%Ω</td> <td>常温状态 Normal temperature</td> </tr> <tr> <td>3-1-7</td> <td>扭力 Torque</td> <td>20gf·cm~120gf·cm</td> <td>适配镜头: Match Lens:</td> </tr> </tbody> </table> <h4>3.2.产品工作环境和储存环境/Operating and stroage environmnet of the product</h4> <table border="1"> <tbody> <tr> <td>3-2-1</td> <td>工作环境 Operating environment</td> <td>·温度/Temp.: -30~+70°C ·湿度/Humi.: 90%RH(max)</td> </tr> <tr> <td>3-2-2</td> <td>储存环境 Stroage environment</td> <td>·温度/Temp.: -40~+85°C ·湿度/Humi.: 90%RH(max)</td> </tr> </tbody> </table>				NO.	项目/ITEM	规格/SPEC	备注/REMARK	3-1-1	外形尺寸 Outline dimension	8.5×8.5×4.55mm	不含端子长度 Without terminal	3-1-2	重量 Weight	0.50g(max)	不含镜头 Without lens	3-1-3	额定电流 Rated current	95mA	直流电/DC	3-1-4	最大额定电流 Max related current	110mA	运行状态 Operatting	3-1-5	绝缘电阻 Insulation resistance	1MΩ(min)	直流电50V: 外壳和端子间 DC50V: Between Yoke and Terminals	3-1-6	端子间电阻 Resistance between terminals	18±15%Ω	常温状态 Normal temperature	3-1-7	扭力 Torque	20gf·cm~120gf·cm	适配镜头: Match Lens:	3-2-1	工作环境 Operating environment	·温度/Temp.: -30~+70°C ·湿度/Humi.: 90%RH(max)	3-2-2	储存环境 Stroage environment	·温度/Temp.: -40~+85°C ·湿度/Humi.: 90%RH(max)
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<h1>产品规格书/SPECIFICATION</h1>	机种名 MODEL	LSV-6546
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3.3.电气特性规格/Fuction Specification

NO.	项目/ITEM	规格/SPEC	方向/Direction	备注/REMARK
3-3-1	额定行程 Rated Stroke	·≥200μm(@95mA)	向上 upward	·测试专用镜头(lens weight ≤0.1g) + 全反镜
3-3-2	始动电流 Starting Current	·20mA~40mA	向上 upward	·测试专用镜头(lens weight ≤0.1g) + 全反镜
3-3-3	敏感度 Sensitivity	·3μm/mA~8μm/mA	向上 upward	CP: C=40mA, D=60mA 测试专用镜头(lens weight ≤0.1g) + 全反镜
3-3-4	迟滞误差 Hysteresis	≤10μm	向上 upward	·测试专用镜头(lens weight ≤0.1g) + 全反镜 ·5mA/step 10mA→95mA→10mA
3-3-5	动态光轴 Dynamic Tilt	≤15'	向上 upward	向上, 0~200um 测试专用镜头(lens weight ≤0.10g) + 全反镜
3-3-6	姿势差 Posture Deviation	≤50μm	三姿 upward Horizontal down	带镜头 10~200um
3-3-7	线性度 Linear	≤15μm	向上 upward	向上, 0~200um 测试专用镜头(lens weight ≤0.10g) + 全反镜
3-3-8	二段位移 AF Current	≤10μm	向上 upward	向上, 0~200um 测试专用镜头(lens weight ≤0.10g) + 全反镜

【电气特性测试项目和测试方法/Measurement items and methods of the characteristics】



·敏感度/Sensitivity
 $= (d-c)/(D-C)$

·始动电流/Starting Current
 $= A - (a \cdot (B-A)) / (b-a)$

产品规格书/SPECIFICATION

机种名
MODEL

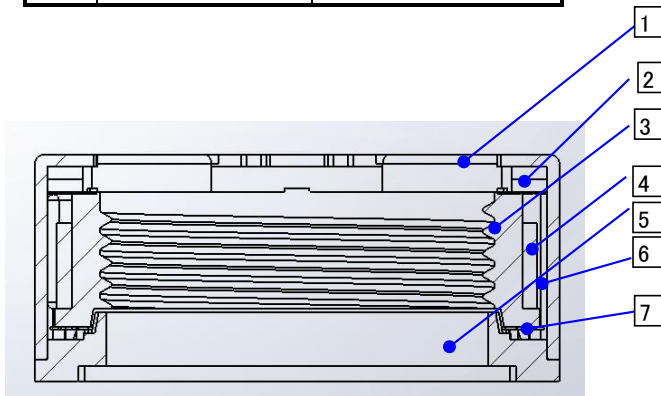
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管理号
Spec.No.

