<SPECIFICATION>

SPEC.No. ASDIQ-SPE-141(00)
Date： Aug. 16, 2022

To :

CUSTOMER'S PRODUCT NAME

ASDI PRODUCT NAME:
AMPI5020N-SERIES

RECEIPT CONFIRMATION

UNCONDITIONAL CONSENT	CONDITIONAL CONSENT

APPROVED	CHECKED

ASDI SIGNATURE

APPROVED	CHECKED	PREPARED
Xianglong Li	Liang Wang	Jiayin Cai

REV.	DATE	DESCRIPTION	APPROVED	CHECKED	PREPARED
00	Aug.16, 2022	New release	Xianglong Li	Liang Wang	Jiayin Cai

CAUTION WHEN HANDLING

Before use the products, please read this specification.

CAUTION FOR SAFETY USING

When use the products, be careful to mentioned below for safety using.

CAUTION

*The product should be used within 12 monthes.
Focus on the storage conditions.
Solderability may become weak if it exceeds the period.
*Do not use and store the product in condition of gas corrosion (Salt,Acid,Alkaline).
*The products must be preheated before soldering.
The operating temperature including self-generated heat must be within '- 25 ~ +125℃.
*Rework by soldering iron;Please keep the mentioned conditions in this specification.
*In case of insert P.C. Board on chassis, do not add mechanical stress to the product.
*Be careful to arrange of non-magnetic field type inductors.
The error may be caused by magnetic field coupling.
*In case handle the products, please use wrist strap for ground static discharge on human body.
The product keeps away from magnet or magnetized things.
*Do not use the product beyond the mentioned conditions in this specification.
*About an application
The products listed on this specification sheet are intended for use in general electronic equipment
(AV equipment, telecommunications equipment, home appliances, amusement equipment, computer equipment, personal equipment, office equipment, measurement equipment, industrial robots) under a normal operation and use condition.
*The products are not designed or warranted to meet the requirements of the applications listed below, whose performance and/or quality require a more stringent level of safety or reliability, or whose failure, malfunction or trouble could cause serious damage to society, person or property. Please understand that we are not responsible for any damage or liability caused by use of the products in any of the applications below or for any other use exceeding the range or conditions set forth in this specification sheet.

1)Aerospace/Aviation equipment
2)Military equipment
3)Seabed equipment
4)Safety equipment
5)Medical equipment
6)Transportation control equipment
7)Power-generation control equipment which directly endanger human life
8)Atomic energy-related equipment
9)Other applications that are not considered general-purpose applications

If you intend to use the products in the following applications, please contact our sales office.
Transportation equipment (cars, electric trains, ships, etc.), Public information-processing equipment, Electric heating apparatus / burning equipment, Disaster prevention/crime prevention equipment
When using this product in general-purpose applications, you are kindly requested to take into consideration securing protection circuit/equipment or providing backup circuits, etc., to ensure higher safety.

1.INDEX

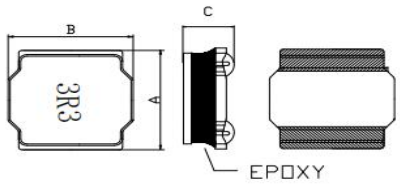
2.Manufacturing Location

China

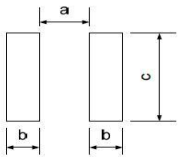
(1)Features

1.This specification applies Low Profile Power Inductors.
2.100% Lead(Pb) & Halogen-Free and RoHS compliant.

(2)Dimensions



Recommended Land Pattern



Series	A(mm)	B(mm)	C(mm)
AMPI5020N	5.0±0.2	5.0±0.2	2.0 Max

a Typ	b Typ	c Typ
2.3	1.4	4.2

(3)Part Numbering

AMPI	5020	N	-	1R0	N
A	B	C		D	E

A: Series
B: Dimension
C: Control S/N
D: Inductance 1R0=1.0μH
E: Inductance Tolerance M=±20%；N=±30%

