

# Wire-wound Metal Power Inductors MCOIL™ LSAN/LLAN series

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### ■ 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 refer to a recommended land pattern.</li> </ol> </li> </ul>
Technical considerations	<ul style="list-style-type: none"> <li>◆ Land pattern design</li> <li>Surface Mounting               <ul style="list-style-type: none"> <li>• Mounting and soldering conditions should be checked beforehand.</li> <li>• Applicable soldering process to this products is reflow soldering only.</li> </ul> </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	<ul style="list-style-type: none"> <li>◆ Adjustment of mounting machine               <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> </li> </ul>
4. Soldering	
Precautions	<ul style="list-style-type: none"> <li>◆ Reflow soldering               <ol style="list-style-type: none"> <li>1. Please contact any of our offices for a reflow soldering, and refer to the recommended condition specified.</li> <li>2. The product shall be used reflow soldering only.</li> <li>3. Please do not add any stress to a product until it returns in normal temperature after reflow soldering.</li> </ol> </li> <li>◆ Lead free soldering               <ol style="list-style-type: none"> <li>1. When using products with lead free soldering, we request to use them after confirming adhesion, temperature of resistance to soldering heat, soldering etc sufficiently.</li> </ol> </li> </ul>
Technical considerations	<ul style="list-style-type: none"> <li>◆ Reflow soldering               <ol style="list-style-type: none"> <li>1. If products are used beyond the range of the recommended conditions, heat stresses may deform the products, and consequently degrade the reliability of the products.</li> </ol> <p>Recommended reflow condition (Pb free solder)</p> <p>Temperature [°C]</p> <p>Heating Time [sec]</p> <p>150~180</p> <p>90 ± 30sec</p> <p>40sec max</p> <p>230°C min</p> <p>5sec max</p> <p>Peak: 260+0/-5°C</p> </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>1. Washing by supersonic waves shall be avoided.</li> </ul>
Technical considerations	<ul style="list-style-type: none"> <li>◆ Cleaning conditions</li> <li>1. 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 product 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 product, 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 product any excessive mechanical shocks.</li> <li>2. Please do not add any shock and power to a product in transportation.</li> <li>◆ Pick-up pressure</li> <li>1. Please do not push to add any pressure to a winding part. Please do not give any shock and push into a ferrite core exposure part.</li> <li>◆ Packing</li> <li>1. Please avoid accumulation of a packing box as much as possible.</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. The position of the product on PCBs shall be carefully considered to minimize the stress caused from splitting of the PCBs.</li> <li>◆ Mechanical considerations</li> <li>1. There is a case to be damaged by a mechanical shock.</li> <li>2. There is a case to be broken by the handling in transportation.</li> <li>◆ Pick-up pressure</li> <li>1. Damage and a characteristic can vary with an excessive shock or stress.</li> <li>◆ Packing</li> <li>1. If packing boxes are accumulated, that could cause a deformation on packing tapes or a damage on the products.</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>