

**Wire-wound Ferrite Inductors LSQB/LSQC/LSQE/LLQB/LLQC/LLQE/LMQB/LMQC/LMQE/  
LBQB/LBQC/LBQE series**

**Wire-wound Ferrite Power Inductors LSQN/LSQPA/LLQN/LLQPA/LMQN/LMQPA/  
LBQN/LBQPA series**

**Wire-wound Ferrite Inductors for Signal Lines LSQM/LLQM/LMQM/LBQM series**

**■ PRECAUTIONS**

1. Circuit Design	
Precautions	<ul style="list-style-type: none"> <li>◆ Verification of operating environment, electrical rating and performance                             <ol style="list-style-type: none"> <li>1. A malfunction in medical equipment, spacecraft, nuclear reactors, etc. may cause serious harm to human life or have severe social ramifications. As such, any inductors to be used in such equipment may require higher safety and/or reliability considerations and should be clearly differentiated from components used in general purpose applications.</li> <li>2. When inductors are used in places where dew condensation develops and/or where corrosive gas such as hydrogen sulfide, sulfurous acid, or chlorine exists in the air, characteristic deterioration may occur. Please do not use inductors under such environmental conditions.</li> </ol> </li> <li>◆ Operating Current (Verification of Rated current)                             <ol style="list-style-type: none"> <li>1. The operating current including inrush current for inductors must always be lower than their rated values.</li> <li>2. Do not apply current in excess of the rated value because the inductance may be reduced due to the magnetic saturation effect.</li> </ol> </li> <li>◆ Temperature rise                             <p>Temperature rise of power choke coil depends on the installation condition in end products.</p> <p>Make sure that temperature rise of power choke coils in actual end products is within the specified temperature range.</p> </li> </ul>
2. PCB Design	
Precautions	<ul style="list-style-type: none"> <li>◆ Land pattern design                             <ol style="list-style-type: none"> <li>1. Please contact any of our offices for a land pattern, and refer to a recommended land pattern of a right figure or specifications.</li> </ol> </li> </ul>
Technical considerations	<p><b>PRECAUTIONS</b>  <b>【Recommended Land Patterns】</b></p> <p>Surface Mounting</p> <ul style="list-style-type: none"> <li>• Mounting and soldering conditions should be checked beforehand.</li> <li>• Applicable soldering process to those products is reflow soldering only.</li> </ul>
3. Considerations for automatic placement	
Precautions	<ul style="list-style-type: none"> <li>◆ Adjustment of mounting machine                             <ol style="list-style-type: none"> <li>1. Excessive impact load should not be imposed on the products when mounting onto the PC boards.</li> <li>2. Mounting and soldering conditions should be checked beforehand.</li> </ol> </li> </ul>
Technical considerations	<ol style="list-style-type: none"> <li>1. When installing products, care should be taken not to apply distortion stress as it may deform the products.</li> </ol>
4. Soldering	
Precautions	<ul style="list-style-type: none"> <li>◆ Reflow soldering (Wire-wound Ferrite Inductors, Wire-wound Ferrite Power Inductors)                             <ol style="list-style-type: none"> <li>1. For reflow soldering with either leaded or lead-free solder, the profile specified in "point for controlling" is recommended.</li> </ol> </li> <li>◆ Recommended conditions for using a soldering iron                             <ol style="list-style-type: none"> <li>1. Put the soldering iron on the land-pattern. Soldering iron's temperature - Below 350°C Duration-3 seconds or less. The soldering iron should not come in contact with inductor directly.</li> </ol> </li> </ul>
Technical considerations	<ul style="list-style-type: none"> <li>◆ Reflow soldering (Wire-wound Ferrite Inductors, Wire-wound Ferrite Power Inductors)                             <ol style="list-style-type: none"> <li>1. Reflow profile                                     <div style="text-align: center;"> <p>The graph shows a reflow profile with the following parameters:                      - Heating to 150~180°C: 90±30sec                      - Heating to 230°C min: 30±10sec                      - Peak temperature: 260+0/-5°C                      - Peak duration: 5sec max</p> </div> </li> </ol> </li> <li>◆ Recommended conditions for using a soldering iron                             <ol style="list-style-type: none"> <li>1. Components can be damaged by excessive heat where soldering conditions exceed the specified range.</li> </ol> </li> </ul>

▶ 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/>).

5. Cleaning	
Precautions	<ul style="list-style-type: none"> <li>◆Cleaning conditions</li> <li>Washing by supersonic waves shall be avoided.</li> </ul>
Technical considerations	<ul style="list-style-type: none"> <li>◆Cleaning conditions</li> <li>If washed by supersonic waves, the products might be broken.</li> </ul>
6. Handling	
Precautions	<ul style="list-style-type: none"> <li>◆Handling</li> <li>1. Keep the inductors away from all magnets and magnetic objects.</li> <li>◆Breakaway PC boards (splitting along perforations)</li> <li>1. When splitting the PC board after mounting inductors, care should be taken not to give any stresses of deflection or twisting to the board.</li> <li>2. Board separation should not be done manually, but by using the appropriate devices.</li> <li>◆Mechanical considerations</li> <li>1. Please do not give the inductors any excessive mechanical shocks.</li> </ul>
Technical considerations	<ul style="list-style-type: none"> <li>◆Handling</li> <li>1. There is a case that a characteristic varies with magnetic influence.</li> <li>◆Breakaway PC boards (splitting along perforations)</li> <li>1. Planning pattern configurations and the position of products should be carefully performed to minimize stress.</li> <li>◆Mechanical considerations</li> <li>1. There is a case to be damaged by a mechanical shock.</li> </ul>
7. Storage conditions	
Precautions	<ul style="list-style-type: none"> <li>◆Storage</li> <li>1. To maintain the solderability of terminal electrodes and to keep the packing material in good condition, temperature and humidity in the storage area should be controlled. <ul style="list-style-type: none"> <li>▪ Storage conditions</li> <li>Ambient temperature : 0~40°C</li> <li>Humidity : Below 70% RH</li> <li>▪ The recommended ambient temperature is below 30°C. Even under ideal storage conditions, solderability of products electrodes may decrease as time passes.</li> <li>For this reason, product should be used within 6 months from the time of delivery.</li> <li>In case of storage over 6 months, solderability shall be checked before actual usage.</li> </ul> </li> </ul>
Technical considerations	<ul style="list-style-type: none"> <li>◆Storage</li> <li>1. Under a high temperature and humidity environment, problems such as reduced solderability caused by oxidation of terminal electrodes and deterioration of taping/packaging materials may take place.</li> </ul>