

# Specification for Approval

Customer:

Customer P/N:

EEC P/N:

AL-7060A-701T0

Spec No.:

Version No.:

V0.1

Description:

Automotive Power Line Choke

| Customer Approval |  | EEC Approval |             |
|-------------------|--|--------------|-------------|
|                   |  |              |             |
| Inspected By:     |  | Issued By:   | Fuming Chen |
| Checked By:       |  | Checked By:  | Jerry Gu    |
| Approved By:      |  | Approved By: | Focus Wang  |
| Approved Date:    |  | Issued Date: | 2023/8/9    |

Please Return One Copy to Us After Approved,TKS! (承认后请回寄一份,谢谢)

Remark:

1. Before use, please confirm whether this product is suitable for your design, Scientific only ensure products meet this specification.
2. This specification data change must be confirmed by both parties,any individual modification is invalid.
3. If customer placed orders without signing back this specification, it is regarded as recognition.



绵阳敦源电子科技有限公司

Mianyang Dunyuan Electronics Technology Co.,Ltd

地址：四川省绵阳市高新区综合保税区

ADD: Comprehensive Bonded Zone, High-Tech Industrial Development Zone Mianyang, SiChuan

[illegible]

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## 1 Features And Benefits

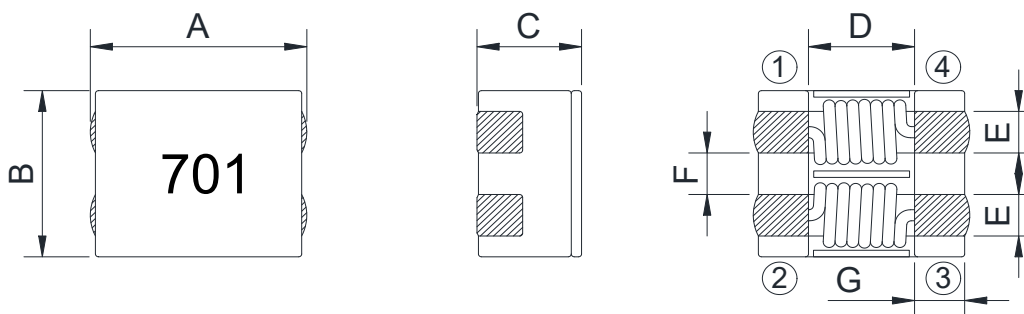
- Wire wound constructure common mode choke with best EMI suppression effect high impedance but very high rated current and low DCR
- Preventive measure against common mode noise radiation emissions from power line or else.
- Best for high current circuit such as car, wireless charging and power device design.
- Dimensions L x W x H = 7.0 x 6.0 x 4.0mm
- Operating Temperature: -40°C to +125°C
- Compatible with RoHS Directive and AEC-Q200



## 2 Electrical Specifications @ 25°C

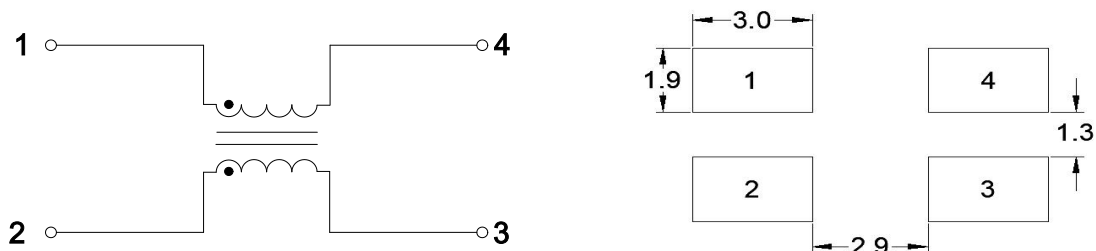
| Part Number    | Inductance (μH) Typ. | Common Mode Impedance (100MHZ) |         | DCR (mΩ)Max | Rated Current (A) | Insulation Resistance (MΩ) Min | Rated Voltage (V) Max |
|----------------|----------------------|--------------------------------|---------|-------------|-------------------|--------------------------------|-----------------------|
|                |                      | (Ω) Min                        | (Ω) Typ |             |                   |                                |                       |
| AL-7060A-701T0 | 4.7                  | 500                            | 700     | 15          | 4                 | 10                             | 125                   |

