

**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~+125°C (Including self-generated heat)

Test Methods and Remarks Including self-generated heat

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 and Remarks Measuring equipment : LCR Meter (HP 4285A or equivalent)
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 equivalent)

7. Temperature characteristic

Specified Value Inductance change : Within ±20%

Test Methods and Remarks Measurement of inductance shall be taken at temperature range within −40°C~+85°C.
With reference to inductance value at +20°C., change rate shall be calculated.
Change of maximum inductance deviation in step 1 to 5

Step	Temperature (°C)
1	20
2	Minimum operating temperature
3	20 (Standard temperature)
4	Maximum operating temperature
5	20

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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 Remarks	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%.	
	Solder Temperature	245±5°C
	Time	5±1.0 sec.
※Immersion depth : All sides of mounting terminal shall be immersed.		

15. Resistance to soldering heat

Specified Value	Inductance change : Within ±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

Specified Value	Inductance change : Within ±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 at specified temperature for specified time by step 1 to step 4 as shown in below table in sequence. The temperature cycle shall be repeated 1000 cycles.		
	Conditions of 1 cycle		
	Step	Temperature (°C)	Duration (min)
	1	-40±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 ±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 as shown in below table.	
	Temperature	60±2°C
	Humidity	90~95%RH
	Time	1000+24/-0 hour

18. Loading under damp heat

Specified Value	Inductance change : Within ±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 ±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±2°C
	Time	1000+24/-0 hour

