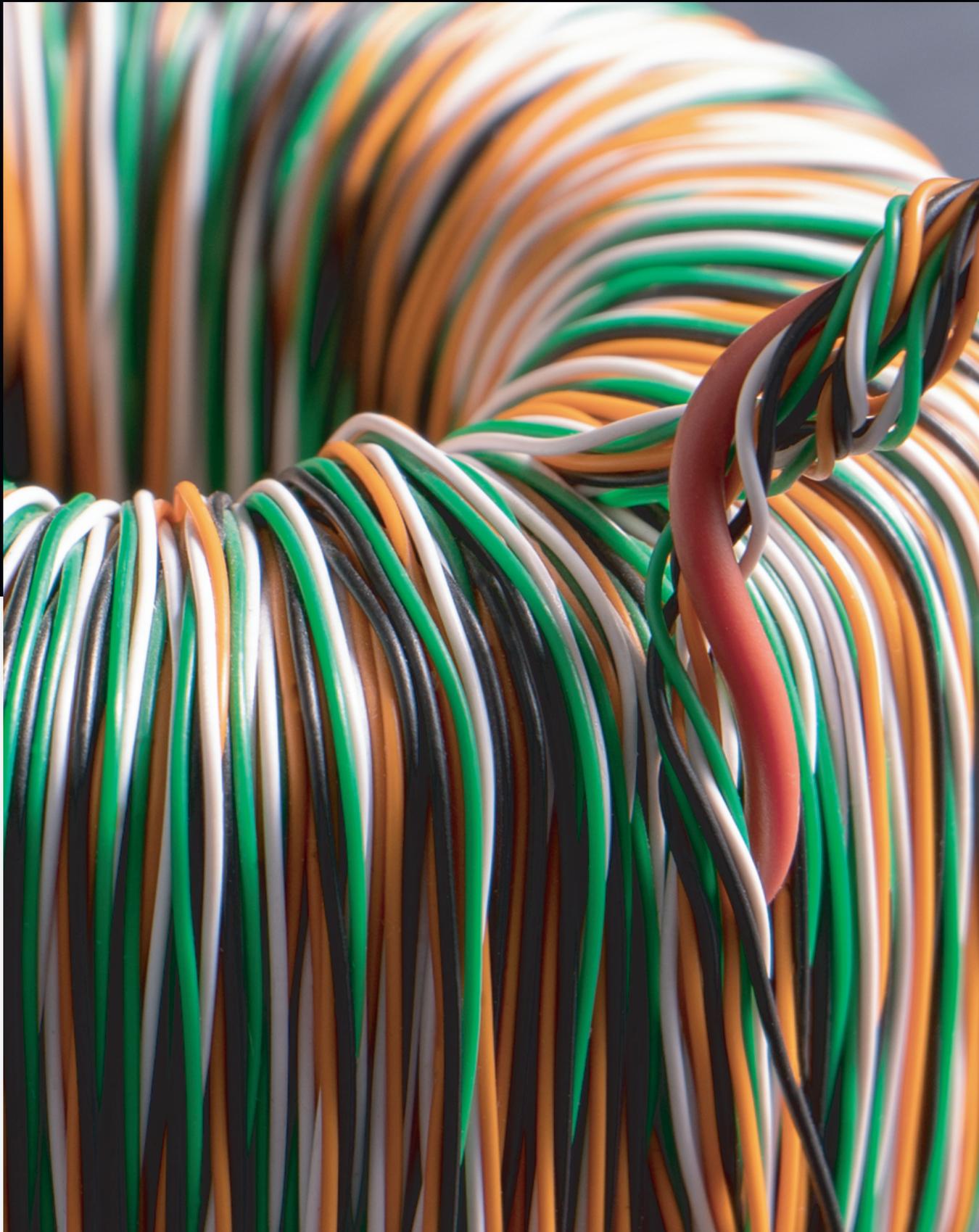
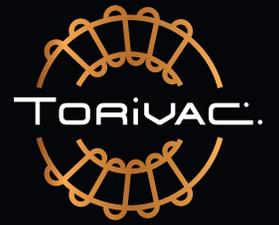


