FEATURES

- High performance (I sat) realized by metal dust core.
- Low profile:
  3.6mm x 3.2mm x 1.0mm
  3.6mm x 3.2mm x 1.2mm
  3.6mm x 3.2mm x 1.5mm
  3.6mm x 3.2mm x 2.0mm
- Low loss realized with low DCR
- Magnetically Shielded.
- RoHS compliant.

APPLICATIONS

- DC/DC converter for CPU in Notebook PC
- Cellular phones, LCD displays, HDDs, DVCs, PDAs etc..
- Thin type on-board power supply module for exchanger
- VRM for server

PRODUCT IDENTIFICATION

MHP 0310 – 1R0 M

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

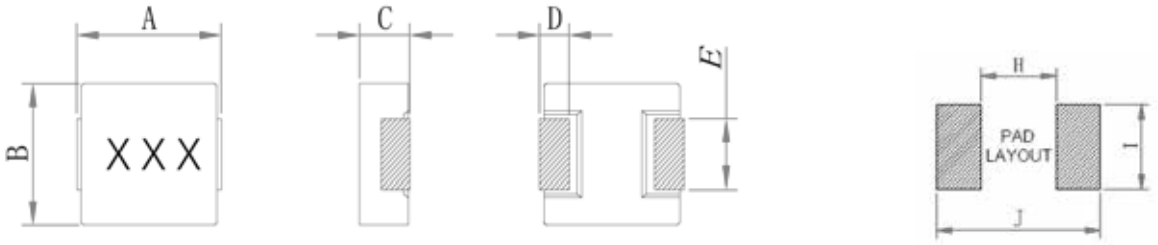
(1) Series :High Power Inductors.

(2) Dimensions :0310 is size.

(3) Inductance: 1R0 for 1.0uH.

(4) Inductance tolerance: M: ± 20%

SHAPES AND DIMENSIONS



Item	A	B	C	D	E	H	I	J
MHP0310	3.4±0.2	3.0±0.2	0.8±0.2	0.7±0.3	1.3±0.2	1.2	2.0	4.2
MHP0312	3.4±0.2	3.0±0.2	1.0±0.2	0.7±0.3	1.3±0.2	1.2	2.0	4.2
MHP0315	3.4±0.2	3.0±0.2	1.3±0.2	0.7±0.3	1.3±0.2	1.2	2.0	4.2
MHP0302	3.4±0.2	3.0±0.2	1.8±0.2	0.7±0.3	1.3±0.2	1.2	2.0	4.2

