



广东风华高新科技股份有限公司
GUANGDONG FENGHUA ADVANCED TECHNOLOGY HOLDING CO., LTD.

承认书

APPROVAL SHEET

客户名称:

Customer

产品名称:

车规片式功率电感器

Part Name

Automotive Grade Chip (SMD) Power Inductor

客户料号:

Customer P/N

物料描述:

Material description

产品规格:

ARS3015-C60 Series

Specification

版本号:

24.01

Version No.

日期:

2024-2-1

DATE

制造 Manufacturer			客户 Customer		
拟制 Draft by	审核 Checked by	确认 Approved by	检验 Checke by	审核 Checked by	批准 Approved by
王志聪	张惠霞 承认书专用章	张惠霞			



履历表 Resume

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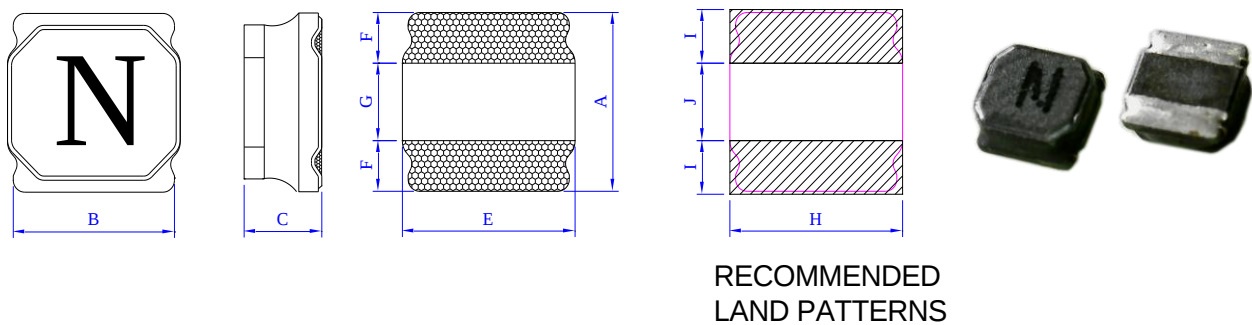
1. 产品适用范围 Application Scope

本承认书中涉及产品推荐用于用于汽车信息系统、影音娱乐系统、车身与舒适系统等。

The products involved in this letter are recommended for automobile information system, audio-visual entertainment system, body and comfort system, etc.

2. 结构及尺寸 Structure And Dimensions

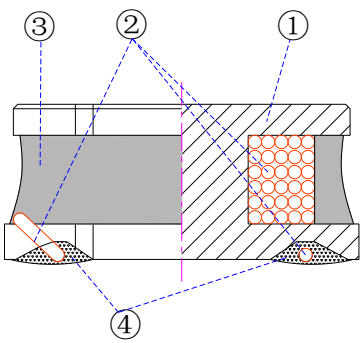
单位 Unit: mm



顶部印字：见电性能参数表；Marking：See Electrical Characteristics List.

A	B	C	E Typical	F typical	G typical	H typical	I typical	J typical
3.0±0.2	3.0±0.2	1.5Max	2.8	0.85	1.3	3.0	0.9	1.3

结构图 Structural drawing:

	No.	部位 Component	材料 Material
	①	磁芯 Core	镍锌铁氧体磁芯 Ni-Zn ferrite core
	②	线圈 Winding	漆包线 Enamelled Wire
	③	保护层 Shield	导磁胶 magnetic glue
	④	电极 Electrode	底层—银 Substrate—Ag 镀层—镍层--锡层 Base plating—Ni-Sn 表层焊锡—锡/铜 Surface solder—Sn/Cu

3. 型号规格表示办法 How To Order

ARS 3015 - 6R8 □ T □□□

① ② ③ ④ ⑤ ⑥

- ① 产品代号, Product symbol
 ② 尺寸规格, Dimension, 长度与厚度, Length and thickness
 ③ 电感量标称值, Inductance, 1R0→1.0μH, 100→10μH, 101→100μH..
 ④ 电感量公差代码, Inductance Tolerance code, N ±30%,M ±20%,K ±10%
 ⑤ 包装代码, T-编带卷盘; B-散装, Packing code: T-Tape & reel; B-Bulk
 ⑥ 标准代码, 空缺-标准品, 标示-定制品,
 Standard code, Vacant-Standard product, Indicate-custom product

4. 电气性能 Performance Specification (Reference ambient temperature 20°C).