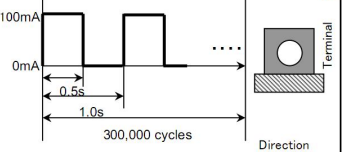
LSV-6546

4.部品和材料清单/Parts and material list

NO.	品名 Parts Name	材料 Material
1	铁壳 YOKE	SPCC
2	上弹簧 TOP SPRING	Cu-Ni-Sn
3	载体 CARRIER	LCP-E525T
4	线圈 COIL	Magnetic Wire
5	底座 BASE	LCP-E525T
6	磁石 MAGNET	Nd-Fe-B+Plating(Ni)
7	下弹簧 BOTTOM SPRING	Cu-Ni-Sn
8	端子 (表面镀金) TERMINAL	Cu-Ni-Au



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<p>5.可靠性试验/Reliability test</p> <p>注/Note:</p> <ul style="list-style-type: none"> ※ 根据试验方式, 带镜头进行试验 According to the test configuration, build in test lens and perform the test. ※ 测试用的镜头镜筒由客户提供 Test lens barrel is provided by the customer <p>产品承认的可靠性试验的项目和方法如下: The items and methods of the reliability test are shown below:</p>				
NO.	试验项目 TEST ITEM	试验方法 TEST METHOD	样品数 SAMPLE	判定标准
5-1	高温保存试验 High temp. storage	·温度/Temp.: 85±2°C ·时间/Time: 96h	10pcs	·试验后, 在常温常湿状态下放置2小时后(不超过24小时)进行测试, 满足产品规格书3-2部分。 ·After test, dispose in normal temperature for more than 2 hours(less than 24 hours), and then take the measurement.Meet the product specification section 3-2
5-2	低温保存试验 Low temp. storage	·温度/Temp.: -40±2°C ·时间/Time: 96h	10pcs	
5-3	高温高湿保存试验 High temp. &high humidity storage	·温湿度/Temp.: 85±2°C, 90%RH±5% ·时间/Time: 96h	10pcs	
5-4	热冲击试验 Heat cycle test	·温度(时间)/Temp.(Time): 1循环/Cycle -40±2°C(30min)→85±2°C(30min) ·切换时间/Sweep Time: 5min ·循环次数/Cycle times: 48 cycles	10pcs	
5-5	冲击试验 Shock test	·试验方式/Test configuration: VCM+lens ·VCM固定在治具中 Fix the VCM in the jig ·加速度/Acceleration:1000m/s ² ·脉冲宽/Pulse width:6ms ·方向/Direction:±X,±Y,±Z ·次数/times:3times/each, total:18times	10pcs	
5-6	振动试验 Drop test(Unit)	·试验方式/Test configuration: VCM+lens ·将VCM固定在治具中 Fix the VCM in the jig ·振动频率/Frequency:10Hz~50Hz ·振幅/Amplitude:1.5mm(p-p) ·扫描频率/Sweep: 1min ·方向、时间/Direction、Time: X=2h, Y=2h, Z=4h	10pcs	