Note: Beyond the above specification also could satisfy the special requirement

ELECTRICAL CHARACTERISTICS

Part No.	Inductance L (uH)	Tolerance (±%)	DCR(mΩ)		I sat(A)		I rms(A)	
			Typ.	Max.	Typ.	Max.	Typ.	Max.
MHP0310-R15M	0.15	20	9.3	12	12	10	8.0	7.0
MHP0310-R22M	0.22	20	11.0	14	11	9.0	7.0	5.5
MHP0310-R33M	0.33	20	15.0	18	10	9.0	6.0	4.0
MHP0310-R47M	0.47	20	22.0	25	7.0	6.0	4.0	3.0
MHP0310-1R0M	1.0	20	40.0	48	5.0	4.0	2.8	2.4
MHP0310-1R5M	1.5	20	54.0	65	4.0	3.5	2.4	2.0
MHP0310-2R2M	2.2	20	87.0	100	3.5	3.0	1.8	1.5
MHP0310-100M	10.0	20	380	430	1.4	1.2	0.9	0.7
MHP0312-R11M	0.12	20	4.3	5.5	17	14	11	9.0
MHP0312-R22M	0.22	20	9.6	12	12	11	9.0	7.5
MHP0312-R33M	0.33	20	15.8	18	9.6	8.6	7.2	5.2
MHP0312-R47M	0.47	20	22.0	25	8.2	7.2	6.2	4.2
MHP0312-1R0M	1.0	20	39.2	45	5.8	5.0	4.0	3.0
MHP0312-2R2M	2.2	20	88.0	102	4.0	3.5	2.6	2.1
MHP0312-3R3M	3.3	20	136	155	3.2	2.8	1.8	1.4
MHP0312-4R7M	4.7	20	160	190	2.0	1.8	1.4	0.9
MHP0312-100M	10.0	20	313	360	1.5	1.2	1.0	0.8
MHP0315-R22M	0.22	20	10.7	13	14	12	11	9.0
MHP0315-R33M	0.33	20	15.0	18	13	11.5	8.5	6.5
MHP0315-R47M	0.47	20	19.0	22	9.0	7.5	7.0	5.0
MHP0315-1R0M	1.0	20	36.0	42	6.2	5.2	4.5	3.5
MHP0315-1R5M	1.5	20	50.0	60	5.8	4.8	3.8	3.0
MHP0315-2R2M	2.2	20	72.0	85	5.0	4.0	3.2	2.6
MHP0315-3R3M	3.3	20	92.0	110	3.5	3.0	2.2	1.5
MHP0315-100M	10.0	20	313	360	2.0	1.5	1.2	0.9
MHP0302-R22M	0.22	20	8.0	10	16	13	10	8.0
MHP0302-R33M	0.33	20	12.0	15	14	12	9.0	7.0
MHP0302-R47M	0.47	20	15.0	18	12	10	8.0	6.5
MHP0302-R68M	0.68	20	22.0	26	10	8.5	7.0	5.5
MHP0302-1R0M	1.0	20	25.0	30	8.0	6.5	5.0	4.0
MHP0302-1R5M	1.5	20	34.0	39	6.0	5.0	4.2	3.2
MHP0302-2R2M	2.2	20	60.0	69	4.8	4.0	3.3	2.8
MHP0302-3R3M	3.3	20	70.0	83	4.0	3.5	2.8	2.2
MHP0302-4R7M	4.7	20	120	144	3.5	3.0	2.4	2.0
MHP0302-6R8M	6.8	20	153	184	3.0	2.6	1.6	1.2
MHP0302-100M	10	20	224	260	1.8	1.6	1.3	1.0

The figures underlined mean the electrical characteristics are beyond competitors. Others, same as standards.

If you require another part number please contact with us.

Note 1: Referenced ambient temperature 20℃.

Note 2: Test Condition :1MHz ,1.0 Vrms.

Note 3: I sat (Typ) : DC current. A）that will cause L0 to drop approximately 30%

I sat (Max) : DC current（A）that will cause L0 to drop 30% Max

I rms (Typ) : DC current. A）that will cause an approximate ΔT of 40℃

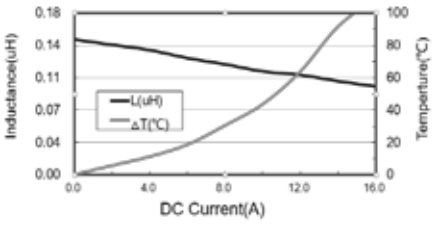
I rms (Max) : DC current（A）that will cause an ΔT of 40℃ Max

Note 4: Operating temperature range includes self-temperature rise.

Note 5: The rated current as listed is either the saturation current or the heating current depending on which value is lower.

Typical performance curves :

MHP0310-R15M



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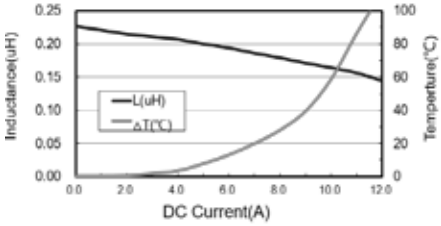

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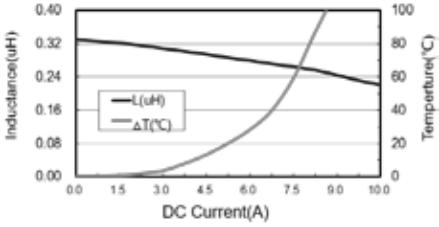

