# Wire-wound Ferrite Power Inductors LBXN/LBXP series for Telecommunications Infrastructure and Industrial Equipment Wire-wound Ferrite Power Inductors LMXN/LMXP series for Medical Devices classified as GHTF Class C (Japan Class III)

## RELIABILITY DATA

1. Operating Temperature Range				
Specified Value	$-40 \sim +125^{\circ}C$ (Including self-generated heat)			
Test Methods and Remarks	Including self-generated heat			

2. Storage Tempera	2. Storage Temperature Range			
Specified Value	-40~+85°C			
Test Methods and Remarks	-5 to 40°C for the product with taping.			

3. Rated current			
	Specified Value	Within the specified tolerance	

4. Inductance				
Specified Value	Within the specified tolerance			
Test Methods	Measuring equipment	: LCR Meter(HP 4285A or equivalent)		
and Remarks	Measuring frequency	: 100kHz, 1V		

5. DC Resistance			
Specified Value	Within the specified tolerance		
Test Methods and Remarks	Measuring equipment	: DC ohmmeter(HIOKI 3227 or equivalent)	

6. Self resonance frequency				
Specified Value	Within the specified tolerance(2020 type:-)			
Test Methods and Remarks	Measuring equipment : Impedance analyzer/material analyzer(HP4291A or equivalent HP4191A, 4192A or equivale			

7. Temperature characteristic						
Specified Value	Inductance	Inductance change : Within $\pm 20\%$				
	With refer	Veasurement of inductance shall be taken at temperature range within $-40^\circ\text{C} \sim +85^\circ\text{C}$ . With reference to inductance value at $+20^\circ\text{C}$ ., change rate shall be calculated. Change of maximum inductance deviation in step 1 to 5				
<b>T</b> . M	Step	Temperature (°C)				
Test Methods	1	20				
and Remarks	2	Minimum operating temperature				
	3	20 (Standard temperature)				
	4	Maximum operating temperature				
	5	20				

This catalog contains the typical specification only due to the limitation of space. When you consider the purchase of our products, please check our specification. For details of each product (characteristics graph, reliability information, precautions for use, and so on), see our Web site (http://www.ty-top.com/).

#### 8. Resistance to flexure of substrate Specified Value No damage The test samples shall be soldered to the test board by the reflow. As illustrated below, apply force in the direction of the arrow indicating until deflection of the test board reaches to 2 mm. Force Rod 10/ Test board size : 100 × 40 × 1.6 mm 20 Test board material : glass epoxy-resin R230 Solder cream thickness : 0.10mm ( 2020~3030 type) ↓ : 0.15mm ( 4040~8080 type) Board Test Sample **R**5 45±2mm 45±2mm Test Methods and Remarks Land dimension Туре A В С 2020 0.65 0.7 2.0 2424 0.7 0.75 2.0 С 3030 0.8 1.4 2.7 4040 1.2 1.6 3.7 5050 1.5 2.1 4.0 B 6060 1.6 3.1 5.7 8080 1.8 3.8 7.5 9. Insulation resistance : between wires Specified Value 10. Insulation resistance : between wire and core Specified Value 11. Withstanding voltage : between wire and core Specified Value 12. Adhesion of terminal electrode Specified Value Shall not come off PC board The test samples shall be soldered to the test board by the reflow. Applied force : 10N to X and Y directions. Duration : 5s. : 0.10mm(2020~3030 type) Solder cream thickness Test Methods and : 0.15mm(4040~8080 type) Remarks 10 N , 5 s 13. Resistance to vibration

	The definition of the definiti				
Specified Value	Inductance change : Within $\pm 10\%$ No significant abnormality in appearance.				
	The test samples shall be soldered to the test board by the reflow. Then it shall be submitted to below test conditions.				
	Frequency Range	10~55Hz			
<b>T</b> . <b>M</b>	Total Amplitude	1.5mm (May not exceed acceleration 196m/s <sup>2</sup> )			
Test Methods and Remarks	Sweeping Method				
and Remarks		X			
	Time	Y For 2 hours on each X, Y, and Z axis.			
		Z			
	Recovery : At least 2hrs of recovery under the standard condition after the test, followed by the measurement within 48hrs.				

This catalog contains the typical specification only due to the limitation of space. When you consider the purchase of our products, please check our specification.
For details of each product (characteristics graph, reliability information, precautions for use, and so on), see our Web site (http://www.ty-top.com/).



14. Solderability				
Specified Value	At least 90% of surface of terminal electrode is covered by new solder.			
Test Methods and	The test samples shall be dipped in flux, and then immersed in molten solder as shown in below table. Flux : Ethanol solution containing rosin 25%.			
Remarks	Solder Temperature	245±5°C		
	Time	5±1.0 sec.		
	XImmersion depth : All sides	s of mounting term	inal shall be immersed.	

