SMD Power Inductors
-YASPIT0420A Series

■ Features

- Molding Inductor.
- High reliability.
- High current，low DCR，high efficiency.
- Very low acoustic noise and very low leakage flux noise.
- Operating temperature:-55℃ ~ +155℃（Including self-temperature rise）.
- Reliability test complied to AEC-Q200.

■ Applications

- General Electronic.
- Video Device,TV,TFT.
- Power Module for PC.
- NB/Lap Top Computer.
- Server,VGA Card/Module.
- DC/DC converter.

■ Product Identification

YASPIT □□□□□ − □□□ □ □□□

(1) (2) (3) (4) (5)

(1)： Type

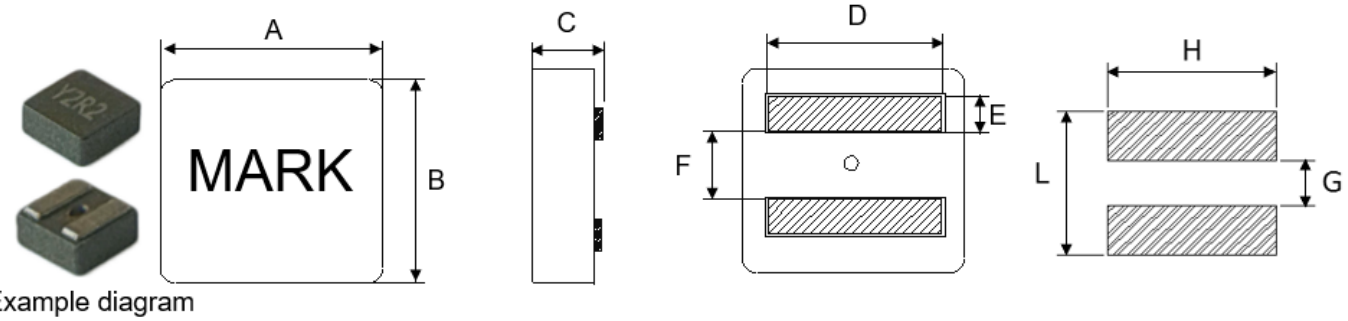
(2)： Dimensions

(3)： Inductance value

(4)： Inductance Tolerance： N=±30%,M=±20%

(5)： Internal code

■ Shapes and Dimensions (Unit：mm)



TYPE	A	B	C	D	E	F	G Ref.	H Ref.	L Ref.
YASPIT0420A	4.1±0.2	4.1±0.2	1.9±0.2	3.4±0.3	0.88±0.3	1.7±0.3	1.4	3.8	3.4

■ YASPIT0420A Series

Part Number	Inductance (μH) @100KHz/0.1V	DCR Max. (mΩ)	Saturation Current (A)		Heat Rating Current (A)	
			Max.	Typ.	Max.	Typ.
YASPIT0420A-R10M	0.10±20%	2.5	33.0	38.0	13.5	18.0
YASPIT0420A-R22M	0.22±20%	4.6	18.8	19.5	13.0	16.8
YASPIT0420A-R36M	0.36±20%	6.3	15.0	17.0	11.0	14.5
YASPIT0420A-R40M	0.40±20%	7.8	13.5	15.5	10.0	14.0
YASPIT0420A-R47M	0.47±20%	8.6	13.0	14.5	9.0	12.5
YASPIT0420A-R56M	0.56±20%	9.3	12.6	14.0	8.5	12.0
YASPIT0420A-R60M	0.60±20%	9.6	12.3	13.7	8.0	11.7
YASPIT0420A-R72M	0.72±20%	11.6	10.6	12.0	7.6	10.5
YASPIT0420A-1R0M	1.0±20%	14.6	8.8	9.6	6.8	9.6
YASPIT0420A-1R2M	1.2±20%	17.9	7.8	9.0	6.6	9.0
YASPIT0420A-1R5M	1.5±20%	23.5	7.4	8.0	5.8	7.6
YASPIT0420A-1R8M	1.8±20%	28.0	7.0	7.5	5.2	7.0
YASPIT0420A-2R2M	2.2±20%	38.7	6.0	6.5	4.6	5.6

