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

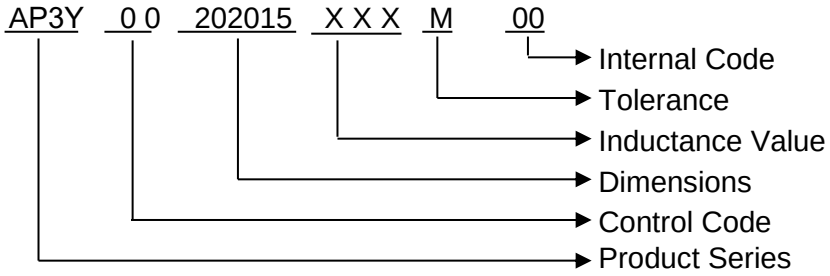
Series	L (mm)	W(mm)	T (mm)	Inductance (μH)
AP3Y	15.0	15.7	10.5	0.47 ~ 82
	15.0	15.7	11.5	
	15.0	15.7	13.5	
	21.5	21.5	15.2	
	29.5	29.5	16.0	

AP3Y00202015XXXM00 Series Specification AEC-Q200

1 Scope:

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

2 Part Numbering:

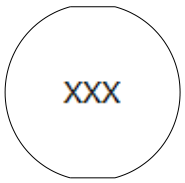


3 Rating:

Operating temperature range:－50°C～150°C (Including self - temperature rise)

Storage condition:-20℃~40℃ ；75%RH Max

4 Marking:



Marking color： White

Ex Marking：XXX

5 Material List:

NO	Part	Material
1	Copper Wire	EIAIW（200℃）
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

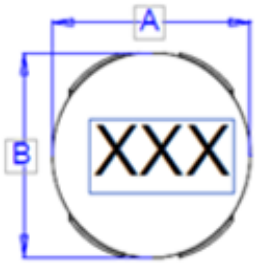
6 Standard Testing Condition

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

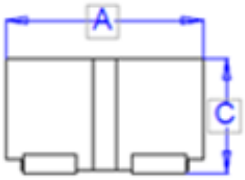
AP3Y00202015XXXM00 Series Specification AEC-Q200

7 Configuration and Dimensions:

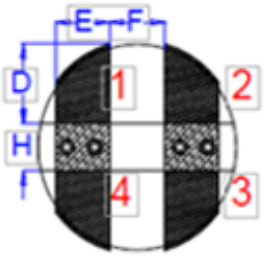
TOP VIEW



SIDE VIEW



BOTTOM VIEW



Product appearance

Part No.	A	B	C	D	E	F	H
AP3Y00202015R47M00	21.5max	21.5 max	15.2Max	7.7±0.5	5.5±0.5	6ref	4.6ref
AP3Y002020151R0M00	21.5 max	21.5 max	15.2Max	7.7±0.5	5.5±0.5	6ref	4.6ref
AP3Y002020151R5M00	21.5 max	21.5 max	15.2Max	7.7±0.5	5.5±0.5	6ref	4.6ref
AP3Y002020152R2M00	21.5 max	21.5 max	15.2Max	7.7±0.5	5.5±0.5	6ref	4.6ref
AP3Y002020153R3M00	21.5 max	21.5 max	15.2Max	7.7±0.5	5.5±0.5	6ref	4.6ref
AP3Y002020154R7M00	21.5 max	21.5 max	15.2Max	7.7±0.5	5.5±0.5	6ref	4.6ref
AP3Y002020155R6M00	21.5 max	21.5 max	15.2Max	7.7±0.5	5.5±0.5	6ref	4.6ref
AP3Y002020156R8M00	21.5 max	21.5 max	15.2Max	7.7±0.5	5.5±0.5	6ref	4.6ref
AP3Y002020158R2M00	21.5 max	21.5 max	15.2Max	7.7±0.5	5.5±0.5	6ref	4.6ref
AP3Y00202015100M00	21.5 max	21.5 max	15.2Max	7.7±0.5	5.5±0.5	6ref	4.6ref
AP3Y00202015220M00	21.5 max	21.5 max	15.2Max	7.7±0.5	5.5±0.5	6ref	4.6ref