TOROIDAL TRANSFORMERS



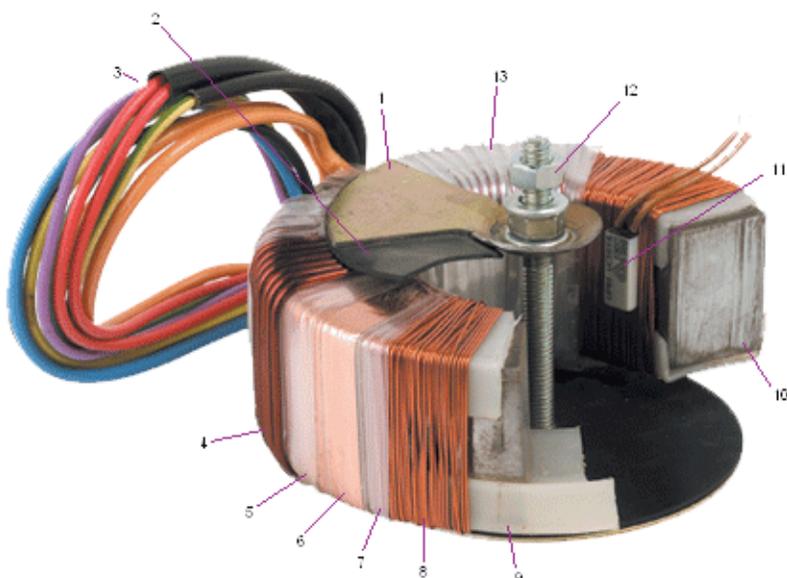


PRESENTATION

Torivac has over thirty years of experience in manufacturing all types of toroidal transformers.

The toroidal transformer represents, like no others, the ideal design for a transformer. In fact, Faraday designed and wound the first transformer on a toroidal core. The toroidal cores manufactured by Torivac are made of magnetic sheet metal with very low loss levels and high induction saturation, which when heat treated allow for reaching saturation values of up to 16,000 gauss. In the toroidal transformer the magnetic flow is evenly concentrated in the core and, due to the absence of intermediate metal parts, vibrations are eliminated.

Similarly, as all the wound coils are spread over the surface of the core, the noise caused by magnetostriction practically disappears, which favours the dissipation of heat. These features substantially improve the characteristics and yield of the toroidal transformers with respect to conventional ones.



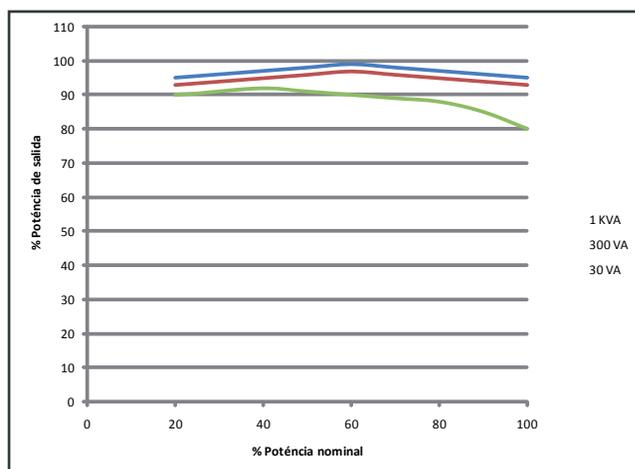
1. Metallic disc
2. Sochet-pan of rubber
3. Out
4. Wound secondary
5. Kerb between shielded and secondary
6. Electrostatic shielded
7. Kerb film polyester between primary and shielded
8. Wound primary
9. Cover toroidal with nylon
10. Screw, nut and socket-pans
11. Magnetic core
12. Thermostat
13. Final kerb or foreing covering

CHARACTERISTICS

Efficiency

Is the ratio between the output and the input power ratings that is variable depending on the size of the transformer and the working conditions, but which is almost always higher than that of conventional transformers of a similar power rating. The typical efficiency of our standard transformers, from 20VA to 3000VA varies between 82% and 96% (see diagram).