工作温度范围,包括自身发热的上升温度: -40°C~+125°C

Operating Temperature Range, Including self-heating temperature rise: -40°C~+125°C

客户料号 Customers Part No.	风华型号 Fenghua Part No.	电感量 Inductance Ls (μH)		直流电阻 Direct Current Resistance RDC (Ω)		饱和电流 Saturation Current Isat (A)	温升电流 Temperature Rise Current Irms (A)	印字 Marking
	ARS3015-R22NTC60	0.22	±30%	0.016	±30%	5.00	3.50	T
	ARS3015-R47NTC60	0.47	±30%	0.020	±30%	3.90	2.60	S
	ARS3015-R68NTC60	0.68	±30%	0.025	±30%	3.00	2.45	U
	ARS3015-1R0NTC60	1.00	±30%	0.030	±20%	2.32	2.35	A
	ARS3015-1R5NTC60	1.50	±30%	0.040	±20%	2.30	1.70	B
	ARS3015-2R2NTC60	2.20	±30%	0.060	±20%	1.60	1.60	C
	ARS3015-2R7NTC60	2.70	±30%	0.075	±20%	1.52	1.43	D
	ARS3015-3R3NTC60	3.30	±30%	0.080	±20%	1.32	1.36	E
	ARS3015-4R7MTC60	4.70	±20%	0.120	±20%	1.10	1.09	H
	ARS3015-5R6MTC60	5.60	±20%	0.140	±20%	0.95	0.86	G
	ARS3015-6R2MTC60	6.20	±20%	0.160	±20%	1.00	0.86	F
	ARS3015-6R8MTC60	6.80	±20%	0.160	±20%	0.87	0.85	I
	ARS3015-8R2MTC60	8.20	±20%	0.220	±20%	0.80	0.80	J
	ARS3015-100MTC60	10.00	±20%	0.230	±20%	0.72	0.77	K
	ARS3015-150MTC60	15.00	±20%	0.360	±20%	0.66	0.65	L
	ARS3015-180MTC60	18.00	±20%	0.430	±20%	0.56	0.59	M
	ARS3015-220MTC60	22.00	±20%	0.520	±20%	0.52	0.57	N
	ARS3015-330MTC60	33.00	±20%	0.840	±20%	0.44	0.43	O
	ARS3015-390MTC60	39.00	±20%	1.100	±20%	0.40	0.40	P
	ARS3015-470MTC60	47.00	±20%	1.340	±20%	0.35	0.35	不印字 blank



	ARS3015-101MTC60	100.00	±20%	2.440	±20%	0.25	0.30	不印字 blank
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测试仪器 Test equipment: Inductance\RDC---HP4263B or equivalent, Isat\Irms--- Microtest 6379 & 6220 or equivalent.

Ls 测试频率/电压 Ls Test frequency/Voltage: 100kHz/500mV;

Isat: 指使电感量比初始值下降约 30% 的电流值,

The DC current at which the inductance drops approximate 30% from its value without current;

