



Pulse transformers

IT series with single secondary winding	150
IT series with double secondary winding	153

Pulse transformers. They provide a proper galvanic separation between gate drive circuitry and high voltage path in IGBT, thyristor, triac, power MOSFET and DC/DC converter circuits.

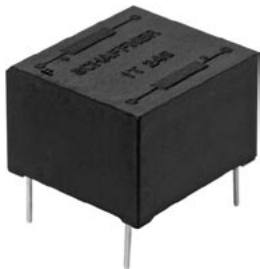
			Voltage-time area [Vμs] Ignition current [A]							Features								Typical applications							
										1 : 1	1 : 1 : 1	2 : 1	2 : 1 : 1	3 : 1	3 : 1 : 1	PCB	Faston	Galvanic separation	Thyristors, triac and IGBTs	Driving power MOSFETs	Line coupling transformers	DC/DC converters	Power supplies	Home automation systems	Monitoring systems
Pulse transformer		Nominal voltage	0 0	1000 0.6	2000 1.2	3000 1.8	4000 2.4	5000 3		1 : 1	1 : 1 : 1	2 : 1	2 : 1 : 1	3 : 1	3 : 1 : 1	PCB	Faston	Galvanic separation	Thyristors, triac and IGBTs	Driving power MOSFETs	Line coupling transformers	DC/DC converters	Power supplies	Home automation systems	Monitoring systems
IT 155		500VAC	500 0.1																						
p. 150		500VAC	1100 0.25																						
IT 237		750VAC	500 0.1																						
p. 150		750VAC	250 0.25																						
IT 245		750VAC	250 1																						
p. 150		1000VAC	350 0.25																						
IT 370		1000VAC	4000 1																						
p. 150		3000VAC	5000 3																						
IT 213		380VAC	450 0.25																						
p. 153		380VAC	1200 0.25																						
IT 312		380VAC	450 1																						
p. 153		500VAC	800 0.025																						
IT 143		500VAC	600 0.1																						
p. 153		500VAC																							

Pulse transformer		Nominal voltage	Voltage-time area [Vμs]						Features								Typical applications							
			0 0	1000 0.6	2000 1.2	3000 1.8	4000 2.4	5000 3	1 : 1	1 : 1 : 1	2 : 1	2 : 1 : 1	3 : 1	3 : 1 : 1	PCB	Faston	Galvanic separation	Thyristors, triac and IGBTs	Driving power MOSFETs	Line coupling transformers	DC/DC converters	Power supplies	Home automation systems	Monitoring systems
IT 233		500VAC	300 0.25																					
p. 153																								
IT 242		500VAC	250 0.1																					
p. 153																								
IT 243		500VAC	250 0.1																					
p. 153																								
IT 253		500VAC	180 0.25																					
p. 153																								
IT 246		750VAC	200 0.1																					
p. 150																								
IT 248		750VAC	350 0.25																					
p. 150																								
IT 362		1000VAC					3500																	
p. 150																								
IT 249		500VAC	330 0.25																					
p. 153																								
IT 260		500VAC	200 0.1																					
p. 150																								
IT 314		380VAC	500 0.25																					
p. 153																								
IT 154		500VAC	600 0.1																					
p. 153																								
IT 234		500VAC	300 0.25																					
p. 153																								
IT 244		500VAC	200 0.1																					
p. 153																								



Pulse transformers
IT series

Pulse transformer with single
secondary winding



- Galvanic separation of drive and power circuit
- Voltage resistance up to 8kV
- Ignition current up to 3A
- Turns ratio up to 3:1

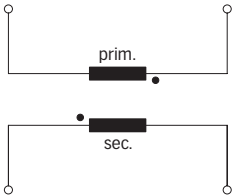
Approvals



Technical specifications

Nominal operating voltage:	Up to 3000V
Operating frequency:	40kHz max.
	500kHz max. for data transmission
Ignition currents:	0.1 to 3A @ 40°C
Rise time:	0.3 to 2.3µs
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.
- Voltage resistance up to 8kV.
- Allows high potential difference voltage scaling.
- Optional grounded shields.
- Vacuum potting.
- Very low partial discharge effects.
- PCB through hole mounting or faston types.
- 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 _{ot} [Vµs]	t _r [µs]	L _p [mH]	L _{str} [µH]	R _p [Ω]	R _s [Ω]	C _k [pF]			[g]
IT 155	1:1	0.1	500	4	480	1	5	85	1.2	1.2	6	02		13
IT 245	1:1	0.1	750	4	500	1.2	8	100	1.48	1.48	10	02		6
IT 237	1:1	0.25	500	2.5	1100	1	25	35	1.9	2.2	50	02		14
IT 239	1:1	0.25	1000	6	300	2.3	3	80	0.9	0.9	5	02		13
IT 255	1:1	0.25	750	4	250	1.1	2.2	40	0.8	0.8	8	02		6
IT 258	1:1	1	750	3.2	250	0.25	2.5	3	0.62	0.75	80	02		6
IT 370	1:1	1	1000	5	4000	0.6	0.3	6	0.16	0.18	40	02		71
IT 364*	1:1	3	3000	8	5000	1.7	1.5	10	0.16	0.14	35		05	220
IT 246	2:1	0.1	750	4	200	0.4	7	35	2.1	1.1	7	02		6
IT 248	2:1	0.25	750	3.2	350	2.2	17	80	3.2	1.6	9	02		6
IT 362*	2:1	3	1000	5	3500	0.4	3	25	2.4	0.3	20		05	360
IT 260	3:1	0.1	500	3.2	200	0.3	12	30	2	0.8	8	02		6