The efficiency of a toroidal transformer is mainly conditioned by the resistive losses of the copper wire and the losses in the core. The resistive losses are always less in the toroidal transformer than in the conventional ones by the lower quantity of copper used in the windings. With regards to the core losses, by hysteresis, are reduced to 0,98W / Kg, at an induction of 1.6T, by means of an appropriate heat treatment of recrystallization and the losses induced by Foucault's currents are practically negligible in our cores made from M4 and M5 magnetic sheet.





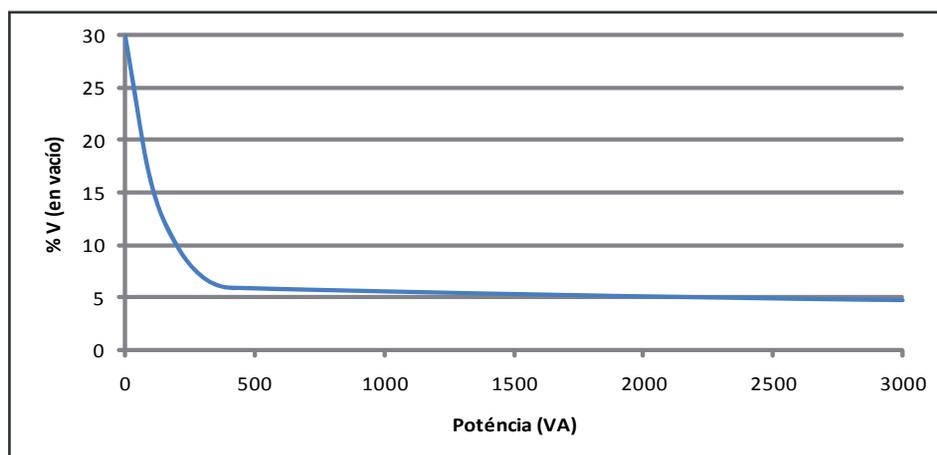
TECHNICAL SPECIFICATIONS

Voltage Variation "No Load"/"Full Load"

The voltage drop of a transformer is determinate by the quotient between "no load" and "full load" secondary voltage. This rate is an important parameter to be taken into consideration when designing the transformer. It allows an approximate calculation of the nominal load voltage.

The rate changes with the size of the transformer. At greater power ratings there is generally less resistance in the copper wires used in the wound coils and better characteristics can be achieved.

The attached diagram reflects the increase in no load voltage (%), with respect to the nominal load voltage, based on the power rating of the transformer.



Radiation

The absence of air-gaps in the construction of the core, its heat treatment, the painstaking design and the meticulous winding techniques used, allow achieving of very low magnetic dispersion, which is almost insignificant when compared with that generated by conventional transformers. When it is required that magnetic dispersion must be totally eliminated, one can add electromagnetic screens or shielding.

The application of the toroid transformers in the stages of power supply and power drawing is ideal as a good signal/noise ratio can be achieved.

Electrostatic shielding

The electrostatic screens are constructed using a copper layer winding coil, insulated with polyester, which covers completely the primary winding and has the function of filtering out the electrostatic interferences from the mains power supply, when the voltage is transformed and to derive to ground in case of failure of the main isolation.

Start up transitory electric currents

The toroidal transformers usually have higher transitory electric currents on starting up than conventional ones due to the absence of air-gaps in the core. For this reason we recommend you to protect the power supply with slow melting fuses or controlled starting systems.

Temperature increase

The working temperature of ours toroidal transformers varies, depending on the percentage load used, as can be seen in the attached diagram. In the permanent working mode, these may increase between 55oC and 60oC, above the surrounding environmental temperature, even though the outside temperature of the transformer does not display increases in excess of 45oC.

Shape factor

These types of transformers allow as no others to achieve low profiles and adapt the size to the dimensions called for in each application, adjusting the diameter and height of the cores to the final requirements.