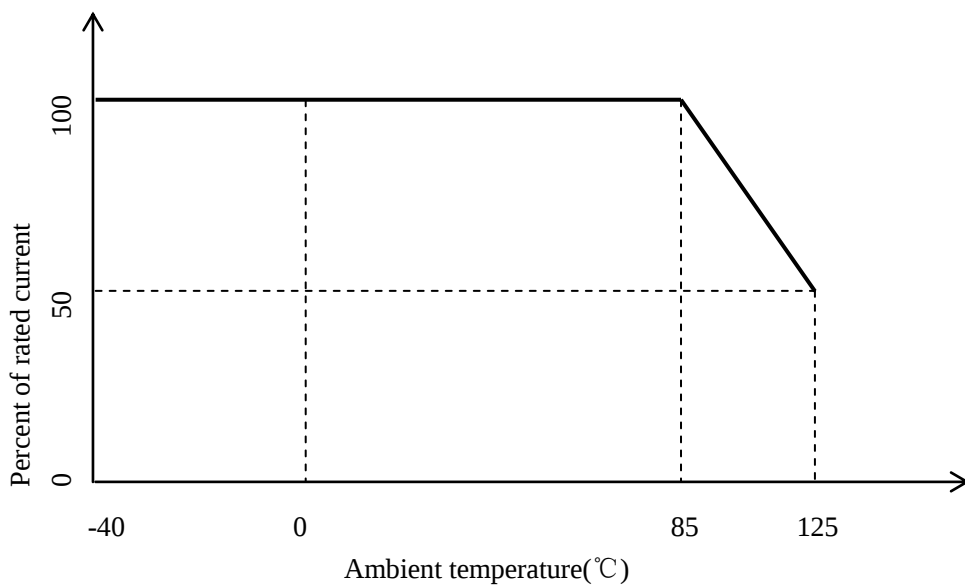
Irms: 指使电感器表面温度上升 40°C 的电流值 (参考周围环境温度 20°C)。

The DC current is inductor surface temperature to rise by 40°C (Reference ambient temperature 20°C).

额定工作使用电压: DC50V

Rated working voltage: DC50

● 电流降额 Current Derating.





5. 可靠性 Reliability Data

本承认书中涉及产品符合 AEC-Q200 汽车标准相关条款，推荐用于汽车信息系统、影音娱乐系统、车身与舒适系统等。

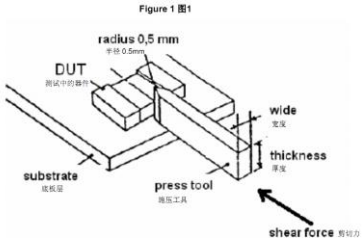
The products involved in this letter are compliant with AEC-Q200 standard and recommended for automobile system, audio-visual entertainment system, body and comfort system, etc.

序号 No.	项目 Items	要求 Requirements	试验方法及备注 Test Methods and Remarks
1	高温存储 High Temperature Exposure (Storage)	无可见损伤; $\Delta L/L$ 在 $\pm 10\%$ 以内 No visible damage. $\Delta L/L$ within $\pm 10\%$.	温度 125°C; 不通电; 持续时间 1000h; 周期测试 250h, 500h, 1000h; 试验结束后 (24 $\pm$ 4)h 内进行电性能测量。 Temperature 125°C; Unpowered; Duration 1000h; Examination at 250h, 500h and 1000h; Measurement at (24 $\pm$ 4) hours after test conclusion.
2	温度循环 Temperature Cycling	无可见损伤; $\Delta L/L$ 在 $\pm 10\%$ 以内 No visible damage. $\Delta L/L$ within $\pm 10\%$.	高温 125°C; 低温 -40°C; 高、低温下暴露时间各 30 分钟; 转换时间 ≤ 1 min; 循环次数 1000 次。 试验结束后 24 $\pm$ 4 小时内进行测试。 High Temperature +125°C; low temperature -40°C; Duration at each temperature 30 min; Transition time ≤ 1 min. Severity 1000 cycles; Measurement at 24 $\pm$ 4 hours after test conclusion.
3	偏高湿度 (高温高湿) Biased Humidity	无可见损伤; $\Delta L/L$ 在 $\pm 10\%$ 以内 No visible damage. $\Delta L/L$ within $\pm 10\%$.	温度 85°C; 湿度 85RH%; 持续时间 1000 小时, 不通电。周期测量 250 小时、500 小时。 试验结束后 24 $\pm$ 4 小时内进行测试。 Temperature 85°C; Relative humidity 85%; Duration 1000 h; Unpowered. Examination at 250h, 500h and 1000h; Measurement at 24 $\pm$ 4 hours after test conclusion.



