

Power Inductor



BPCP Series



Overview

Power inductors are passive electronic components used in various circuits to store energy in a magnetic field when electrical current flows through them. They are critical in filtering, energy storage, and noise suppression in power electronic systems. They are designed to handle higher currents and are optimized for minimal power loss and thermal efficiency.

Benefits

- 1. Low Rdc and high saturation current for portable DC to DC converter line
- 2. High magnetic shielding construction provides high resolution for EMC protection
- 3. Support lead-free soldering

Applications

- 1. Notebook PC
- 2. Set top box, SSD
- 3. LCD TV, LCD displays
- 4. Portable communication device
- 5. DC/DC converters
- 6. Networking

Product Information

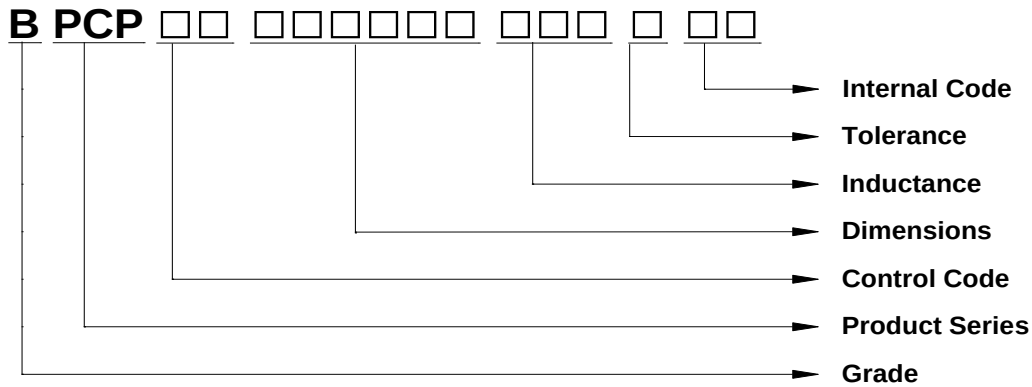
Series	L (mm)	W(mm)	T (mm)	Inductance (μH)
BPCP	7.6	7.6	3.8	2.2 ~ 1000
	7.6	7.6	4.5	
	12.0	12.0	8.1	



BPCP00070738 Series Specification

1 Scope: This specification applies to the Pb Free high current type SMD inductors

2 Part Numbering:



3 Rating:

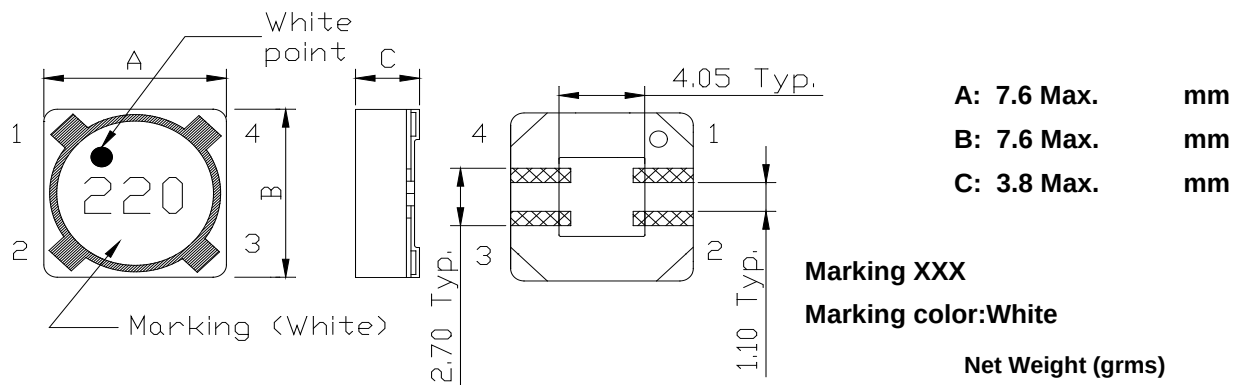
Operating Temperature: $-40^{\circ}\text{C} \sim 125^{\circ}\text{C}$ (Including self - temperature rise)

Storage Temperature: (on tape & reel): -20°C to $+40^{\circ}\text{C}$; 75% RH max.