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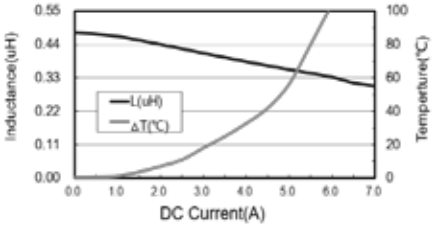
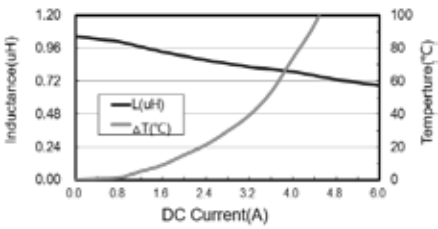


MHP0310-1R0M



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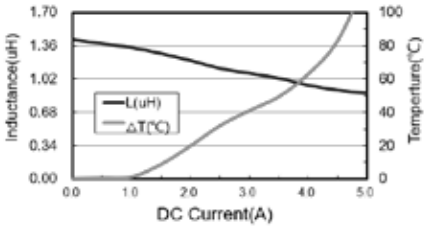

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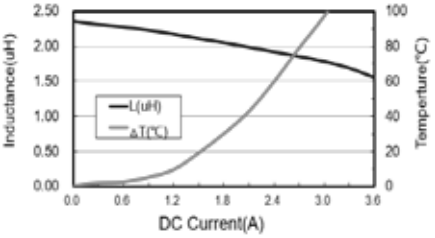
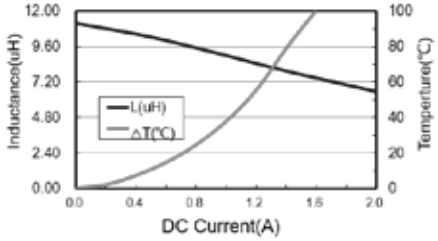
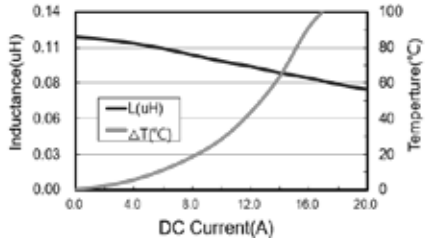


MHP0310-100M



MHP0312-R11M



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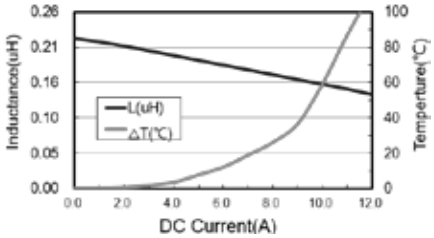

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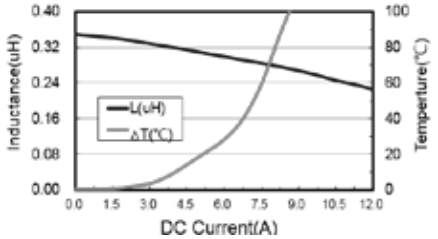

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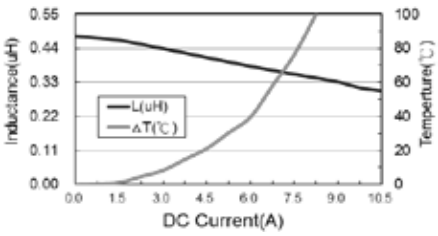

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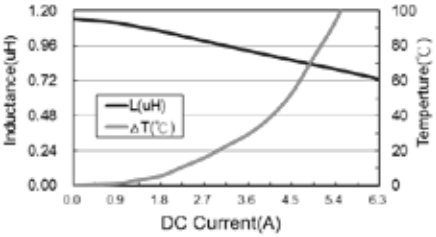

