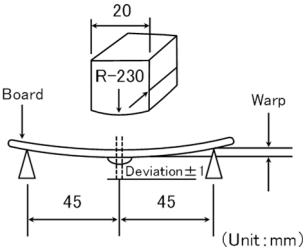


**Multilayer Metal Power Inductors MCOIL™ LBCN series**  
**for Telecommunications Infrastructure and Industrial Equipment**  
**Multilayer Metal Power Inductors MCOIL™ LMCN series**  
**for Medical Devices classified as GHTF Class C (Japan Class III)**

■ RELIABILITY DATA

<b>1. Operating Temperature Range</b>	
Specified Value	−40~+125°C(Including self-generated heat) , End of part number “D”⇒−55~+150°C(Including self-generated heat)
<b>2. Storage Temperature Range</b>	
Specified Value	−40~+85°C , End of part number “D”⇒−55~+110°C
<b>3. Rated Current</b>	
Specified Value	Idc1: The decreasing-rate of inductance value is within 30 % Idc2: The temperature of the element is increased within 40°C
<b>4. Inductance</b>	
Specified Value	Refer to each specification.
Test Methods and Remarks	Measuring frequency : 1MHz Measuring equipment : E4991 (or its equivalent)
<b>5. DC Resistance</b>	
Specified Value	Refer to each specification.
Test Methods and Remarks	Measuring equipment : HIOKI RM3545 (or its equivalent)
<b>6. Resistance to Flexure of Substrate</b>	
Specified Value	No mechanical damage.
Test Methods and Remarks	<p>Warp : 2mm  Testing board : glass epoxy-resin substrate  Thickness : 0.8mm</p>  <p>(Unit: mm)</p>
<b>7. Solderability</b>	
Specified Value	At least 90% of terminal electrode is covered by new solder.
Test Methods and Remarks	Solder temperature : 245±3°C (Sn/3.0Ag/0.5Cu) Duration : 4±1 sec.
<b>8. Resistance to Soldering</b>	
Specified Value	Appearance: No significant abnormality Inductance change: Within ±10%
Test Methods and Remarks	Solder temperature : 260±5°C Duration : 10±0.5 sec. Preheating temperature : 150 to 180°C Preheating time : 3 min. Flux : Immersion into ethanol solution with colophony for 3 to 5 sec. Recovery : 2 to 3 hrs of recovery under the standard condition after the test. (See Note 1)

9. Thermal Shock		
Specified Value	Appearance : No significant abnormality Inductance change : Within $\pm 10\%$	
Test Methods and Remarks	Conditions for 1 cycle	
	Step	temperature (°C)
	1	(Minimum Operating Temperature) $+0/-3$
	2	Room temperature
	3	(Maximum Operating Temperature) $+3/-0$
	4	Room temperature
Number of cycles : 1000		
Recovery : 2 to 3 hrs of recovery under the standard condition after the test. (See Note 1)		
10. Damp Heat ( Steady state)		
Specified Value	Appearance : No significant abnormality Inductance change : Within $\pm 10\%$	
Test Methods and Remarks	Temperature	$60 \pm 2^{\circ}\text{C}$
	Humidity	: 90 to 95%RH
	Duration	: $1000 + 24/-0$ hrs
	Recovery	: 2 to 3 hrs of recovery under the standard condition after the removal from test chamber. (See Note 1)
11. Loading under Damp Heat		
Specified Value	Appearance : No significant abnormality Inductance change : Within $\pm 10\%$	
Test Methods and Remarks	Temperature	$60 \pm 2^{\circ}\text{C}$
	Humidity	: 90 to 95%RH
	Applied current	: $I_{dc2max}$
	Duration	: $1000 + 24/-0$ hrs
	Recovery	: 2 to 3 hrs of recovery under the standard condition after the removal from test chamber. (See Note 1)
12. Loading at High Temperature		
Specified Value	Appearance : No significant abnormality Inductance change : Within $\pm 10\%$	
Test Methods and Remarks	Temperature	$85 \pm 2^{\circ}\text{C}$ (End of part number "D" $\Rightarrow 110 \pm 2^{\circ}\text{C}$ )
	Applied current	: $I_{dc2max}$
	Duration	: $1000 + 24/-0$ hrs.
	Recovery	: 2 to 3 hrs of recovery under the standard condition after the removal from test chamber. (See Note 1)

(Note 1) Measurement shall be made after  $48 \pm 2$  hrs of recovery under the standard condition.

Note on standard condition: "standard condition" referred to herein is defined as follows:

5 to  $35^{\circ}\text{C}$  of temperature, 25 to 85% relative humidity.

When there are questions concerning measurement results:

In order to provide correlation data, the test shall be conducted under condition of  $20 \pm 2^{\circ}\text{C}$  of temperature, 60 to 70% relative humidity, and 86 to 106kPa of air pressure. Unless otherwise specified, all the tests are conducted under the "standard condition."