

Power Inductor

Automotive Grade

AP3Y Series



Overview

Power inductors are passive electronic components used in various circuits to store energy in a magnetic field when electrical current flows through them. They are critical in filtering, energy storage, and noise suppression in power electronic systems. They are designed to handle higher currents and are optimized for minimal power loss and thermal efficiency.

Benefits

1. Automotive grade available
2. THT version available
3. Extremely low DCR
4. No thermal aging

Applications

1. Automotive Systems, OBC, Filter
2. Inverter, Energy Storage
3. Battery Charger

Product Information

Series	L (mm)	W (mm)	T (mm)	Inductance (μH)
AP3Y	15.0	15.7	10.5	0.47 ~ 82
	15.0	15.7	11.5	
	15.0	15.7	13.5	
	21.5	21.5	15.2	
	29.5	29.5	16.0	

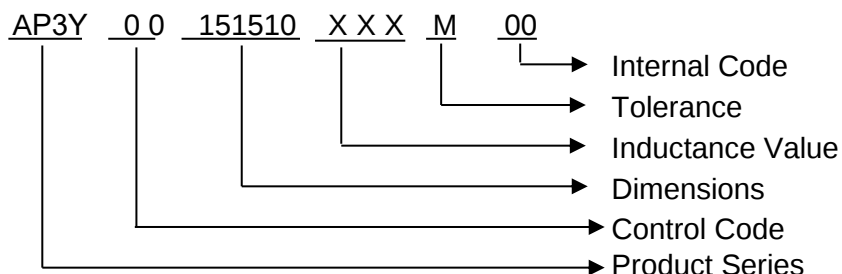


AP3Y00151510XXXM00 Series Specification

AEC-Q200

1 Scope: This specification applies to large current and low RDC SMD power inductor.

2 Part Numbering:

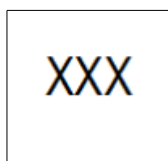


3 Rating:

Operating temperature range: $-50^{\circ}\text{C} \sim 150^{\circ}\text{C}$ (Including self - temperature rise)

Storage condition: $-20^{\circ}\text{C} \sim 40^{\circ}\text{C}$; 75%RH Max

4 Marking:



Marking color : White

Ex Marking XXX

5 Material List:

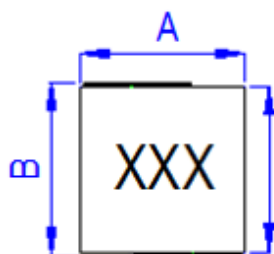
NO	Part	Material
1	Copper Wire	EIAIW (200°C)
2	Core	Carbonyl iron powder
3	coating	Paint Gray (127# matte)
4	Solder	Sn96.5-Ag3.0-Cu0.5
5	Ink	PIC-1083B-白
6	EPOXY	M02-039-AU(6461HF)
7	Clip	C1100

6 Standard Testing Condition

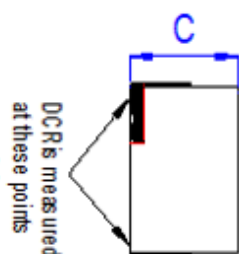
	Unless otherwise specified	In case of doubt
Temperature	Ordinary Temperature(15 to 35°C)	20 to 30°C
Humidity	Ordinary Humidity(25 to 85% RH)	50 to 80% RH

7 Configuration and Dimensions:

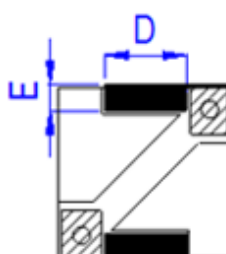
TOP VIEW



SIDE VIEW



BOTTOM VIEW



Product appearance



Part No.	A	B	C	D	E
AP3Y001515101R0M00	15.0 max	15.7 max	10.5Max	5.1±0.5	2.3±0.5
AP3Y001515101R5M00	15.0 max	15.7 max	10.5Max	5.1±0.5	2.3±0.5
AP3Y001515102R2M00	15.0 max	15.7 max	10.5Max	5.1±0.5	2.3±0.5
AP3Y001515103R3M00	15.0 max	15.7 max	10.5Max	5.1±0.5	2.3±0.5
AP3Y001515104R7M00	15.0 max	15.7 max	10.5Max	5.1±0.5	2.3±0.5
AP3Y001515106R8M00	15.0 max	15.7 max	10.5Max	5.1±0.5	2.3±0.5
AP3Y001515108R2M00	15.0 max	15.7 max	10.5Max	5.1±0.5	2.3±0.5
AP3Y00151510100M00	15.0 max	15.7 max	10.5Max	5.1±0.5	2.3±0.5
AP3Y00151510150M00	15.0 max	15.7 max	10.5Max	5.1±0.5	2.3±0.5
AP3Y00151510220M00	15.0 max	15.7 max	10.5Max	5.1±0.5	2.3±0.5
AP3Y00151511270M00	15.0 max	15.7 max	11.5Max	5.1±0.5	2.3±0.5
AP3Y00151511330M00	15.0 max	15.7 max	11.5Max	5.1±0.5	2.3±0.5
AP3Y00151513470M00	15.0 max	15.7 max	13.5Max	5.1±0.5	2.3±0.5
AP3Y00151513680M00	15.0 max	15.7 max	13.5Max	5.1±0.5	2.3±0.5