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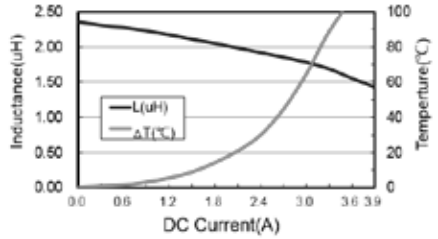

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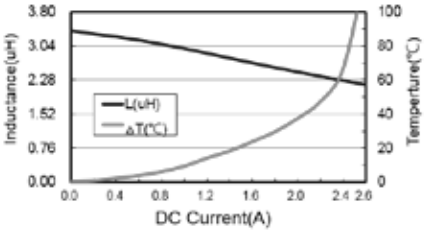
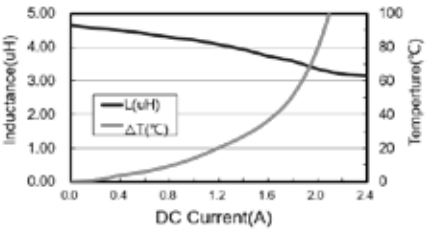
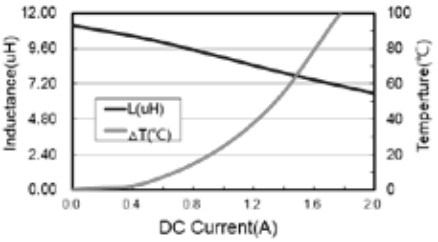


MHP0312-4R7M



MHP0312-100M



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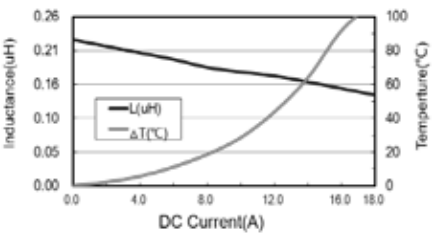
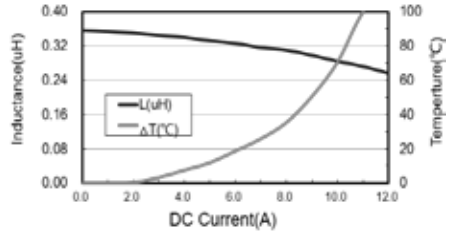


Typical performance curves :

MHP0315-R33M



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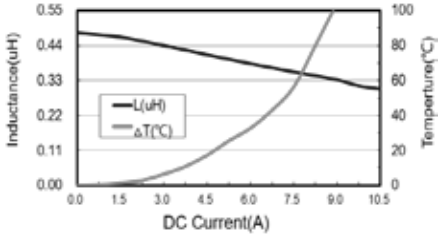

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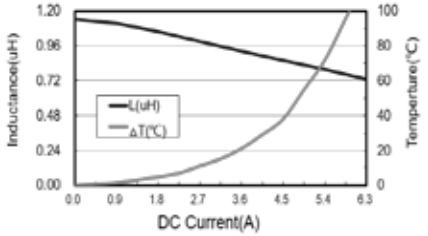

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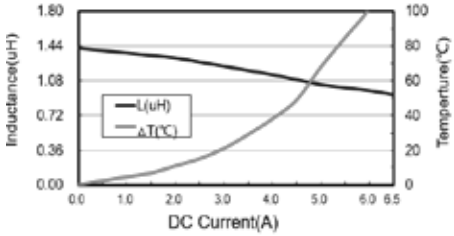

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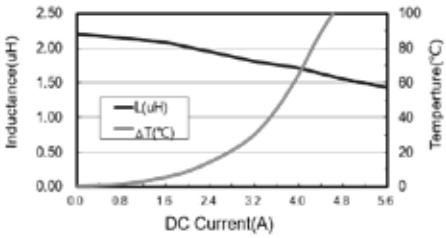

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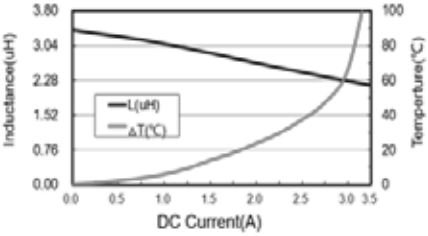