8 Electrical Characteristics:

Part No.	Inductance (uH)	Test Freq.	Tolerance (±%)	Irms (A)Typ.	Isat (A)Typ.	RDC (mΩ)Max	Marking
AP3Y00202015R47M00	0.47	100kHz,1.0V	20	73	93	0.6	R47
AP3Y002020151R0M00	1.0	100kHz,1.0V	20	68	62	0.7	1R0
AP3Y002020151R5M00	1.5	100kHz,1.0V	20	58	50	1.00	1R5
AP3Y002020152R2M00	2.2	100kHz,1.0V	20	53	48	1.3	2R2
AP3Y002020153R3M00	3.3	100kHz,1.0V	20	47	33	1.6	3R3
AP3Y002020154R7M00	4.7	100kHz,1.0V	20	42	30	2.2	4R7
AP3Y002020155R6M00	5.6	100kHz,1.0V	20	40	28	3	5R6
AP3Y002020156R8M00	6.8	100kHz,1.0V	20	35	25	3.8	6R8
AP3Y002020158R2M00	8.2	100kHz,1.0V	20	30	23	4.3	8R2
AP3Y00202015100M00	10	100kHz,1.0V	20	26	20	4.8	100
AP3Y00202015220M00	22	100kHz,1.0V	20	18	11	9	220

Note:

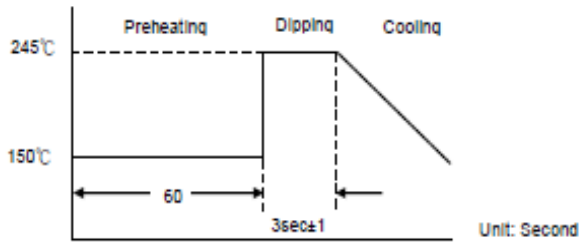
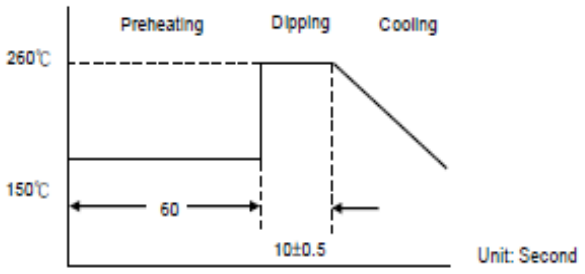
1.Ambient + temperature rise range －50°C～150°C(Including self - temperature rise)

2.Isat for Inductance drop 30% from its value without current.

3.Irms for a 40℃ temprature rise from 25℃ 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