4 Standard Testing Condition:

	Unless otherwise specified	In case of doubt
Temperature	Ordinary Temperature(15 to 35°C)	20 to 30°C
Humidity	Ordinary Humidity(25 to 85% RH)	50 to 80 %RH

5 Configuration and Dimensions and Unit Weight:



Net Weight (grms)

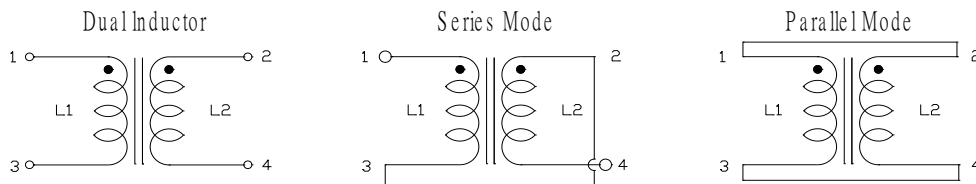
SIZE CODE	Net Weight (grms)
070738	0.57(Typ.)

BPCP00070738 Series Specification

6 Electrical Characteristics:

Part No.	Inductance L1,2(μH)	Parallel Ratings				Series Ratings				Marking
		OCL	Resistance	Rated DC Current		OCL	Resistance	Rated DC Current		
		(μH)±20%	RDC(Ω) Typ.	Isat(A)	Irms(A)	(μH)±20%	RDC(Ω) Typ.	Isat(A)	Irms(A)	
BPCP000707383R3MA0	3.3	3.3	0.0316	4.22	3.31	13.60	0.182	2.11	1.660	● 3R3
BPCP000707384R7MA0	4.7	4.7	0.0406	3.78	3.09	17.10	0.242	1.89	1.550	● 4R7
BPCP000707386R8MA0	6.8	6.8	0.0658	3.12	2.55	25.50	0.285	1.56	1.280	● 6R8
BPCP000707388R2MA0	8.2	8.2	0.0772	2.66	2.19	34.10	0.306	1.33	1.100	● 8R2
BPCP00070738100MA0	10	10	0.0826	2.47	2.08	39.60	0.342	1.24	1.040	● 100
BPCP00070738150MA0	15	15	0.1190	2.05	1.83	59.60	0.470	1.03	0.916	● 150
BPCP00070738220MA0	22	22	0.150	1.67	1.62	89.5	0.620	0.83	0.811	● 220
BPCP00070738330MA0	33	33	0.240	1.35	1.31	140.5	1.000	0.68	0.653	● 330
BPCP00070738470MA0	47	47	0.338	1.14	1.08	194.2	1.280	0.57	0.542	● 470
BPCP00070738680MA0	68	68	0.507	0.96	0.89	289.3	1.920	0.48	0.444	● 680
BPCP00070738820MA0	82	82	0.610	0.89	0.86	324.7	2.280	0.44	0.430	● 820
BPCP00070738101MA0	100	100	0.715	0.79	0.73	397.6	2.640	0.39	0.367	● 101
BPCP00070738151MA0	150	150	0.986	0.65	0.58	608.2	3.630	0.32	0.289	● 151
BPCP00070738221MA0	220	220	1.480	0.53	0.52	922.6	5.500	0.27	0.260	● 221
BPCP00070738331MA0	330	330	2.160	0.44	0.42	1335.0	8.250	0.22	0.211	● 331
BPCP00070738471MA0	470	470	2.820	0.37	0.35	1859.0	11.220	0.18	0.173	● 471