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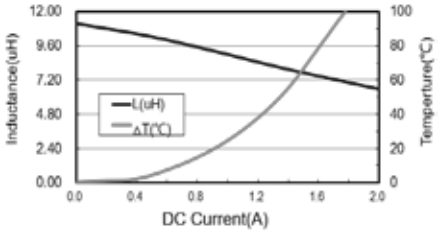
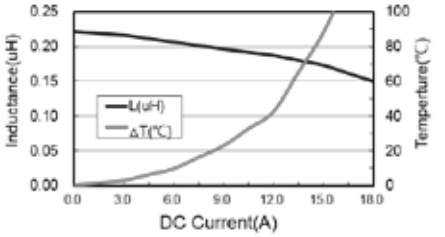


MHP0302-R22M



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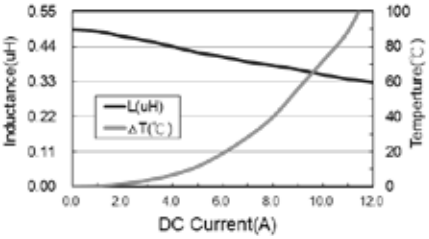

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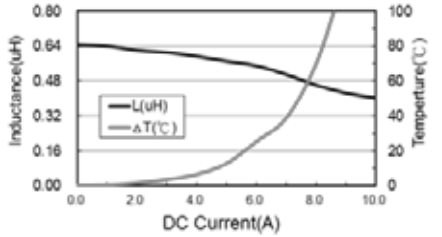

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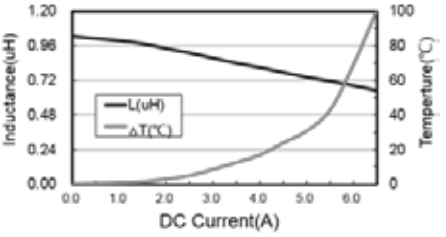

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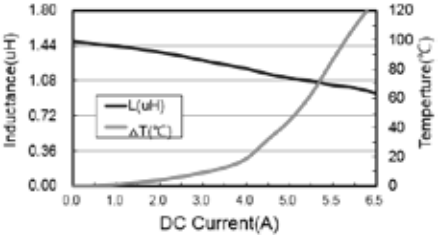

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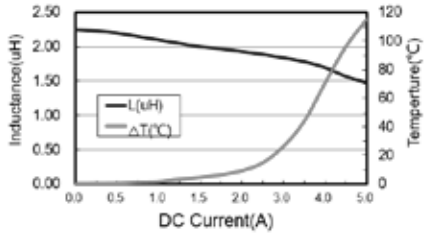

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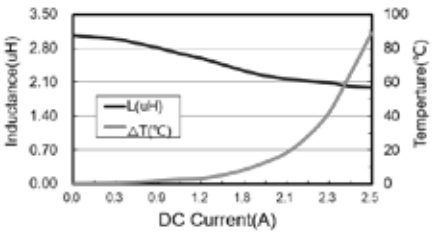

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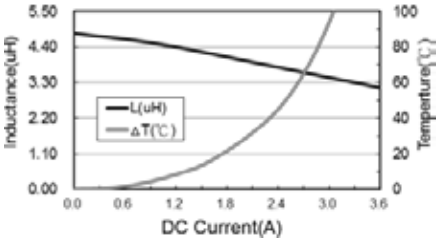

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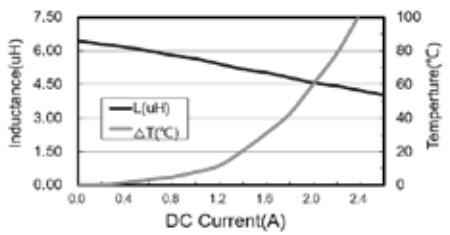

