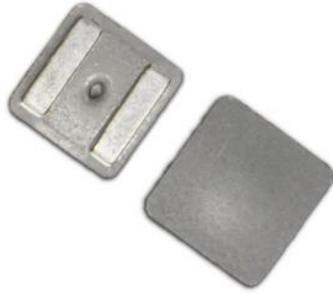


**SHPM Series**



**Features**

- High current
- Larger terminations for lower DCR and stronger solder joint
- Soft saturation characteristics
- Operate at up to 125° ambient
- No thermal aging issues
- Ultra low buzz noise due to molding construction
- Rugged mechanical construction
- Magnetically shielded
- Halogen Free & ROHS compliant

**Applications**

- Laptops and PCs
- Switch and servers
- Base stations
- DC/DC converters
- Battery powered devices
- SSD modules

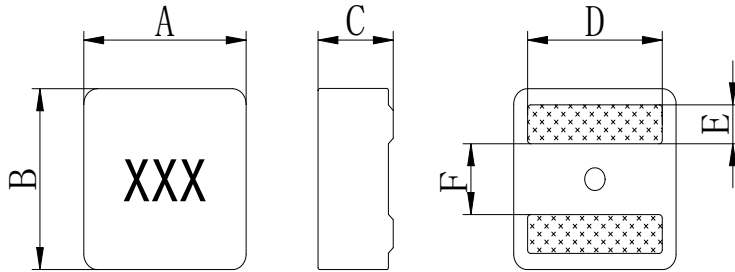
**Product Identification**

SHPMXXX TL - XXXX  
For example: SHPM0420TL-1R0M

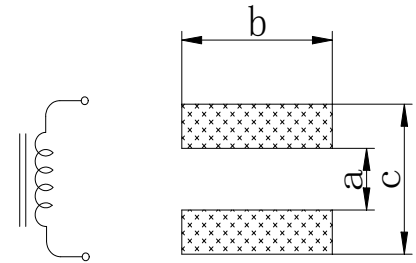
**General Specifications**

- Test Frequency.....100KHz
- Test Voltage.....0.1V
- Parameters Test Temp..... 20°C
- Operation Temp.....-40°C to +125°C (Including temperature Rise)
- Storage Temp.....0~40°C
- Storage Humidity.....<70% RH
- Resistance to Soldering Heat.....260°C for 10 sec
- Rated Current.....Ind. drops of 30% typ at Isat
- Temperature Rise.....40°C typ. at Irms