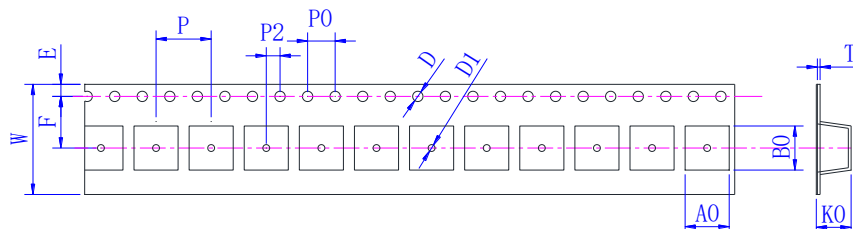
序号 No.	项目 Items	要求 Requirements	试验方法及备注 Test Methods and Remarks
4	工作寿命 Operational Life	无可见损伤; $\Delta L/L$ 在 $\pm 10\%$ 以内 No visible damage. $\Delta L/L$ within $\pm 10\%$.	温度 85°C ; 施加电流: 常温额定电流; 持续时间: 1000 小时。 试验结束后 24 ± 4 小时内进行测试。 Temperature 85°C ; Test current: Rated current at normal temperature; Duration 1000 h; Measurement at 24 ± 4 hours after test conclusion.
5	机械冲击 Mechanical Shock	无可见损伤; $\Delta L/L$ 在 $\pm 10\%$ 以内 No visible damage. $\Delta L/L$ within $\pm 10\%$.	正半弦波; 峰值加速度 100g; 脉冲持续时间 6ms; 三轴六向各 3 次, 共 18 次。 Half sine wave. Peak value 100g. Normal duration 6 ms; Three shocks in each direction shall be applied along the three mutually perpendicular axes of the test specimen (18 shocks)
6	振动 Vibration	无可见损伤; $\Delta L/L$ 在 $\pm 10\%$ 以内 No visible damage. $\Delta L/L$ within $\pm 10\%$.	频率 10Hz~2000Hz; 加速度 5 克; 一个循环 20 分钟; X、Y、Z 三个方向每个方向 12 个循环, 共 36 个循环; . The entire frequency range of 10 to 2000 Hz and return to 10 Hz shall be traversed in 20 minutes. This cycle shall be preformed 12 time in each of three mutually perpendicular directions (total of 36 times), so that the motion shall be applied for a total period of approximately 12 hours. Peak value 5g.
7	耐焊接热 Resistance to Soldering Heat	无可见损伤; $\Delta L/L$ 在 $\pm 10\%$ 以内 No visible damage. $\Delta L/L$ within $\pm 10\%$.	焊槽法; 温度 $(260\pm 5)^{\circ}\text{C}$; 浸渍时间 $(10\pm 1)\text{s}$ 。 Solder bath; Temperature $(260\pm 5)^{\circ}\text{C}$; Immersion timer (10 ± 1) seconds.



序号 No.	项目 Items	要求 Requirements	试验方法及备注 Test Methods and Remarks
8	静电放电 ESD	无可见损伤; $\Delta L/L$ 在 $\pm 10\%$ 以内 No visible damage. $\Delta L/L$ within $\pm 10\%$.	接触放电; 放电电压: 2000V; 每个样品每个电极承受两次放电, 正、 负极性各 1 次。 Direct contact discharge; Indicated voltage 2000V; Two discharges shall be applied to each PUT within a sample group and at each stress voltage level, one with a positive polarity and one with a negative polarity.
9	可焊性 Solderability	无可见损伤; 电极面 95%以上覆盖新的焊料。 95% or more of electrode area shall be coated by new solder.	焊槽法; 无铅焊锡; 温度 $(245 \pm 3) ^\circ\text{C}$; 浸渍时间 $(3 \pm 0.3) \text{ s}$ 。 Solder bath; Lead-free solder; Temperature $(245 \pm 3) ^\circ\text{C}$; Immersion timer $(3 \pm 0.3) \text{ seconds}$.
10	端子强度 Terminal Strength (SMD)	无可见损伤; $\Delta L/L$ 在 $\pm 10\%$ 以内 No visible damage. $\Delta L/L$ within $\pm 10\%$.	试样安装在环氧玻璃板上, 施加 17.7N 的力到试样的侧面, 保持 $60\text{s} \pm 1\text{s}$ 。 The testing samples shall be mounted on the testing boards, apply a 17.7N force to the side of a device being tested. Duration $60\text{s} \pm 1\text{s}$. 