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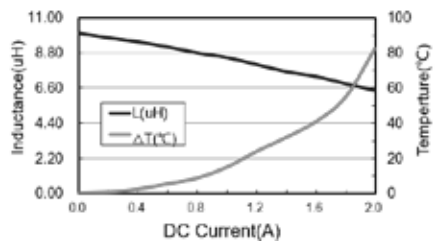
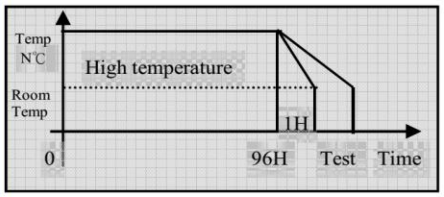
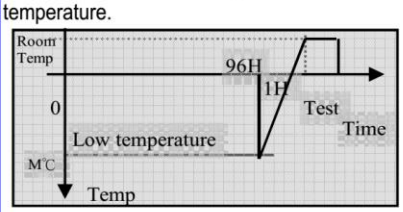
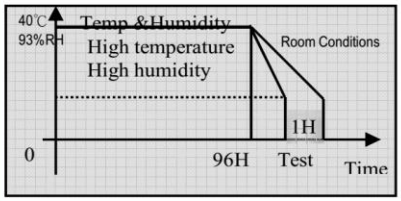
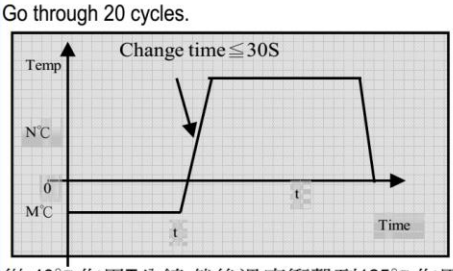
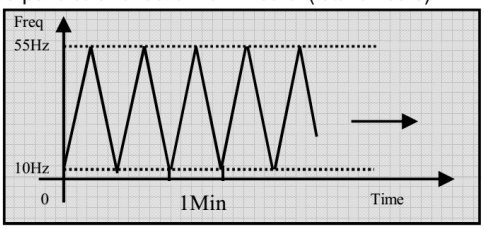
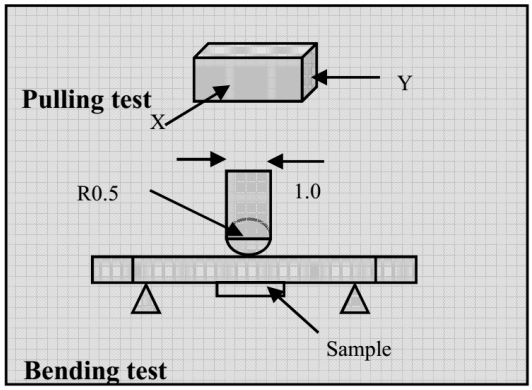


