# Short circuit proof PCB transformer
# **VB**




## General Data

| |
|---|
| Rated input voltage 230 Vac |
| Rated output voltage 6 - 2 x 24 Vac |
| Rated power 0.35 - 3.2 VA |
| Insulation class B |
| Maximum ambient temperature 70 °C |
| Efficiency up to 58 % |
| Degree of protection IP 00 |

## Advantages

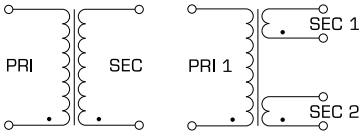
| |
|---|
| Minimum size at high output |
| Unconditionally short-circuit proof |
| Also with double output voltage for series or parallel connection |
| Designed for high ambient temperatures |
| Permanent corrosion protection, high insulation value and maximum electrical reliability thanks to XtraDensiFill resin encapsulation |
| Coil shell in 2-chamber technology |
| Self-extinguishing potting material |

## Applications

As a mains transformer for adjustment of the voltage and simple electrical isolation.

As a safety isolating transformer for the safe electrical isolation of the input and output sides. The transformer is suitable for creating SELV and PELV circuits because of the limit on the output voltage.

## Circuit diagram




## Standards

Mains transformer
to: VDE 0570 Teil 2-1, DIN EN 61558-2-1, EN 61558-2-1, IEC 61558-2-1, UL 5085-1/-2, CSA 22.2 No.66

Safety isolating transformer
to: VDE 0570 Teil 2-6, DIN EN 61558-2-6, EN 61558-2-6, IEC 61558-2-6, UL 5085-1/-2, CSA 22.2 No.66