SCHEMATIC

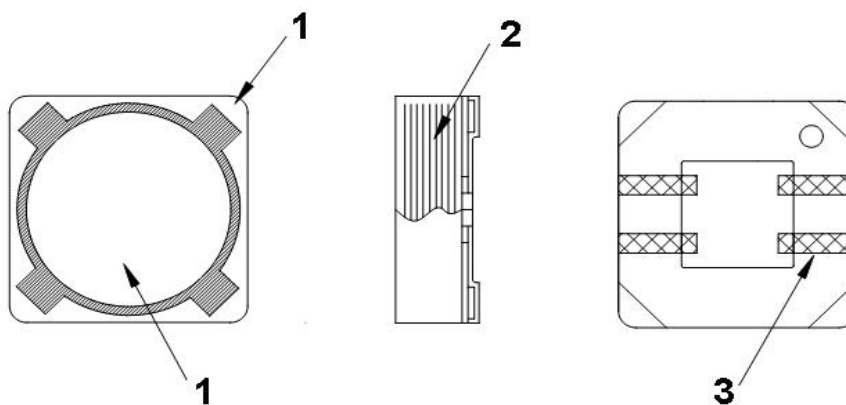


NOTE: tolerance M=±20%

1. Test Frequency : 100kHz, 0.25V
2. Dual: L1(1-3), L2(2-4) Parallel: (1,2-3,4) Series: (1-4) tie(2-3)
3. Isat : Based on inductance change ($\Delta L/L_0$: drop 30% Typ.) @ ambient Temperature : 25°C
4. Irms : Based on temperature rise (ΔT : 40°C Typ.)
5. Turns Ratio(1-3):(2-4) 1:1
6. Parallel RDC = $(R1 \cdot R2) / (R1 + R2)$
Series RDC = $(R1 + R2)$

BPCP00070738 Series Specification

6.1 Construction:



6.2 Material List:

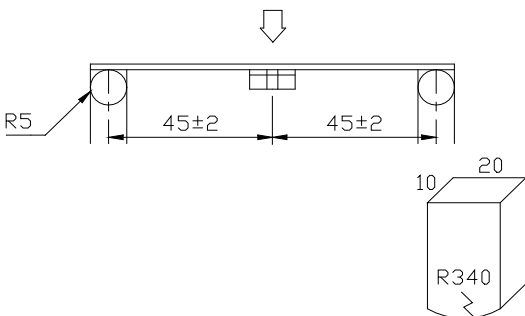
NO.	ITEM	DESCRIPTION & TYPE
1	CORE	FERRITE
2	Wire	Magnet Wire
3	CLIP	COPPER FOIL

BPCP00070738 Series Specification

ELECTRICAL

TEST ITEM	SPECIFICATION	TEST DETAILS
Temperature characteristics	$\Delta L/L_{20^{\circ}\text{C}} \leq \pm 10\%$ $0 \sim 2000 \text{ ppm}/^{\circ}\text{C}$	The test shall be performed after the sample has stabilized in an ambient temperature of -20 to $+85^{\circ}\text{C}$, and the value calculated based on the value applicable in a normal temperature and normal humidity shall be $\Delta L/L_{20^{\circ}\text{C}} \leq \pm 10\%$.

MECHANICAL

TEST ITEM	SPECIFICATION	TEST DETAILS
Substrate bending	$\Delta L/L_0 \leq \pm 10\%$ There shall be no mechanical damage or electrical damage.	The sample shall be soldered onto the printed circuit board in figure 1 and a load applied until the figure in the arrow direction is made approximately 3mm. (keep time 30 seconds) PCB dimension shall the page 7/9 F(Pressurization)  PRESSURE ROD figure-1