## 3 Dimensions (mm)



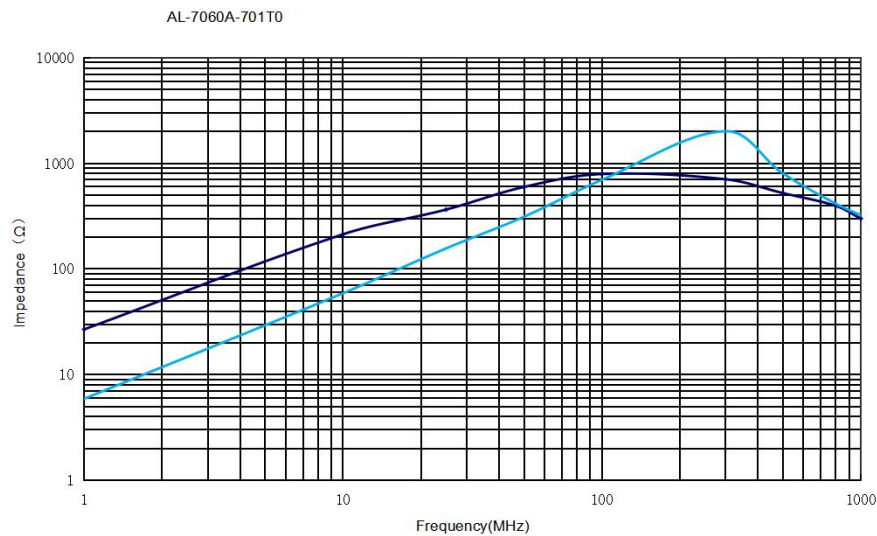
| Item | A    | B    | C   | D   | E    | F    | G    |
|------|------|------|-----|-----|------|------|------|
| Dim  | 7.3  | 6.0  | 3.8 | 3.5 | 1.5  | 1.5  | 1.7  |
| Tole | ±0.5 | ±0.5 | Max | Typ | ±0.2 | ±0.2 | ±0.2 |

## 4 Schematics& recommend layout

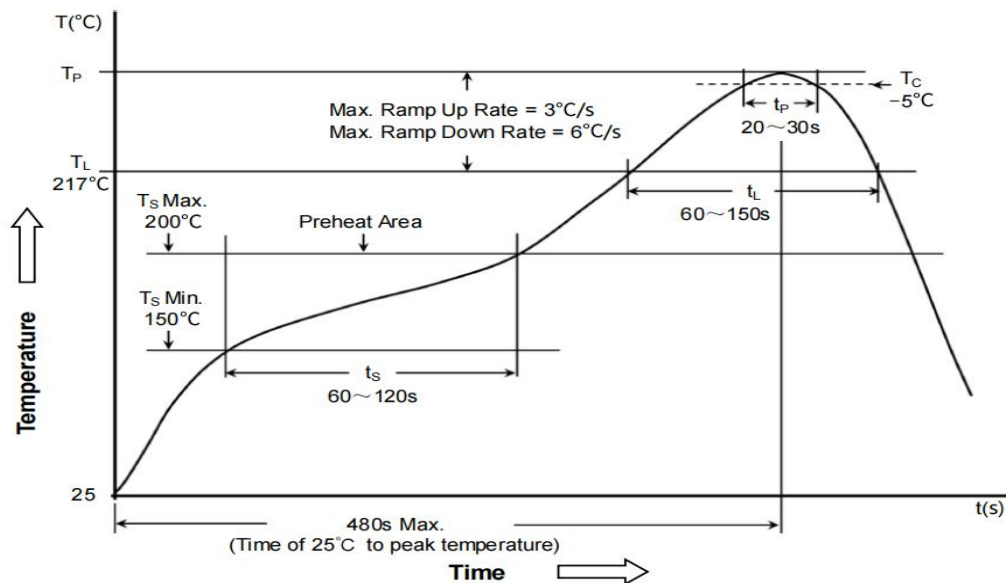


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## 5 Impedance VS. Frequency