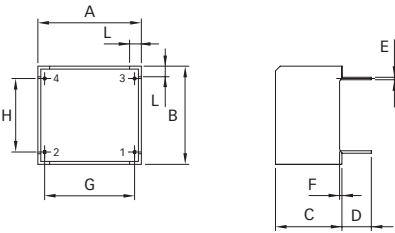
* Not suitable for PCB-mounting.

Explanations:

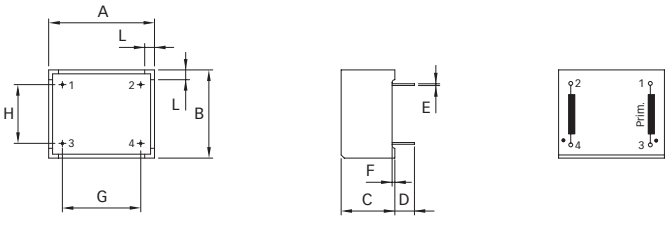
- t_r rise time at given load resistor R and 70% of the output pulse height.
- L_p primary inductance measured at 1kHz (secondary coile open).
- L_{str} stray inductance measured at the secondary side, short circuit at the primary side. If there are several secondary coils only one at the time is connected (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

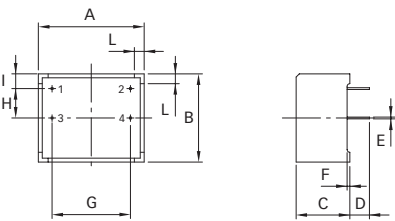
IT 245, IT 246, IT 248, IT 255, IT 258, IT 260



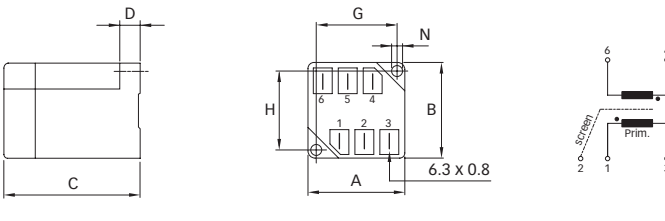
IT 239



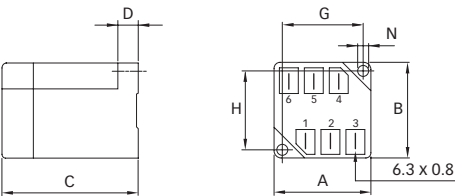
IT 155, IT 237



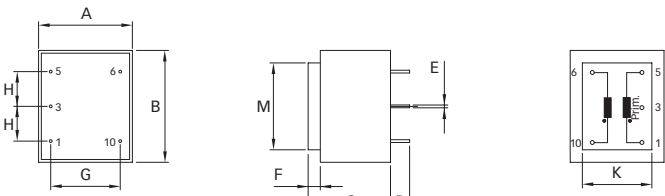
IT 362



IT 364



IT 370



Dimensions

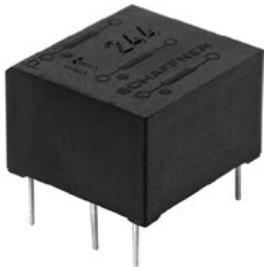
	IT 245	IT 246	IT 248	IT 255	IT 258	IT 260	IT 239	IT 155	IT 237	IT 362	IT 364	IT 370	Tol.
A	17.6*	17.6*	17.6*	17.6*	17.6*	17.6*	27	27	27	50	50	27	±0.2
B	16.7*	16.7*	16.7*	16.7*	16.7*	16.7*	22.5	22.5	22.5	50	50	32.2	±0.2
C	11.3*	11.3*	11.3*	11.3*	11.3*	11.3*	13.7	13.7	13.7	72	60	23.7	±0.2
D	5	5	5	5	5	5	5	5	5	10*	10*	5.5	+1/-0
E	Ø0.42	Ø0.42	Ø0.42	Ø0.42	Ø0.42	Ø0.42	Ø0.45	Ø0.45	Ø0.45			Ø0.8	
F	0.4	0.4	0.4	0.4	0.4	0.4	0.7	0.7	0.7			3.5	
G	15.3	15.3	15.3	15.3	15.3	15.3	20	20	20	42	42	20	±0.2
H	12.5	12.5	12.5	12.5	12.5	12.5	15	7.5	7.5	42	42	10	±0.2
I								3.5	3.5				±0.2
L	2	2	2	2	2	2	2.5	2.5	2.5				
M												25	±0.2
N										Ø4.2	Ø4.2		

