GATE DRIVE TRANSFORMERS FOR IGBT
ACC. TO IEC 61558
CERTIFIED BY VDE

MAIN FEATURES
- Large voltage-time area in extremely compact design
- Very low leakage inductance
- Low coupling capacitance
- High insulation strength (reinforced insulation)

DESCRIPTION
Gate Drive Transformers for IGBT need to ensure excellent switching behavior as well as safe galvanic separation between high and low voltage side.

By using toroidal cores made from nanocrystalline VITROPERM® it is possible to build extremely compact components with high voltage-time area $\int U dt$. A broad portfolio of such transformers, designed for different working voltages and frequencies, is available.

TRANSMISSION CHARACTERISTICS

Real lab measurements showing the large voltage-time area and the excellent transmission quality of the components

ADVANCED MATERIALS – THE KEY TO PROGRESS
GATE DRIVE TRANSFORMERS FOR IGBT

MAGNETICAL AND ELECTRICAL PROPERTIES

<table>
<thead>
<tr>
<th>Part number</th>
<th>n</th>
<th>f (kHz)</th>
<th>fUdt (µVs)</th>
<th>P (W)</th>
<th>L₁ (mH)</th>
<th>Lₛ (µH)</th>
<th>Cₖ (pF)</th>
<th>Uₛₘ₋ₘs (V)</th>
<th>Uₚₘ₋ₘs (kV)</th>
<th>Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>T60403-F...</td>
<td>5032-X112</td>
<td>1:1:1</td>
<td>80</td>
<td>60</td>
<td>300</td>
<td>5.0</td>
<td>2.8</td>
<td>3.8</td>
<td>SMD</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4215-X180</td>
<td>1:1:1</td>
<td>60</td>
<td>170</td>
<td>600</td>
<td>6.75</td>
<td>0.5</td>
<td>20</td>
<td>PTH</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4615-X067</td>
<td>1:1:1</td>
<td>20</td>
<td>500</td>
<td>600</td>
<td>6.75</td>
<td>1.0</td>
<td>50</td>
<td>PTH</td>
<td></td>
</tr>
</tbody>
</table>

**KEY**

- n = turns ratio (bold: primary winding)
- f = working frequency
- fUdt = voltage-time area at primary winding in unipolar operation
- P = transmittable power
- L₁ = primary inductance (typical value)
- Lₛ = leakage inductance of primary winding with secondary windings shorted (typical value)
- Cₖ = coupling capacitance between primary and secondary windings (typical value)
- Uₛₘ₋ₘs = insulation voltage, effective value between primary and secondary windings (identical to ‘working voltage’)
- Uₚₘ₋ₘs = test voltage, effective value at 50 Hz between primary and secondary windings
- SMD = Surface Mounted Device
- PTH = Pin Through Hole

**NOTES**

The latest addition to this range consists of above listed gate drive transformers that are built according to IEC 61558 for “Safety of power transformers, power supplies, reactors and similar products”. They all feature reinforced insulation. The fulfillment of IEC 61558-1 and IEC 61558-2-16 is certified by VDE Testing and Certification Institute Offenbach, Germany. Test reports are available upon request.

All transformers are based on VAC’s UL1446-certified class F insulation system VAC-ISO-F1 (E329745).

The data sheets can be downloaded from VAC’s homepage.

Design modifications are possible upon request.

**POSSIBLE APPLICATIONS**

- Renewables (i.e. solar inverters, converters for wind turbines or grid connection)
- Power supplies for welding equipment
- Uninterruptable power supplies (UPS)
- Medical devices such as X-rays and laser