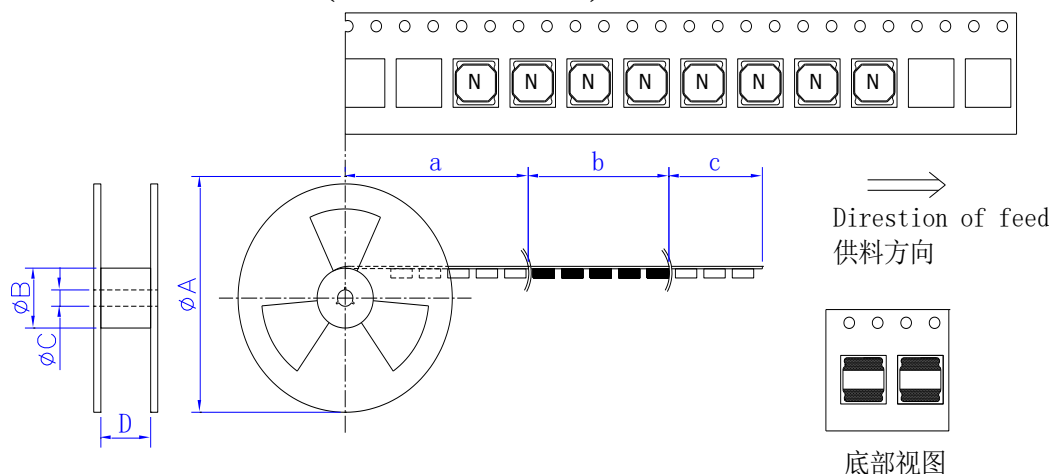
6. 包装 Package

6.1 载带尺寸 Tape Dimension(单位：毫米 Unit:mm)



W	A0	B0	D	D1	E	F	K0	P0	P2	P	T
8.0±0.3	3.3±0.1	3.3±0.1	1.5±0.1	---	1.75±0.1	3.5±0.1	1.9±0.1	4.0±0.1	2.0±0.1	4.0±0.1	0.25±0.1

6.2 供料方向 Direction of feed(单位：毫米 Unit:mm)



A	B	C	D	a	b	c
178 Typical	58 Typical	13 Typical	8.4 Typical	空带 Blank portions	装元件 Chip cavity	引带 Leader

6.3 包装数量 Packing quantity

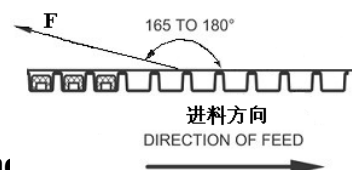
卷盘 Reel (PCS)	纸盒 Box (PCS)	纸箱 Carton (PCS)
2,000	10,000	100,000

6.4 剥离力要求 Peeling required

6.4.1 F 力大小 F force: 10~100g;

6.4.2 面带剥离速度 Peeling speed: 300mm/min±10%;

6.4.3 面带剥离角度 Peeling angle: 165°~180°.



7. 环保情况说明 Environmental Protection Statement

RoHS 指令： 公司产品符合 RoHS 指令。

Response to RoHS directive: Our products are RoHS compliance.



8. 推荐使用的焊接曲线 Recommended soldering profile

本产品建议使用回流焊接法。

Applicable soldering process to the products is reflow soldering.

8.1 焊接材料 Soldering Materials

8.1.1 焊料 Solder: Sn-3.0Ag-0.5Cu

8.1.2 助焊剂: 使用松香基助焊剂, 禁止使用卤化物含量超过 0.2wt% 的强酸性助焊剂和水溶性助焊剂。

Flux: Use rosin-based flux, but not strongly acidic flux (with chlorine exceeding 0.2 wt%). Do not use water-soluble flux.