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NO.	试验项目 TEST ITEM	试验方法 TEST METHOD	样品数 SAMPLE	判定标准
5-7	寿命试验 Life test	·试验方式/Test configuration: VCM+LENS ·电流/Current: 100mA ·温度/Temp.: +70°C±2°C, -30°C±2°C ·方向/Direction: 水平(Horizontal) ·次数/Cycles: 300,000cycles (1cycle=0.5sON-0.5sOFF) 	5pcs/each temp. Total: 10pcs	·试验后, 在常温常湿状态下放置2小时后(不超过24小时)进行测试, 满足产品规格书3-2部分。 ·After test, dispose in normal temperature for more than 2 hours(less than 24 hours), and then take the measurement.Meet the product specification section 3-2
5-8	落下试验(单品) Drop test(Unit)	·试验方式/Test configuration: VCM+lens ·把VCM固定在带缓冲垫的治具(150g)里, 跌落在混凝土上 Drop the VCM fixed in the jig with cushion on the concrete. ·高度/Height: 1.5m ·方向/Direction: 6Faces ·次数/Cycles: 3cycles/faces (total:18times)	20pcs	·试验后, 始动电流(向下方向) > 0mA, 其他项目满足产品规格书3-2部分 After test, the starting current in bottom direction must be more than 0mA, meet the product specification section 3-2.
5-9	落下试验II(包装) Drop test(Package)	·试验方式/Test configuration: 同正常出货包装 Same as the package for normal shipment ·将试验品VCM按照放在正常出货包装箱内的托盘小包的角上, 其余部分用不良品填充。 Put the test VCM in the coners of the tray package in the catton box ·数量/Q'ty: 1pcs/corner ·高度/Height: 1.5m ·方向/Direction: 1corner,3edges,6faces—1 cycle ·次数/Cycles: 10Cycles	2pcs/Each corner Total: 8pcs	·试验后, 在常温常湿状态下放置2小时后(不超过24小时)进行测试, 满足产品规格书3-2部分。 ·After test, dispose in normal temperature for more than 2 hours(less than 24 hours), and then take the measurement.Meet the product specification section 3-2

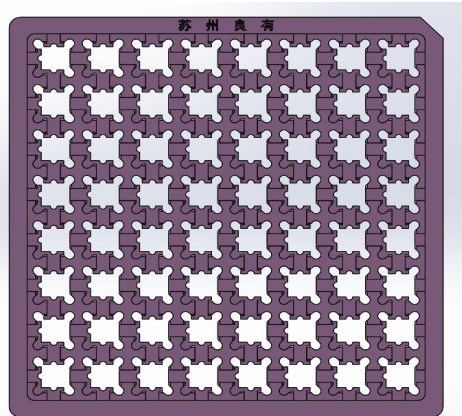
产品规格书/SPECIFICATION		机种名 MODEL	LSV-6546
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6.品质/Quality			
6.1.检查项目/Inspection items			
NO.	项目 ITEM	条件 CONDITION	
6-1-1	外观 Appearance	满足附加的外观基准书 Meet the visual inspection standard attached	
6-1-2	重要尺寸 Critical dimension	在指定的尺寸规格公差范围内 Within the tolerance specified	
6-1-3	特性 Characteristics	满足产品规格书章节3-3 Meet the specification section3-3	
6-1-4	扭力 Torque	满足产品规格书章节3-1-7 Meet the specification section3-1-7	
6.2.适用检查水准/Inspection level applied			
NO.	项目 ITEM	条件 CONDITION	标准 Standard
6-2-1	重大缺陷 Critical defect	电气特性/Characteristics 外观/Appearance	AQL=0.65
	一般缺陷 General defect	重要尺寸/Critical dimension	
6-2-2		满足章节6-1-1/Meet section 6-1-1 满足章节3-2/Meet section 3-2 满足章节6-1-2/Meet section6-1-2	
7.耐热特性/Heatproof characteristics			
NO.	项目 ITEM	耐热特性 HEATPROOF CHARACTERISTICS	条件 CONDITION
7-1	·上弹簧/Top spring ·下弹簧/Bottom spring ·外壳/Yoke	标准250°C Standard 250°C	在正常适用条件下 In the scope of normal usage
	·底座/BASE ·载体/CARRIER ·上盖/COVER	标准245°C Standard 245°C	
7-3	·磁石/MAGNET	标准 110°C Standard 110°C	