**Shape And Dimensions**



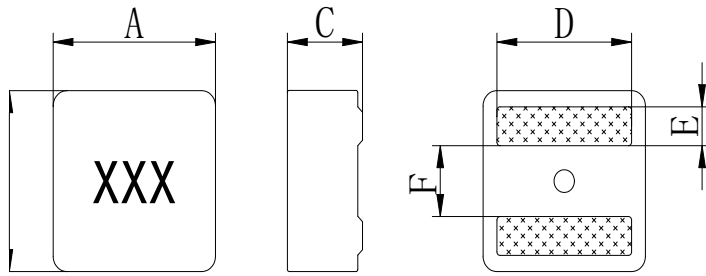
**Electrical Schematic & PAD Layout**



**Dimensions In mm**

TYPE	A	B	C	D	E	F	a (Typ)	b (Typ)	c (Typ)
0420	4.10±0.2	4.10±0.2	1.90±0.2	3.40±0.3	0.88±0.3	1.70±0.3	1.40	3.80	3.40
0430	4.1±0.25	4.10±0.25	2.80±0.2	3.40±0.3	0.88±0.3	1.70±0.3	1.40	3.80	3.40
0520	5.50±0.2	5.30±0.2	1.90±0.2	4.30±0.3	1.10±0.3	2.30±0.3	2.00	4.70	4.50
0530	5.50±0.2	5.30±0.2	2.90±0.2	4.30±0.3	1.10±0.3	2.30±0.3	2.00	4.70	4.50
0550	5.50±0.2	5.30±0.2	4.80±0.2	4.30±0.3	1.10±0.3	2.30±0.3	2.00	4.70	4.50
0630	6.60±0.2	6.40±0.2	2.80±0.2 L ≤ 1.2uH 2.90±0.2 L ≥ 1.5uH	See Remarks	1.40±0.3	2.60±0.3	2.50	5.60	5.60
0650	6.60±0.2	6.40±0.2	4.80±0.2	See Remarks	1.40±0.3	2.60±0.3	2.50	5.60	5.60
0660	6.60±0.2	6.40±0.2	5.80±0.2	5.30±0.3	1.40±0.3	2.60±0.3	2.50	5.60	5.60
0720	7.80±0.25	7.60±0.2	1.85±0.2	See Remarks	1.75±0.3	3.15±0.3	2.80	7.20	7.40
0730	7.80±0.25	7.60±0.2	2.90±0.2	See Remarks	1.75±0.3	3.15±0.3	2.80	7.20	7.40
0770	7.80±0.25	7.60±0.25	6.70±0.3	See Remarks	1.75±0.3	3.15±0.3	2.80	6.70	7.80
0880	8.90±0.3	8.50±0.3	7.70±0.3	See Remarks	1.80±0.3	3.50±0.5	2.70	7.80	8.00
1031	11.9±0.3	11.0±0.3	2.90±0.2	9.00±0.5	2.40±0.3	4.40±0.5	3.70	11.0	10.5
1060	11.9±0.3	11.0±0.3	5.70±0.3	See Remarks	2.40±0.3	4.50±0.5	3.70	11.0	10.5
1010	11.9±0.3	11.0±0.3	9.70±0.3	See Remarks	2.40±0.3	4.40±0.5	3.70	11.0	10.5
1580	16.5±0.3	15.5±0.3	7.70±0.3	13.2±0.5	3.20±0.3	7.00±0.5	6.00	15.0	15.0
1510	16.5±0.3	15.5±0.3	9.70±0.3	13.2±0.5	3.20±0.3	7.00±0.3	6.00	15.0	15.0
1513	16.5±0.3	15.5±0.3	12.7±0.3	13.2±0.5	3.20±0.3	7.00±0.5	6.00	15.0	15.0

## Shape And Dimensions



## Dimensions In mm

### Remarks:

series	D	Dimensions
0630	5.00±0.3	3R3 / 4R5
	5.05±0.3	2R2
	5.10±0.3	1R8
	5.15±0.3	1R2 / 1R5
	5.20±0.3	1R0
	5.30±0.3	R18 / R56 / R68
	5.55±0.3	R33
0650	5.20±0.3	4R7 / 4R3 / 3R3 / 2R2
	5.30±0.3	1R8 / 1R5 / 1R2 / 1R0 / R82
0720	6.60±0.3	R27
	6.20±0.3	1R0 / R68 / R47 / R33 / R31
0730	6.60±0.3	1R5 / 1R0
	6.20±0.3	8R2 / 6R8 / 5R6 / 4R7 / 3R3 / 2R7 / 2R2
0770	6.70±0.3	4R7 / 3R3
	6.50±0.3	6R8
0880	7.20±0.3	2R2 / 1R8
	6.90±0.3	100 / 6R8 / 4R7 / 3R3
1060	9.50±0.5	R68
	9.00±0.5	4R7 / 3R3 / 2R2 / 1R5 / 1R2 / 1R0
1010	9.30±0.5	3R3/4R7/5R6
	9.00±0.5	6R8/8R2/100/150

Standard Specifications

Stamp	Inductance (uH)	SHPM0420				SHPM0430				SHPM0520			
		DCR (mΩ) Max	Isat (A) Max(Typ)	Irms (A)Typ 20℃	Irms (A)Typ 40℃	DCR (mΩ) Max	Isat (A) Max(Typ)	Irms (A)Typ 20℃	Irms (A)Typ 40℃	DCR (mΩ) Max	Isat (A) Max(Typ)	Irms (A)Typ 20℃	Irms (A)Typ 40℃
R10	0.10	2.42	33.0(38.0)	13.5	18.0								
R15	0.15									4.60	27.0(30.0)	13.9	18.8
R16	0.16									4.60	(27.0)30.0	13.9	18.8
R22	0.22	4.60	18.8(19.5)	13.0	16.8								
R33	0.33									7.00	24.0(26.0)	10.5	14.4
R36	0.36	6.30	15.0(17.0)	11.0	14.5								
R40	0.40	7.73	13.5(15.5)	10.0	14.0								
R47	0.47	8.58	13.0(14.5)	9.00	12.5	7.26	(15.0)17.0	10.0	14.0	8.05	20.0(22.0)	10.1	14.1
R56	0.56	9.30	12.6(14.0)	8.50	12.0					9.54	16.0(19.0)	9.90	13.9
R60	0.60	9.52	12.3(13.7)	8.00	11.7								
R68	0.68									10.2	14.0(16.0)	9.60	13.4
R72	0.72	11.6	10.6(12.0)	7.60	10.5								
R80	0.80									11.8	13.5(15.5)	9.40	13.0
R82	0.82									12.7	13.0(15.0)	8.50	12.0
R90	0.90					10.1	9.00(10.0)	8.20	11.2				
1R0	1.00	14.6	8.80(9.60)	6.80	9.60	10.1	9.00(9.80)	8.00	11.0	13.8	12.8(14.5)	7.50	10.5
1R2	1.20	17.9	7.80(9.00)	6.60	9.00	11.5	8.70(9.20)	7.80	9.80	16.3	12.2(14.0)	6.80	9.40
1R5	1.50	23.5	7.40(8.00)	5.80	7.60	13.2	7.00(8.00)	7.00	9.00	18.7	11.7(13.3)	6.40	8.80
1R8	1.80	28.0	7.00(7.50)	5.20	7.00								
2R2	2.20	38.7	6.00(6.50)	4.60	5.60	22.6	6.10(7.00)	6.00	7.80				
3R3	3.30					28.6	5.30(6.20)	5.00	6.60				