8.2 焊接曲线 Soldering Profile

预热条件: 150~180°C/90~120s

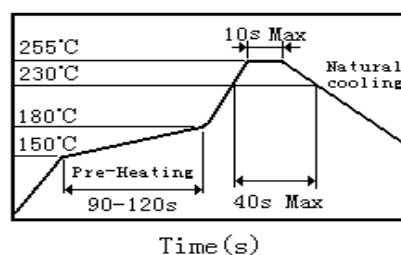
Preheat condition: 150~180°C/90~120s

230°C 以上时间: 40s Max

Allowed time above 230°C: 40s Max

峰值温度: 255°C

Max temp: 255°C



8.3 烙铁焊接 Soldering Iron

使用烙铁进行返修时要求在 150°C 下预热至少 1 分钟, 不能直接用焊头接触磁体, 返修焊接条件如下:
Reworking with electric soldering iron must preheating at 150°C for 1 minute is required, and do not directly touch the core with the tip of the soldering iron. The reworking soldering conditions are as follows:

8.3.1 烙铁头温度 Temperature of soldering iron tip: 350°C;

8.3.2 烙铁输出功率 Soldering iron power output: ≤30W;

8.3.3 烙铁头直径 Diameter of soldering iron end: ≤1.0mm;

8.3.4 焊接时间 Soldering time: <3 s



9. 清洗 Cleaning

避免用超声波清洗, 如果被超声波清洗, 产品可能会被破坏。

Washing by supersonic shall be avoided. If washed by supersonic waves, the products might be broken.

10. 贮存方法 Storage Methods

10.1 存储期限 Storage Period

为保证端子电极的焊接特性和包装材料处于良好状态, 请于本公司发货后 6 个月内使用本产品。同时, 由于端子电极的焊接特性会随时间发生变化, 如果贮存时间超过 6 个月, 请首先确认其焊接特性后再安装使用。

To maintain the solderability of terminal electrodes and to keep the packing material in good condition, product should be used within 6 months from the time of delivery. And the solderability of products electrodes



may decrease as time passes, so in case of storage over 6 months, solderability shall be checked before actual usage.

10.2 存储条件 Storage Conditions

10.2.1 存放货物的仓库应满足以下条件:

Store products in a warehouse in compliance with the following condition:

温度(Temperature): -10 ~ +40°C

相对湿度(Humidity): 30~70%RH

10.2.2 不要使产品遭受温度和湿度的快速变化。

Do not subject products to rapid changes in temperature and humidity.

10.2.3 不要将产品存放在化学环境中，如硫酸气体或碱性气体中，否则会降低电极端子的焊接特性和使电感器腐蚀。

Do not store the products in chemical atmosphere such as one containing sulfurous acid gas or alkaline gas, that will causes poor solderability and corrosion of inductors.

10.2.4 不要以散包装的形式存放产品以防止电感器间的相互碰撞造成磁芯破裂或断线。

Do not store products in bulk packaging to prevent collision among inductors which causes core chipping and wire breakage.

10.2.5 为了避免受潮气、灰尘等物质的影响，产品应保管于货架上。

Store products on pallets to protect from humidity, dust, etc.

10.2.6 产品应避免热冲击、振动以及直接光照等等。

Avoid heat shock, vibration, direct sunlight, etc.

11. 使用注意事项 Attention Matters for Usage

11.1 本承认书只保证我司产品作为一个单体时的质量情况，当我司产品被安装到贵公司产品上时，请贵司对使用在贵司电路上的产品情况进行了有效评价和确认。

Our specification limits the quality of the component as a single unit. Please ensure the component is thoroughly evaluated in your application circuit.

11.2 不要对产品施加过大的振动或机械冲击；

Do not apply excessive vibration or mechanical shock to products.

11.3 为防止断线，请不要使用锋利的物体接触线圈，如镊子；

Do not touch wire with sharp objects such as tweezers to prevent wire breakage.

11.4 在产品贴装时不要使用过大的压力，避免磁芯断裂。

Do not apply excessive stress to products mounted on boards to prevent core breakage.