## Certifications

ENEC 10 (VDE), UL 5085-1/-2, CSA 22.2 No.66



# Short circuit proof PCB transformer
# VB

Electrical data

| Type | VB 0,35/1/.. | VB 0,35/2/.. | VB 0,5/1/.. | VB 0,5/2/.. | VB 1,0/1/.. | VB 1,0/2/.. |
|---|---|---|---|---|---|---|
| **Input** | | | | | | |
| Rated input voltage | 230 Vac | 230 Vac | 230 Vac | 230 Vac | 230 Vac | 230 Vac |
| Rated frequency | 50 - 60 Hz | 50 - 60 Hz | 50 - 60 Hz | 50 - 60 Hz | 50 - 60 Hz | 50 - 60 Hz |
| **Output** | | | | | | |
| **Rated output voltage: Order no.** | 6 Vac: VB 0,35/1/6<br>8 Vac: VB 0,35/1/8<br>9 Vac: VB 0,35/1/9<br>12 Vac: VB 0,35/1/12<br>15 Vac: VB 0,35/1/15<br>18 Vac: VB 0,35/1/18<br>24 Vac: VB 0,35/1/24 | 2x6 Vac: VB 0,35/2/6<br>2x8 Vac: VB 0,35/2/8<br>2x9 Vac: VB 0,35/2/9<br>2x12 Vac: VB 0,35/2/12<br>2x15 Vac: VB 0,35/2/15*<br>2x18 Vac: VB 0,35/2/18*<br>2x24 Vac: VB 0,35/2/24* | 6 Vac: VB 0,5/1/6<br>8 Vac: VB 0,5/1/8<br>9 Vac: VB 0,5/1/9<br>12 Vac: VB 0,5/1/12<br>15 Vac: VB 0,5/1/15<br>18 Vac: VB 0,5/1/18<br>24 Vac: VB 0,5/1/24 | 2x6 Vac: VB 0,5/2/6<br>2x8 Vac: VB 0,5/2/8<br>2x9 Vac: VB 0,5/2/9<br>2x12 Vac: VB 0,5/2/12<br>2x15 Vac: VB 0,5/2/15*<br>2x18 Vac: VB 0,5/2/18*<br>2x24 Vac: VB 0,5/2/24* | 6 Vac: VB 1,0/1/6<br>8 Vac: VB 1,0/1/8<br>9 Vac: VB 1,0/1/9<br>12 Vac: VB 1,0/1/12<br>15 Vac: VB 1,0/1/15<br>18 Vac: VB 1,0/1/18<br>24 Vac: VB 1,0/1/24 | 2x6 Vac: VB 1,0/2/6<br>2x8 Vac: VB 1,0/2/8<br>2x9 Vac: VB 1,0/2/9<br>2x12 Vac: VB 1,0/2/12<br>2x15 Vac: VB 1,0/2/15*<br>2x18 Vac: VB 1,0/2/18*<br>2x24 Vac: VB 1,0/2/24* |
| Rated Power | 0.35 VA | 0.35 VA | 0.50 VA | 0.50 VA | 1.00 VA | 1.00 VA |
| No-load voltage (app. x factor) | 1.80 | 1.80 | 1.80 | 1.80 | 1.40 | 1.40 |
| No-load loss (typ.) | 1.30 W | 1.30 W | 1.10 W | 1.10 W | 0.90 W | 0.90 W |
| Efficiency | 30 % | 30 % | 40 % | 40 % | 55 % | 55 % |
| **Standards** | | | | | | |
| Classification | Safety isolating transformer | Safety isolating transformer<br>*Mains transformer<br>(without VDE mark) | Safety isolating transformer | Safety isolating transformer<br>*Mains transformer<br>(without VDE mark) | Safety isolating transformer | Safety isolating transformer<br>*Mains transformer<br>(without VDE mark) |
| **Approvals** | | | | | | |
| Approvals | cURus, ENEC 10 (VDE) | cURus, ENEC 10 (VDE) | cURus, ENEC 10 (VDE) | cURus, ENEC 10 (VDE) | cURus, ENEC 10 (VDE) | cURus, ENEC 10 (VDE) |
| **Environment** | | | | | | |
| Ambient temperature max. | 70 °C | 70 °C | 70 °C | 70 °C | 70 °C | 70 °C |
| **Safety and protection** | | | | | | |
| Type | encapsulated | encapsulated | encapsulated | encapsulated | encapsulated | encapsulated |
| Class of Insulation System | VDE=B, UL=class 105 | VDE=B, UL=class 105 | VDE=B, UL=class 105 | VDE=B, UL=class 105 | VDE=B, UL=class 105 | VDE=B, UL=class 105 |
| Protection index | IP 00 | IP 00 | IP 00 | IP 00 | IP 00 | IP 00 |
| Safety class (prepared) | II | II | II | II | II | II |
| Short circuit strength | inherently short-circuit proof | inherently short-circuit proof | inherently short-circuit proof | inherently short-circuit proof | inherently short-circuit proof | inherently short-circuit proof |
| **Order numbers** | | | | | | |
| **Order Number** | **refer to rated output voltage** | **refer to rated output voltage** | **refer to rated output voltage** | **refer to rated output voltage** | **refer to rated output voltage** | **refer to rated output voltage** |