Advantages

* High efficiency * Low noise level * Low dispersion field * Less heating * Low weight and size * Easy assembly



FIELDS OF APPLICATION

The toroidal transformers have numerous fields of application, and among these we can emphasize as the most usual the followings:

- * Consumer electronics *Electro medicine.
- * Converters
- * Power supply systems * Audio systems
- * Security
- * Telecommunications
- * Low voltage lighting
- * Any equipment that may require an optimal efficiency.

PRODUCTION SERIES

Standard by order

This series is conceived for a 230V primary and a secondary of any voltage and power ratings between 20VA and 5 KVA, according with the following table.

By order, we can manufacture them adding screens, thermal winding protectors and other configurations.

The standard lengths of the output leads are of 16 cm up to 500 VA, 20 cm for 600 to 1000VA and 25 cm fir higher powers.

Regulación motorizada

Utilizada fundamentalmente para regular los equipos a distancia ó para equipos estabilizadores. También se suelen motorizar los variadores de tensión de grandes potencias, por la comodidad de uso que proporcionan. En este tipo de regulación el eje del variador es accionado por un motor-reductor, mediante un conmutador manual que permite elevar o reducir la tensión de salida.

Las motorizaciones que ensambla TORIVAC carecen de inercia, por lo que son ideales para control remoto.

Bajo demanda se fabrican modelos estabilizados por medio de una placa electrónica con una precisión del 2%. La incorporación de dicha placa permite regular el variador por medio de un potenciómetro o una señal continua de 0-10Vcc.

Estándar bajo demanda/Standad to order (Entrada/Input 230V)								
VA	Ø mm.	Altura mm. Height mm.	Voltaje min. Voltage min.	Rdto. EffiC.	cdt	Ø Acce.	Kg.	Fijación Mounting
15	66	29	2	82	18	50	0.37	M5x40 mm.
20	67	32	3	82	18	50	0.4	M5x40 mm.
30	69	36	11	83	17	50	0.5	M5x45 mm.
	75	32	11	83	17	50	0.55	M5x40 mm.
40	83	25	11	83	17	65	0.60	M5x35 mm.
	69	50	5	84	16	50	0.65	M5x60 mm.
	79	33	5	84	16	50	0.60	M5x45 mm.
50	83	26	5	84	16	65	0.70	M5x35 mm.
	70	43	5	85	15	50	0.70	M5x55 mm.
	79	34	5	85	15	65	0.75	M5x45 mm.
60	94	27	5	85	15	65	0.8	M5x35 mm.
	79	38	6	86	14	65	0.85	M6x55 mm.
80	87	34	6	86	14	65	0.90	M6x50 mm.
	90	38	7	86	13	65	0.90	M6x50 mm.
100	99	34	7	86	13	80	1.00	M6x50 mm.
	90	45	8	87	12	65	1.25	M6x55 mm.
120	100	38	8	87	12	80	1.30	M6x50 mm.
	100	40	9	87	11	80	1.40	M6x55 mm.
150	110	38	8	87	11	80	1.45	M6x50 mm.
	100	44	10	88	10	80	1.60	M6x60 mm.
160	120	33	10	88	10	80	1.70	M6x50 mm.
	113	43	9	80	10	80	1.65	M6x55 mm.
200	110	42	10	89	9	80	1.80	M6x60 mm.
	120	52	10	89	9	80	2.00	M6x70 mm.
300	120	62	12	90	9	80	2.80	M6x80 mm.
	123	58	13	90	9	80	3.00	M6x80 mm.
	135	55	12	90	9	100	3.50	M6x70 mm.
330	125	62	12	90	9	80	3.00	M6x80 mm.
400	150	50	13	91	8	100	3.90	M8x70 mm.
500	150	60	15	92	8	100	4.40	M8x80 mm.
600	150	70	15	93	8	100	5.70	M8x90 mm.
750	165	67	18	93	7	127	6.00	M8x90 mm.
1.000	165	77	22	93	7	127	7.10	M8x100 mm.
1.200	170	95	22	94	6	140	9.70	M8x110 mm.
1.500	185	90	24	94	6	140	10.80	M8x110 mm.
	220	70	24	94	6	140	12.34	M8x90 mm.
2.000	250	80	30	95	6	En. Int.	15.00	M10x100 mm.
2.500	255	85	35	95	5	En. Int.	18.00	M10x110 mm.
3.000	260	105	40	95	4	En. Int.	23.00	M10x130 mm.
4.000	270	115	50	96	3	En. Int.	28.00	M12x140 mm.
5.000	280	125	60	96	2	En. Int.	33.00	M12x160 mm.