20. High temperature life test

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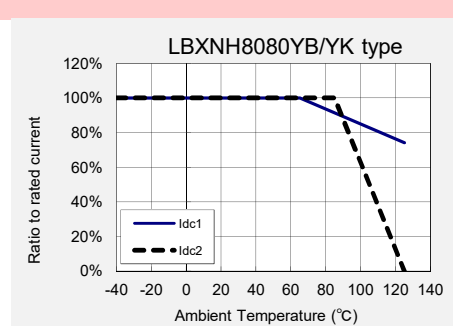
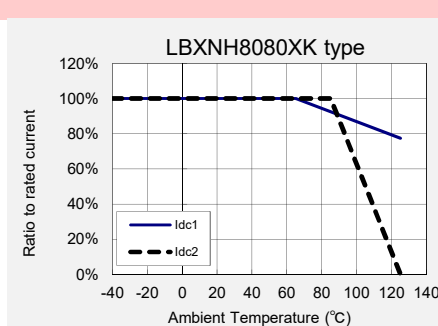
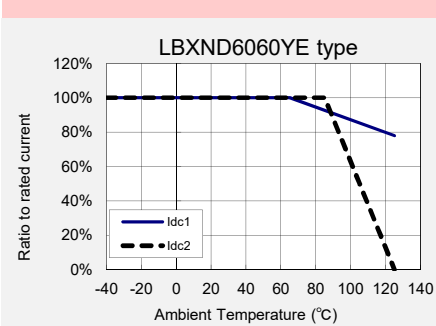
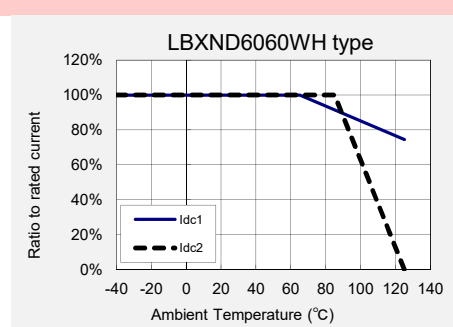
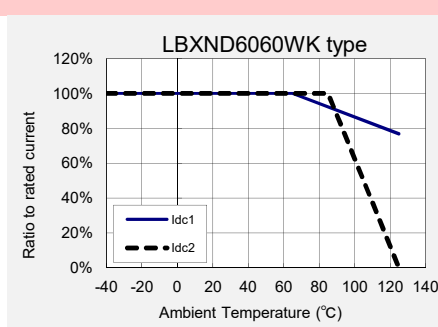
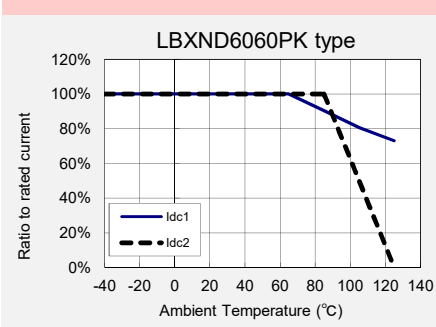
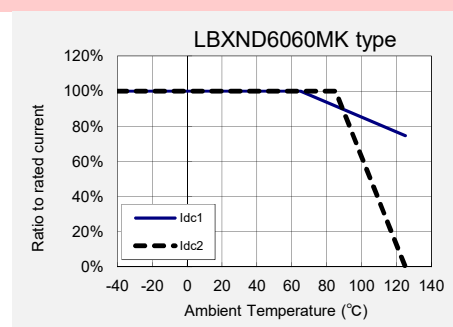
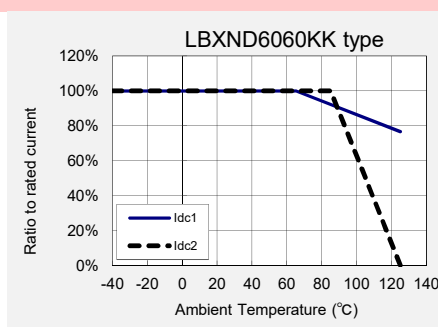
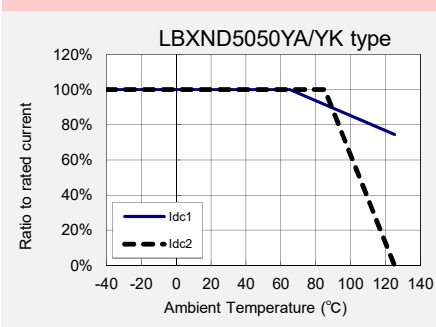
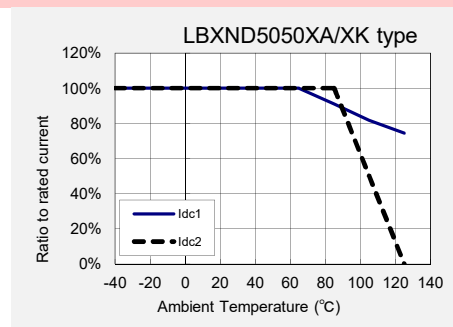
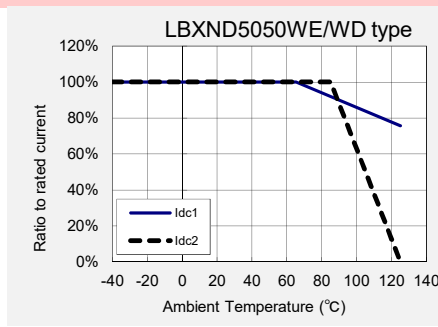
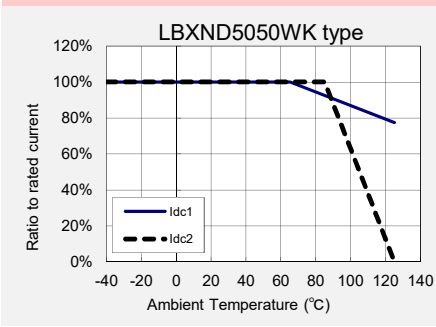
21. Loading at high temperature life test		
Specified Value	Inductance change : Within $\pm 10\%$ No significant abnormality in appearance.	
Test Methods and Remarks	The test samples shall be soldered to the test board by the reflow soldering.	
	Temperature	$85 \pm 2^\circ\text{C}$
	Applied current	Rated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

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

Derating of Rated 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.



Derating of Rated 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.

