

## Data Sheet

**Customer:**

**Product:** SMD Metal Alloy Power Inductor – SMA Series

**Sizes.:** 0310/0312/0315/0320/0410/0412/0415/0420/0510/0512/  
0515/0520/0610/0612/0615/0620

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VIKING TECH CORPORATION  
光頡科技股份有限公司  
No.70, Guangfu N. Rd., Hukou  
Township, Hsinchu County  
303, Taiwan (R.O.C)

TEL:886-3-5972931  
FAX:886-3-5972935•886-3-5973494  
E-mail:sales@viking.com.tw

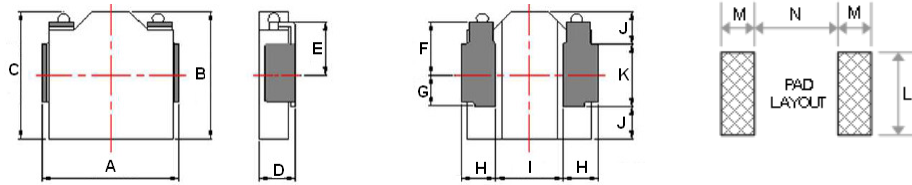
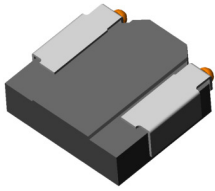
VIKING TECH CORPORATION KAOHSIUNG BRANCH  
光頡科技股份有限公司高雄分公司  
No.248-3, Sin-Sheng Rd., Cian-Jhen Dist., Kaohsiung,  
806, Taiwan

TEL:886-7-8217999  
FAX:886-7-8228229  
E-mail:sales@viking.com.tw

VIKING ELECTRONICS (WUXI) CO., LTD.  
光頡電子(無錫)有限公司  
No.22 Xixia Road, Machinery & Industry Park,  
National Hi-Tech Industrial Development Zone  
of Wuxi, Wuxi, Jiangsu Province, China  
Zip Code:214028  
TEL:86-510-85203339  
FAX:86-510-85203667•86-510-85203977  
E-mail:china@viking.com.tw

Produced by (QC)	Checked (QC)	Approved by (QC)	Prepared by (Sales)	Accepted by (Customer)
03-Jul-20	03-Jul-20	03-Jul-20	03-Jul-20	
<i>Kris Chen</i>	<i>Ben Chang</i>	<i>Ben Chang</i>		

## SMD Metal Alloy Power Inductor



### Dimensions

Unit: mm

Type	A	B	C max	D max	E	F	G	H	I	J	K	L	M	N
SMA0310	3.4±0.2	3.1±0.2	3.4	1.0	1.25	1.25	0.8	0.95±0.1	1.5	0.75±0.1	1.6	1.8	1.1	1.5
SMA0312	3.4±0.2	3.1±0.2	3.4	1.2	1.25	1.25	0.8	0.95±0.1	1.5	0.75±0.1	1.6	1.8	1.1	1.5
SMA0315	3.4±0.2	3.1±0.2	3.4	1.5	1.25	1.25	0.8	0.95±0.1	1.5	0.75±0.1	1.6	1.8	1.1	1.5
SMA0320	3.4±0.2	3.1±0.2	3.4	2.0	1.25	1.25	0.8	0.95±0.1	1.5	0.75±0.1	1.6	1.8	1.1	1.5
SMA0410	4.4±0.2	4.1±0.2	4.4	1.0	1.60	1.60	1.0	1.10±0.1	2.2	1.05±0.1	2.0	2.5	1.5	1.8
SMA0412	4.4±0.2	4.1±0.2	4.4	1.2	1.60	1.60	1.0	1.10±0.1	2.2	1.05±0.1	2.0	2.5	1.5	1.8
SMA0415	4.4±0.2	4.1±0.2	4.4	1.5	1.60	1.60	1.0	1.10±0.1	2.2	1.05±0.1	2.0	2.5	1.5	1.8
SMA0420	4.4±0.2	4.1±0.2	4.4	2.0	1.60	1.60	1.0	1.10±0.1	2.2	1.05±0.1	2.0	2.5	1.5	1.8
SMA0510	5.4±0.2	5.1±0.2	5.4	1.0	2	2	1.25	1.20±0.1	3.0	1.30±0.1	2.5	2.8	1.8	2.2
SMA0512	5.4±0.2	5.1±0.2	5.4	1.2	2	2	1.25	1.20±0.1	3.0	1.30±0.1	2.5	2.8	1.8	2.2
SMA0515	5.4±0.2	5.1±0.2	5.4	1.5	2	2	1.25	1.20±0.1	3.0	1.30±0.1	2.5	2.8	1.8	2.2
SMA0520	5.4±0.2	5.1±0.2	5.4	2.0	2	2	1.25	1.20±0.1	3.0	1.30±0.1	2.5	2.8	1.8	2.2
SMA0610	7.1±0.2	6.7±0.2	7.1	1.0	2.7	2.7	1.5	1.65±0.1	3.8	1.85±0.1	3.0	3.5	2.2	3.7
SMA0612	7.1±0.2	6.7±0.2	7.1	1.2	2.7	2.7	1.5	1.65±0.1	3.8	1.85±0.1	3.0	3.5	2.2	3.7
SMA0615	7.1±0.2	6.7±0.2	7.1	1.5	2.7	2.7	1.5	1.65±0.1	3.8	1.85±0.1	3.0	3.5	2.2	3.7
SMA0620	7.1±0.2	6.7±0.2	7.1	2.0	2.7	2.7	1.5	1.65±0.1	3.8	1.85±0.1	3.0	3.5	2.2	3.7