# Short circuit proof PCB transformer
# VB

Electrical data

| Type | VB 1,2/1/.. | VB 1,2/2/.. | VB 1,5/1/.. | VB 1,5/2/.. | VB 2,0/1/.. | VB 2,0/2/.. |
|---|---|---|---|---|---|---|
| **Input** | | | | | | |
| Rated input voltage | 230 Vac | 230 Vac | 230 Vac | 230 Vac | 230 Vac | 230 Vac |
| Rated frequency | 50 - 60 Hz | 50 - 60 Hz | 50 - 60 Hz | 50 - 60 Hz | 50 - 60 Hz | 50 - 60 Hz |
| **Output** | | | | | | |
| **Rated output voltage: Order no.** | 6 Vac: VB 1,2/1/6<br>8 Vac: VB 1,2/1/8<br>9 Vac: VB 1,2/1/9<br>12 Vac: VB 1,2/1/12<br>15 Vac: VB 1,2/1/15<br>18 Vac: VB 1,2/1/18<br>24 Vac: VB 1,2/1/24 | 2x6 Vac: VB 1,2/2/6<br>2x8 Vac: VB 1,2/2/8<br>2x9 Vac: VB 1,2/2/9<br>2x12 Vac: VB 1,2/2/12<br>2x15 Vac: VB 1,2/2/15*<br>2x18 Vac: VB 1,2/2/18*<br>2x24 Vac: VB 1,2/2/24* | 6 Vac: VB 1,5/1/6<br>8 Vac: VB 1,5/1/8<br>9 Vac: VB 1,5/1/9<br>12 Vac: VB 1,5/1/12<br>15 Vac: VB 1,5/1/15<br>18 Vac: VB 1,5/1/18<br>24 Vac: VB 1,5/1/24 | 2x6 Vac: VB 1,5/2/6<br>2x8 Vac: VB 1,5/2/8<br>2x9 Vac: VB 1,5/2/9<br>2x12 Vac: VB 1,5/2/12<br>2x15 Vac: VB 1,5/2/15*<br>2x18 Vac: VB 1,5/2/18*<br>2x24 Vac: VB 1,5/2/24* | 6 Vac: VB 2,0/1/6<br>8 Vac: VB 2,0/1/8<br>9 Vac: VB 2,0/1/9<br>12 Vac: VB 2,0/1/12<br>15 Vac: VB 2,0/1/15<br>18 Vac: VB 2,0/1/18<br>24 Vac: VB 2,0/1/24 | 2x6 Vac: VB 2,0/2/6<br>2x8 Vac: VB 2,0/2/8<br>2x9 Vac: VB 2,0/2/9<br>2x12 Vac: VB 2,0/2/12<br>2x15 Vac: VB 2,0/2/15*<br>2x18 Vac: VB 2,0/2/18*<br>2x24 Vac: VB 2,0/2/24* |
| Rated Power | 1.20 VA | 1.20 VA | 1.50 VA | 1.50 VA | 2.00 VA | 2.00 VA |
| No-load voltage (app. x factor) | 1.35 | 1.35 | 1.45 | 1.45 | 1.70 | 1.70 |
| No-load loss (typ.) | 1.00 W | 1.00 W | 1.00 W | 1.00 W | 1.10 W | 1.10 W |
| Efficiency | 57 % | 57 % | 57 % | 57 % | 52 % | 52 % |
| **Standards** | | | | | | |
| Classification | Safety isolating transformer | Safety isolating transformer<br>*Mains transformer<br>(without VDE mark) | Safety isolating transformer | Safety isolating transformer<br>*Mains transformer<br>(without VDE mark) | Safety isolating transformer | Safety isolating transformer<br>*Mains transformer<br>(without VDE mark) |
| **Approvals** | | | | | | |
| Approvals | cURus, ENEC 10 (VDE) | cURus, ENEC 10 (VDE) | cURus, ENEC 10 (VDE) | cURus, ENEC 10 (VDE) | cURus, ENEC 10 (VDE) | cURus, ENEC 10 (VDE) |
| **Environment** | | | | | | |
| Ambient temperature max. | 70 °C | 70 °C | 70 °C | 70 °C | 70 °C | 70 °C |
| **Safety and protection** | | | | | | |
| Type | encapsulated | encapsulated | encapsulated | encapsulated | encapsulated | encapsulated |
| Class of Insulation System | VDE=B, UL=class 105 | VDE=B, UL=class 105 | VDE=B, UL=class 105 | VDE=B, UL=class 105 | VDE=B, UL=class 105 | VDE=B, UL=class 105 |
| Protection index | IP 00 | IP 00 | IP 00 | IP 00 | IP 00 | IP 00 |
| Safety class (prepared) | II | II | II | II | II | II |
| Short circuit strength | inherently short-circuit proof | inherently short-circuit proof | inherently short-circuit proof | inherently short-circuit proof | inherently short-circuit proof | inherently short-circuit proof |
| **Order numbers** | | | | | | |
| **Order Number** | **refer to rated output voltage** | **refer to rated output voltage** | **refer to rated output voltage** | **refer to rated output voltage** | **refer to rated output voltage** | **refer to rated output voltage** |



