

GATE DRIVE TRANSFORMERS FOR IGBT

ACC. TO IEC 61558
CERTIFIED BY VDE

INDUSTRIAL APPLICATIONS

MAIN FEATURES

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

DESCRIPTION

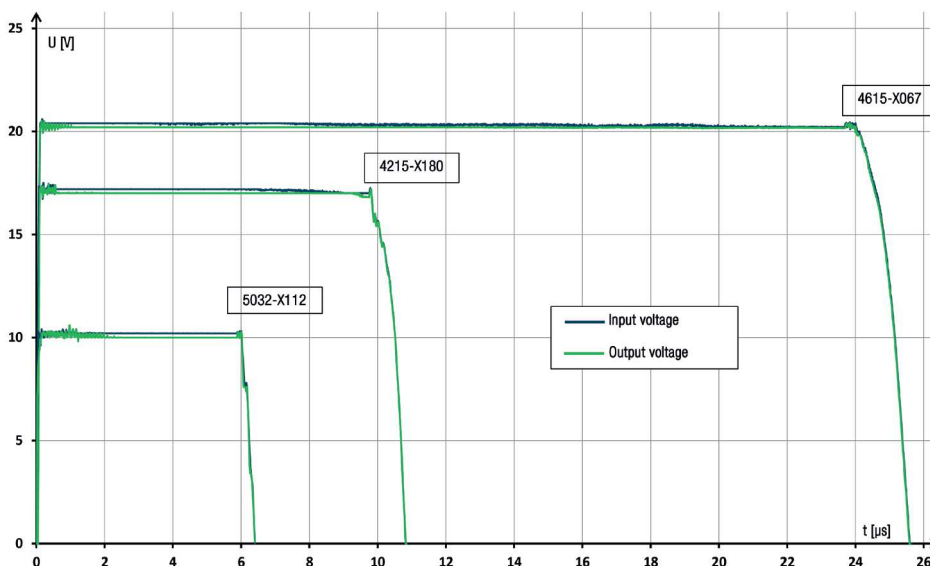
Gate Drive Transformers for IGBT need to ensure excellent switching behavior as well as safe galvanic separation between high and low voltage side.

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.



With state-of-the-art winding and insulation concepts an optimum between low leakage inductance and low coupling capacitance is achieved. The benefits are highest impulse precision and high interference resistance between high and low voltage side. Consequently, the controlling of IGBT becomes entirely reliable.

TRANSMISSION CHARACTERISTICS



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

ADVANCED MAGNETIC SOLUTIONS

VAC®
VACUUMSCHMELZE

MAGNETICAL AND ELECTRICAL PROPERTIES

| Part number | n | f | $\int Udt$ | P | L_1 | L_s | C_k | $U_{is,rms}$ | $U_{p,rms}$ | Design |
|-------------|-------|-----|------------|----|-------|---------|-------|--------------|-------------|--------|
| T60403-F... | | kHz | μVs | W | mH | μH | pF | V | kV | |
| 5032-X112 | 1:1:1 | 80 | 60 | 5 | 0.7 | 2.8 | 3.8 | 300 | 5.0 | SMD |
| 4215-X180 | 1:1:1 | 60 | 170 | 10 | 2.98 | 0.5 | 20 | 600 | 6.75 | PTH |
| 4615-X067 | 1:1:1 | 20 | 500 | 10 | 14.4 | 1.0 | 50 | 600 | 6.75 | PTH |

KEY

n = turns ratio (**bold**: primary winding)

f = working frequency

$\int Udt$ = voltage-time area at primary winding in unipolar operation

P = transmittable power

L_1 = primary inductance (typical value)

L_s = leakage inductance of primary winding with secondary windings shorted (typical value)

C_k = coupling capacitance between primary and secondary windings (typical value)

$U_{is,rms}$ = insulation voltage, effective value between primary and secondary windings (identical to 'working voltage')

$U_{p,rms}$ = 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

Published by VACUUMSCHMELZE GmbH & Co. KG, Hanau, November 2021

© VACUUMSCHMELZE GmbH & Co. KG 2014. All rights reserved.

® is a registered Trademark of VACUUMSCHMELZE GmbH & Co. KG