### Features

- Small and thickness
- Magnetically shielded construction, low DC resistance
- Using high saturating flux density magnetic iron powder ensure capability for large current
- High Curie's Temp. for wider function Temp
- Low audible core noise
- Ideal for DC-DC converter applications
- RoHS compliant. Halogen Free

### Applications

- Smartphones
- Note Book
- Others

### Characteristics

- Saturation Rated Current (I sat ): The DC current when the inductance becomes 30% lower than its initial value. (Ta=25°C)
- Temperature Rise Current (I rms): The actual current when temperature of coil becomes Δ T40°C. (Ta=25°C)
- Operating temperature range: -55~155°C

### Inductance and rated current ranges

– SMA0310	0.47~4.7μH	6.2~1.8A
– SMA0312	0.47~4.7μH	7.2~2.1A
– SMA0315	0.47~4.7μH	7.2~2.3A
– SMA0320	0.47~4.7μH	10.8~2.6A
– SMA0410	0.47~10μH	8.2~1.4A
– SMA0412	0.47~10μH	12.0~1.6A
– SMA0415	0.47~10μH	12.0~1.8A
– SMA0420	0.47~10μH	16.0~2.4A
– SMA0510	0.47~10μH	9.4~1.8A
– SMA0512	0.47~10μH	12.6~2.1A
– SMA0515	0.47~10μH	12.5~2.7A
– SMA0520	0.47~10μH	18.0~3.6A
– SMA0610	0.47~10μH	9.4~2.2A
– SMA0612	0.47~10μH	13.8~2.7A
– SMA0615	0.47~10μH	18.0~3.3A
– SMA0620	0.47~10μH	21.0~4.4A

– Test equipment:

L: HP4284A LCR meter

DCR: Milli-ohm meter

– Electrical specifications at 25°C

**SMD Metal Alloy Power Inductor**

**Product Identification**

SMA	0412	M	T	1R5
Product Type	Dimensions (BxD)	Inductance Tolerance	Packaging Style	Inductance
	0310: 3.1x1.0 0312: 3.1x1.2 0315: 3.1x1.5 0320: 3.1x2.0 0410: 4.1x1.0 0412: 4.1x1.2 0415: 4.1x1.5 0420: 4.1x2.0 0510: 5.1x1.0 0512: 5.1x1.2 0515: 5.1x1.5 0520: 5.1x2.0 0610: 6.7x1.0 0612: 6.7x1.2 0615: 6.7x1.5 0620: 6.7x2.0	M: ±20%	T : Tape and Reel	R47: 0.47μH 1R5: 1.5μH 100: 10μH

**Electrical Characteristics**

SMA0310 Type(□:Tolerance):