Note: When ordering, please specify tolerance code. Tolerance: M=±20%, N=±30%

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Standard Specifications

Stamp	Inductance (uH)	SHPM0530				SHPM0550				SHPM0630			
		DCR (mΩ) Max	Isat (A) Max(Typ)	Irms (A)Typ 20°C	Irms (A)Typ 40°C	DCR (mΩ) Max	Isat (A) Max(Typ)	Irms (A)Typ 20°C	Irms (A)Typ 40°C	DCR (mΩ) Max	Isat (A) Max(Typ)	Irms (A)Typ 20°C	Irms (A)Typ 40°C
R15	0.15	2.31	32.5(36.0)	14.3	22.2								
R16	0.16	2.33	32.0(35.0)	14.2	22.2								
R18	0.18									1.75	36.0(40.0)	24.0	32.0
R33	0.33	3.52	26.0(28.0)	13.8	19.2					2.50	28.0(32.0)	20.0	25.0
R47	0.47	4.13	24.0(26.0)	13.7	18.4								
R56	0.56	4.52	20.2(22.2)	13.6	17.7					3.31	25.0(29.0)	17.0	22.0
R60	0.60	4.52	20.0(22.0)	13.6	17.7								
R68	0.68									5.17	21.0(25.0)	15.0	20.0
R80	0.80	5.65	18.0(20.0)	10.1	13.1								
R82	0.82	5.78	17.6(19.7)	9.90	12.9								
1R0	1.00	7.60	14.3(16.5)	9.00	12.2					6.05	18.0(23.0)	13.0	18.0
1R2	1.20	9.70	13.5(15.0)	8.50	11.0					7.40	16.0(22.0)	12.0	16.0
1R5	1.50	11.2	12.5(14.0)	8.00	10.5					9.13	15.5(20.0)	11.0	15.0
1R8	1.80	12.7	11.3(12.3)	7.60	10.1					10.2	13.0(18.2)	10.0	14.0
2R2	2.20	14.5	9.00(10.0)	7.20	9.70					12.2	11.0(15.9)	7.00	10.0
3R3	3.30	23.1	8.70(9.50)	5.90	8.10					20.8	9.00(12.2)	6.00	8.00
4R5	4.50									25.3	8.00(10.0)	5.00	7.00
4R7	4.70	36.3	7.00(8.20)	4.30	5.90								
5R6	5.60					24.2	7.20(8.60)	5.30	7.20				
6R8	6.80					28.6	6.60(7.80)	4.80	6.40				
8R2	8.20					32.5	6.10(7.20)	4.60	6.10				
100	10.0					43.0	5.40(6.50)	3.80	5.00				