BPCP00070738 Series Specification

MECHANICAL

TEST ITEM	SPECIFICATION	
Vibration	$\Delta L/L_0 \leq \pm 10\%$ There shall be no mechanical damage.	The sample shall be soldered onto the printed circuit board and when a vibration having an amplitude of 1.52mm and a frequency of from 10 to 55Hz/1 minute repeated should be applied to the 3 directions (X,Y,Z) for 2 hours each. (A total of 6 hours)
Solderability	New solder More than 90%	Flux (rosin, isopropyl alcohol{JIS-K-1522}) shall be coated over the whole of the sample before hard, the sample shall then be preheated for about 2 minutes in a temperature of 130~150°C and after it has been immersed to a depth 0.5mm below for 3±0.2 seconds fully in molten solder M705 with a temperature of 245±5°C. More than 90% of the electrode sections shall be covered with new solder smoothly when the sample is taken out of the solder bath.
Resistance to Soldering heat (reflow soldering)	There shall be no damage or problems.	Temperature profile of reflow soldering The graph shows a temperature profile for reflow soldering. The y-axis is Temperature (°C) with markers at 25, 160, 217, and 260. The x-axis is Time. The profile starts at 25°C, ramps up at 3°C/sec max, passes through a preheat phase (150-200°C, 60-120 sec), enters a liquidus phase (>217°C, 60-150 sec), reaches a peak soldering temperature of 260°C ± 3°C for 10-30 seconds, and then ramps down at 6°C/sec max. The specimen shall be passed through the reflow oven with the condition shown in the above profile for 1 time. The specimen shall be stored at standard atmospheric conditions for 1 hour, after which the measurement shall be made.

BPCP00070738 Series Specification

ENVIRONMENT CHARACTERISTICS

TEST ITEM	SPECIFICATION																
High temperature storage	$\Delta L/Lo \leq \pm 10\%$ There shall be no mechanical damage.	The sample shall be left for 96 ± 4 hours in an atmosphere with a temperature of 125°C and a normal humidity. Upon completion of the measurement shall be made after the sample has been left in a normal temperature and normal humidity for 1 hour.															
Low temperature storage	$\Delta L/Lo \leq \pm 10\%$ There shall be no mechanical damage.	The sample shall be left for 96 ± 4 hours in an atmosphere with a temperature of $-40 \pm 3^\circ\text{C}$. Upon completion of the test, the measurement shall be made after the sample has been left in a normal temperature and normal humidity for 1 hour.															
Change of temperature	$\Delta L/Lo \leq \pm 10\%$ There shall be no other damage of problems	The sample shall be subject to 5 continuous cycles, such as shown in the table 2 below and then it shall be subjected to standard atmospheric conditions for 1 hour, after which measurement shall be made. table 2 <table border="1" style="margin: 10px auto; border-collapse: collapse;"> <thead> <tr> <th></th><th>Temperature</th><th>Duration</th></tr> </thead> <tbody> <tr> <td>1</td><td>$-40 \pm 3^\circ\text{C}$ (Thermostat No.1)</td><td>30 min.</td></tr> <tr> <td>2</td><td>Standard atmospheric</td><td>No.1→No.2</td></tr> <tr> <td>3</td><td>$125 \pm 2^\circ\text{C}$ (Thermostat No.2)</td><td>30 min.</td></tr> <tr> <td>4</td><td>Standard atmospheric</td><td>No.2→No.1</td></tr> </tbody> </table>		Temperature	Duration	1	$-40 \pm 3^\circ\text{C}$ (Thermostat No.1)	30 min.	2	Standard atmospheric	No.1→No.2	3	$125 \pm 2^\circ\text{C}$ (Thermostat No.2)	30 min.	4	Standard atmospheric	No.2→No.1
	Temperature	Duration															
1	$-40 \pm 3^\circ\text{C}$ (Thermostat No.1)	30 min.															
2	Standard atmospheric	No.1→No.2															
3	$125 \pm 2^\circ\text{C}$ (Thermostat No.2)	30 min.															
4	Standard atmospheric	No.2→No.1															
Moisture storage	$\Delta L/Lo \leq \pm 10\%$ There shall be no mechanical damage.	The sample shall be left for 96 ± 4 hours in a temperature of $40 \pm 2^\circ\text{C}$ and a humidity(RH) of 90~95%. Upon completion of the test, the measurement shall be made after the sample has been left in a normal temperature and normal humidity more than 1 hour.															