RELIABILITY TEST

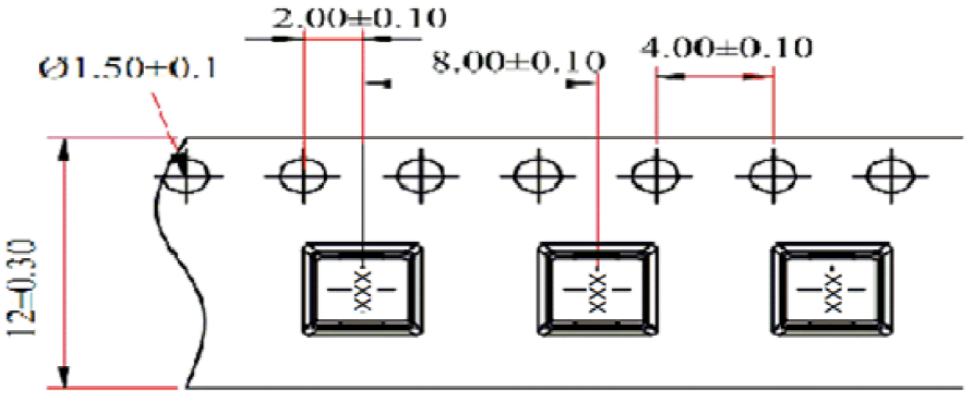
FOR SMT/SMD and other similar types

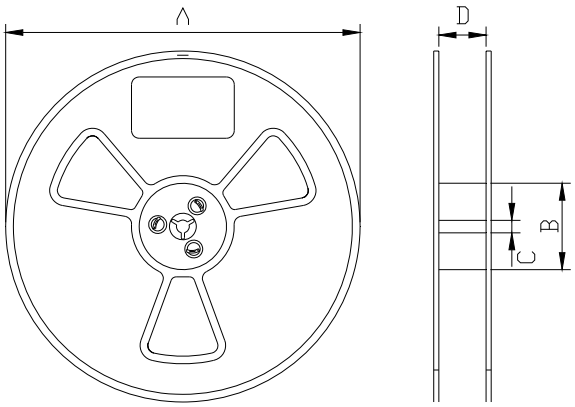
	Item (項目)	Required Characteristics (要求)	Test Method / Condition (測試方法)
Environmental tests (環境試驗)	High temperature Storage test Reference documents: MIL-STD-202G Method 108A 高溫儲存試驗	1.No case deformation or change in appearance. 2.△L/L≦10% or15% 3.△Q/Q≦30% 4.△DCR/DCR≦10% N:依據產品規格設定 1.無明顯的外觀缺陷 2.感值變化不超過10%或者15% 3.品質因數變化不超過30% 4.直流電阻變化不超過10%	Temperature: N±2℃ Time : 96±2 hours Tested not less than 1 hour, nor more than 2 hours at room temperature.  溫度: N±2℃ 時間: 96±2 小時 樣品在室溫下放置1小時,不超2小時必須測試.
	Low temperature Storage test Reference documents: IEC 68-2-1A 6.1 6.2 低溫儲存試驗	1.No case deformation or change in appearance. 2.△L/L≦10% or15% 3.△Q/Q≦30% 4.△DCR/DCR≦10% M:依據產品規格設定 1.無明顯的外觀缺陷 2.感值變化不超過10%或者15% 3.品質因數變化不超過30% 4.直流電阻變化不超過10%	Temperature: M±2℃ Time : 96±2 hours Tested not less than 1 hour, nor more than 2 hours at room temperature.  溫度: M±2℃ 時間: 96±2 小時 樣品在室溫下放置1小時,不超2小時必須測試.
	Humidity test Reference documents: MIL-STD-202G Method 103B 濕度測試	1.No case deformation or change in appearance. 2.△L/L≦10% or15% 3.△Q/Q≦30% 4.△DCR/DCR≦10% 1.無明顯的外觀缺陷 2.感值變化不超過10%或者15% 3.品質因數變化不超過30% 4.直流電阻變化不超過10%	Temperature: 40±2℃ , Humidity: 93±3%RH Time : 96±2 hours Tested not less than 1 hour, nor more than 2 hours at room temperature.  溫度:40±2℃ , 溼度: 93±3%RH 時間 : 96±2 hours 樣品在室溫下放置1小時,不超2小時間必須測試.
	Thermal shock test Reference documents: MIL-STD-202G Method 107G 熱衝擊測試	1.No case deformation or change in appearance. 2.△L/L≦10% or15% 3.△Q/Q≦30% 4.△DCR/DCR≦10% For T: weight≦28g : 15Min; M:低溫設定 28g≦weight≦136g : 30Min N:高溫設定 1.無明顯的外觀缺陷 2.感值變化小於10%或者15% 3.品質因數變化小於30% 4.直流電阻變化小於10%	First M℃ forT time, lastN℃ forT time as 1 cycle. Go through 20 cycles.  從-40℃作用T分鐘,然後溫度衝擊到125℃作用T分鐘,作爲一個循環,共作用20次.