Note: When ordering, please specify tolerance code. Tolerance: M=±20%, N=±30%

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Standard Specifications

Stamp	Inductance (uH)	SHPM0650				SHPM0660				SHPM0720			
		DCR (mΩ) Max	Isat (A) Max(Typ)	Irms (A)Typ 20°C	Irms (A)Typ 40°C	DCR (mΩ) Max	Isat (A) Max(Typ)	Irms (A)Typ 20°C	Irms (A)Typ 40°C	DCR (mΩ) Max	Isat (A) Max(Typ)	Irms (A)Typ 20°C	Irms (A)Typ 40°C
R27	0.27									3.50	32.0(35.0)	16.0	21.0
R31	0.31									4.80	31.0(34.0)	14.0	20.0
R33	0.33									4.80	31.0(34.0)	13.0	19.0
R47	0.47									6.20	25.0(28.0)	12.0	17.0
R68	0.68									9.20	23.0(25.0)	10.0	13.0
R82	0.82	4.18	20.0(24.0)	16.0	21.0								
1R0	1.00	4.52	18.0(23.0)	15.0	20.0	4.40	19.0(24.0)	16.0	21.0	10.8	20.0(23.0)	8.00	11.0
1R2	1.20	5.83	16.0(22.0)	14.0	18.0								
1R5	1.50	6.30	14.5(19.5)	13.0	17.0	6.10	15.0(20.0)	13.5	17.5				
1R8	1.80	7.10	13.5(18.5)	12.0	16.0								
2R2	2.20	8.50	12.0(16.0)	10.0	13.0	8.10	12.5(16.5)	11.0	14.0				
3R3	3.30	12.5	10.0(12.5)	8.50	11.0	12.3	11.0(13.0)	9.00	12.0				
4R3	4.30	16.2	8.50(11.0)	7.00	9.00								
4R7	4.70	18.4	8.00(10.5)	6.50	8.50	14.4	9.30(10.5)	8.50	11.0				
5R6	5.60					15.9	8.70(9.90)	7.60	10.0				
6R8	6.80					20.8	8.10(9.20)	7.00	9.00				

Note: When ordering, please specify tolerance code. Tolerance: M=±20%, N=±30%

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Standard Specifications

Stamp	Inductance (uH)	SHPM0730				SHPM0770				SHPM0880			
		DCR (mΩ) Max	Isat (A) Max(Typ)	Irms (A)Typ 20°C	Irms (A)Typ 40°C	DCR (mΩ) Max	Isat (A) Max(Typ)	Irms (A)Typ 20°C	Irms (A)Typ 40°C	DCR (mΩ) Max	Isat (A) Max(Typ)	Irms (A)Typ 20°C	Irms (A)Typ 40°C
1R0	1.00	5.00	28.0(30.0)	16.1	21.8								
1R5	1.50	8.25	23.5(25.0)	12.0	15.3								
1R8	1.80									4.00	24.0(28.0)	18.0	24.0
2R2	2.20	13.7	17.0(19.0)	10.0	13.0					4.30	22.0(25.0)	16.0	21.5
2R7	2.70	15.4	13.5(16.0)	9.20	11.4								
3R3	3.30	18.0	13.0(15.0)	8.00	10.0	9.42	15.1(19.4)	11.5	15.1	7.30	20.0(23.0)	13.5	18.0
4R7	4.70	26.7	12.2(13.5)	6.90	9.00	13.5	14.0(15.5)	10.5	13.6	9.80	17.0(19.0)	10.5	14.6
5R6	5.60	33.2	11.5(12.5)	5.30	7.30								
6R8	6.80	42.5	11.0(12.0)	4.50	6.80	19.6	11.0(12.8)	7.00	9.50	14.3	12.5(14.5)	8.00	11.3
8R2	8.20	48.8	9.00(10.2)	3.00	5.90								
100	10.0									22.9	10.0(11.0)	6.60	8.70

Note: When ordering, please specify tolerance code. Tolerance: M=±20%, N=±30%

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Standard Specifications

Stamp	Inductance (uH)	SHPM1031				SHPM1060				SHPM1010			
		DCR (mΩ) Max	Isat (A) Max(Typ)	Irms (A)Typ 20°C	Irms (A)Typ 40°C	DCR (mΩ) Max	Isat (A) Max(Typ)	Irms (A)Typ 20°C	Irms (A)Typ 40°C	DCR (mΩ) Max	Isat (A) Max(Typ)	Irms (A)Typ 20°C	Irms (A)Typ 40°C
R28	0.28	1.60	58.0(65.0)	25.5	35.0								
R56	0.56	2.75	39.0(44.0)	23.0	32.0								
R68	0.68					1.50	50.0(55.0)	22.5	34.0				
R82	0.82	4.10	32.0(38.0)	18.0	25.0								
R90	0.90	4.20	31.0(36.0)	17.0	24.0								
1R0	1.00	4.95	30.0(35.0)	16.0	23.0	2.32	44.0(48.0)	20.0	28.5				
1R2	1.20					2.64	40.0(45.0)	18.0	26.5				
1R5	1.50	6.60	25.0(30.0)	12.0	18.0	3.30	36.0(40.0)	16.0	24.5				
2R2	2.20					4.84	30.0(35.0)	14.0	20.0				
3R3	3.30					7.70	25.0(28.0)	11.4	16.8	4.10	23.4(27.4)	18.2	25.0
4R7	4.70					10.8	22.0(25.0)	8.70	14.0	5.70	21.4(25.4)	17.5	24.0
5R6	5.60									7.20	19.6(23.6)	15.7	21.2
6R8	6.80									8.90	18.5(21.8)	14.0	18.5
8R2	8.20									12.4	16.3(18.3)	12.9	17.1
100	10.0									13.8	14.6(17.5)	11.5	15.5
150	15.0									19.3	12.5(15.5)	9.90	13.8

