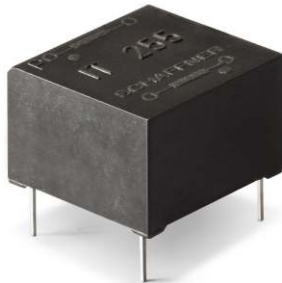




## Pulse Transformers IT series

### Pulse Transformer with Single Secondary Winding

**SCHAFFNER**  
energy efficiency and reliability



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

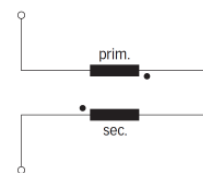
Approvals

**RoHS**

#### Technical specifications

|                                             |                                       |
|---------------------------------------------|---------------------------------------|
| Flammability corresponding to:              | UL 94V-0 listed materials             |
| Ignition currents:                          | 0.1 to 3A @ 40°C                      |
| Max. partial discharge voltage:             | $1.5 \times U_{\text{nom}}$           |
| Nominal operating voltage :                 | Up to 3000V                           |
| Operating frequency :                       | 40kHz max.                            |
|                                             | 500kHz max. for data transmission     |
| Rise time:                                  | 0.3 to 2.3 $\mu$ s                    |
| Temperature range (operation and storage) : | -25°C to +70°C (25/70/21)             |
| Test voltage:                               | Up/50Hz/2s max. according to VDE 110b |

#### 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

|         | Turns ratio | Ignition current<br>$I_{\text{ign}}$ | Voltage          |       | Voltage time area<br>$V_{0t}$ | Rise time<br>$t_r$ | Inductance |                  | Resistance |       | Coupling capacitance<br>$C_k$ | Input/ Output connections                                                           |                                                                                     | Weight |
|---------|-------------|--------------------------------------|------------------|-------|-------------------------------|--------------------|------------|------------------|------------|-------|-------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------|
|         |             |                                      | $U_{\text{nom}}$ | $U_p$ |                               |                    | $L_p$      | $L_{\text{str}}$ | $R_p$      | $R_s$ |                               |  |  |        |
|         |             | [A]                                  | [V]              | [kV]  | [Vµs]                         | [µs]               | [mH]       | [µH]             | [Ω]        | [Ω]   | [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 260  | 3:1         | 0.1                                  | 500              | 3.2   | 200                           | 0.3                | 12         | 30               | 2          | 0.8   | 8                             | 02                                                                                  |                                                                                     | 6      |

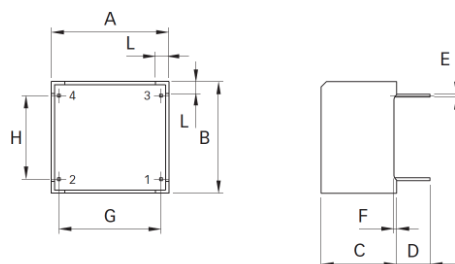
\* Not suitable for PCB-mounting.

Explanations:

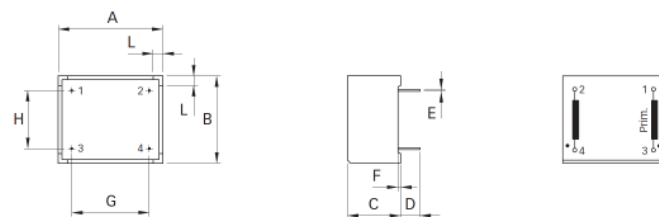
- $t_r$  rise time at given load resistor R and 70% of the output pulse height.
- $L_p$  primary inductance measured at 1kHz (secondary coil open).
- $L_{\text{str}}$  stray inductance measured at the secondary side, short circuit at the primary side. If there are several secondary coils only one at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

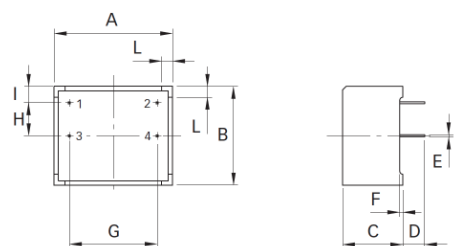
IT 245, IT 246, IT 248, IT 255, IT 258, IT 260



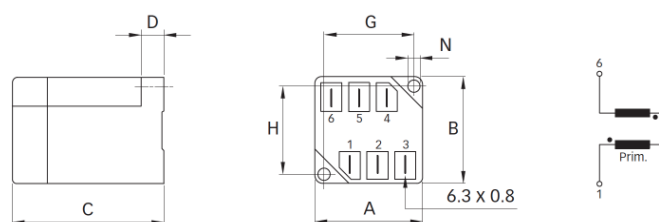
IT 239



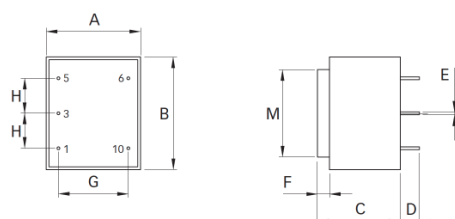
IT 155, IT 237



IT 364



IT 370



## Dimensions

|   | IT 245 | IT 246 | IT 248 | IT 255 | IT 258 | IT 260 | IT 239 | IT 155 | IT 237 | IT 364 | IT 370 | Tol.  |
|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|
| A | 17.6*  | 17.6*  | 17.6*  | 17.6*  | 17.6*  | 17.6*  | 27     | 27     | 27     | 50     | 27     | ±0.2  |
| B | 16.7*  | 16.7*  | 16.7*  | 16.7*  | 16.7*  | 16.7*  | 22.5   | 22.5   | 22.5   | 50     | 32.2   | ±0.2  |
| C | 11.3*  | 11.3*  | 11.3*  | 11.3*  | 11.3*  | 11.3*  | 13.7   | 13.7   | 13.7   | 60     | 23.7   | ±0.2  |
| D | 5      | 5      | 5      | 5      | 5      | 5      | 5      | 5      | 5      | 10*    | 5.5    | +1/-0 |
| E | 0.42   | 0.42   | 0.42   | 0.42   | 0.42   | 0.42   | 0.45   | 0.45   | 0.45   |        | 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     | 20     | ±0.2  |
| H | 12.5   | 12.5   | 12.5   | 12.5   | 12.5   | 12.5   | 15     | 7.5    | 7.5    | 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   |        |       |

\* Tolerance is ±0.1

All dimensions in mm; 1 inch = 25.4mm

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

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