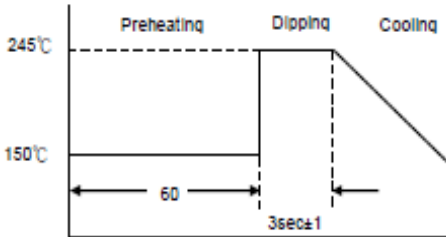
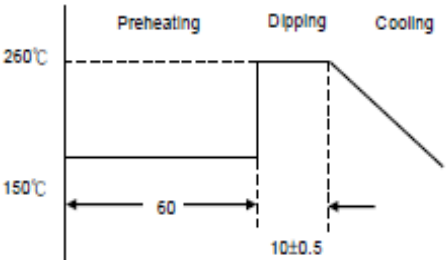
8 Electrical Characteristics:

Part No.	Inductance (uH)	Test Freq.	Tolerance (±%)	Irms (A)Typ.	Isat (A)Typ.	RDC (mΩ)Max	Marking
AP3Y001515101R0M00	1.0	100kHz,1.0V	20	44	100	1.8	1R0
AP3Y001515101R5M00	1.5	100kHz,1.0V	20	38	95	2.1	1R5
AP3Y001515102R2M00	2.2	100kHz,1.0V	20	36	70	2.7	2R2
AP3Y001515103R3M00	3.3	100kHz,1.0V	20	32	50	3.5	3R3
AP3Y001515104R7M00	4.7	100kHz,1.0V	20	28	45	5.2	4R7
AP3Y001515106R8M00	6.8	100kHz,1.0V	20	26	38	6	6R8
AP3Y001515108R2M00	8.2	100kHz,1.0V	20	24	34	7.2	8R2
AP3Y00151510100M00	10	100kHz,1.0V	20	21	32	8.5	100
AP3Y00151510150M00	15	100kHz,1.0V	20	18	30	11.5	150
AP3Y00151510220M00	22	100kHz,1.0V	20	14	24	16.8	220
AP3Y00151511270M00	27	100kHz,1.0V	20	11	23	26.5	270
AP3Y00151511330M00	33	100kHz,1.0V	20	10	19	28	33
AP3Y00151513470M00	47	100kHz,1.0V	20	9	17	38	470
AP3Y00151513680M00	68	100kHz,1.0V	20	7	16	61	680

Note:

- 1.Ambient + temperature rise range — 50°C~150°C(Including self - temperature rise)
- 2.Isat for Inductance drop 30% from its value without current.
- 3.Irms for a 40°C temprature rise from 25°C ambient.
- 4.The part temperature (ambient + temp rise) should not exceed 150°C under worst case operating conditions.
Circuit design150°C under worst case operating conditions. Component placement, PWB trace size and thickness, airflow and other cooling provisions all affect the part temperature. Part temperature should be verified in the end application.

9 Reliability verification conditions

Item	Specification	Conditions															
Solderability	More than 90% of the terminal electrode should be covered with solder.	 Unit: Second															
Solder Heat Resistance	Inductance within $\pm 20\%$ of initial value. No disconnection or short circuit. The appearance shall not break.	 Unit: Second															
Heat resistance	Inductance within $\pm 20\%$ of initial value. No disconnection or short circuit. The appearance shall not break.	After 1000 hours in $125 \pm 5^\circ\text{C}$ and 2 hour drying under normal condition.															
Cold resistance	Inductance within $\pm 20\%$ of initial value. No disconnection or short circuit. The appearance shall not break.	After 1000 hours in $-40 \pm 5^\circ\text{C}$ and 2 hour drying under normal condition.															
Thermal shock	Inductance within $\pm 20\%$ of initial value. No disconnection or short circuit. The appearance shall not break.	After 100 cycles of following condition. <table border="1"> <thead> <tr> <th>Step</th><th>Temperature ($^\circ\text{C}$)</th><th>Times (min.)</th></tr> </thead> <tbody> <tr> <td>1</td><td>$-40 \pm 5^\circ\text{C}$</td><td>30</td></tr> <tr> <td>2</td><td>Room Temperature</td><td>Within 3</td></tr> <tr> <td>3</td><td>$125 \pm 5^\circ\text{C}$</td><td>30</td></tr> <tr> <td>4</td><td>Room Temperature</td><td>Within 3</td></tr> </tbody> </table>	Step	Temperature ($^\circ\text{C}$)	Times (min.)	1	$-40 \pm 5^\circ\text{C}$	30	2	Room Temperature	Within 3	3	$125 \pm 5^\circ\text{C}$	30	4	Room Temperature	Within 3
Step	Temperature ($^\circ\text{C}$)	Times (min.)															
1	$-40 \pm 5^\circ\text{C}$	30															
2	Room Temperature	Within 3															
3	$125 \pm 5^\circ\text{C}$	30															
4	Room Temperature	Within 3															
Humidity Resistance	Inductance within $\pm 20\%$ of initial value. No disconnection or short circuit. The appearance shall not break.	After 1000 hours in $40 \pm 2^\circ\text{C}$ and 90 to 95% humidity , and 2 hour drying under normal condition.															
Vibration Test	Inductance within $\pm 5\%$ of initial value and appearance shall not break.	After vibration for 1hour, In each of three orientations at sweep vibration (10~55~10Hz) with 1.52mm P-P Amplitudes.															