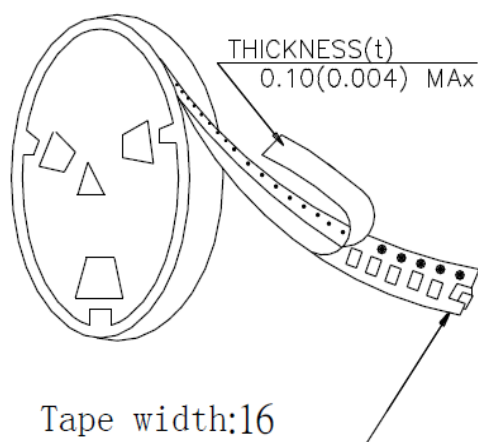
Test conditions :

The sample shall be reflow soldered onto the printed circuit board in every test.

BPCP00070738 Series Specification

7 Packaging:

7.1 Packaging -Cover Tape

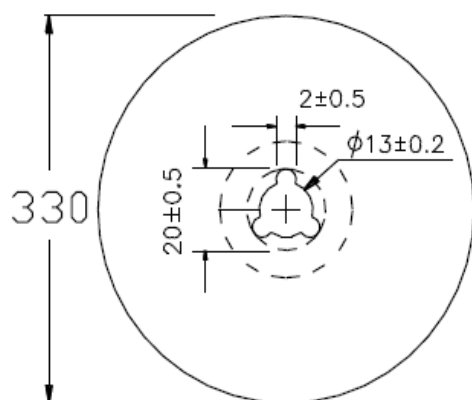


7.2 Packaging Quantity

TYPE	PCS/REEL
BPCP00070738	1000

7.3 Reel Dimensions

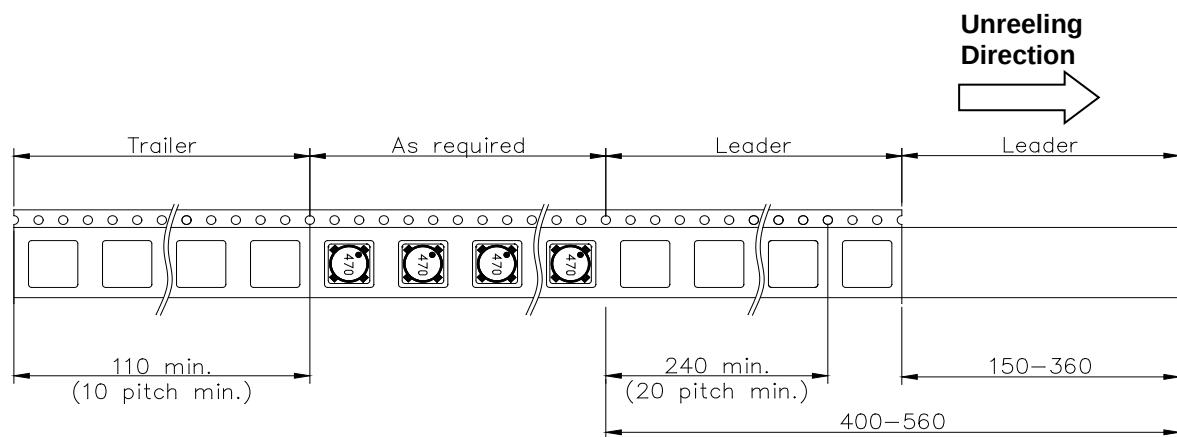
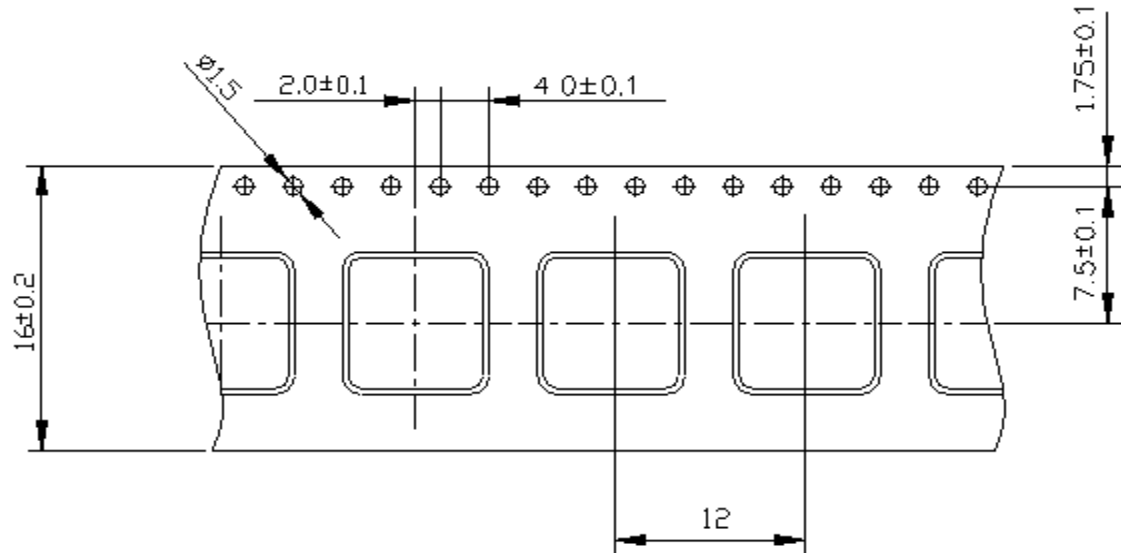
Unit : mm