FOR SMT/SMD and other similar types

	Item (項目)	Required Characteristics (要求)	Test Method / Condition (測試方法)
Physical characteristic tests (物理特性試驗)	Solderability test Reference documents: MIL-STD-202G Method 208H IPC J-STD-002C 可焊性測試	Terminals area must have 95% min. solder coverage 端子必須有95%以上著錫	1.Dip pads in flux then dip in solder pot at 245±5℃ for 5 seconds. 2.Solder: lead free 3.Flux: rosin flux 1.端子浸入助焊劑, 然後浸入245±5℃錫爐中5秒 2.焊料 :無鉛焊料 3.助焊劑: 松香助焊劑
	Heat endurance of Reflow soldering Reference documents: IPC J-STD-020D 過再流焊測試	1.No case deformation or change in appearance. 2.ΔL/L≦10% or 15% 3.ΔQ/Q≦30% 4.ΔDCR/DCR≦10% 1.無明顯的外觀缺陷 2.感值變化不超過10%或者15% 3.品質因數變化不超過30% 4.直流電阻變化不超過10%	1.Refer to the next page reflow curve Go through 3 times 2.The peak temperature : 260+0/-5℃ 1.參照下頁回流焊曲線過三次 2.峰值溫度爲: 260+0/-5℃
	Vibration test Reference documents: MIL-STD-202G Method 201A 振動測試	1.No case deformation or change in appearance. 2.ΔL/L≦10% 3.ΔQ/Q≦30% 4.ΔDCR/DCR≦10% 1.無明顯的外觀缺陷 2.感值變化不超過10% 3.品質因數變化不超過30% 4.直流電阻變化不超過10%	Apply frequency 10~55Hz. 1.5mm amplitude in each of perpendicular direction for 2 hours. (total 6 hours)  用10~55Hz 振動頻率,振幅1.5mm,振動周期爲1min/cycle.沿X,Y,Z方向各振動2小時.(共6小時)
	Drop test Reference documents: MIL-STD-202G Method 203C 落下試驗	1.No case deformation or change in appearance. 2.ΔL/L≦10% 3.ΔQ/Q≦30% 4.ΔDCR/DCR≦10% 1.無明顯的外觀缺陷 2.感值變化不超過10% 3.品質因數變化不超過30% 4.直流電阻變化不超過10%	Packaged & Drop down from 1m with 981m/s^2(100G) attitude In 1 angle 1 ridges & 2 surfaces orientations. 將產品包裝後從1米高度自然落下至試驗板上1角1棱2面
	Terminal strength push test Reference documents: JIS C 5321 :1997 端子強度試驗	Pulling test: Define: A: sectional area of terminal 0.5mm^2<A≦1.2mm^2 force ≧20N time : 10sec 1.2mm^2<A force ≧40N time: 10sec Bending test: Soldering the products on PCB,after the pulling test and bending test ,terminal should not pull off 推力測試: 定義: A: 焊接端子截面積 0.5mm^2<A≦1.2mm^2 推力≧20N 時間:10S 1.2mm^2<A 推力≧40N 時間10S 彎折測試: 將產品焊於PCB上,分別經過推力測試和彎折測試後,端子不會發生松脫	Bend the testing PCB at middle point,the deflection shall be 2mm  將PCB對中彎折,到達撓度2mm.
	Resistance to solvent test Reference documents: IEC 68-2-45:1993 耐溶劑性試驗	No case deformation or change in appearance,or obliteration of marking 無外觀破壞及標記破損	To dip parts into IPA solvent for 5±0.5Min,then drying them at room temp for 5Min,at last ,to brushing making 10 times. 在IPA溶劑中浸泡 5±0.5分鐘,室溫下乾燥5分鐘,然後擦拭10次.

Packaging





SIZE	A	B	C	D	Reel/PCS
MHP0310	330	100	13	12.5	3000
MHP0312	330	100	13	12.5	3000
MHP0315	330	100	13	12.5	3000
MHP0302	330	100	13	12.5	3000

Note: Beyond the above specification also could satisfy the special requirement

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