10 Reflow Profile:

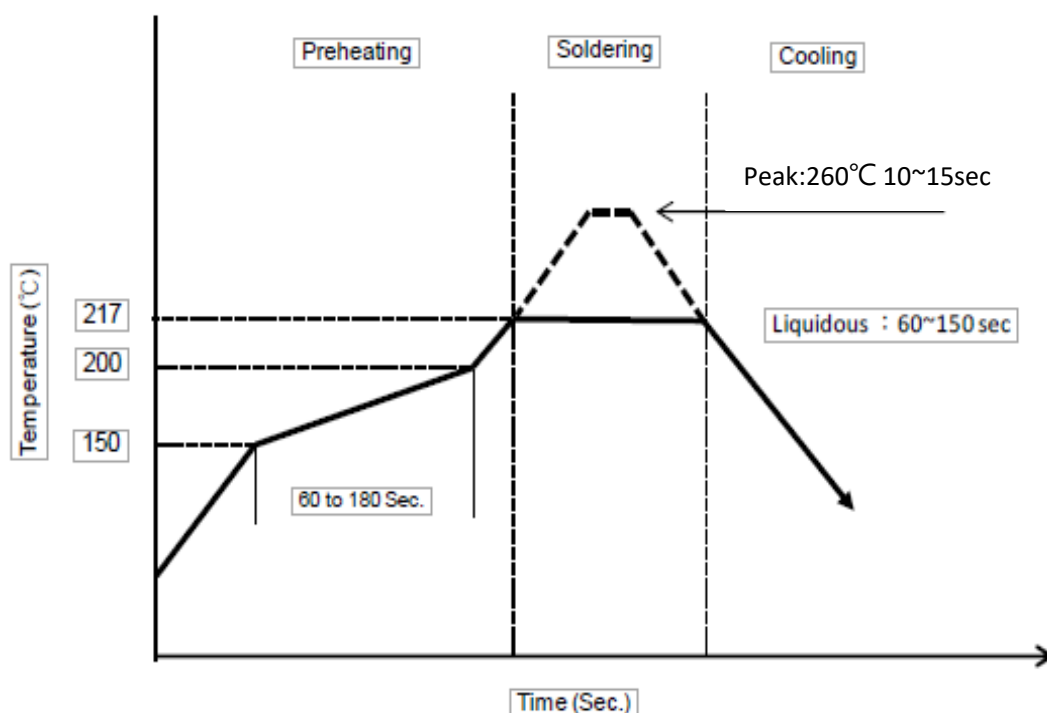
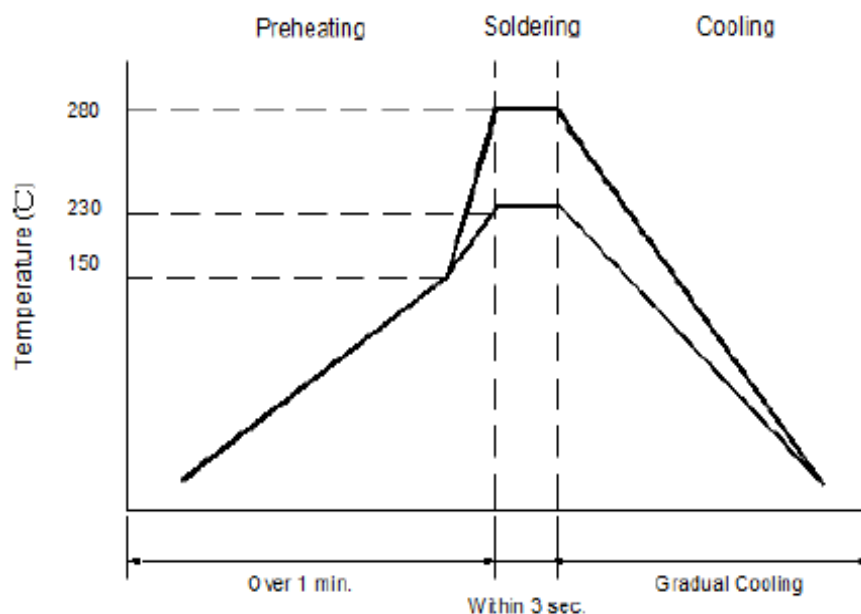