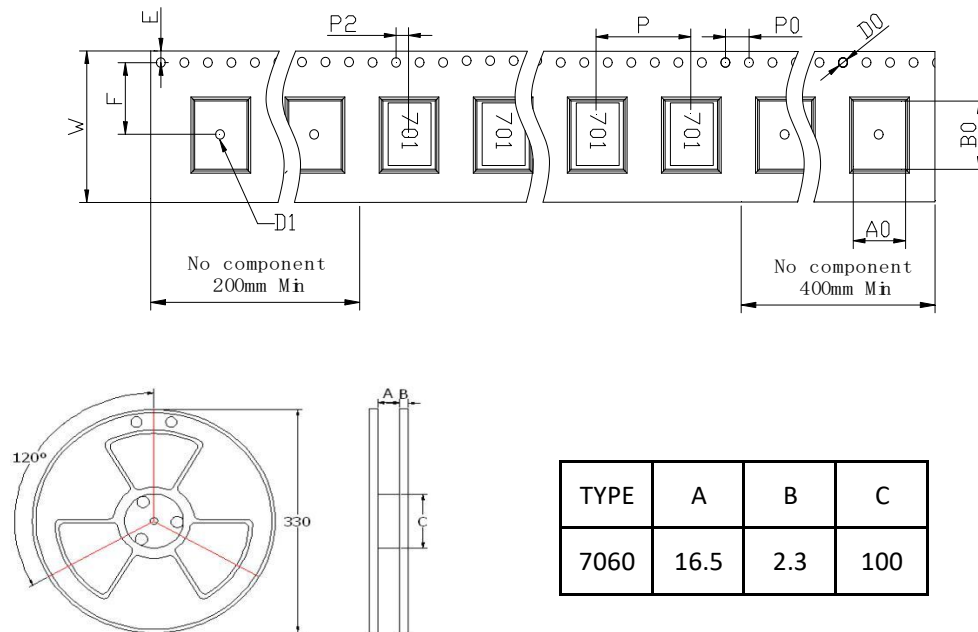
## 6 Recommended Reflow Profile



|                  | Package Thickness | Package Volume       |                          |                       |
|------------------|-------------------|----------------------|--------------------------|-----------------------|
|                  |                   | <350 mm <sup>3</sup> | 350~2000 mm <sup>3</sup> | >2000 mm <sup>3</sup> |
| PB-Free Assembly | <1.6mm            | 260°C                | 260°C                    | 260°C                 |
|                  | 1.6~2.5mm         | 260°C                | 250°C                    | 245°C                 |
|                  | ≥2.5mm            | 250°C                | 245°C                    | 245°C                 |

|                  |                |           |                   |
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## 7 Packaging specification



| TYPE     | W    | A0   | B0   | K0   | P    | P0   | P2  | F    | E    | D0   | D1   | REEL (PCS) |
|----------|------|------|------|------|------|------|-----|------|------|------|------|------------|
| AL-7060A | 16.0 | 6.35 | 7.85 | 3.80 | 12.0 | 4.00 | 2.0 | 7.50 | 1.75 | 1.50 | 1.50 | 1500       |

Package Quantity:

One Reel=1500 Pcs

One Inner Carton=1500\*3=4500 Pcs

One Export Carton=4500\*3=13500 Pcs

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## 8 Reliability test

| NO. | Test Item                     | Standard Reference     | Test Condition                                                                                                                                                                                                                                                                                                                                                |
|-----|-------------------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | High temperature storage test | MIL-STD-202 Method 108 | 1、1000 hrs. at rated temperature (e.g. 85°C part can be stored for 1000 hrs. at 85°C. Same applies for 125°C part. Unpowered.<br>2、Remeasure the parameters at 250hrs & 500hrs in addition to measuring them<br>3、Measurement at 24±4 hours after test conclusion.                                                                                            |
| 2   | Temperature Cycling           | JESD22 Method JA-104   | 1、1000 cycles (-40°C to +125°C). Note: If 85°C part or 105°C part the 1000 cycles will be at that temperature.<br>2、Sack Time : 30min<br>3、Measurement at 24±4 hours after test conclusion. 30min maximum dwell time at each temperature extreme. 1 min. maximum transition time                                                                              |
| 3   | Biased Humidity               | MIL-STD-202 Method 103 | 1、Time: 1000 hours, Temperature: 85±2°C / humidity:85±2%RH<br>2、Measurement at 24±4 hours after test conclusion.                                                                                                                                                                                                                                              |
| 4   | Operational Life              | MIL-STD-202 Method 108 | 1、1000 hrs. @ 105°C. If 85°C or 125°C part will be tested at that temperature. (Refer to DS)<br>2、Remeasure the parameters at 250hrs & 500hrs in addition to measuring them at the end of the test.<br>3、Measurement at 24±4 hours after test conclusion.                                                                                                     |
| 5   | Resistance to Solvents        | MIL-STD-202 Method 215 | 1、It is applicable to marked and/or coated components.<br>2、Add Aqueous wash chemical OKEMCLEAN (A 6% concentrated Oakite cleaner) or equivalent.<br>Notes: Do not use banned solvents.                                                                                                                                                                       |
| 6   | Mechanical Shock              | MIL-STD-202 Method 213 | 1、Figure 1 of Method 213. Condition C :<br>Peak value:100g's;<br>Normal duration(D):6ms;<br>Waveform:Half-sine;<br>Velocity change(Vi)ft/sec:12.3<br>2、18 cycles each of 6 orientations at 1500g's                                                                                                                                                            |
| 7   | Vibration                     | MIL-STD-202 Method 204 | 5g's for 20 min., 12 cycles each of 3 orientations<br>Note: Use 8"X5" PCB .031" thick 7 secure points on one long side and 2 secure points at corners of opposite sides. Parts mounted within 2" from any secure point. Test from 10-2000 Hz.(12 cycles each of 3 orientations at 5g's/ 0.5" / 10-2000 Hz.)                                                   |
| 8   | Resistance to Soldering Heat  | MIL-STD-202 Method 210 | Condition B No pre-heat of samples. Note: Single Wave Solder -Procedure 2 for SMD and Procedure 1 for Leaded with solder within 1.5mm of device body. Condition B include the follow conditions:<br>1.Temperature(°C): 260±5 (solder temp) ;<br>2.Time(s):10±1;<br>3.Temperature ramp/immersion and emersion rate:25mm/s±6mm/s;<br>4.Number of heat cycles:1. |