BPCP00070738 Series Specification

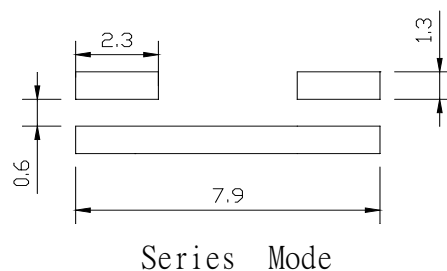
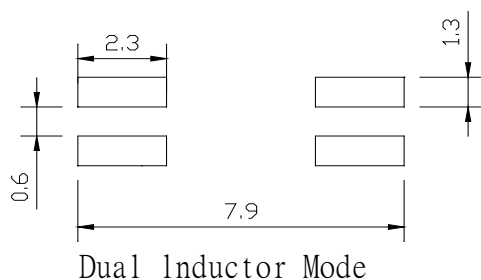
7 Packaging:

7.4 Tape Dimensions in mm



8 Recommended Land Pattern:

(STANDARD PATTERN) Unit : mm



BPCP00070738 Series Specification

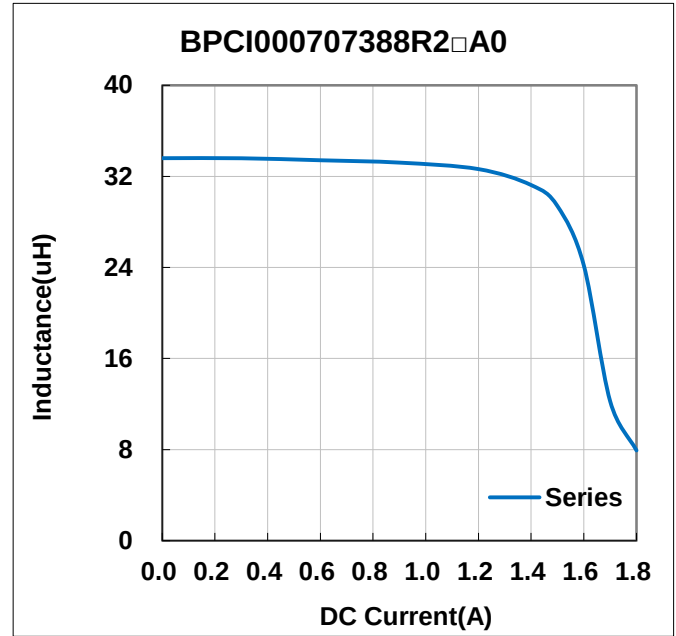
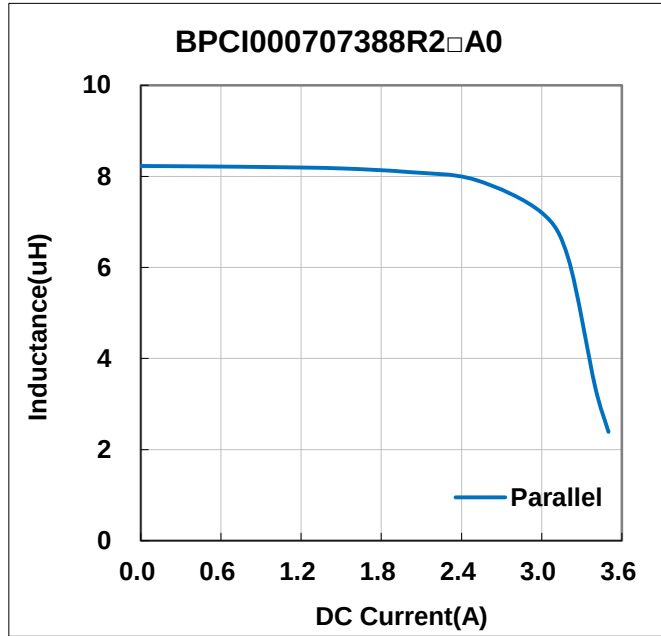
9 Note:

1. Please make sure that your product has been evaluated and confirmed against your specifications when our product is mounted to your product.
2. Do not knock or drop.
3. All the items and parameters in this product specification have been prescribed on the premise that our product is used for the purpose, under the condition and in the environment agreed upon between you and us. You are requested not to use our product deviating from such agreement.
4. Please keep the distance between transformer/coil and other components
(refer to the standard IEC 950)
5. The moisture sensitivity level (MSL) of products is classified as level 1.

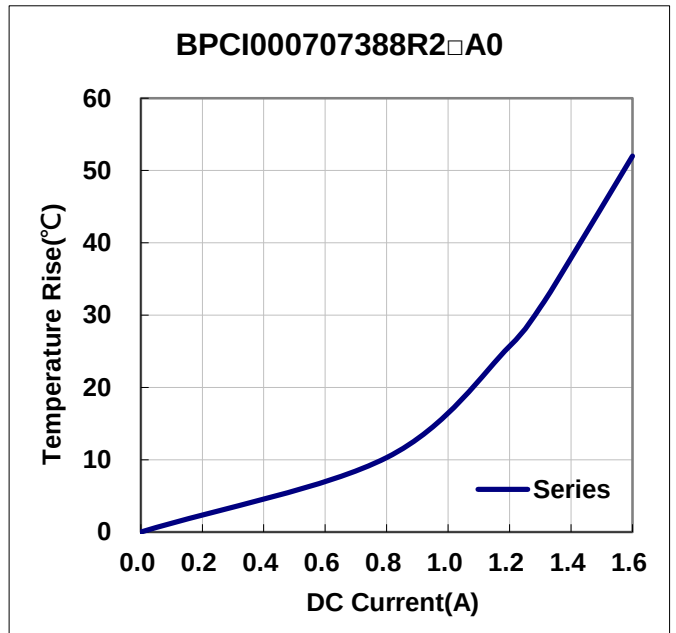
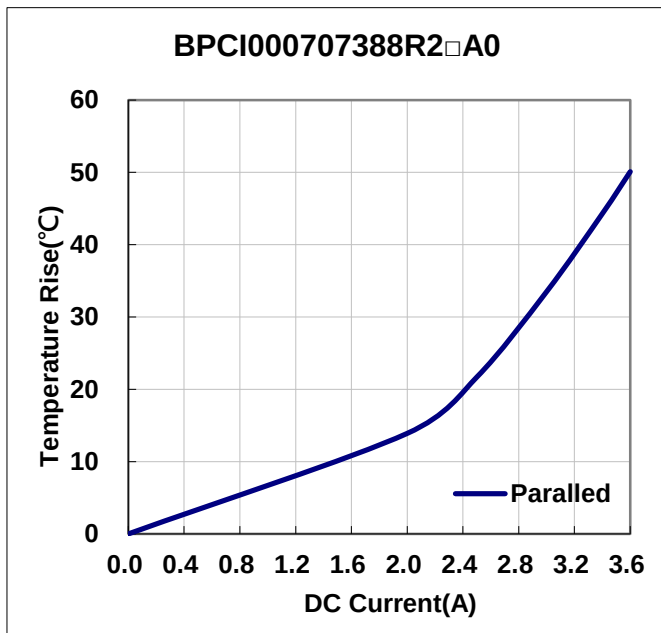
BPCP00070738 Series Specification

