

Wire-wound Ferrite Power Inductors LAXH series for Automotive Powertrain and Safety

RELIABILITY DATA

1. Operating Temperature Range

Specified Value	-40~+150°C (Including self-generated heat)
Test Methods and Remarks	Including self-generated heat

2. Storage Temperature Range

Specified Value	-40~+125°C
Test Methods and Remarks	-5 to 40°C for the product with taping.

3. Rated current

Specified Value	Within the specified tolerance
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4. Inductance

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

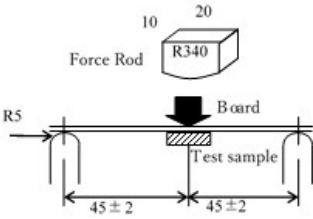
5. DC Resistance

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

6. Temperature characteristic

Specified Value	Inductance change : Within $\pm 20\%$
Test Methods and Remarks	Measurement of inductance shall be taken at temperature range within -40°C~+150°C. With reference to inductance value at +20°C., change rate shall be calculated.

7. Board Flex

Specified Value	No damage
Test Methods and Remarks	<p>AEC-Q200 Test No.21 qualified (AEC-Q200-005)</p> <p>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 for 60 s.</p> <p>Test board size : 100 × 40 × 1.6</p> <p>Test board material : glass epoxy-resin</p> 

8. Terminal Strength

Specified Value	Inductance change : Within $\pm 10\%$
Test Methods and Remarks	<p>AEC-Q200 Test No.22 qualified (AEC-Q200-006)</p> <p>The test samples shall be soldered to the test board by the reflow soldering.</p> <p>Applied force : 17.7N</p> <p>Duration : 60 s</p>

9. Vibration			
Specified Value	Inductance change : Within ±10% No significant abnormality in appearance.		
Test Methods and Remarks	AEC-Q200 Test No.14 qualified (MIL-STD-202 Method 204) The test samples shall be soldered to the test board by the reflow. Then it shall be submitted to below test conditions.		
	Frequency Range	10~2000Hz	
	Total Amplitude	5G	
	Sweeping Method	10Hz to 2000Hz to 10Hz for 20min.	
	Number of cycle	X Y Z	For 12 cycles on each X, Y, and Z axis.
10. Mechanical Shock			
Specified Value	Inductance change : Within ±10% No significant abnormality in appearance.		
Test Methods and Remarks	AEC-Q200 Test No.13qualified (MIL-STD-202 Method213) The test samples shall be soldered to the test board by the reflow. Then it shall be submitted to below test conditions.		
	Acceleration	981m/s ²	
	Duration	6msec(Half sine pulse)	
	Direction	+X, +Y, +Z, -X, -Y, -Z	
	Number of time	Each 3 times, Total 18 times	
11. Solderability			
Specified Value	At least 90% of surface of terminal electrode is covered by new solder.		
Test Methods and Remarks	AEC-Q200 Test No.18qualified (J-STD-002)		
		(a) Method B	(c) Method D
	Preconditioning	155°C_4hrs	Steam 8hrs±15min
	Solder Temperature	235±5°C	260±5°C
	Time	5+0/-0.5 sec	30+0/-0.5 sec.
12. Resistance to Soldering Heat			
Specified Value	Inductance change : Within ±10% No significant abnormality in appearance.		
Test Methods and Remarks	AEC-Q200 Test No.15 qualified (MIL-STD-202 Method210) Condition:K The test sample shall be exposed to reflow oven at 183°C for 90-120 seconds, with peak temperature at 250±5°C for 30±5 seconds, 3 times.		
13. Temperature Cycling			
Specified Value	Inductance change : Within ±10% No significant abnormality in appearance.		
Test Methods and Remarks	AEC-Q200 Test No.04 qualified (JESD22 Method JA-104) 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 following condition.		
	1Cycle	-40±3°C/30 min⇄125±3°C/30 min	
	Number of cycle	1000 cycles	

14. Biased Humidity							
Specified Value	Inductance change : Within $\pm 10\%$ No significant abnormality in appearance.						
Test Methods and Remarks	AEC-Q200 Test No.07 qualified (MIL-STD-202 Method 103) 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. <table border="1"> <tr> <td>Temperature</td><td>$85 \pm 2^{\circ}\text{C}$</td></tr> <tr> <td>Humidity</td><td>85%RH</td></tr> <tr> <td>Time</td><td>1000+24/-0 hour</td></tr> </table>	Temperature	$85 \pm 2^{\circ}\text{C}$	Humidity	85%RH	Time	1000+24/-0 hour
Temperature	$85 \pm 2^{\circ}\text{C}$						
Humidity	85%RH						
Time	1000+24/-0 hour						
15. High Temperature Exposure							
Specified Value	Inductance change : Within $\pm 10\%$ No significant abnormality in appearance.						
Test Methods and Remarks	AEC-Q200 Test No.03 qualified (MIL-STD-202 Method 108) The test samples shall be soldered to the test board by the reflow soldering. <table border="1"> <tr> <td>Temperature</td><td>$150 \pm 3^{\circ}\text{C}$</td></tr> <tr> <td>Time</td><td>1000+24/-0 hour</td></tr> </table>	Temperature	$150 \pm 3^{\circ}\text{C}$	Time	1000+24/-0 hour		
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Time	1000+24/-0 hour						
16. Operational Life							
Specified Value	Inductance change : Within $\pm 10\%$ No significant abnormality in appearance.						
Test Methods and Remarks	AEC-Q200 Test No.08 qualified (MIL-PRF-27) The test samples shall be soldered to the test board by the reflow soldering. <table border="1"> <tr> <td>Temperature</td><td>1) $125 \pm 3^{\circ}\text{C}$ 2) $110 \pm 3^{\circ}\text{C}$</td></tr> <tr> <td>Applied current</td><td>1) Rated current(+25°C) 2) Rated current(+40°C)</td></tr> <tr> <td>Time</td><td>1000+24/-0 hour</td></tr> </table>	Temperature	1) $125 \pm 3^{\circ}\text{C}$ 2) $110 \pm 3^{\circ}\text{C}$	Applied current	1) Rated current(+25°C) 2) Rated current(+40°C)	Time	1000+24/-0 hour
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Applied current	1) Rated current(+25°C) 2) Rated current(+40°C)						
Time	1000+24/-0 hour						
17. 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. <table border="1"> <tr> <td>Temperature</td><td>$-40 \pm 2^{\circ}\text{C}$</td></tr> <tr> <td>Time</td><td>1000+24/-0 hour</td></tr> </table>	Temperature	$-40 \pm 2^{\circ}\text{C}$	Time	1000+24/-0 hour		
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Time	1000+24/-0 hour						
18. 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.						