

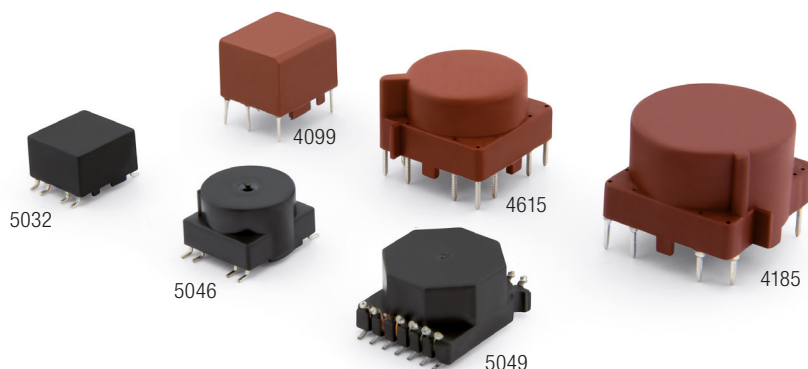
GATE DRIVE TRANSFORMERS FOR IGBT

ACC. TO IEC 61800

INDUSTRIAL APPLICATIONS

MAIN FEATURES

- Low coupling capacitance
- High insulation strength (reinforced insulation)
- Very high corona extinction voltage
- Compact designs in THT and SMT casings



DESCRIPTION

In modern variable-frequency drives (VFD) IGBT are used in the inverter stage for frequency conversion. The corresponding Gate Driver Circuit needs to supply the necessary power for switching. In medium to high power applications DC/DC converters are usually used for this purpose.

Gate Drive Transformers for IGBT are the key element in these converters maintaining the safe galvanic separation between the intermediate circuit and the low voltage control side.

By using toroidal cores made from nanocrystalline VITROPERM® it is possible to transmit the required switching power in extremely compact casings saving valuable PCB space. Advanced insulation and winding concepts ensure highest corona extinction voltages as well as low coupling capacitances.

A large portfolio for typical working voltages between 500V and 1200V is available. The transformers feature different transmission ratios and voltage-time areas for demanding applications.

DESIGNED FOR INDUSTRIAL DRIVES



elevators & escalators



pumps & fans



process automation

ADVANCED MATERIALS – THE KEY TO PROGRESS

VAC[®]
VACUUMSCHMELZE

MAGNETIC AND ELECTRIC PROPERTIES

Part number	n	f kHz	$\int Udt$ μVs	P W	L_1 mH	L_s μH	C_k pF	$U_{is,rms}$ V	$U_{TA,rms}$ kV	$U_{p,rms}$ kV	Design
3-F5046-X100	1 :1.2:1.2	100	80	3	1.4	0.3	12	848	1.25	1.8	SMT
3-F5046-X007	1 :1:1	100	85	6.5	1.4	0.3	13	848	1.25	4.5	SMT
3-F4099-X011	1 :1:1	100	85	8	0.95	2.4	2.5	500	0.95	4.5	THT
2-C4615-X070	1 : 1 :1.11:1.11	90	100	8	0.8	13	5	900	1.36	5	THT
3-F5046-X008	1 :1:1:1	100	110	4.5	2.32	6.7	9	848	1.25	4.5	SMT
3-D4615-X047	1 :1:1	100	250	10	3	0.25	25	848	1.25	5	THT
2-C4615-X065	2.9 :1:1	100	340	42	14.5	9	10	1200	1.8	2.2	THT
3-F4185-X046	2 :1	20	500	20	22	4	40	1200	1.5	5	THT

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, rms value between primary and secondary windings (identical to 'working voltage')
- $U_{TA,rms}$ = corona extinction voltage, rms value
- $U_{p,rms}$ = test voltage, rms value between primary and secondary windings
- SMT = Surface-Mounting Technology
- THT = Through Hole Technology

NOTES

The latest addition to this range consists of above listed gate drive transformers that are built according to IEC 61800-5-1* for "Adjustable speed electrical power drive systems". They all feature reinforced insulation. The specified corona extinction voltages are being tested at 100 %.

All components can be operated at temperatures up to 105 °C.

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

Design modifications are possible upon request.

* Please contact VAC for more detailed information on the conformity to UL 61800.