TYPICAL ELECTRICAL CHARACTERISTICS

INDUCTANCE vs. DC CURRENT@100KHz/0.25V



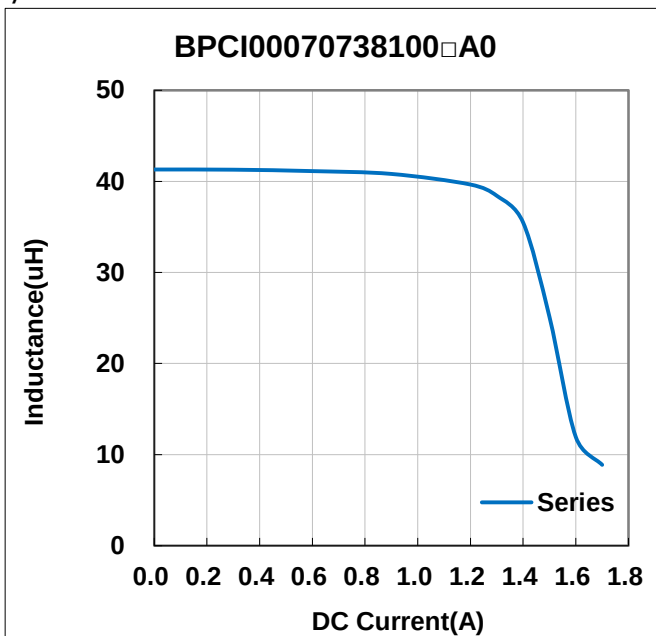
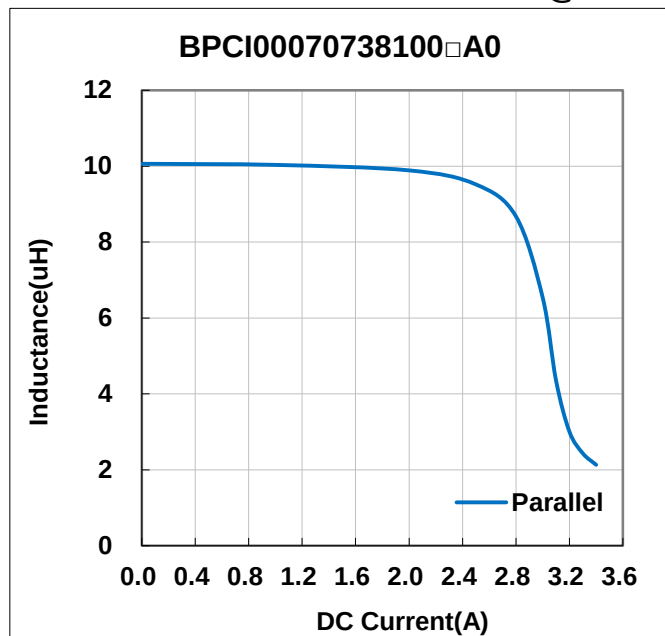
TEMPERATURE vs. DC CURRENT



BPCP00070738 Series Specification

TYPICAL ELECTRICAL CHARACTERISTICS

INDUCTANCE vs. DC CURRENT@100KHz/0.25V



TEMPERATURE vs. DC CURRENT