※ All test in 25 °C temperature.
※ Saturation Current (Isat) will cause L0 to drop 30% approximately.
※ Heating Rating Current (Irms) will cause the coil temperature rise of 40℃ approximately (Δt).
※ Storage temperature and humidity range (product with tapping):-10℃~+40℃,RH70% Max.
※ Absolute maximum voltage 30VDC.
※ The part temperature (ambient + temp rise) should not exceed 155℃ under the worst case operating condition. Circuit design, component.
※ PCB trace size and thickness airflow and other cooling provisions all could affect the part temperature. Part temperature should be verified in the end application.
※ Special inquiries besides the above common used types can be met on your requirement.

■ Mechanical Reliability

TEST ITEM	SPECIFICATION	TEST DETAILS
Solderability	1. No case deformation or change in appearance. 2. New solder coverage more than 95%.	1.Preheat:155℃±5℃,60S±2S 2.Tin: lead-free. 3.Temperature:240℃±5℃,flux 3.0S±0.5S.
Mechanical shock	1. No case deformation or change in appearance. 2. △L/Lo≤±10%.	1. Acceleration:100G. 2. Pulse time:6ms. 3. Direction： ±X ±Y ±Z. 4. 3 times in each positive and negative. direction of 3 mutual perpendicular directions.
Mechanical vibration	1. No case deformation or change in appearance. 2. △L/Lo≤±10%	1. Reflow:2times. 2.Frequency:10HZ~55HZ~10HZ,20Min/Cycles. 3. Amplitude:1.52 mm±10%. 4. Directions: X,Y,Z 5. Time:12 cycle / direction

■ Endurance Reliability

<table>
<tr><th>TEST ITEM</th><th>SPECIFICATION</th><th>TEST DETAILS</th></tr>
<tr><td>Thermal Shock</td><td>Inductance change:
Within ±10% Without distinct damage in appearance.</td><td>1. First -55℃ for 30 minutes， last 155℃ for 30 minutes as 1 cycle. Go through 1000 cycles.
2. Max transfer time is 3 minutes.
3. Measured at room temperature after placing for 24±2 hours
<table>
<tr><th></th><th>Temperature</th><th>Duration</th></tr>
<tr><td>1</td><td>-55±2℃
(Themostat No.1)</td><td>30 min.</td></tr>
<tr><td>2</td><td>Standard atmospheric</td><td>Within 3 minutes
No.1→No.2</td></tr>
<tr><td>3</td><td>155±2℃
(Themostat No.2)</td><td>30 min.</td></tr>
<tr><td>4</td><td>Standard atmospheric</td><td>Within 3 minutes
No.2→No.1</td></tr>
</table></td></tr>
<tr><td>Humidity Resistance</td><td>Inductance change:
Within ±10% Without distinct damage in appearance</td><td>1.Reflow 2 times,
2.85℃,85%RH,1000 hours
3.Measured at room temperature after placing for 24±2 hours</td></tr>
<tr><td>Low temperature storage</td><td>Inductance change:
Within ±10% Without distinct damage in appearance</td><td>1. Temperature:-55 ± 2℃
2. Time:1000 hours
3. Measured at room temperature after placing for 24±2 hours</td></tr>
<tr><td>High temperature storage</td><td>Inductance change:
Within±10% Without distinct damage in appearance</td><td>1. Temperature:+155 ± 2℃
2. Time:1000 hours
3. Measured at room temperature after placing for 24±2 hours</td></tr>
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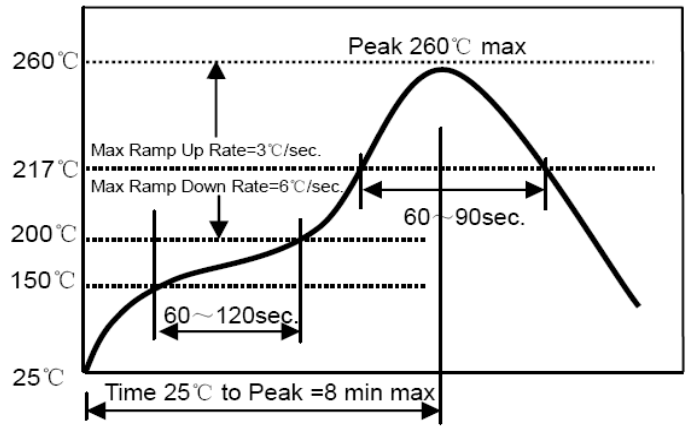
■ Recommended Soldering Technologies