15. Resistance to soldering heat				
Specified Value	Inductance change : Within $\pm$ 10% No significant abnormality in appearance.			
Test Methods and Remarks	The test sample shall be exposed to reflow oven at 230±5°C for 40 seconds, with peak temperature at 260±5°C for 5 seconds, 2 times. Test board material : glass epoxy-resin Test board thickness : 1.0mm			

16. Thermal shock	ί.			
Specified Value	Inductance change : Within $\pm 10\%$ No significant abnormality in appearance.			
		•	elow table in sequence. The t	The test samples shall be placed at specified temperature for specified temperature cycle shall be repeated 1000 cycles.
Test Methods Step Temperature (°C) Duration (min)				
and Remarks	1	$-40 \pm 3$	30±3	
	2	Room temperature	Within 3	
	3	+85±2	30±3	
	4	Room temperature	Within 3	

17. Damp heat				
Specified Value		Inductance change : Within $\pm 10\%$ No significant abnormality in appearance.		
Test Methods	The test samples shall be soldered to the test board by the reflow. The test samples shall be placed in thermostatic oven set at specified temperature and humidity as shown in below table.			
and Remarks	Temperature	60±2°C		
	Humidity	90~95%RH		
	Time	1000+24/-0 hour		

18. Loading under o	lamp heat			
Specified Value	Inductance change : Within $\pm$ 10% No significant abnormality in appearance.			
Test Methods and Remarks	The test samples shall be soldered to the test board by the reflow. The test samples shall be placed in thermostatic oven set at specified temperature and humidity and applied the rated current continuously as shown in below table.			
	Temperature	60±2°C		
	Humidity	90~95%RH		
	Applied current	Rated current		
	Time	1000+24/-0 hour		

19. Low temperature life test				
Specified Value	Inductance change : Within $\pm$ 10% No significant abnormality in appearance.			
Test Methods and Remarks	The test samples shall be soldered to the test board by the reflow. After that, the test samples shall be placed at test conditions as shown in below table.			
	Temperature	$-40\pm2^{\circ}C$		
	Time	1000+24/-0 hour		

20. High temperatur	re life test
Specified Value	-

This catalog contains the typical specification only due to the limitation of space. When you consider the purchase of our products, please check our specification. For details of each product (characteristics graph, reliability information, precautions for use, and so on), see our Web site (http://www.ty-top.com/).



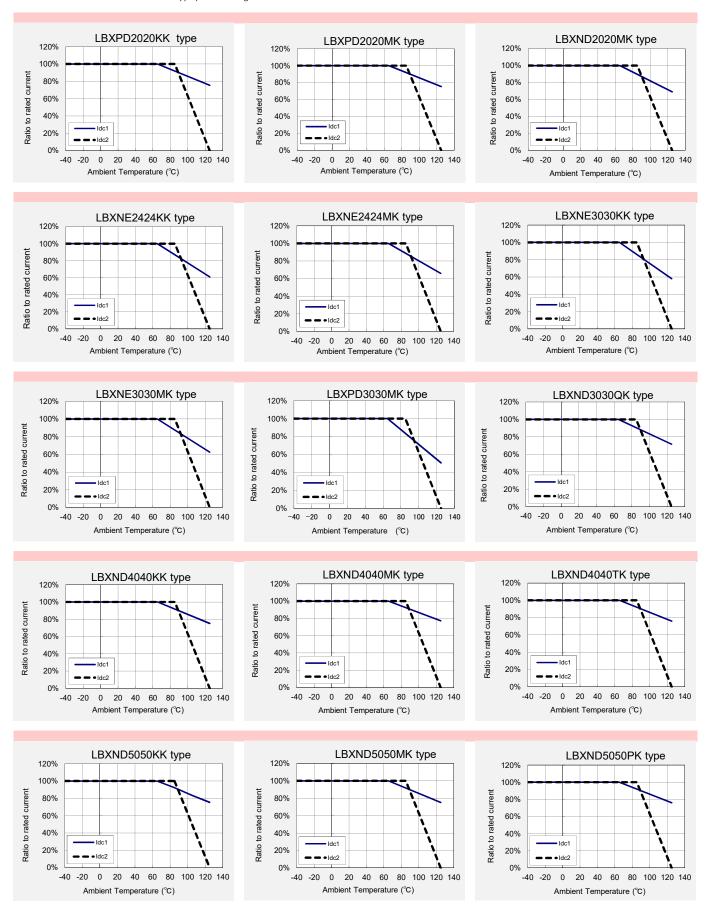
21. Loading at high temperature life test				
Specified Value	Inductance change : Within $\pm$ 10% No significant abnormality in appearance.			
Test Methods and Remarks	The test samples shall be soldered to the test board by the reflow soldering.			
	Temperature	85±2°C		
	Applied current	Rated current		
	Time	1000+24/-0 hour		

22. Standard condition			
Specified Value	Standard test condition : Unless otherwise specified, temperature is 20±15°C and 65±20%of relative humidity. When there is any question concerning measurement result: In order to provide correlation data, the test shall be condition of 20±2°C of temperature, 65±5% relative humidity. Inductance is in accordance with our measured value.		