(4)Electrical Specifications

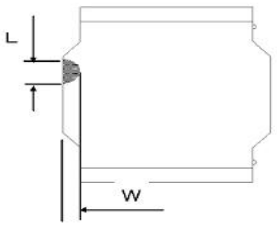
Table 1

ASDI Part Number	Inductance (μH)	Tolerance (%)	Test Frequency	DCR (Ω) ±30%	I sat (A)	I rms (A)
AMPI5020N-R22N	0.22	±30%	100kHz/0.25V	0.018	5.80	5.00
AMPI5020N-R47N	0.47	±30%	100kHz/0.25V	0.020	2.80	4.90
AMPI5020N-1R0N	1.00	±30%	100kHz/0.25V	0.030	2.60	2.35
AMPI5020N-1R5N	1.50	±30%	100kHz/0.25V	0.030	2.60	2.30
AMPI5020N-2R2N/M	2.20	±30%/±20%	100kHz/0.25V	0.040	2.55	2.20
AMPI5020N-3R3N/M	3.30	±30%/±20%	100kHz/0.25V	0.050	2.50	2.20
AMPI5020N-4R7M	4.70	±20%	100kHz/0.25V	0.070	2.35	2.00
AMPI5020N-6R8M	6.80	±20%	100kHz/0.25V	0.095	2.00	1.90
AMPI5020N-100M	10.00	±20%	100kHz/0.25V	0.120	1.50	1.35
AMPI5020N-150M	15.00	±20%	100kHz/0.25V	0.155	1.20	1.10
AMPI5020N-220M	22.00	±20%	100kHz/0.25V	0.260	1.15	1.05
AMPI5020N-330M	33.00	±20%	100kHz/0.25V	0.390	0.92	0.90
AMPI5020N-470M	47.00	±20%	100kHz/0.25V	0.530	0.77	0.77
AMPI5020N-101M	100.00	±20%	100kHz/0.25V	1.100	0.53	0.53

Notes

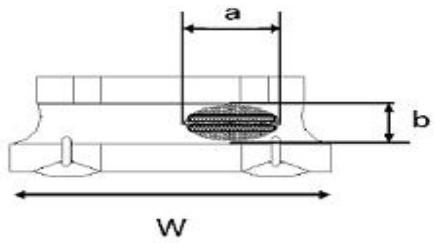
Isat：Based on inductance change （△L/L0：≦-30%）@ ambient temp. 25℃
Irms：Based on temperature rise （△T：40℃ typ.）

Core chipping



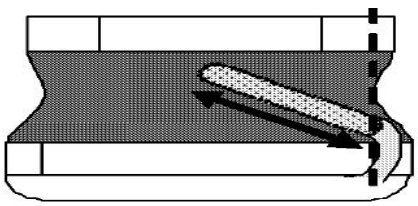
Type	L	W
AMPI5020N	1.5mm Max.	1.5mm Max.

Vacant appearance tolerance Limit
The appearance standard of the chipping size in top side, of bottom side ferrite core is following dimension.
Size of vacancies occurring to coating resin is specified below.



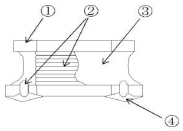
External appearance specification for exposed wire

Exposed end of the winding wire at the secondary side should be 3mm and below.



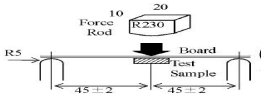
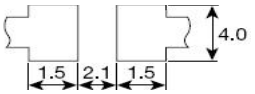
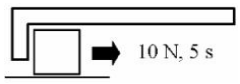
Exposed wire tolerance limit of coating resin part on product side.
Size of exposed wire occurring to coating resin is specified below.
1.Width direction(dimension a): Acceptable when a≦1/2W
Nonconforming when a > w1/2W
2.Length direction(dimension b): Dimension b is not specified.
3.When total area of exposed wire occurring to each sides is not greater than 50% of coating resin area, that is acceptable.