Part No	L (μH)	Tolerance	Test Condition	DCR (mΩ) max.	Isat (A) max.	Irms (A) max.
SMA0310□TR47	0.47	M	100KHz, 1V	26.5	6.2	5.0
SMA0310□TR68	0.68	M	100KHz, 1V	35.5	5.2	4.0
SMA0310□T1R0	1.0	M	100KHz, 1V	58.5	5.0	3.0
SMA0310□T1R5	1.5	M	100KHz, 1V	105.0	3.7	2.1
SMA0310□T2R2	2.2	M	100KHz, 1V	118.0	2.3	2.0
SMA0310□T3R3	3.3	M	100KHz, 1V	160.0	1.8	1.7
SMA0310□T4R7	4.7	M	100KHz, 1V	215.0	1.8	1.5

SMA0312 Type(□:Tolerance):

Part No	L (μH)	Tolerance	Test Condition	DCR (mΩ) max.	Isat (A) max.	Irms (A) max.
SMA0312□TR47	0.47	M	100KHz, 1V	17.8	7.2	5.9
SMA0312□TR68	0.68	M	100KHz, 1V	24.8	5.2	5.0
SMA0312□T1R0	1.0	M	100KHz, 1V	34.0	4.4	4.2
SMA0312□T1R5	1.5	M	100KHz, 1V	58.0	3.7	3.2
SMA0312□T2R2	2.2	M	100KHz, 1V	74.0	3.1	2.7
SMA0312□T3R3	3.3	M	100KHz, 1V	129.0	2.6	2.1
SMA0312□T4R7	4.7	M	100KHz, 1V	210.0	2.1	1.6

**■Electrical Characteristics**

SMA0315 Type(□:Tolerance):

Part No	L (μH)	Tolerance	Test Condition	DCR (mΩ) max.	Isat (A) max.	Irms (A) max.
SMA0315□TR47	0.47	M	100KHz, 1V	12.3	7.2	8.0
SMA0315□TR68	0.68	M	100KHz, 1V	17.2	5.4	6.3
SMA0315□T1R0	1.0	M	100KHz, 1V	28.1	5.8	5.0
SMA0315□T1R5	1.5	M	100KHz, 1V	48.0	3.7	3.6
SMA0315□T2R2	2.2	M	100KHz, 1V	60.5	3.2	3.3
SMA0315□T3R3	3.3	M	100KHz, 1V	129.0	2.9	2.2
SMA0315□T4R7	4.7	M	100KHz, 1V	152.0	2.3	2.0

SMA0320 Type(□:Tolerance):

Part No	L (μH)	Tolerance	Test Condition	DCR (mΩ) max.	Isat (A) max.	Irms (A) max.
SMA0320□TR47	0.47	M	100KHz, 1V	14.6	10.8	6.6
SMA0320□TR68	0.68	M	100KHz, 1V	14.8	5.7	6.6
SMA0320□T1R0	1.0	M	100KHz, 1V	21.3	5.6	5.6
SMA0320□T1R5	1.5	M	100KHz, 1V	47.0	4.4	3.5
SMA0320□T2R2	2.2	M	100KHz, 1V	64.8	4.1	3.0
SMA0320□T3R3	3.3	M	100KHz, 1V	119.0	2.9	2.2
SMA0320□T4R7	4.7	M	100KHz, 1V	156.0	2.6	1.9

SMA0410 Type(□:Tolerance):

Part No	L (μH)	Tolerance	Test Condition	DCR (mΩ) max.	Isat (A) max.	Irms (A) max.
SMA0410□TR47	0.47	M	100KHz, 1V	35.3	8.2	4.6
SMA0410□TR68	0.68	M	100KHz, 1V	36.0	6.2	4.6
SMA0410□T1R0	1.0	M	100KHz, 1V	42.5	4.7	4.0
SMA0410□T1R5	1.5	M	100KHz, 1V	64.0	4.2	3.4
SMA0410□T2R2	2.2	M	100KHz, 1V	87.0	3.4	2.6
SMA0410□T3R3	3.3	M	100KHz, 1V	120.0	2.9	2.1
SMA0410□T4R7	4.7	M	100KHz, 1V	210.0	2.4	1.6
SMA0410□T6R8	6.8	M	100KHz, 1V	245.0	1.8	1.5
SMA0410□T100	10	M	100KHz, 1V	350.0	1.4	1.1

SMA0412 Type(□:Tolerance):