This catalog contains the typical specification only due to the limitation of space. When you consider the purchase of our products, please check our specification. For details of each product (characteristics graph, reliability information, precautions for use, and so on), see our Web site (http://www.ty-top.com/).

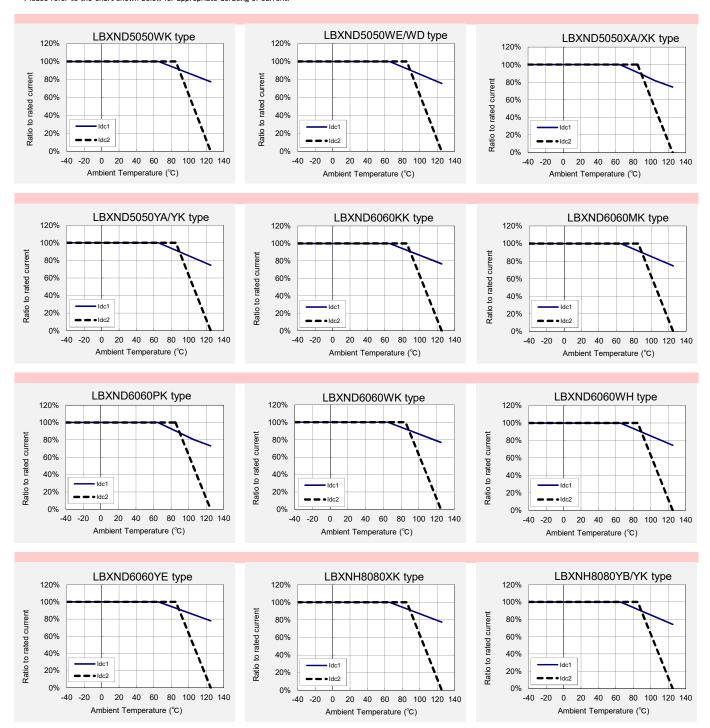
## LBXN/LBXP series

Derating of current is necessary for LBXN/LBXP series depending on ambient temperature. Please refer to the chart shown below for appropriate derating of current.



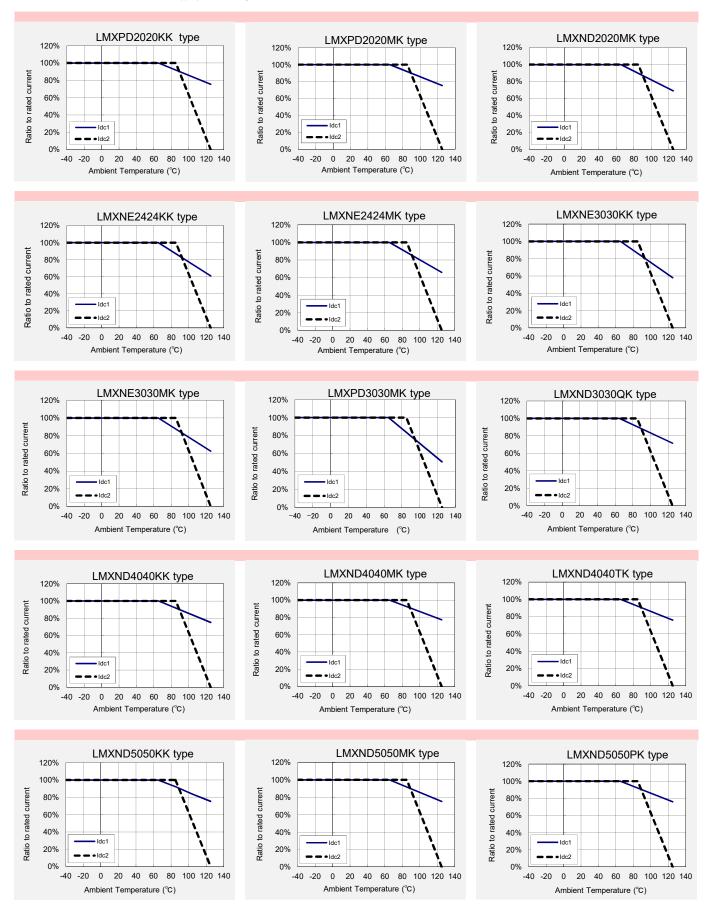
## LBXN/LBXP series

Derating of current is necessary for LBXN/LBXP series depending on ambient temperature. Please refer to the chart shown below for appropriate derating of current.



## LMXN/LMXP series

Derating of current is necessary for LMXN/LMXP series depending on ambient temperature. Please refer to the chart shown below for appropriate derating of current.



## LMXN/LMXP series

Derating of current is necessary for LMXN/LMXP series depending on ambient temperature. Please refer to the chart shown below for appropriate derating of current.