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<p>8.产品安全/Product safety</p> <p>本产品是半成品,所以不保证成品的安全标准。 This product is half-finished product,so not assured the safety standard of finished product.</p>										
<p>9.环境相关的化学物质/Environment related chemical substances</p> <p>9.1.环境相关的化学物质控制标准/Environment related chemical substances control standard 有害物质控制标准PID-LS301-N02 Standard of Controlled Hazardous Substance PID-LS301-N02</p> <p>9.2.无卤/Halogen-free</p> <table border="1"> <thead> <tr> <th></th> <th>容许含量 Allowable contents</th> </tr> </thead> <tbody> <tr> <td>溴 Bromine</td> <td>< 900ppm</td> </tr> <tr> <td>氯 Chlorine</td> <td>< 900ppm</td> </tr> <tr> <td>溴和氯的总含量 Total of bromine and chlorine</td> <td>< 1500ppm</td> </tr> </tbody> </table>				容许含量 Allowable contents	溴 Bromine	< 900ppm	氯 Chlorine	< 900ppm	溴和氯的总含量 Total of bromine and chlorine	< 1500ppm
	容许含量 Allowable contents									
溴 Bromine	< 900ppm									
氯 Chlorine	< 900ppm									
溴和氯的总含量 Total of bromine and chlorine	< 1500ppm									
<p>10.备注/Remarks</p> <p>如发生争议, 双方协商解决。 If any defect is found, the problem should be resolved through mutual discussion. 尺寸、特性、材料和供应商发生变更时, 需双方协商后才能实施 Changes in dimensions, materials, characteristics and suppliers shall be made after mutual consultation.</p>										

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11. 产品包装/Product packaging

11.1. 成品VCM包装托盘



端子侧/Terminal side

托盘/Tray	尺寸/SIZE	材料/MATERIAL	VCM数量/Q'ty
	114.5*114.5*10 (mm)	ABS(ESD)	64pcs/tray

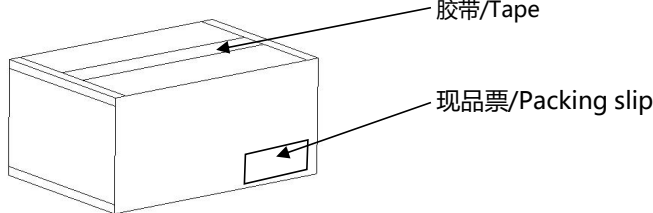
11.2. 托盘真空捆包/Tray with vacuum packaging



真空捆包用包装袋
Vacuum packaging bags

真空捆包用包装袋 Vacuum packaging bags	尺寸/SIZE(mm)	材料/MATERIAL	数量/Q'ty
	160×130	PC(ESD)	1pc/block

托盘真空包 Tray block with vacuum packaging	尺寸/SIZE(mm)	产品数量/Product Q'ty
	150×120×100	560pcs/block

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<p>11.3.外箱包装/Carton packaging</p> <p>11.3.1.缓冲措施</p> <p>产品四周各放置一层缓冲材料，纸箱底部和顶部各放置两层缓冲材料，每一真空包装袋产品之间放置一层缓冲材料。若产品未装满纸箱，则增加缓冲材料以保证产品在运输过程中无晃动。</p> <p>11.3.2.纸箱分类</p> <table border="1"> <thead> <tr> <th>纸箱型号</th> <th>最大容量</th> <th>使用范围</th> </tr> </thead> <tbody> <tr> <td>LY-ZX01-00</td> <td>56*10*3=1680</td> <td>产品数量小于1680pcs</td> </tr> <tr> <td>LY-ZX02-00</td> <td>56*10*4=2240</td> <td>产品数量1680~2240pcs</td> </tr> <tr> <td>LY-ZX03-00</td> <td>56*10*6=3360</td> <td>产品数量2241~3360pcs</td> </tr> </tbody> </table> <p>若产品数量大于3360，则三种纸箱组合使用。</p> <p>11.3.3.纸箱封装</p> 			纸箱型号	最大容量	使用范围	LY-ZX01-00	56*10*3=1680	产品数量小于1680pcs	LY-ZX02-00	56*10*4=2240	产品数量1680~2240pcs	LY-ZX03-00	56*10*6=3360	产品数量2241~3360pcs
纸箱型号	最大容量	使用范围												
LY-ZX01-00	56*10*3=1680	产品数量小于1680pcs												
LY-ZX02-00	56*10*4=2240	产品数量1680~2240pcs												
LY-ZX03-00	56*10*6=3360	产品数量2241~3360pcs												

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11.4.现品票/Packing slip

联视现品票/PACKING SLIP			
客户/Customer			
订单号/P.N.			
日期/Date		数量/Q,ty	
型号/Model		箱号/箱数 Carton NO.	
备注Remark		核对 Checkde by	