(5)Material List



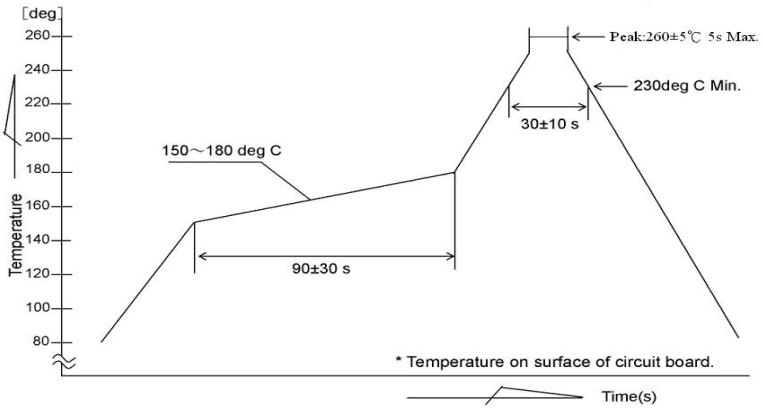
No.	Items	Materials
1	Core	Ni-Zn ferrite
2	Wire	Copper Wire
3	Coating	Epoxy
4	Solder	Lead free

(6)Reliability Tests

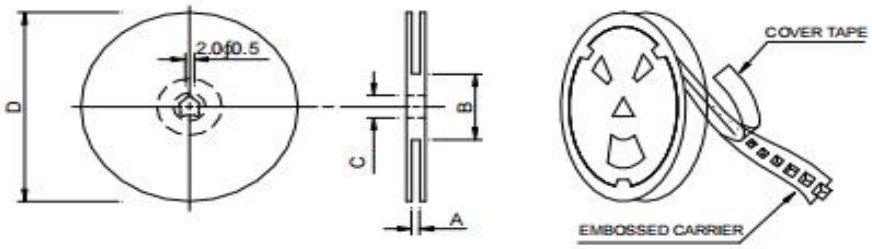
No.	Test item	Performance	Test details
1	Operating temperature	- 25 ~ +125℃.	Including self-generated heat
2	Storage Temperature	-40 ~ +85℃. - 5 to 40℃ for the product with taping.	
3	Rated current	Within the specified tolerance	
4	Inductance (L)		LCR Meter: HP 4285A or equivalent, 100kHz, 1V
5	DC Resistance		DC Ohmmeter: HIOKI3227 or equivalent
6	Temperature characteristics	Inductance change：Within±20%	Measurement of inductance shall be taken at temperature rang within–25℃ to +85℃. With reference to inductance value at+20℃,change rate shall be calculated. Measurement of inductance shall be taken at temperature rang within–40℃ to +125℃. With reference to inductance value at+20℃,change rate shall be calculated.
7	Resistance to flexure substrate	No damage	The test samples shall be soldered to the testing board by the reflow. As illustrated below, apply force in the direction of the arrow indicating until deflection of the test board reaches to 2mm.  Substrate size：100x40x1.0 Substrate material：glass epoxy-resin Solder cream thickness：0.15 
8	Adhesion of Terminal electrode	Shall not come off PC board.	The test samples shall be soldered to the testing board and by the reflow.  Applied force：10 N to X and Y directions. Duration：5s Solder cream thickness：0.15
9	Resistance to Vibration	Inductance change：Within±10% No abnormality observed in appearance.	The test samples shall be soldered to the test board by the reflow. Then it shall be submitted to below test conditions. Frequency: 10-55Hz Total Amplitude: 1.5mm (May not exceed acceleration 196m/S2) Sweeping Method:10Hz to 55Hz to 10Hz for 1min. Time：2 hours each in X,Y, and Z Direction. Recovery: At least 2hrs of recovery under the standard condition after the test, followed by the measurement within 48hrs.