Re-flowing Profile



Preheat condition: 150 ~200℃/60~120sec.

Allowed time above 217℃: 60~90sec.

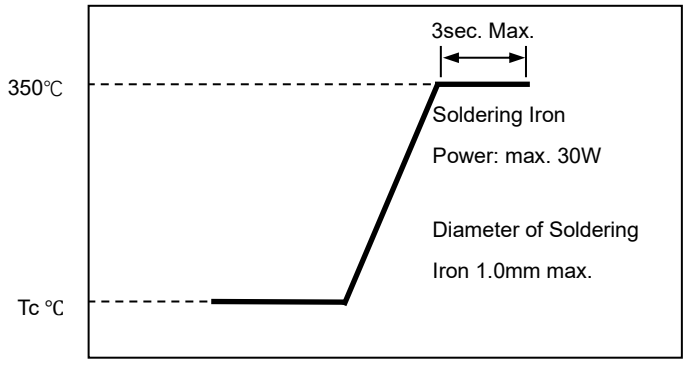
Peak temp: 260℃

Max time at Peak temp: 10 sec.

Solder paste: Sn/3.0Ag/0.5Cu

Allowed Reflow time: 2x max

Iron Soldering Profile



Iron soldering power: Max. 30W

Pre-heating: 150℃/60sec.

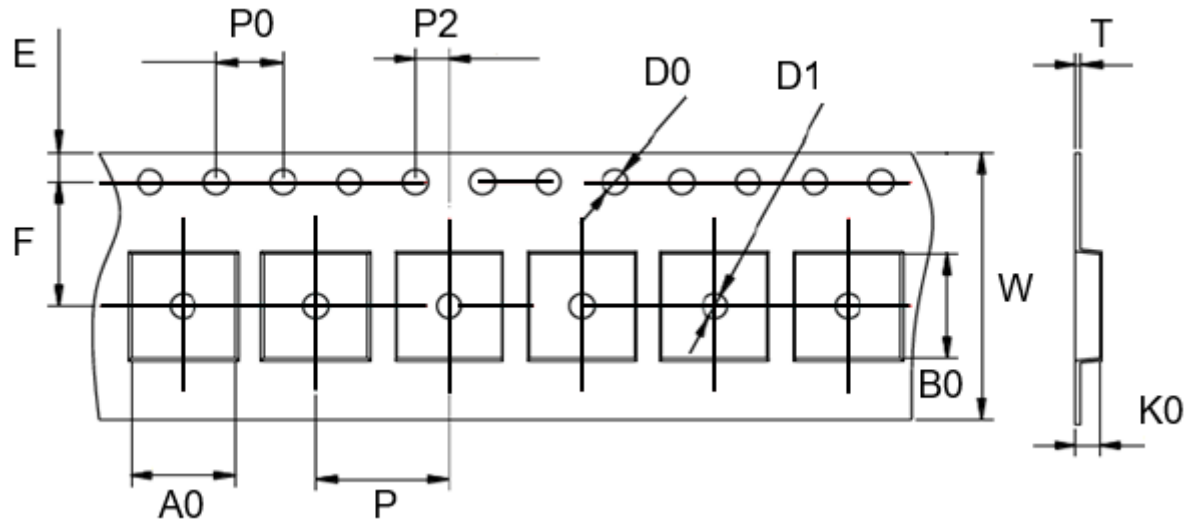
Soldering Tip temperature: 350℃ Max.