项目/ITEM	范例/EXAMPLE	说明/EXPLANATION
客户 Customer	A公司	客户名称 Customer name
订单号 P.O NO.	***	—
日期 Date	2014.11.8	发货日期 Shipment date
型号 Model	LSV-6546	—
数量 Q'ty	4000pcs	—
箱号/总箱数 Carton No.	1/1	—
备注 Remarks	—	—
核对 Checked by	xxx	—

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12.批号识别/Lot NO. identification

例/Example: 2013年07月01日产线1组生产产品批号
The Lot No. of the products manufactured by Group 1 in 2013-07-01

3 7 1 1 1 1 1

承座模号 Carrier Template
外观检测 Cavity No. of Carrier
测试机台 Mold No. of Carrier
生产组别 Group No.
生产日 Product day
生产月份 Product month
生产年份 Product year

年份表/Year table

年/Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
代号/Code	3	4	5	6	7	8	9	A	B	C	D

月份表/Month table

月/Month	1	2	3	4	5	6	7	8	9	10	11	12
代号/Code	1	2	3	4	5	6	7	8	9	A	B	C

日期表/Day table

日/Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
代号/Code	1	2	3	4	5	6	7	8	9	0	A	B	C	D	E	F	G	H	J	K	L	M	N	P
日/Day	25	26	27	28	29	30	31																	
代号/Code	Q	U	V	W	X	Y	Z																	

测试机台

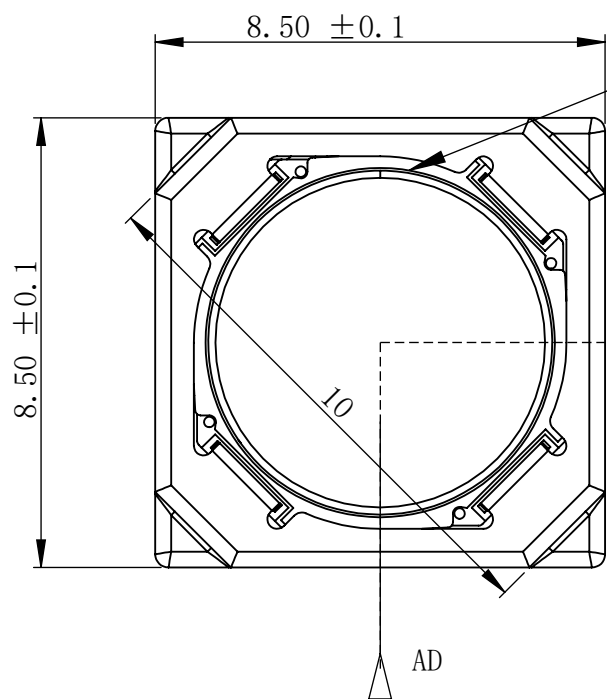
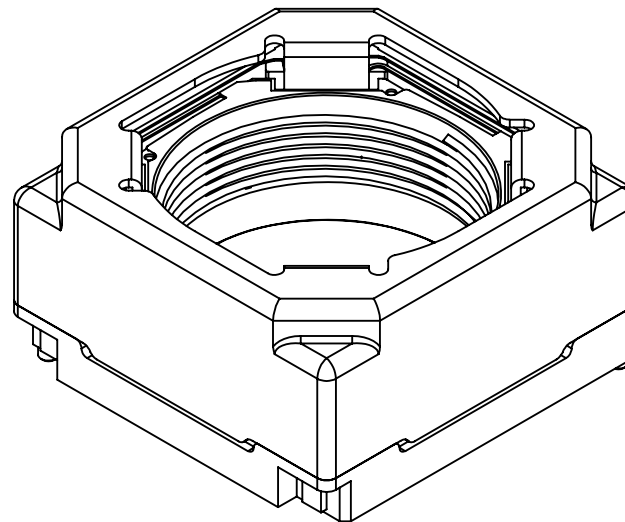
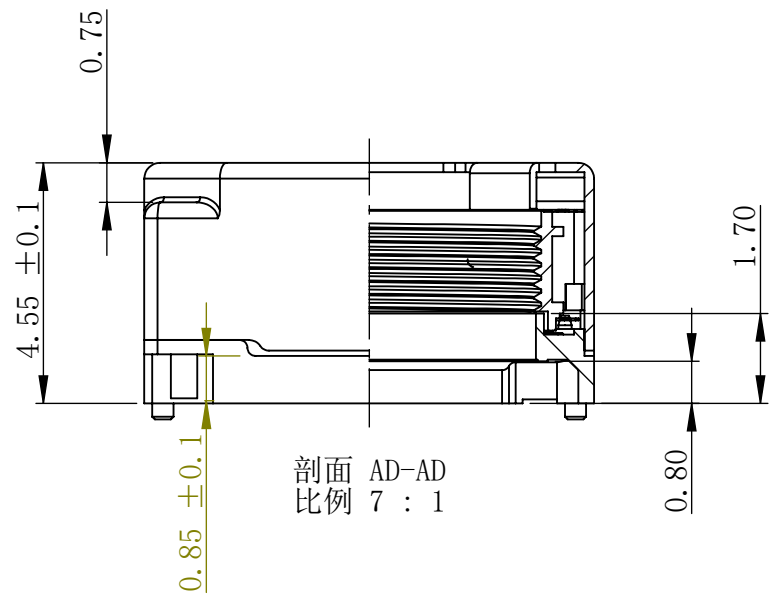
NO.	1	2	3	4	5	6	7	8
代号/Code	1#机	2#机	3#机	4#机	5#机	6#机	7#机	8#机