<table>
<tr><th>No.</th><th>Test item</th><th>Performance</th><th>Test details</th></tr>
<tr><td>10</td><td>Solderability</td><td>At least 90% of surface of terminal electrode is covered by new solder.</td><td>The test samples shall be dipped in flux, and then immersed in molten solder as shown in below.
Flux：methanol solution containing rosin 25%
Solder temperature: 245±5℃
Time: 5±1.0 sec.
Immersion depth: All sides of mounting terminal shall be immersed.</td></tr>
<tr><td>11</td><td>Resistance to soldering</td><td>Inductance change：Within±10%
No abnormality observed in appearance.</td><td>The test sample shall be exposed to reflow oven at 230±5℃ for 40 seconds, with peak temperature at 260±5℃ for 5 seconds,2 times.
Test board thickness: 1.0mm
Test board material: glass epoxy-resin</td></tr>
<tr><td>12</td><td>Thermal shock</td><td rowspan="5">Inductance change：Within±10%
No abnormality observed in appearance.</td><td>The test samples shall be soldered to the test board by the reflow.
The test samples shall be placed at specified temperature for specified time by step 1 to step 4 as shown below in sequence.
The temperature cycles shall be repeated 100 cycles .
<table><tr><th>Phase</th><th>Temperature(℃)</th><th>Time(min.)</th></tr><tr><td>1</td><td>-40±3℃</td><td>30±3</td></tr><tr><td>2</td><td>Room Temp</td><td>Within 3</td></tr><tr><td>3</td><td>85±2℃</td><td>30±3</td></tr><tr><td>4</td><td>Room Temp</td><td>Within 3</td></tr></table></td></tr>
<tr><td>13</td><td>Damp heat life test</td><td>Test Method and Remarks The test samples shall be soldered to the test board by the reflow.
The test samples shall be placed in thermostatic oven set at specified temperature and humidity as shown in below.
Temperature: 60±2℃
Humidity: 90~95%RH
Time: 500+24/-0 hrs</td></tr>
<tr><td>14</td><td>Loading under damp heat life test</td><td>The test samples shall be soldered to the test board by the reflow.
The test samples shall be placed in thermostatic oven set at specified temperature and humidity and applied the rated current continuously as shown in below.
Temperature: 60±2℃
Humidity: 90~95%RH
Applied current: Rated current
Time: 500+24/-0 hrs</td></tr>
<tr><td>15</td><td>Low temperature life test</td><td>The test samples shall be soldered to the test board by the reflow.
After that, the test samples shall be placed at test conditions as shown in below.
Temperature:-40±2℃
Time:500+24/-0 hrs</td></tr>
<tr><td>16</td><td>Loading at high temperature life test</td><td>The test samples shall be soldered to the test board by the reflow.
Temperature: 85±2℃.
Applied current: Rated current
Time: 500+24/-0 hrs.</td></tr>
</table>

(7)Soldering

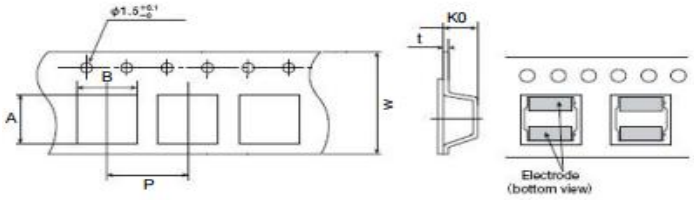


(8)Packaging Information
8-1,Reel Dimension



Type	A(mm)	B(mm)	C(mm)	D(mm)
AMPI5020N	12.4±2.0	100±4.0	13.2±0.2	330±2.0

8-2,Tape Dimension



Series	Ao(mm	Bo(mm)	Ko(mm)	P(mm)	W(mm)	t(mm)
AMPI5020N	5.30±0.1	5.30±0.1	2.3±0.1	8.0±0.1	12±0.3	0.35±0.05

8-3,Packaging Quantity

Type	Chip / Reel
AMPI5020N	2500

(9)Note

·Storage Conditions

To maintain the solderability of terminal electrodes:

1. ASDI products meet IPC/JEDEC J-STD-020D standard-MSL, level 1.
2. Temperature and humidity conditions: Temperature: 5 to 30deg.C, Humidity: 75% Max.
3. Recommended products should be used within 12 months form the time of delivery.
4. The packaging material should be kept where no chlorine or sulfur exists in the air.

·Transportation

1. Products should be handled with care to avoid damage or contamination from perspiration and skin oils.
2. The use of tweezers or vacuum pick up is strongly recommended for individual components.
3. Bulk handling should ensure that abrasion and mechanical shock are minimized.