# Short circuit proof PCB transformer
# VB

Electrical data

| Type | VB 2,3/1/.. | VB 2,3/2/.. | VB 2,8/1/.. | VB 2,8/2/.. | VB 3,2/1/.. | VB 3,2/2/.. |
|---|---|---|---|---|---|---|
| **Input** | | | | | | |
| Rated input voltage | 230 Vac | 230 Vac | 230 Vac | 230 Vac | 230 Vac | 230 Vac |
| Rated frequency | 50 - 60 Hz | 50 - 60 Hz | 50 - 60 Hz | 50 - 60 Hz | 50 - 60 Hz | 50 - 60 Hz |
| **Output** | | | | | | |
| **Rated output voltage: Order no.** | 6 Vac: VB 2,3/1/6<br>8 Vac: VB 2,3/1/8<br>9 Vac: VB 2,3/1/9<br>12 Vac: VB 2,3/1/12<br>15 Vac: VB 2,3/1/15<br>18 Vac: VB 2,3/1/18<br>24 Vac: VB 2,3/1/24 | 2x6 Vac: VB 2,3/2/6<br>2x8 Vac: VB 2,3/2/8<br>2x9 Vac: VB 2,3/2/9<br>2x12 Vac: VB 2,3/2/12<br>2x15 Vac: VB 2,3/2/15*<br>2x18 Vac: VB 2,3/2/18*<br>2x24 Vac: VB 2,3/2/24* | 6 Vac: VB 2,8/1/6<br>8 Vac: VB 2,8/1/8<br>9 Vac: VB 2,8/1/9<br>12 Vac: VB 2,8/1/12<br>15 Vac: VB 2,8/1/15<br>18 Vac: VB 2,8/1/18<br>24 Vac: VB 2,8/1/24 | 2x6 Vac: VB 2,8/2/6<br>2x8 Vac: VB 2,8/2/8<br>2x9 Vac: VB 2,8/2/9<br>2x12 Vac: VB 2,8/2/12<br>2x15 Vac: VB 2,8/2/15*<br>2x18 Vac: VB 2,8/2/18*<br>2x24 Vac: VB 2,8/2/24* | 6 Vac: VB 3,2/1/6<br>8 Vac: VB 3,2/1/8<br>9 Vac: VB 3,2/1/9<br>12 Vac: VB 3,2/1/12<br>15 Vac: VB 3,2/1/15<br>18 Vac: VB 3,2/1/18<br>24 Vac: VB 3,2/1/24 | 2x6 Vac: VB 3,2/2/6<br>2x8 Vac: VB 3,2/2/8<br>2x9 Vac: VB 3,2/2/9<br>2x12 Vac: VB 3,2/2/12<br>2x15 Vac: VB 3,2/2/15*<br>2x18 Vac: VB 3,2/2/18*<br>2x24 Vac: VB 3,2/2/24* |
| Rated Power | 2.30 VA | 2.30 VA | 2.80 VA | 2.80 VA | 3.20 VA | 3.20 VA |
| No-load voltage (app. x factor) | 1.43 | 1.43 | 1.80 | 1.80 | 1.70 | 1.70 |
| No-load loss (typ.) | 0.90 W | 0.90 W | 0.90 W | 0.90 W | 1.00 W | 1.00 W |
| Efficiency | 59 % | 59 % | 57 % | 57 % | 58 % | 58 % |
| **Standards** | | | | | | |
| Classification | Safety isolating transformer | Safety isolating transformer<br>*Mains transformer<br>(without VDE mark) | Safety isolating transformer | Safety isolating transformer<br>*Mains transformer<br>(without VDE mark) | Safety isolating transformer | Safety isolating transformer<br>*Mains transformer<br>(without VDE mark) |
| **Approvals** | | | | | | |
| Approvals | cURus, ENEC 10 (VDE) | cURus, ENEC 10 (VDE) | cURus, ENEC 10 (VDE) | cURus, ENEC 10 (VDE) | cURus, ENEC 10 (VDE) | cURus, ENEC 10 (VDE) |
| **Environment** | | | | | | |
| Ambient temperature max. | 70 °C | 70 °C | 70 °C | 70 °C | 50 °C | 50 °C |
| **Safety and protection** | | | | | | |
| Type | encapsulated | encapsulated | encapsulated | encapsulated | encapsulated | encapsulated |
| Class of Insulation System | VDE=B, UL=class 105 | VDE=B, UL=class 105 | VDE=B, UL=class 105 | VDE=B, UL=class 105 | VDE=B, UL=class 105 | VDE=B, UL=class 105 |
| Protection index | IP 00 | IP 00 | IP 00 | IP 00 | IP 00 | IP 00 |
| Safety class (prepared) | II | II | II | II | II | II |
| Short circuit strength | inherently short-circuit proof | inherently short-circuit proof | inherently short-circuit proof | inherently short-circuit proof | inherently short-circuit proof | inherently short-circuit proof |
| **Order numbers** | | | | | | |
| **Order Number** | **refer to rated output voltage** | **refer to rated output voltage** | **refer to rated output voltage** | **refer to rated output voltage** | **refer to rated output voltage** | **refer to rated output voltage** |



