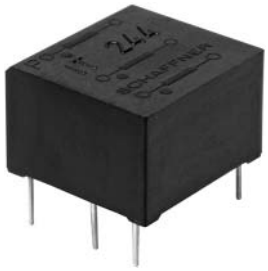
Pulse transformers
IT series

Pulse transformer with double secondary winding

schaffner
energy efficiency and reliability



- **Galvanic separation of drive and power circuit**
- **Voltage resistance up to 4kV**
- **Ignition current up to 1A**
- **Turns ratio up to 3:1:1**

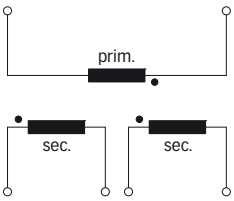
Approvals

RoHS
2002/95/EC

Technical specifications

Nominal operating voltage:	Up to 500V
Operating frequency:	40kHz max.
	500kHz max. for data transmission
Ignition currents:	0.1 to 1A @ 40°C
Rise time:	0.4 to 4.0µs
Test voltage:	U_p/50Hz/2s max. according to VDE 110b
Max. partial discharge voltage:	1.5 x U_{nom}
Temperature range (operation and storage):	-25°C to +70°C (25/70/21)
Flammability corresponding to:	UL 94V-0 listed materials

Typical electrical schematic



IT pulse transformers are designed to offer you galvanic isolation for transformer coupled gate drives. The IT series provides negligible delays and the possibility of voltage scaling. They are available with single or double secondary winding for multiple gate drives. Choosing the IT product line brings you the rapid availability of a standard gate drive transformer. A wide selection on turns ratio, ignition current and voltages are designed to offer you the desired standard product.

Features and benefits

- Galvanic separation with secondary winding.
- Voltage resistance up to 4kV.
- Allows high potential difference voltage scaling.
- Vacuum potting.
- Very low partial discharge effects.
- PCB through hole mounting.
- Custom-specific versions on request.

Typical applications

- Gate drive circuit
- Power supplies
- Power converters
- Frequency converters
- Switching applications
- DC/DC converters
- Line coupling transformers in high-speed data transmission

Pulse transformer selection table

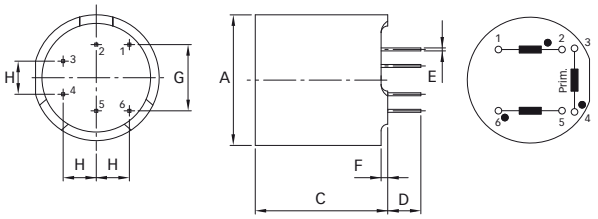
Pulse transformer	Turns ratio	Ignition current	Voltage		Voltage time area	Rise time	Inductance		Resistance		Coupling capacitance	Input/Output connections	Weight
		I_{ign} [A]	U_{nom} [V]	U_p [kV]	V_{0t} [Vµs]	t_r [µs]	L_p [mH]	L_{str} [µH]	R_p [Ω]	R_s [Ω]	C_k [pF]		[g]
IT 143	1:1:1	0.025	500	4	800	0.6	15	200	3	3	10	02	14
IT 153	1:1:1	0.1	500	4	600	1.4	9	120	1.5	1.5	10	02	14
IT 242	1:1:1	0.1	500	3.2	250	0.9	2.5	75	0.75	0.75	7	02	6
IT 243	1:1:1	0.1	500	3.2	250	1	2.5	85	0.8	0.8	7	02	6
IT 213	1:1:1	0.25	380	2.5	450	0.4	6.5	20	1.4	1.4	40	02	9
IT 233	1:1:1	0.25	500	4	300	1.3	3	45	0.8	0.8	7	02	13
IT 253	1:1:1	0.25	500	3.2	160	1.3	1.1	45	0.55	0.55	6	02	6
IT 312	1:1:1	0.25	380	2.5	1200	1	21	35	2.4	2.7	30	02	24
IT 313	1:1:1	1	380	2.5	450	0.6	3	6	0.33	0.4	27	02	24
IT 249	2:1:1	0.25	500	3.2	330	4	17	140	3.1	1.5	9	02	6
IT 154	3:1:1	0.1	500	4	600	1.3	75	180	7.5	2.2	9	02	14
IT 244	3:1:1	0.1	500	3.2	200	0.7	15	70	2.8	0.9	9	02	6
IT 234	3:1:1	0.25	500	4	280	1	17	40	2	0.7	9	02	13
IT 314	3:1:1	1	380	2.5	500	1	35	20	1.6	0.7	30	02	25