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

10 Reflow Profile:

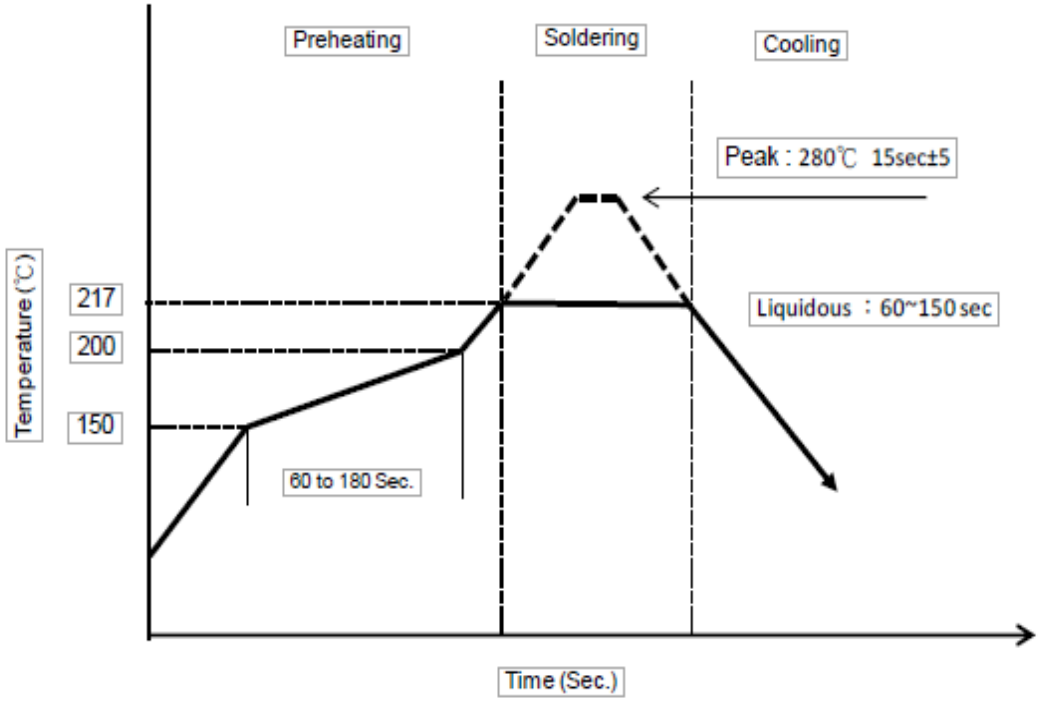
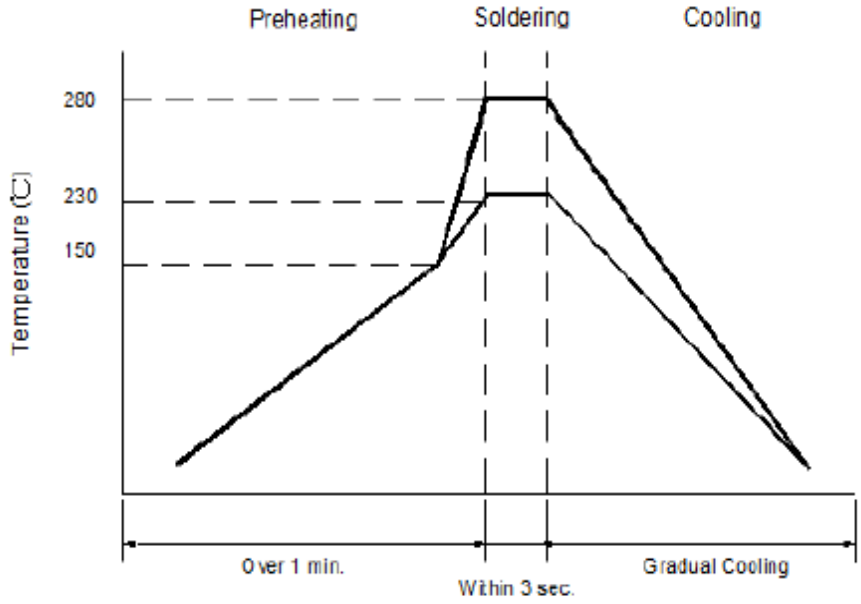
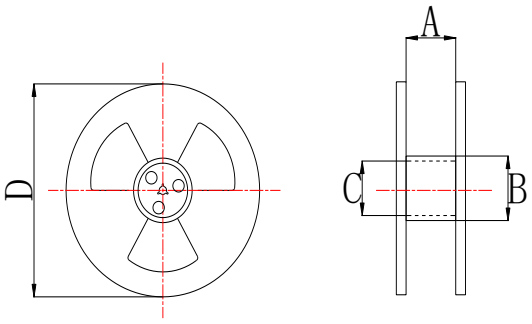