Note: When ordering, please specify tolerance code. Tolerance: M=±20%, N=±30%

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Standard Specifications

Stamp	Inductance (uH)	SHPM1580				SHPM1510				SHPM1513			
		DCR (mΩ) Max	Isat (A) Max(Typ)	Irms (A)Typ 20°C	Irms (A)Typ 40°C	DCR (mΩ) Max	Isat (A) Max(Typ)	Irms (A)Typ 20°C	Irms (A)Typ 40°C	DCR (mΩ) Max	Isat (A) Max(Typ)	Irms (A)Typ 20°C	Irms (A)Typ 40°C
2R0	2.00	2.21	52.0(57.0)	29.5	40.0								
2R2	2.20	2.48	49.0(55.0)	28.0	37.0								
3R0	3.00	3.00	41.0(46.0)	26.0	34.5								
4R2	4.20	4.68	33.0(38.0)	20.5	27.0								
4R7	4.70					3.80	39.0(43.0)	22.0	30.0	3.30	40.0(44.0)	23.0	31.0
5R3	5.30	5.34	31.0(35.0)	19.5	26.0								
5R6	5.60					4.20	34.0(38.0)	21.0	28.0	3.90	35.0(40.0)	22.0	29.0
6R2	6.20	6.50	31.0(34.0)	17.0	23.0								
6R8	6.80					4.60	31.0(36.0)	20.0	26.0	4.20	32.0(37.0)	21.0	27.0
7R2	7.20	7.20	29.0(32.0)	15.0	21.0								
8R2	8.20	7.92	25.0(28.0)	13.0	19.0	7.20	28.0(32.0)	19.0	25.0	5.74	29.0(33.0)	20.0	26.0
100	10.0									7.00	27.0(30.0)	19.0	25.0
150	15.0									7.50	21.0(25.5)	16.0	22.0
220	22.0									13.9	19.0(22.0)	12.0	17.0
330	33.0									22.2	16.0(19.0)	9.00	14.0

Note: When ordering, please specify tolerance code. Tolerance: M=±20%, N=±30%

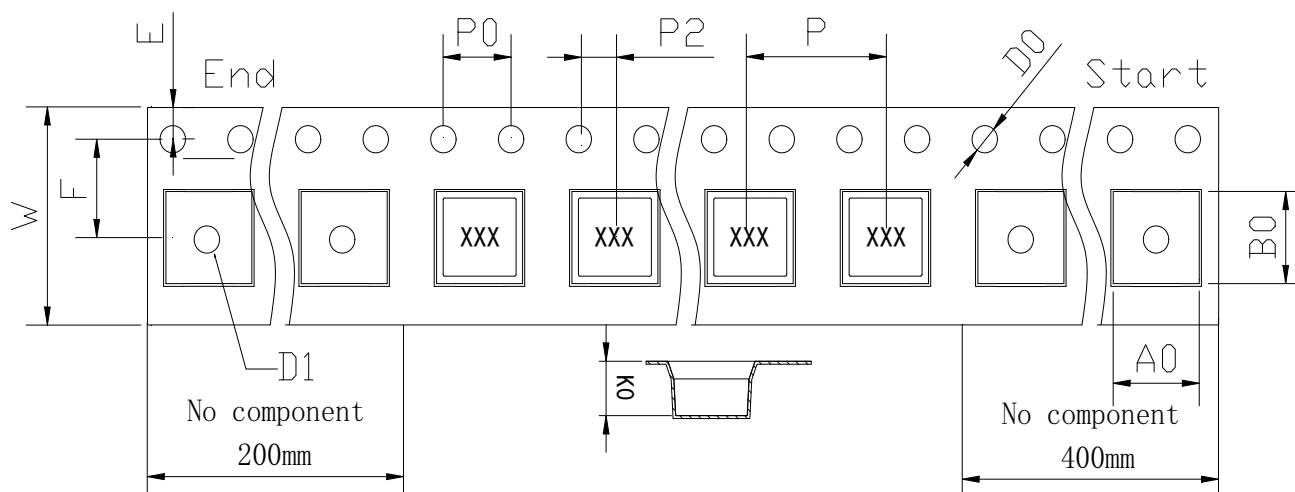
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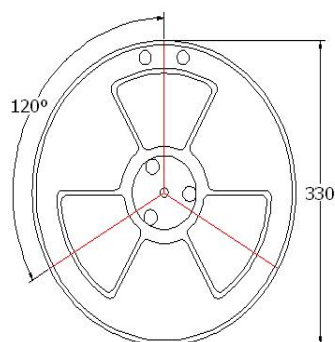
Packing