Soldering time: 3sec. Max.

Solder paste: Sn/3.0Ag/0.5Cu

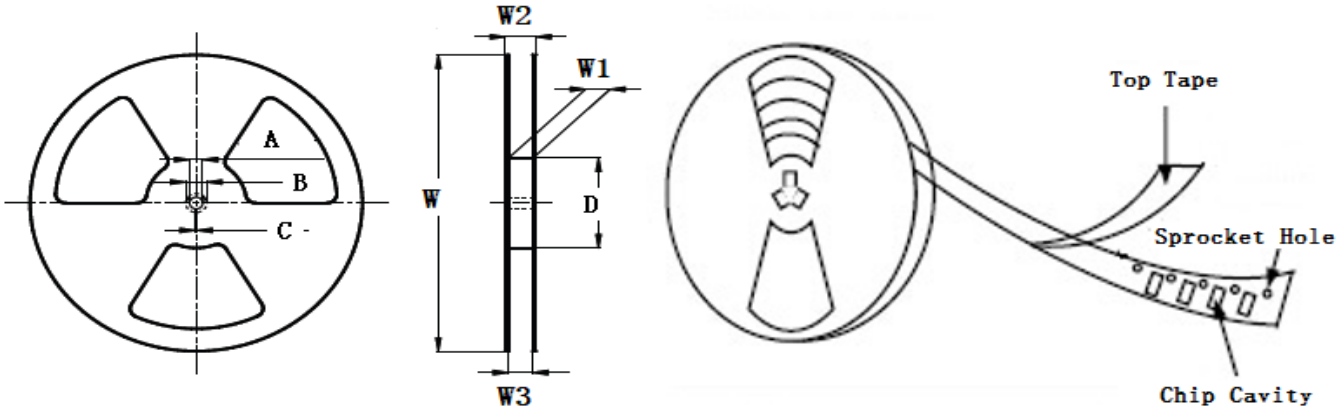
Max.1 times for iron soldering

■ Taping Dimensions(Unit:mm)



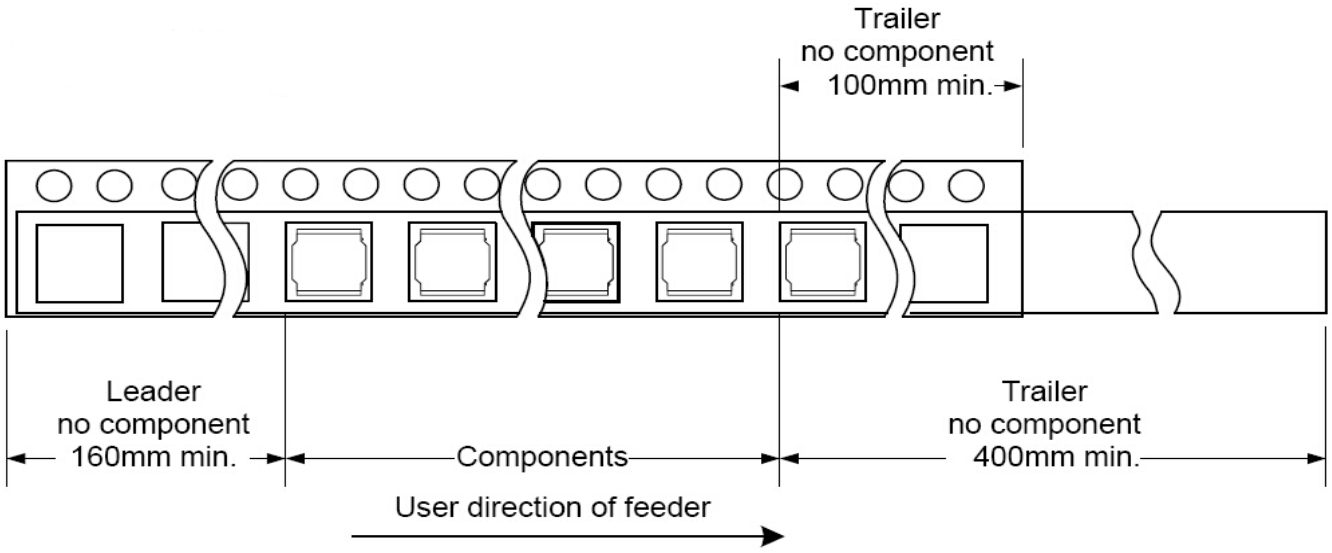
TYPE	W	P	P0	P2	D0	D1	T	A0	B0	K0	E	F	MPQ
YASPIT0420A	12.0 ±0.3	8.0 ±0.1	4.0 ±0.1	2.0 ±0.1	1.5 ±0.1	1.5 ±0.1	0.35 ±0.05	4.5 ±0.1	4.5 ±0.1	2.3 ±0.1	1.75 ±0.1	5.5 ±0.1	3000

