Integrated LLC Transformer / Inductor

FEATURES
- 5.5 kW transformer / inductor design for unidirectional LLC applications
- Magnetizing and leakage inductance fully tunable
- Turns ratio can be customized per application
- No interconnects or jumpers needed from resonant inductor to the transformer winding
- Operating frequencies from 100 kHz to 350 kHz
- Designs for 400 V to 800 V inputs
- Bracket included for cold plate mounting with raised bosses (flush mount options available)
- Minimal parasitic variation optimizes capacitor selection
- Built in voltage isolation elevates corona inception
- Designed for cold plate cooling at 65 °C to 75 °C
- Lead lengths and terminal types can be easily customized
- Can be provided with thermal gap pad on mounting surface
- MRTI design; PATENT(S): www.vishay.com/patents

APPLICATIONS
- Charging power supplies for 400 V / 600 V batteries
- Unidirectional LLC converters from 4 kW to 6 kW
- Industrial control, alternative energy, military, avionic, and construction equipment

ABSOLUTE MAXIMUM RATINGS

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>CONDITIONS</th>
<th>LIMITS</th>
<th>UNITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dielectric withstand voltage</td>
<td>Pri - sec, 5 s</td>
<td>3500</td>
<td>V AC</td>
</tr>
<tr>
<td></td>
<td>All - core, 5 s</td>
<td>2500</td>
<td>V AC</td>
</tr>
<tr>
<td>Rated power</td>
<td></td>
<td>4000 to 6000</td>
<td>W</td>
</tr>
<tr>
<td>Rated hot spot temperature</td>
<td></td>
<td>+155</td>
<td>°C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>Continuous</td>
<td>-55 to +155</td>
<td>°C</td>
</tr>
<tr>
<td>Frequency</td>
<td></td>
<td>100 to 350</td>
<td>kHz</td>
</tr>
<tr>
<td>Size (L x W x H) (1)</td>
<td></td>
<td>88 x 102 x 56</td>
<td>mm</td>
</tr>
<tr>
<td>Terminals</td>
<td></td>
<td>M4 ring</td>
<td></td>
</tr>
</tbody>
</table>

STANDARD ELECTRICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>MAGNETIZING INDUCTANCE (μH) (1)</th>
<th>LEAKAGE INDUCTANCE (μH) (2)</th>
<th>TOTAL PRIMARY INDUCTANCE (μH)</th>
<th>SECONDARY INDUCTANCE (μH)</th>
<th>TRANSFER RATIO PRI : SEC</th>
<th>NOMINAL DCR (mΩ) (3)</th>
<th>RATED PRIMARY CURRENT (ARMS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRTI5R5EZ1513K10</td>
<td>50</td>
<td>10</td>
<td>60</td>
<td>68</td>
<td>1.3 : 1.5</td>
<td>38</td>
<td>13</td>
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<tr>
<td>MRTI5R5EZ1010K10</td>
<td>60</td>
<td>6.2</td>
<td>66</td>
<td>60</td>
<td>1.0 : 1.0</td>
<td>38</td>
<td>10</td>
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<tr>
<td>MRTI5R5EZ1015K10</td>
<td>74</td>
<td>12</td>
<td>86</td>
<td>32</td>
<td>1.5 : 1.0</td>
<td>12</td>
<td>18</td>
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</tbody>
</table>

Notes
- Alternative configurations available upon request
- (1) 1.0 V and 100 kHz
- (2) 1.0 V and 100 kHz with secondary shorted
- (3) At 25 °C
**DIMENSIONS** in inches

![Diagram of MRTI5R5EZ](image)

**Note**
- Lead lengths 8" to 8.5" (203 mm to 216 mm)

**Simplified Full Bridge LLC Circuit**

![Simplified Circuit Diagram](image)
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