Carrier Tape (Unit:mm)



TYPE	W	A0	B0	K0	P	P0	P2	F	E	D0/D1
0420	12.0	4.40	4.40	2.30	8.00	4.00	2.00	5.50	1.75	1.50
0430	12.0	4.40	4.40	3.30	8.00	4.00	2.00	5.50	1.75	1.50
0520	12.0	6.00	5.70	2.30	8.00	4.00	2.00	5.50	1.75	1.50
0530	16.0	6.00	5.70	3.30	8.00	4.00	2.00	7.50	1.75	1.50
0550	16.0	6.00	5.70	5.30	8.00	4.00	2.00	7.50	1.75	1.50

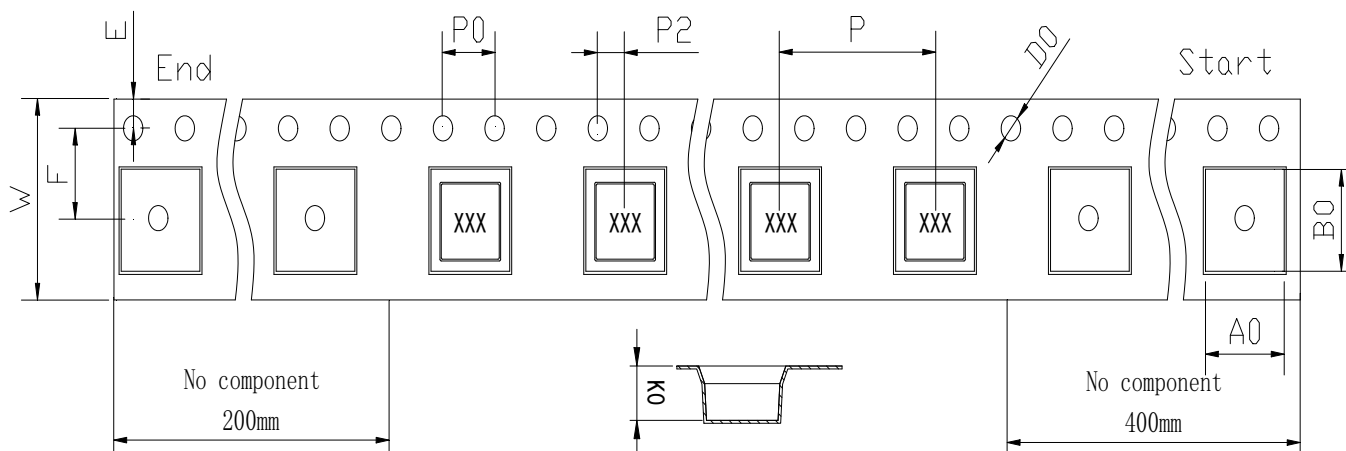
Reel (Unit:mm)



TYPE	A	B	C	Reel(Pcs)
0420	12.5	2.30	100	3000
0430	12.5	2.30	100	2000
0520	12.5	2.30	100	3000
0530	16.5	2.30	100	2000
0550	16.5	2.30	100	1500

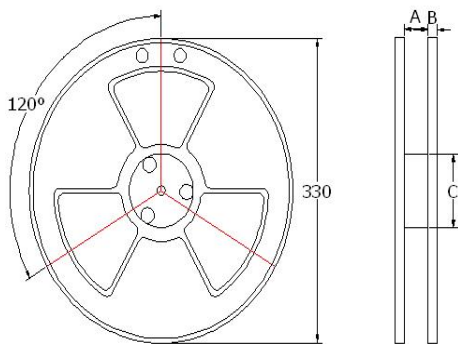
Packing

Carrier Tape (Unit:mm)