TT Series (Standard, in stock)

This series is made for a 230V primary and two identical secondaries, that can be connected in series or parallel and to double the voltage or the current, in a range of power ratings between 20VA and 220VA. They are supplied with individual boxes and the assembly accessories. The usual voltages are as in the following table:

NOTE: Other voltages can be manufactured by order

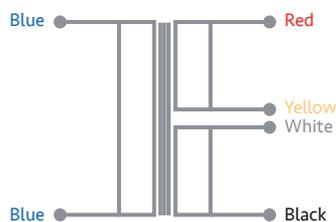
Series connection: Connecting yellow with white we will obtain twice the voltage between red and black with the nominal current.

Parallel connection: By connecting red with white and yellow with black we will obtain the nominal voltage with twice current. Standard length : 20Cm.



Serie T.T. (Estandar, en stock) 230 V Secundarios en serie o paralelo T.T Serie (Standard in stock) 230 V Secondaries in serially or in parallel									
CODIGO CODE	VA	V	A	Rdto. EffiC.	Cdt %	Ø mm.	Altura mm Height mm.	Kg.	Fijación Mounting
TT0020210	20	2x10	2x1	82	18	67	32	0.4	M4x35
TT0020212	20	2x12	2x0.83	82	18	67	32	0.4	M4x35
TT0020215	20	2x15	2x0.66	82	18	67	32	0.4	M4x35
TT0030210	30	2x10	2x1.5	83	17	69	36	0.5	M5x40
TT0030212	30	2x12	2x1.25	83	17	69	36	0.5	M5x40
TT0030215	30	2x15	2x1	83	17	69	36	0.5	M5x40
TT0030218	30	2x18	2x0.83	83	17	69	36	0.5	M5x40
TT0050210	50	2x10	2x2.5	85	15	79	34	0.7	M5x40
TT0050212	50	2x12	2x2.08	85	15	79	34	0.7	M5x40
TT0050215	50	2x15	2x1.66	85	15	79	34	0.7	M5x40
TT0050218	50	2x18	2x1.38	85	15	79	34	0.7	M5x40
TT0080210	80	2x10	2x4	86	13	89	35	0.9	M6x45
TT0080212	80	2x12	2x3.33	86	13	89	35	0.9	M6x45
TT0080215	80	2x15	2x2.66	86	13	89	35	0.9	M6x45
TT0080218	80	2x18	2x2.22	86	13	89	35	0.9	M6x45
TT0100212	100	2x12	2x4.16	87	12	100	38	1.3	M6x45
TT0100215	100	2x15	2x3.33	87	12	100	38	1.3	M6x45
TT0100222	100	2x22	2x2.27	87	12	100	38	1.3	M6x45
TT0120212	120	2x12	2x5	87	11	110	38	1.4	M6x45
TT0120215	120	2x15	2x4	87	11	110	38	1.4	M6x45
TT0120222	120	2x22	2x2.72	87	11	110	38	1.4	M6x45
TT0160212	160	2x12	2x6.66	88	10	113	43	1.7	M6x50
TT0160215	160	2x15	2x5.33	88	10	113	43	1.7	M6x50
TT0160222	160	2x22	2x3.63	88	10	113	43	1.7	M6x50
TT0220215	220	2x15	2x7.33	89	9	120	52	2	M6x55
TT0220222	220	2x22	2x5	89	9	120	52	2	M6x55
TT0220230	220	2x30	2x3.66	89	9	120	52	2	M6x55
TT0220235	220	2x35	2x3.14	89	9	120	52	2	M6x55