■ Reel Dimensions(Unit:mm)

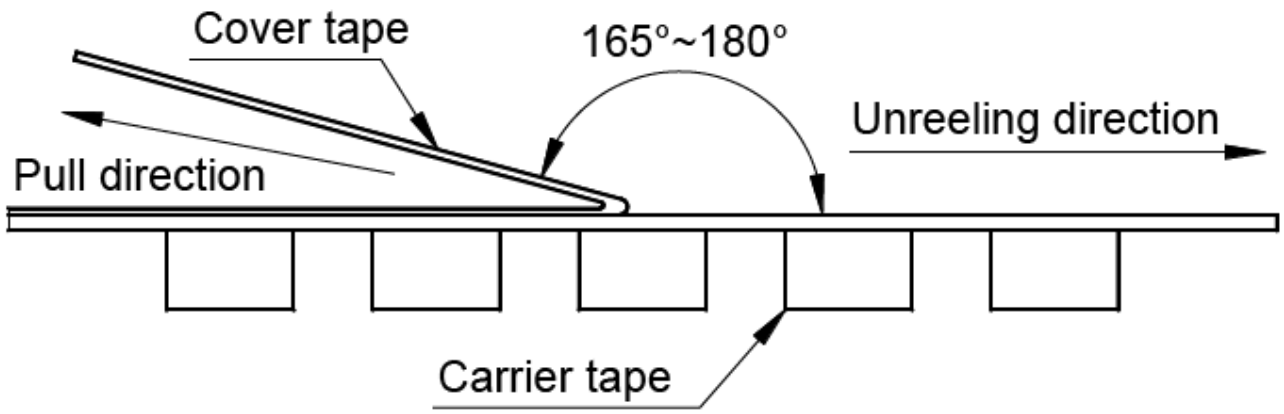


TYPE	W	W1	W2	W3	A	B	C	D
YASPIT0420A	330±2.0	12.4±2.0	18.4MAX	11.9 Min	13.0±0.5	21.0±0.8	2.0±0.5	97±0.5

■ Direction of rolling



■ Cover tape peel off condition



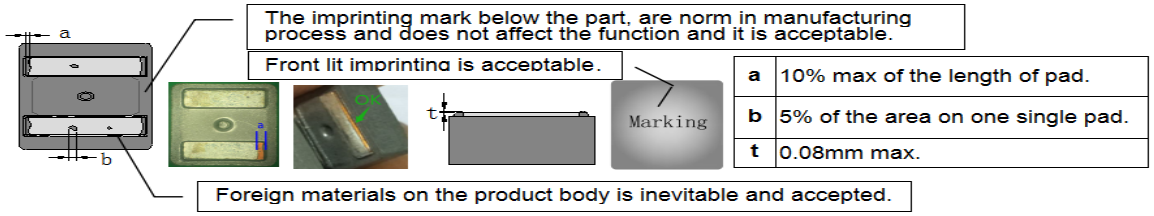
Cover tape peel force shall be 0.1N to 1.3N.