TYPE	W	A0	B0	K0	P	P0	P2	F	E	D0/D1
0630	16.0	7.00	6.80	3.30	12.0	4.00	2.00	7.50	1.75	1.50
0650	16.0	7.00	6.80	5.30	12.0	4.00	2.00	7.50	1.75	1.50
0660	16.0	7.00	6.80	6.30	12.0	4.00	2.00	7.50	1.75	1.50
0720	16.0	8.20	8.00	2.30	12.0	4.00	2.00	7.50	1.75	1.50
0730	16.0	8.20	8.00	3.30	12.0	4.00	2.00	7.50	1.75	1.50
0770	16.0	8.20	8.00	7.30	12.0	4.00	2.00	7.50	1.75	1.50

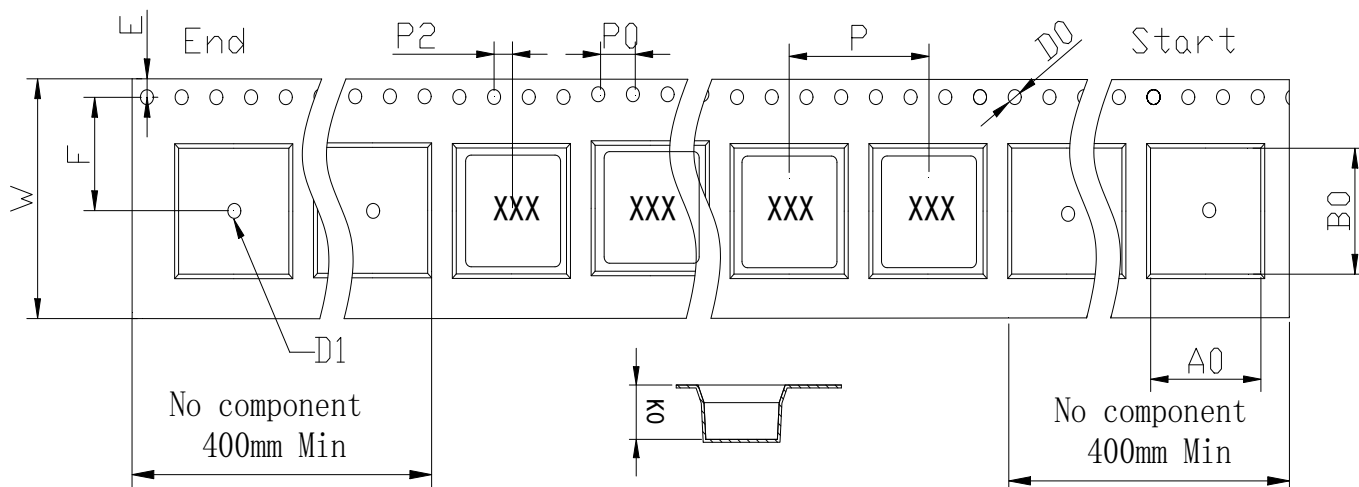
Reel (Unit:mm)



TYPE	A	B	C	Reel(Pcs)
0630	16.5	2.30	100	1000
0650	16.5	2.30	100	800
0660	16.5	2.30	100	750
0720	16.5	2.30	100	2000
0730	16.5	2.30	100	1500
0770	16.5	2.30	100	700

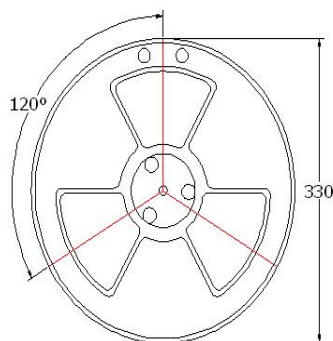
Packing

Carrier Tape (Unit:mm)



TYPE	W	A0	B0	K0	P	P0	P2	F	E	D0/D1
0880	24.0	9.40	8.50	8.50	16.0	4.00	2.00	11.5	1.75	1.50
1031	24.0	12.4	11.5	3.30	16.0	4.00	2.00	11.5	1.75	1.50
1060	24.0	12.4	11.5	6.30	16.0	4.00	2.00	11.5	1.75	1.50
1010	24.0	12.4	11.5	10.3	16.0	4.00	2.00	11.5	1.75	1.50