Part No	L (μH)	Tolerance	Test Condition	DCR (mΩ) max.	Isat (A) max.	Irms (A) max.
SMA0412□TR47	0.47	M	100KHz, 1V	15.3	12.0	6.8
SMA0412□TR68	0.68	M	100KHz, 1V	25.0	9.4	5.0
SMA0412□T1R0	1.0	M	100KHz, 1V	29.5	7.2	4.7
SMA0412□T1R5	1.5	M	100KHz, 1V	43.3	5.0	4.2
SMA0412□T2R2	2.2	M	100KHz, 1V	57.5	4.6	3.6
SMA0412□T3R3	3.3	M	100KHz, 1V	105.0	3.6	2.4
SMA0412□T4R7	4.7	M	100KHz, 1V	128.0	3.2	2.3
SMA0412□T6R8	6.8	M	100KHz, 1V	223.0	2.4	1.6
SMA0412□T100	10	M	100KHz, 1V	250.0	1.6	1.5

**Electrical Characteristics**

SMA0415 Type(□:Tolerance):

Part No	L (μH)	Tolerance	Test Condition	DCR (mΩ) max.	Isat (A) max.	Irms (A) max.
SMA0415□TR47	0.47	M	100KHz, 1V	11.3	12.0	8.3
SMA0415□TR68	0.68	M	100KHz, 1V	13.8	8.6	7.7
SMA0415□T1R0	1.0	M	100KHz, 1V	22.5	8.4	5.4
SMA0415□T1R5	1.5	M	100KHz, 1V	30.0	6.1	4.8
SMA0415□T2R2	2.2	M	100KHz, 1V	48.0	5.8	3.7
SMA0415□T3R3	3.3	M	100KHz, 1V	82.5	4.1	2.8
SMA0415□T4R7	4.7	M	100KHz, 1V	100.0	3.5	2.5
SMA0415□T6R8	6.8	M	100KHz, 1V	125.5	2.8	2.2
SMA0415□T100	10	M	100KHz, 1V	230.0	1.8	1.6

SMA0420 Type(□:Tolerance):

Part No	L (μH)	Tolerance	Test Condition	DCR (mΩ) max.	Isat (A) max.	Irms (A) max.
SMA0420□TR47	0.47	M	100KHz, 1V	8.9	16.0	9.4
SMA0420□TR68	0.68	M	100KHz, 1V	13.2	9.4	8.3
SMA0420□T1R0	1.0	M	100KHz, 1V	18.5	9.5	6.5
SMA0420□T1R5	1.5	M	100KHz, 1V	24.5	7.1	5.4
SMA0420□T2R2	2.2	M	100KHz, 1V	35.5	5.5	4.3
SMA0420□T3R3	3.3	M	100KHz, 1V	52.0	4.5	3.4
SMA0420□T4R7	4.7	M	100KHz, 1V	91.0	4.0	2.7
SMA0420□T6R8	6.8	M	100KHz, 1V	117.0	3.3	2.3
SMA0420□T100	10	M	100KHz, 1V	235.0	2.4	1.5

SMA0510 Type(□:Tolerance):

Part No	L (μH)	Tolerance	Test Condition	DCR (mΩ) max.	Isat (A) max.	Irms (A) max.
SMA0510□TR47	0.47	M	100KHz, 1V	38.0	9.4	4.5
SMA0510□TR68	0.68	M	100KHz, 1V	45.3	7.6	4.1
SMA0510□T1R0	1.0	M	100KHz, 1V	57.0	7.2	3.6
SMA0510□T1R5	1.5	M	100KHz, 1V	65.0	5.8	3.1
SMA0510□T2R2	2.2	M	100KHz, 1V	75.0	4.5	3.0
SMA0510□T3R3	3.3	M	100KHz, 1V	104.0	4.1	2.5
SMA0510□T4R7	4.7	M	100KHz, 1V	151.0	3.2	2.1
SMA0510□T6R8	6.8	M	100KHz, 1V	198.0	2.6	1.9
SMA0510□T100	10	M	100KHz, 1V	335.0	1.8	1.3

SMA0512 Type(□:Tolerance):

