

# 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

## RoHS

## Features and benefits

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

## Technical specifications

|                                           |                                                   |
|-------------------------------------------|---------------------------------------------------|
| Flammability corresponding to             | UL 94 V-0 listed materials                        |
| Ignition currents                         | 0.025 to 1A @ 40 °C                               |
| Max. partial discharge voltage            | 1.5 x U<sup>nom<sup></sup>                        |
| Nominal operating voltage                 | Up to 500 V                                       |
| Operating frequency                       | 40 kHz max.<br>500 kHz max. for data transmission |
| Rise time                                 | 0.4 to 4 µs                                       |
| Temperature range (operation and storage) | -25 °C to +70 °C (25/70/21)                       |
| Test voltage                              | Up/50 Hz/2s max. according to VDE 110b            |

## 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

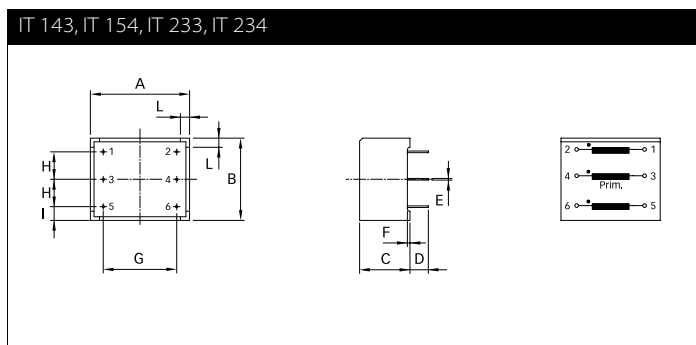
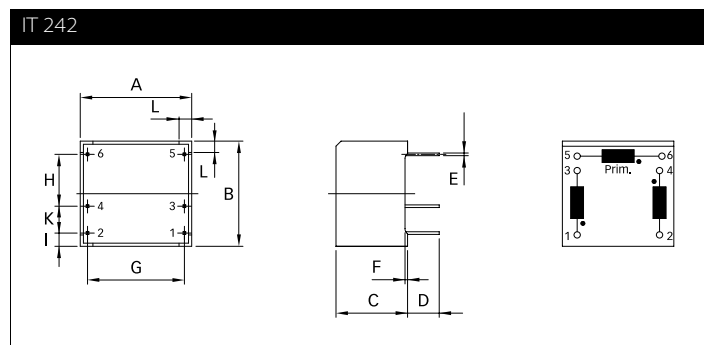
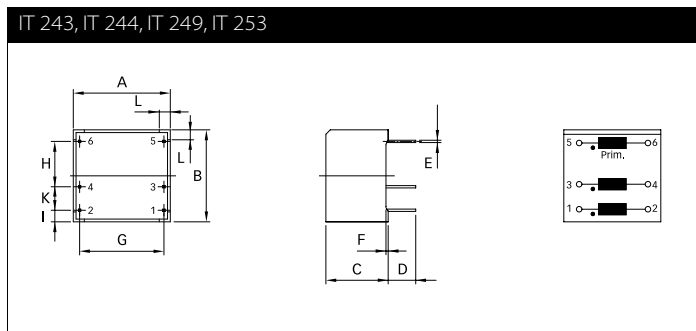
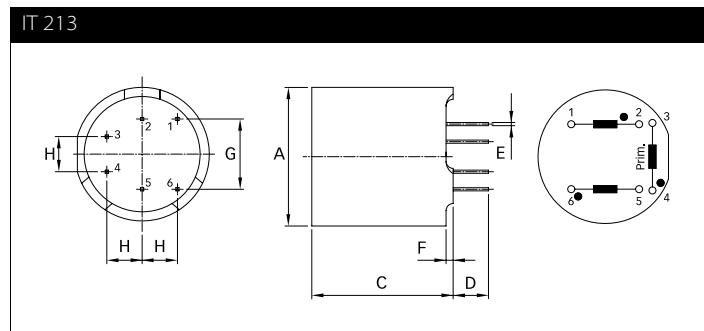
| Pulse transformer | Turns ratio | Ignition current | Voltage       |            | Voltage time area | Rise time  | Inductance * |                | Resistance |           | Coupling capacitance | Input/Output connections | Weight [g] |
|-------------------|-------------|------------------|---------------|------------|-------------------|------------|--------------|----------------|------------|-----------|----------------------|--------------------------|------------|
|                   |             | $I_{ign}$ [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 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 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         |

\* Tolerance: +50%; -30%

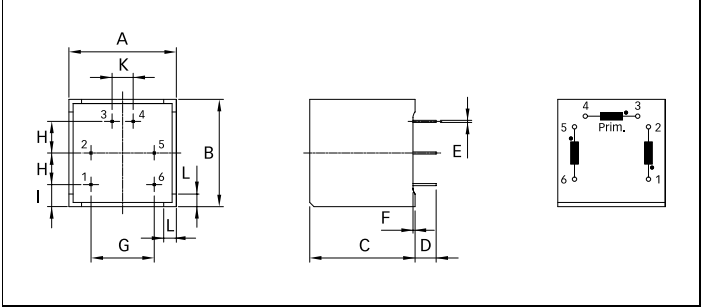
Explanations:

- $t_r$  rise time at given load resistor R and 70% of the output pulse height.
- $L_p$  primary inductance measured at 1 kHz (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 10 kHz).
- The ignition current is a set peak value where the voltage drop over the coil resistance is still insignificant (mostly below 1 V).

## Mechanical data



IT 312, IT 313, IT 314



Dimensions

|   | IT 213 | IT 243 | IT 244 | IT 249 | IT 253 | IT 242 | IT 143 | 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*    | 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*  | 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   | 25*    | 25*    | 25*    | ±0.1  |
| D | 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   | 0.5    | 0.5    | 0.5    |       |
| F | 1      | 0.4    | 0.4    | 0.4    | 0.4    | 0.4    | 0.7    | 0.7    | 0.7    | 0.7    | 0.5    | 0.5    | 0.5    |       |
| G | 10     | 15.3   | 15.3   | 15.3   | 15.3   | 15.3   | 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    | ±0.2  |
| I |        | 2.1    | 2.1    | 2.1    | 2.1    | 2.1    | 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    | 3      | 3      | 3      |       |

\* Tolerance is ±0.2

All dimensions in mm; 1 inch = 25.4mm  
Tolerances according: ISO 2768-m / EN 22768-m

Please visit [www.schaffner.com](http://www.schaffner.com) to find more details on filter connectors.



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