外观检测/Cavity No. of Carrier

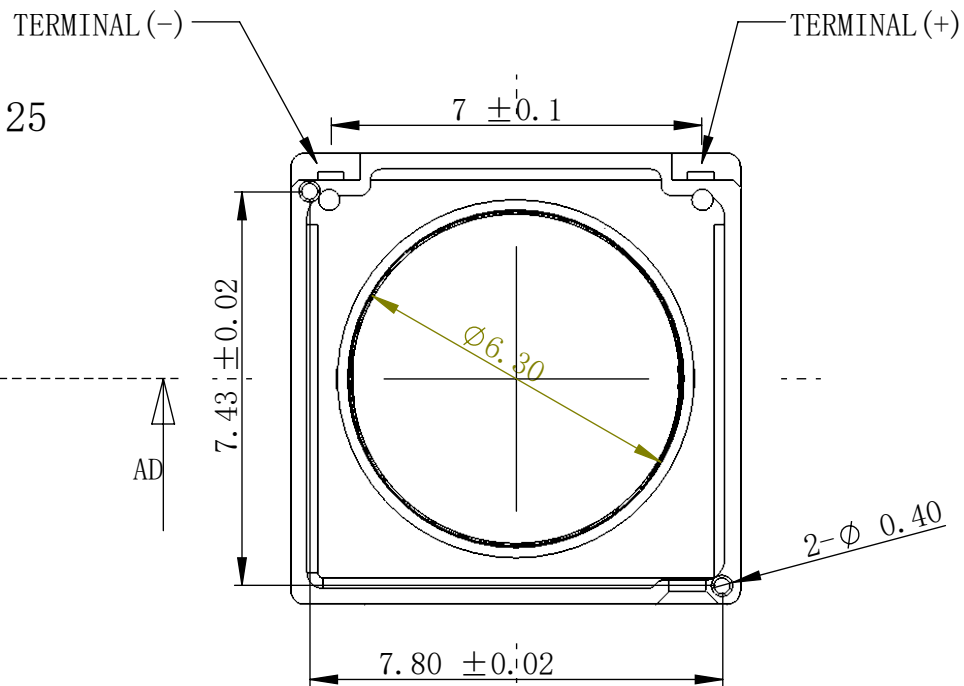
Cavity NO.	1	2	3	4	5	6	7	8
代号/Code	1#	2#	3#	4#	5#	6#	7#	8#

承座模号

Cavity NO.	1	2	3	4	5	6	7	8
代号/Code	1#	2#	3#	4#	5#	6#	7#	8#



M6.5*P0.25



一般公差 TOLERANCE	±0.05	深圳市联视电子有限公司
单位 UNIT	mm	LSV-6546