Part No	L (μH)	Tolerance	Test Condition	DCR (mΩ) max.	Isat (A) max.	Irms (A) max.
SMA0512□TR47	0.47	M	100KHz, 1V	14.9	12.6	7.2
SMA0512□TR68	0.68	M	100KHz, 1V	18.0	9.7	6.8
SMA0512□T1R0	1.0	M	100KHz, 1V	23.0	8.8	5.7
SMA0512□T1R5	1.5	M	100KHz, 1V	29.0	6.2	5.5
SMA0512□T2R2	2.2	M	100KHz, 1V	51.5	6.0	3.7
SMA0512□T3R3	3.3	M	100KHz, 1V	81.5	5.0	2.8
SMA0512□T4R7	4.7	M	100KHz, 1V	100.0	4.3	2.7
SMA0512□T6R8	6.8	M	100KHz, 1V	175.0	3.0	1.9
SMA0512□T100	10	M	100KHz, 1V	200.0	2.1	1.8

**SMD Metal Alloy Power Inductor**

**■Electrical Characteristics**

SMA0515 Type(□:Tolerance):

Part No	L (μH)	Tolerance	Test Condition	DCR (mΩ) max.	Isat (A) max.	Irms (A) max.
SMA0515□TR47	0.47	M	100KHz, 1V	11.2	12.5	8.5
SMA0515□TR68	0.68	M	100KHz, 1V	14.5	12.0	7.3
SMA0515□T1R0	1.0	M	100KHz, 1V	17.5	9.6	6.7
SMA0515□T1R5	1.5	M	100KHz, 1V	24.2	8.4	5.6
SMA0515□T2R2	2.2	M	100KHz, 1V	38.2	7.4	4.7
SMA0515□T3R3	3.3	M	100KHz, 1V	51.0	5.2	4.2
SMA0515□T4R7	4.7	M	100KHz, 1V	73.5	4.5	3.3
SMA0515□T6R8	6.8	M	100KHz, 1V	130.0	3.7	2.4
SMA0515□T100	10	M	100KHz, 1V	164.0	2.7	2.1

SMA0520 Type(□:Tolerance):

Part No	L (μH)	Tolerance	Test Condition	DCR (mΩ) max.	Isat (A) max.	Irms (A) max.
SMA0520□TR47	0.47	M	100KHz, 1V	7.2	18.0	11.2
SMA0520□TR68	0.68	M	100KHz, 1V	9.0	16.3	9.7
SMA0520□T1R0	1.0	M	100KHz, 1V	14.2	14.0	7.5
SMA0520□T1R5	1.5	M	100KHz, 1V	19.7	10.0	6.5
SMA0520□T2R2	2.2	M	100KHz, 1V	26.2	9.6	5.6
SMA0520□T3R3	3.3	M	100KHz, 1V	40.5	6.6	4.3
SMA0520□T4R7	4.7	M	100KHz, 1V	54.1	4.7	3.7
SMA0520□T6R8	6.8	M	100KHz, 1V	80.0	4.2	3.1
SMA0520□T100	10	M	100KHz, 1V	152.0	3.6	2.1

SMA0610 Type(□:Tolerance):

Part No	L (μH)	Tolerance	Test Condition	DCR (mΩ) max.	Isat (A) max.	Irms (A) max.
SMA0610□TR47	0.47	M	100KHz, 1V	41.2	9.4	4.2
SMA0610□TR68	0.68	M	100KHz, 1V	43.0	8.5	4.2
SMA0610□T1R0	1.0	M	100KHz, 1V	54.0	7.2	4.0
SMA0610□T1R5	1.5	M	100KHz, 1V	74.0	6.8	3.1
SMA0610□T2R2	2.2	M	100KHz, 1V	83.0	5.2	2.9
SMA0610□T3R3	3.3	M	100KHz, 1V	99.0	4.5	2.8
SMA0610□T4R7	4.7	M	100KHz, 1V	133.0	4.1	2.5
SMA0610□T6R8	6.8	M	100KHz, 1V	173.0	3.2	2.0
SMA0610□T100	10	M	100KHz, 1V	240.0	2.2	1.7

SMA0612 Type(□:Tolerance):

Part No	L (μH)	Tolerance	Test Condition	DCR (mΩ) max.	Isat (A) max.	Irms (A) max.
SMA0612□TR47	0.47	M	100KHz, 1V	17.1	13.8	7.0
SMA0612□TR68	0.68	M	100KHz, 1V	22.3	13.5	6.3
SMA0612□T1R0	1.0	M	100KHz, 1V	27.5	10.8	5.5
SMA0612□T1R5	1.5	M	100KHz, 1V	32.8	8.0	5.4
SMA0612□T2R2	2.2	M	100KHz, 1V	38.8	6.1	5.0
SMA0612□T3R3	3.3	M	100KHz, 1V	50.0	4.8	4.5
SMA0612□T4R7	4.7	M	100KHz, 1V	82.0	4.4	3.5
SMA0612□T6R8	6.8	M	100KHz, 1V	125.0	3.6	2.7
SMA0612□T100	10	M	100KHz, 1V	157.0	2.7	2.4