Explanations:

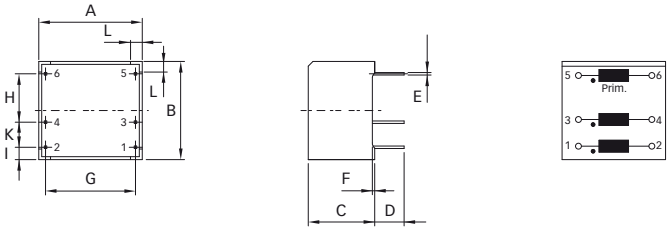
- t_r rise time at given load resistor R and 70% of the output pulse height.
- L_p primary inductance measured at 1kHz (secondary coile open).
- L_{str} stray inductance measured at the secondary side, short circuit at the primary side. If there are several secondary coils only one at the time is connected (measuring frequency 10kHz).
- The ignition current is a set peak value where the voltage drop over the coil resistance is still insignificant (mostly below 1V).

Mechanical data

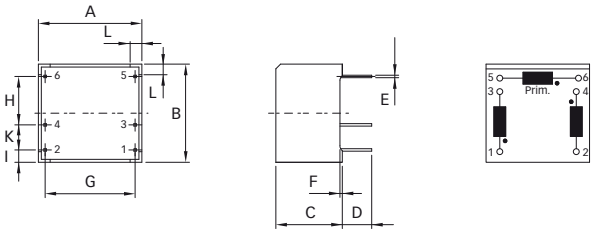
IT 213



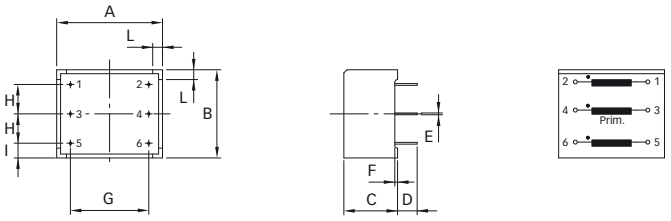
IT 243, IT 244, IT 249, IT 253



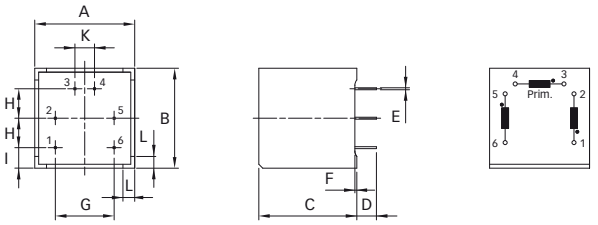
IT 242



IT 143, IT 153, IT 154, IT 233, IT 234



IT 312, IT 313, IT 314



Dimensions

	IT 213	IT 243	IT 244	IT 249	IT 253	IT 242	IT 143	IT 153	IT 154	IT 233	IT 234	IT 312	IT 313	IT 314	Tol.
A	Ø19	17.6	17.6	17.6	17.6	17.6	27*	27*	27*	27*	27*	25.5*	25.5*	25.5*	±0.1
B		16.7	16.7	16.7	16.7	16.7	22.5*	22.5*	22.5*	22.5*	22.5*	25.5*	25.5*	25.5*	±0.1
C	20	11.3	11.3	11.3	11.3	11.3	13.7	13.7	13.7	13.7	13.7	25*	25*	25*	±0.1
D	5	5	5	5	5	5	5	5	5	5	5	5	5	5	+1/-0
E	⌀0.45	⌀0.42	⌀0.42	⌀0.42	⌀0.42	⌀0.42	⌀0.45	⌀0.45	⌀0.45	⌀0.45	⌀0.45	⌀0.5	⌀0.5	⌀0.5	
F	1	0.4	0.4	0.4	0.4	0.4	0.7	0.7	0.7	0.7	0.7	0.5	0.5	0.5	
G	10	15.3	15.3	15.3	15.3	15.3	20	20	20	20	20	15	15	15	
H	5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	±0.2
I		2.1	2.1	2.1	2.1	2.1	3.75	3.75	3.75	3.75	3.75	5.25	5.25	5.25	±0.2
K		5	5	5	5	5						5	5	5	±0.2
L		2	2	2	2	2	2.5	2.5	2.5	2.5	2.5	3	3	3	

* Tolerance is ±0.2

All dimensions in mm; 1 inch = 25.4mm

Tolerances according: ISO 2768-m / EN 22768-m