* Tolerance is ±0.1
 All dimensions in mm; 1 inch = 25.4mm
 Tolerances according: ISO 2768 / EN 22768



Pulse transformers IT series

Pulse transformer with double secondary winding



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

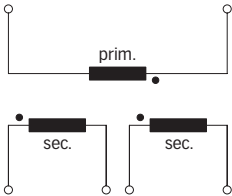
Approvals



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



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Pulse transformer selection table

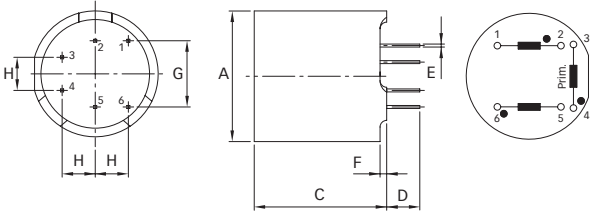
Pulse transformer	Turns ratio	Ignition current	Voltage		Voltage time area	Rise time	Inductance		Resistance		Coupling capacitance	Input/Output connections	Weight [g]
		I_{ign} [A]	U_{nom} [V]	U_p [kV]	V_{ot} [Vμs]	t_r [μs]	L_p [mH]	L_{str} [μH]	R_p [Ω]	R_s [Ω]	C_k [pF]		
IT 143	1:1:1	0.025	500	4	800	0.6	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:

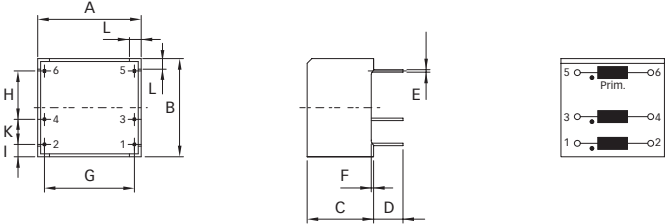
- t_r rise time at given load resistor R and 70% of the output pulse height.
- L_p primary inductance measured at 1kHz (secondary coil open).
- L_{str} stray inductance measured at the secondary side, short circuit at the primary side. If there are several secondary coils only one at the time is connected (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

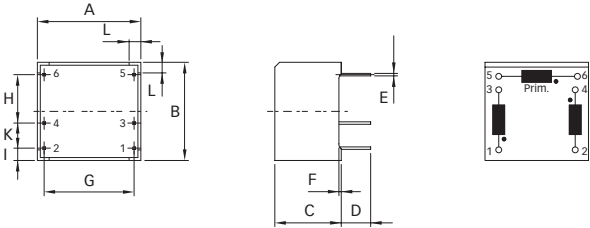
IT 213



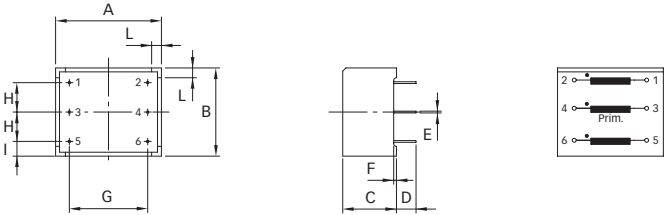
IT 243, IT 244, IT 249, IT 253



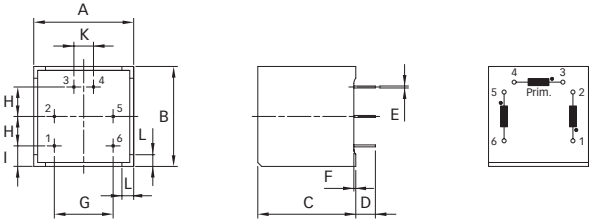
IT 242



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	Ø0.45	Ø0.42	Ø0.42	Ø0.42	Ø0.42	Ø0.42	Ø0.45	Ø0.45	Ø0.45	Ø0.45	Ø0.45	Ø0.5	Ø0.5	Ø0.5	
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 / EN 22768