Figure 2. Hand Soldering



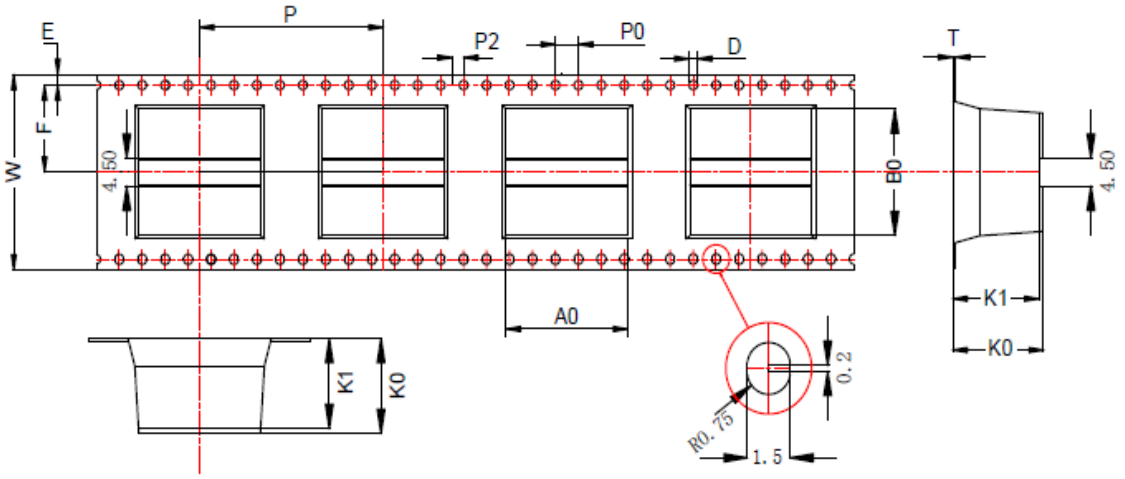
11 Packaging:

11.1 Reel Dimension



Type	A(mm)	B(mm)	C(mm)	D(mm)
13" x 32mm	32.0 ± 0.5	100 ± 2	13.5 ± 0.5	330

11.2 Tape Dimension

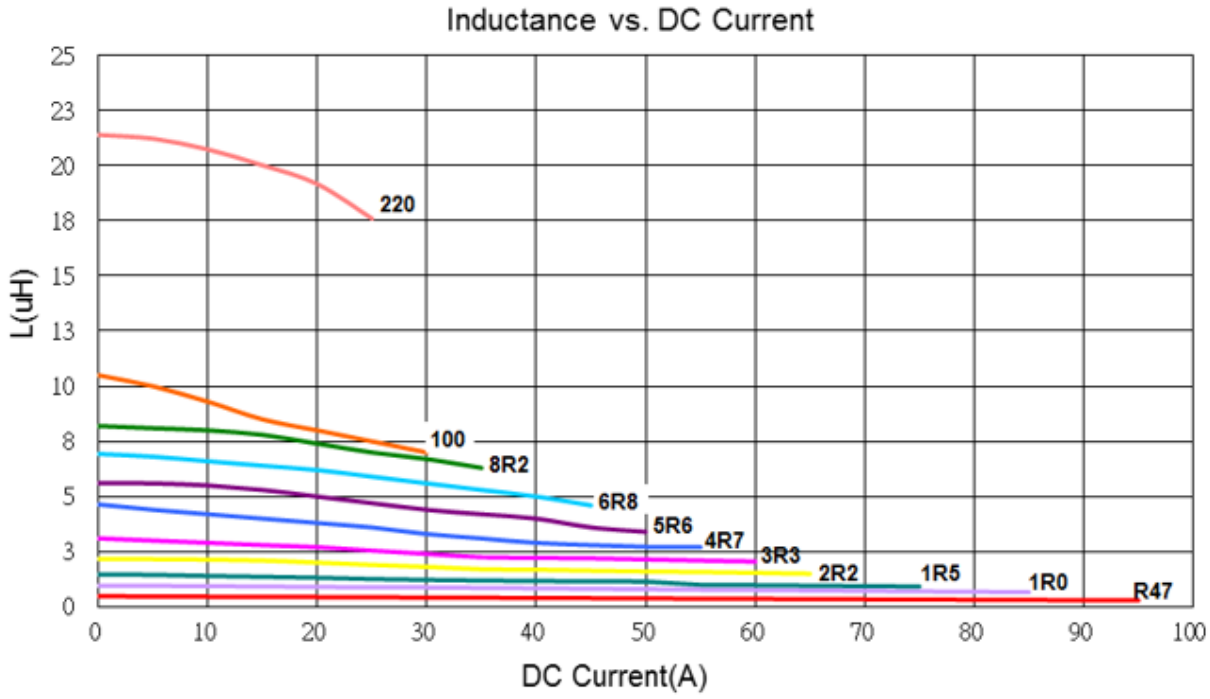


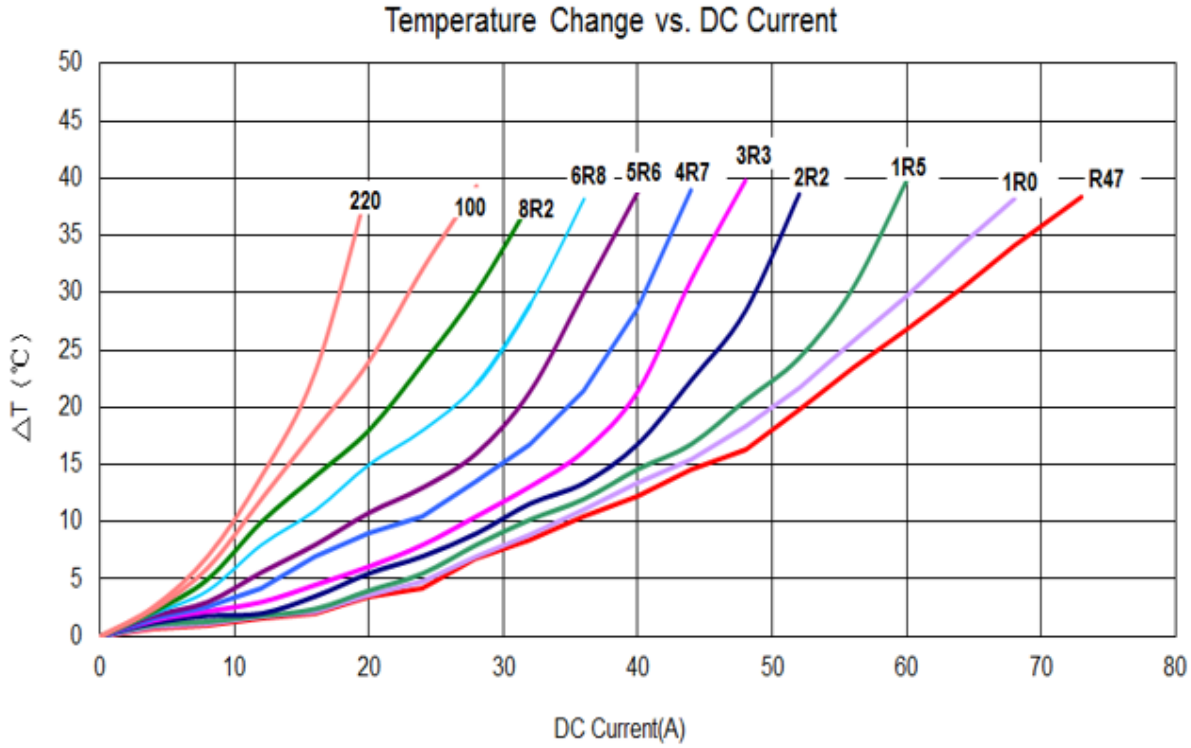
P/N	Ao(mm)	Bo(mm)	Ko(mm)	P(mm)	T(mm)	W(mm)	PCS/REEL
AP3Y00202015 SERIES	21.2±0.1	20.8±0.1	14.8±0.1	32.0±0.1	0.5±0.05	32.0±0.2	100

Packaging Quantity

Series Name : AP3Y00202015 SERIES						Unit: mm
Reel	Inner Carton			Outer Carton		
Quantity	Reel	Quantity	Size	Inner Carton	Quantity	Size
150pcs	2	300PCS	345×68×345	4	1200pcs	368×368×310

12 Graph :


Inductance vs. DC Current
L(uH)
DC Current(A)
220
100
8R2
6R8
5R6
4R7
3R3
2R2
1R5
1R0
R47


Temperature Change vs. DC Current
ΔT (℃)
DC Current(A)
220
100
8R2
6R8
5R6
4R7
3R3
2R2
1R5
1R0
R47