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|    |                             |                         |                                                                                                                                                                                                                                                                             |
|----|-----------------------------|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9  | Solderability               | J-STD-002               | 1、 For both Leaded & SMD. Electrical Test not required. Magnification 50 X.<br>Conditions: Leaded: Method A @ 235°C.<br>SMD:<br>a) Method B, 4 hrs @155°C dry heat @235°C<br>b) Method B @ 215°C category 3(8 hrs steam).<br>c) Method D category 3(8 hrs steam). @ 260°C.  |
| 10 | Electrical Characterization | User Spec               | 1、 Parametrically test per lot and sample size requirements, summary to show Min,Max, Mean and Standard deviation at room as well as Min and Max operating temperatures.<br>a) High Temp. TR at 125°C (Refer to DS)<br>b) Room Temp. TR at 25°C<br>c) Low Temp. TR at -40°C |
| 11 | Flammability                | UL-94                   | V-0 or V-1 Acceptable.<br>Test is applicable to components having a resin case.                                                                                                                                                                                             |
| 12 | Board Flex                  | AEC-Q200-005            | Required for MLCCs only. 60 sec minimum holding time.                                                                                                                                                                                                                       |
| 13 | Terminal Strength(SMD)      | AEC-Q200-006            | 1、 Unless otherwise specified, the SMD shall be tested while mounted onto a .062 inch thick FR-4 PCB using 1 ounce of Copper.<br>2、 Apply a 17.7 N (1.8 Kg) force to the side of a device being tested. This force shall be applied for 60 +1 seconds.                      |
| 14 | External Visual             | MIL-STD-883 Method 2009 | Inspect device construction, marking and workmanship. Electrical Test not required.                                                                                                                                                                                         |
| 15 | Physical Dimension          | JESD22 Method JB-100    | Verify physical dimensions to the applicable device specification.<br>Note: User(s) and Suppliers spec, electrical Test not required.                                                                                                                                       |

 REMINDERS

- The best assembly quality guarantee period of product: 12 months (From shipment date)  
Storage condition : seal in packaging, (temperature: 5 to 40°C, humidity: 10 to 75% RH or less).
- If taking out for use, the remaining products should be sealed in plastic bags and preserved in accordance with the above conditions, to avoid oxidation of electrodes and affect soldering status.
- Do not use or store in locations where there are conditions such as gas corrosion (salt, acid, alkali, etc.).
- Before soldering, be sure to preheat components.  
The preheating temperature should be set so that the temperature difference between the solder temperature and chip temperature does not exceed 150°C.
- Always handle products with care to avoid damage.
- Do not touch electrodes with bare hands directly, as oil secretions may inhibit soldering.  
Always ensure optimum conditions for soldering.
- Soldering corrections after mounting should be within the range of the conditions determined in the specifications. If overheated, a short circuit, performance deterioration, or lifespan shortening may occur.
- Use a wrist band to discharge static electricity in your body through the grounding wire.
- Do not expose the products to magnets or magnetic fields.
- Do not use for a purpose outside of the contents regulated in the delivery specifications.

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