Ø Discos metálicos/ metallic disc	
20 VA	50 mm
30 VA	50 mm
50 VA	65 mm
80 VA	65 mm
100 VA	65 mm
120 VA	80 mm
160 VA	80 mm
220 VA	80 mm

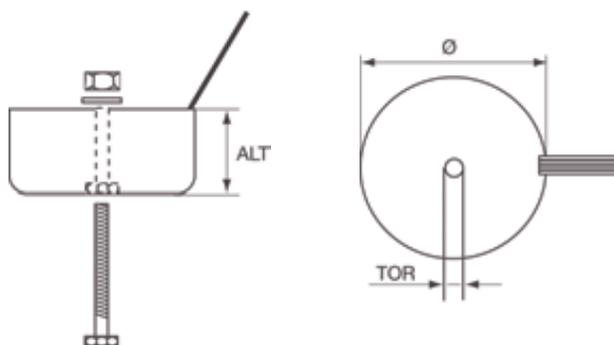




TE Series (Resin packed)

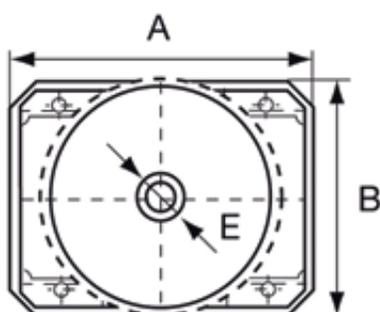
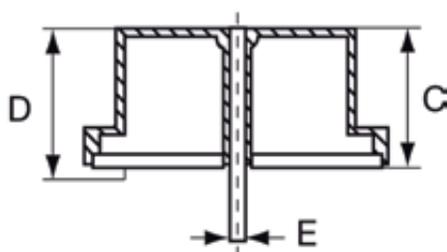
These are transformers of the TT series, packed into PVC boxes and filled with epoxy resin, which allow the extension of the useful life and improve the insulation of the transformer. These are ideal for dusty or humid atmospheres.

Transformadores encapsulados en cajas <i>Transformers packed in casing</i>				
VA	Ø mm.	Altura mm Height mm.	Kg.	Fijación Mounting
15	73	35.4	0.5	M5x45
20	73	35.4	0.5	M5x45
30	73	39.1	0.6	M5x50
40	81.5	39.1	0.7	M5x50
50	81.5	39.1	0.7	M5x50
60	87.3	41.7	0.9	M5x55
60	91	40.5	0.9	M5x55
80	96.7	37.1	1	M6x50
100	104.2	44	1.2	M6x60
120	104.2	44	1.2	M6x60
150	104.2	52.1	1.6	M6x70
200	115	53.2	2	M6x70
250	125.4	52.4	2.1	M6x70
300	125.4	65.3	2.3	M6x80
400	139.6	65.7	3.5	M8x80
500	148	90	4.2	M8x110
600	151.2	82.8	6.1	M8x100
750	154.4	100.3	7.5	M8x110



TCI Series (packed for P.C.)

These are transformers of the TT series, packed in epoxy resin, in PVC boxes which are connected internally to the pins for their use directly on printed circuits. The raster between the pins is of 5 mm and their number varies in accordance with the box size. The connections can be configured in accordance with the customers requirements.



Transformadores encapsulados en cajas <i>Transformers packed in casing</i>								
VA	A	B	C	D	E	F	G	Kg.
15	80	63.1	43.3	47.3	5.1	5x5	70	0.6
30	90.2	73.2	43.4	47.4	5.1	7x5	80	0.7
60	100	83.5	43.4	47.4	5.1	9x5	90	1
100	110	93.3	50.5	54.5	6.1	11x5	100	1.3
200	120	103.3	55.5	59.5	6.1	13x5	110	2.1
400	160	125.6	72.8	76.8	8.2	-	-	3.8