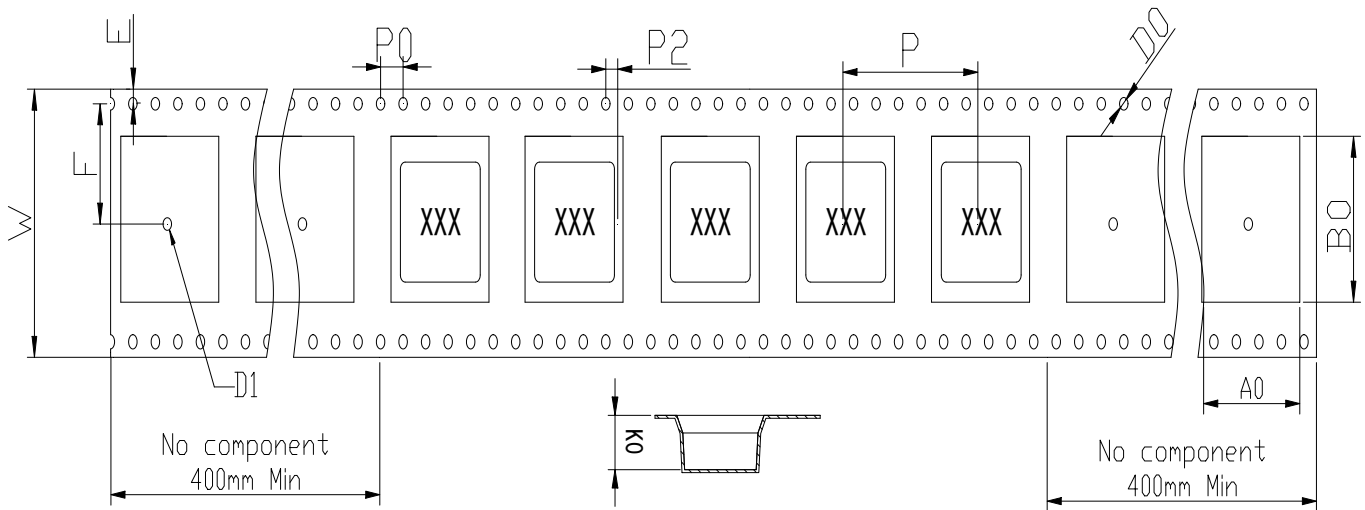
Reel (Unit:mm)



TYPE	A	B	C	Reel(Pcs)
0880	24.5	2.30	100	450
1031	24.5	2.30	100	1000
1060	24.5	2.30	100	500
1010	24.5	2.30	100	300

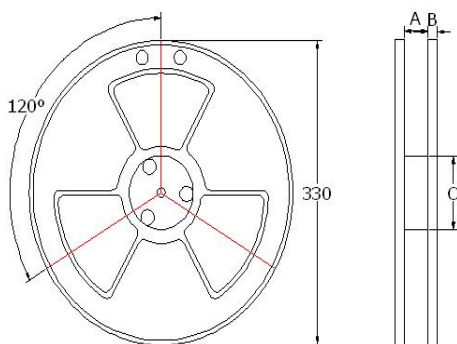
Packing

Carrier Tape (Unit:mm)



TYPE	W	A0	B0	K0	P	P0	P2	F	E	D0/D1
1580	32.0	17.0	16.0	8.50	24.0	4.00	2.00	14.2	1.75	1.50
1510	32.0	17.0	16.0	10.5	24.0	4.00	2.00	14.2	1.75	1.50
1513	32.0	17.0	16.0	13.6	24.0	4.00	2.00	14.2	1.75	1.50

Reel (Unit:mm)



TYPE	A	B	C	Reel(Pcs)
1580	32.5	2.30	100	200
1510	32.5	2.30	100	150
1513	32.5	2.30	100	100

Appearance criterion

1、PAD residual powder、inner wire exposed、imprinting

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

The imprinting mark below the part, are norm in manufacturing process and does not affect the function and it is acceptable.

Front lit imprinting is acceptable.

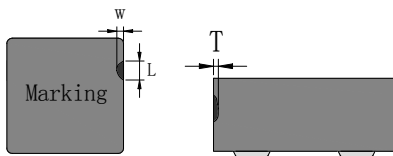
a	10% max of the length of pad.
b	5% of the area on one single pad.
t	0.08mm max.

Foreign materials on the product body is inevitable and accepted.

2、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.

3、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:

Severely crack: not acceptable. More obvious cracks extended from side to side.

Moderate crack: not acceptable. Very obvious and may result in powder come off and exposed of copper wire.

Slight wire expose: acceptable wire exposed during Press process.

Lead wire imprint: acceptable Turns of wires that close to the edge and imprint show.

Slight crack: acceptable.

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.

4、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.