Figure 2. Hand Soldering

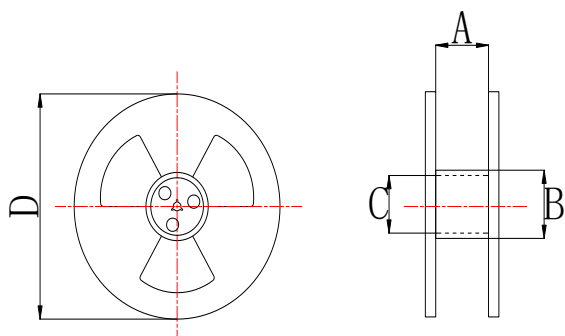


AP3Y00151510XXXM00 Series Specification

AEC-Q200

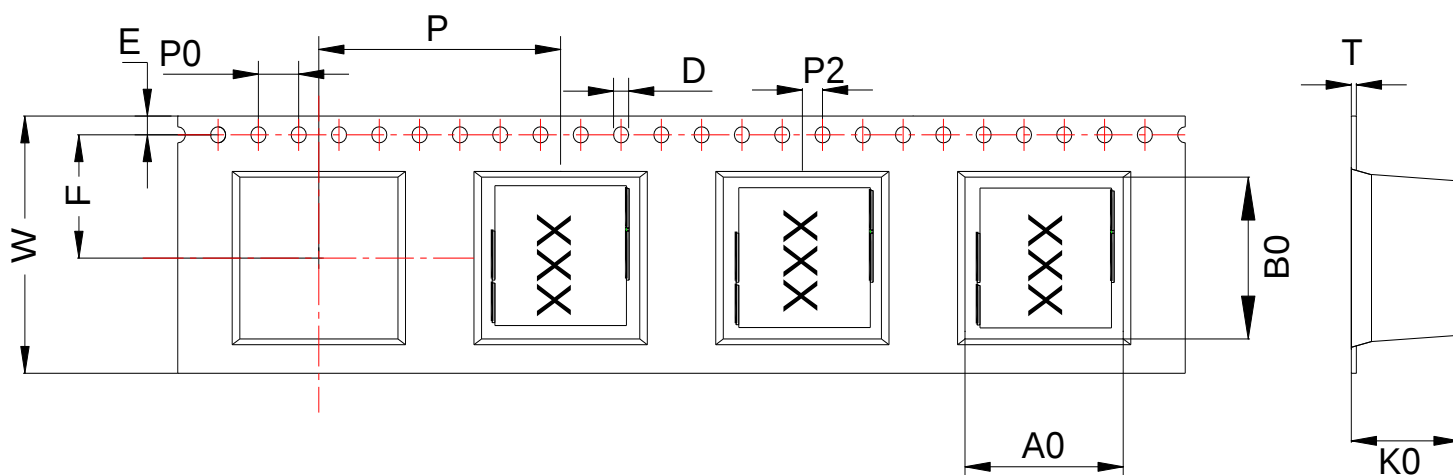
11 Packaging:

11.1 Reel Dimension



Type	A(mm)	B(mm)	C(mm)	D(mm)
13" x 24mm	24.5 ± 0.5	100 ± 2	13.5 ± 0.5	330

11.2 Tape Dimension



P/N	Ao(mm)	Bo(mm)	Ko(mm)	P(mm)	T(mm)	W(mm)	PCS/REEL
AP3Y00151510 SERIES	15.7 ± 0.1	15.1 ± 0.1	10.7 ± 0.1	24 ± 0.1	0.5 ± 0.05	24 ± 0.3	150
AP3Y00151511 SERIES	15.7 ± 0.1	15.1 ± 0.1	11.7 ± 0.1	24 ± 0.1	0.5 ± 0.05	24 ± 0.3	100
AP3Y00151513 SERIES	15.7 ± 0.1	15.1 ± 0.1	13.7 ± 0.1	24 ± 0.1	0.5 ± 0.05	24 ± 0.3	100

13 Graph :