Reference peel speed 300±10mm/min.

■ Appearance criterion

● **PAD residual powder、inner wire exposed、imprinting**

The residual powder on both side of pad is norm and within following criteria are acceptable.



a	10% max of the length of pad.
b	5% of the area on one single pad.
t	0.08mm max.

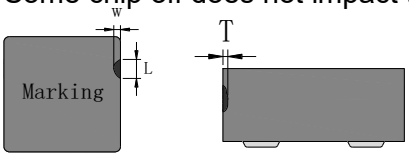
● **Defects**

Chip off is generated during molding and manufacturing process.

Chip off acceptance limits subjected to the product size.

Our current Defect limit is based on the IPC-A-610.

Some chip off does not impact the product function, see the IPC standard 1 & 2.



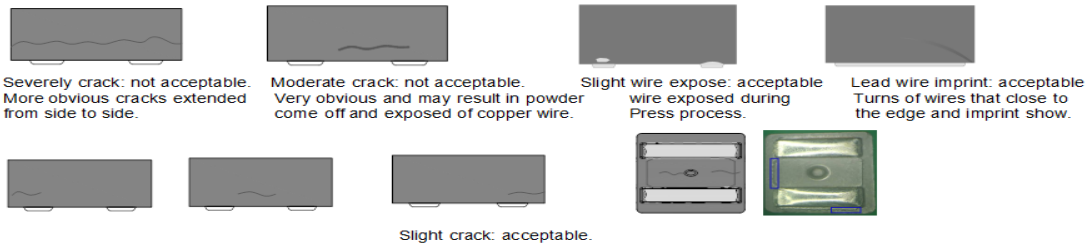
T	≤10% of the thickness	Each surface can only accept one minor chip off，and more than 3 chip off problems are not allowed on the same product.
W	≤10 % of the width	
L	≤10 % of the length	

Defects usually occur at the corners and edges of the product,There will be a slight defect black and rough, but not exposed copper, and does not affect the product performance and reliability.

● **Crack**

Production process of cracks appearing in the body is inevitable,some slight crack is caused because the molding, is not oxidized, crack on the product will not affect product performance.

We have done a reliability test of crack products, even if cracks is more than 0.13mm also will not affect the electrical properties of the product, crack limits as follows：



Products from a slight crack in the baking process due to thermal expansion, and it is not obvious by visual inspection(Must not exceed the blue square area).

Cracks on the same side surface are not allowed to exceed 1/2 of the length of the side and the crack width cannot exceed 0.13mm, and only 1 crack is allowed on the same side.

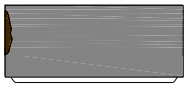
Bottom cracks are not allowed to exceed 1/2 of the length (or width) of the corresponding body nor the Non-manufacturability swelling, and the crack width cannot be exceed 0.13mm, and less than 2 cracks are allowed and judged as good products.

Visible cracks and non-manufacturability bulging are not allowed on the front side.

● **oxidation(rust)**

The contains iron composite, although the resin has a protective effect of oxidation,but there will be small amount of product that may occur oxidation, The oxidation area of each surface is allowed to be about 25% (in the case of non-reliability test)， it is recommend that customer use this product in humidity controlled environment.The basic steps should be to protect the surface oxidation, including the sealed packages to PCB mount inductors. To avoid the adverse effects caused by oxidation,

Oxidation occurs at the surface only allows the internal oxidation is not allowed, oxidized surface will not affect the reliability of the product.



4sides slightly oxidized side:
Acceptable



Top and bottom slightly oxidized side:
Acceptable



Spray printing effect :
can be accepted if recognizable

Visual inspection: Examination with the naked eye, to distinguish from more technical modes of analysis employing tools or apparatus.