**SMD Metal Alloy Power Inductor****■Electrical Characteristics**

SMA0615 Type(□:Tolerance):

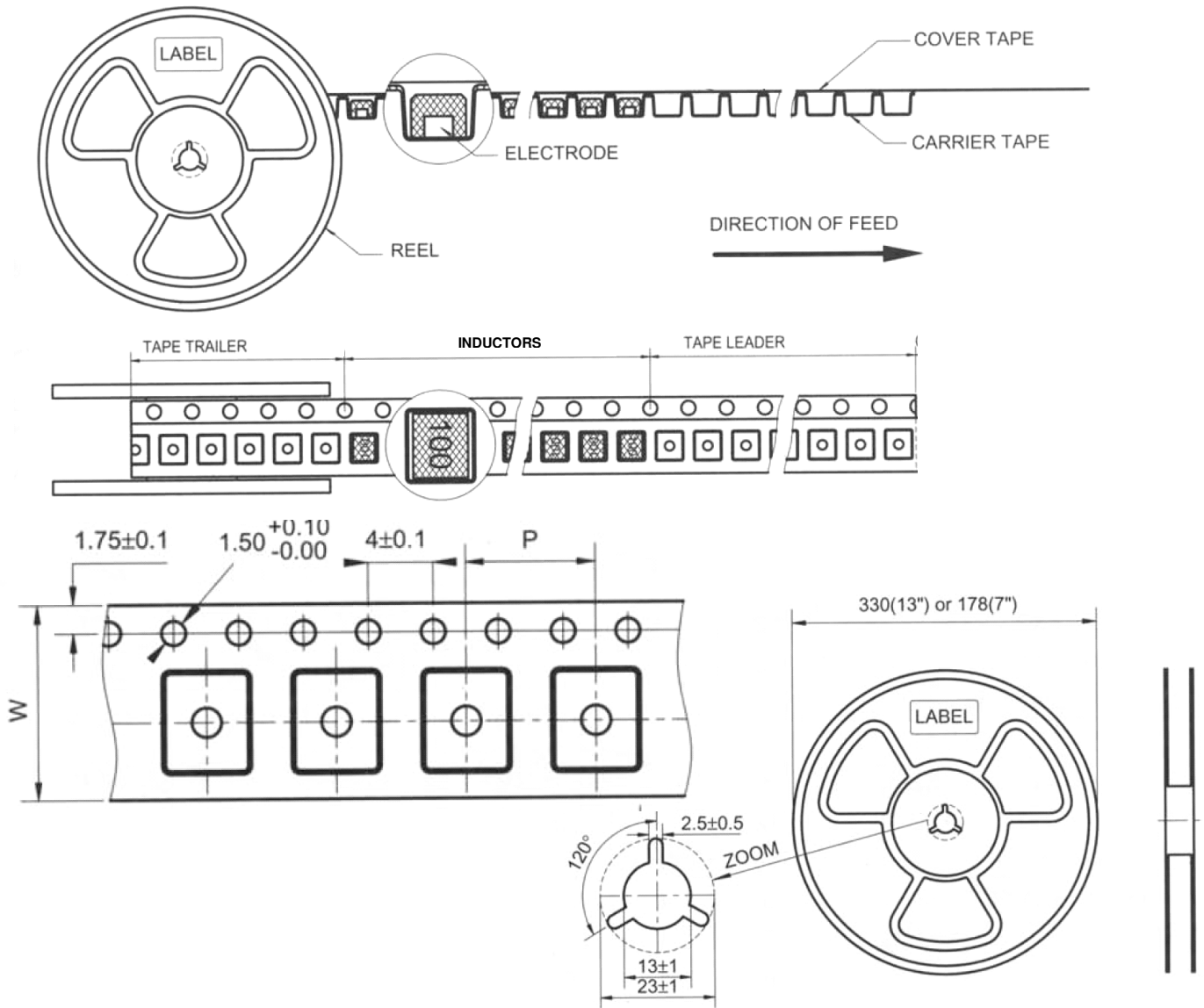
Part No	L ( $\mu$ H)	Tolerance	Test Condition	DCR (m $\Omega$ ) max.	Isat (A) max.	Irms (A) max.
SMA0615□TR47	0.47	M	100KHz, 1V	8.8	18.0	11.2
SMA0615□TR68	0.68	M	100KHz, 1V	11.2	16.0	9.5
SMA0615□T1R0	1.0	M	100KHz, 1V	13.5	11.5	8.8
SMA0615□T1R5	1.5	M	100KHz, 1V	23.8	9.7	6.3
SMA0615□T2R2	2.2	M	100KHz, 1V	33.5	8.4	5.4
SMA0615□T3R3	3.3	M	100KHz, 1V	43.3	7.2	4.7
SMA0615□T4R7	4.7	M	100KHz, 1V	62.0	5.2	3.8
SMA0615□T6R8	6.8	M	100KHz, 1V	87.0	4.6	3.2
SMA0615□T100	10	M	100KHz, 1V	120.0	3.3	2.7

SMA0620 Type(□:Tolerance):

Part No	L ( $\mu$ H)	Tolerance	Test Condition	DCR (m $\Omega$ ) max.	Isat (A) max.	Irms (A) max.
SMA0620□TR47	0.47	M	100KHz, 1V	5.5	21.0	13.9
SMA0620□TR68	0.68	M	100KHz, 1V	7.1	20.0	11.5
SMA0620□T1R0	1.0	M	100KHz, 1V	10.6	13.7	9.8
SMA0620□T1R5	1.5	M	100KHz, 1V	15.6	13.8	8.0
SMA0620□T2R2	2.2	M	100KHz, 1V	17.8	10.0	7.9
SMA0620□T3R3	3.3	M	100KHz, 1V	30.2	7.5	5.9
SMA0620□T4R7	4.7	M	100KHz, 1V	39.6	6.8	5.1
SMA0620□T6R8	6.8	M	100KHz, 1V	63.0	5.2	4.0
SMA0620□T100	10	M	100KHz, 1V	96.0	4.4	3.2

**SMD Metal Alloy Power Inductor**

**■Tape and Reel specifications**



Unit: mm

Type	Tape size		Parts Per Reel	
	W	P	7"	13"
SMA0310	12	8	-	4000
SMA0312	12	8	-	4000
SMA0315	12	8	-	3000
SMA0320	12	8	-	2500
SMA0410	12	8	-	4000
SMA0412	12	8	-	4000
SMA0415	12	8	-	3000
SMA0420	12	8	-	2500
SMA0510	12	8	-	4000
SMA0512	12	8	-	4000
SMA0515	12	8	-	3000
SMA0520	12	8	-	2500
SMA0610	16	12	-	2500
SMA0612	16	12	-	2500
SMA0615	16	12	-	2000
SMA0620	16	12	-	1500



**SMD Metal Alloy Power Inductor**

**■SMT Power Inductor Environmental Specifications**

Environmental test

Test Items	Specifications	Test Conditions / Test Methods
High temperature Storage test	$\Delta L/L \leq \pm 10\%$	Temperature $125 \pm 2^\circ\text{C}$ , Time: $500 \pm 12$ hours,
Low temperature Storage test		Temperature $-40 \pm 2^\circ\text{C}$ , Time: $500 \pm 12$ hours,
Humidity test		Temperature $60 \pm 2^\circ\text{C}$ , 90~95% relative humidity Time: $500 \pm 12$ hours
Temperature Cycle		$-40 \sim 125^\circ\text{C}$ , 30 min, 10cycles

Mechanical test

Test Items	Specifications	Test Conditions / Test Methods
Solderability test	Terminal area must have 75% minimum solder coverage.	Dip pads in flux then dip in solder pot at $240 \pm 5^\circ\text{C}$ for 3 seconds.
Vibration test	$\Delta L/L \leq \pm 10\%$	Apply frequency 10~55Hz. 1.5mm amplitude in each of perpendicular direction for 2 hours.
Drop test	$\Delta L/L \leq \pm 10\%$	Free fall from 1 meter height X, Y, Axi, 1times, Total 3 times