# Short circuit proof PCB transformer
# VB

30 Mechanical data

| Typ | Terminals | Pin (ø) | Core type | Weight | Dimension picture (in mm) | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VB 0,35/1/.. | Pins for printed circuit boards | 0.6 mm | EE 20/6,1 | 0.02 kg | ❶ | 22 | 22.7 | 15 | 15 | 15 | 5 | - | 5 |
| VB 0,35/2/.. | Pins for printed circuit boards | 0.6 mm | EE 20/6,1 | 0.02 kg | ❷ | 22 | 22.7 | 15 | 15 | 15 | 5 | 5 | 5 |
| VB 0,5/1/.. | Pins for printed circuit boards | 0.6 mm | EE 20/10,5 | 0.04 kg | ❶ | 22 | 22.7 | 19 | 15 | 15 | 5 | - | 5 |
| VB 0,5/2/.. | Pins for printed circuit boards | 0.6 mm | EE 20/10,5 | 0.04 kg | ❷ | 22 | 22.7 | 19 | 15 | 15 | 5 | 5 | 5 |
| VB 1,0/1/.. | Pins for printed circuit boards | 0.8 mm | EI 30/10,5 | 0.07 kg | ❶ | 32.3 | 27.3 | 21.8 | 20 | 20 | 10 | - | 5 |
| VB 1,0/2/.. | Pins for printed circuit boards | 0.8 mm | EI 30/10,5 | 0.07 kg | ❷ | 32.3 | 27.3 | 21.8 | 20 | 20 | 10 | 5 | 5 |
| VB 1,2/1/.. | Pins for printed circuit boards | 0.8 mm | EI 30/12,5 | 0.08 kg | ❶ | 32.3 | 27.3 | 23.8 | 20 | 20 | 10 | - | 5 |
| VB 1,2/2/.. | Pins for printed circuit boards | 0.8 mm | EI 30/12,5 | 0.08 kg | ❷ | 32.3 | 27.3 | 23.8 | 20 | 20 | 10 | 5 | 5 |
| VB 1,5/1/.. | Pins for printed circuit boards | 0.8 mm | EI 30/12,5 | 0.08 kg | ❶ | 32.3 | 27.3 | 23.8 | 20 | 20 | 10 | - | 5 |
| VB 1,5/2/.. | Pins for printed circuit boards | 0.8 mm | EI 30/12,5 | 0.08 kg | ❷ | 32.3 | 27.3 | 23.8 | 20 | 20 | 10 | 5 | 5 |
| VB 2,0/1/.. | Pins for printed circuit boards | 0.8 mm | EI 30/15,5 | 0.10 kg | ❶ | 32.3 | 27.3 | 26.8 | 20 | 20 | 10 | - | 5 |
| VB 2,0/2/.. | Pins for printed circuit boards | 0.8 mm | EI 30/15,5 | 0.10 kg | ❷ | 32.3 | 27.3 | 26.8 | 20 | 20 | 10 | 5 | 5 |
| VB 2,3/1/.. | Pins for printed circuit boards | 0.8 mm | EI 30/18,0 | 0.11 kg | ❶ | 32.3 | 27.3 | 29 | 20 | 20 | 10 | - | 5 |
| VB 2,3/2/.. | Pins for printed circuit boards | 0.8 mm | EI 30/18,0 | 0.11 kg | ❷ | 32.3 | 27.3 | 29 | 20 | 20 | 10 | 5 | 5 |
| VB 2,8/1/.. | Pins for printed circuit boards | 0.8 mm | EI 30/23,0 | 0.14 kg | ❶ | 32.3 | 27.3 | 34 | 20 | 20 | 10 | - | 5 |
| VB 2,8/2/.. | Pins for printed circuit boards | 0.8 mm | EI 30/23,0 | 0.14 kg | ❷ | 32.3 | 27.3 | 34 | 20 | 20 | 10 | 5 | 5 |
| VB 3,2/1/.. | Pins for printed circuit boards | 0.8 mm | EI 38/16,5 | 0.17 kg | ❶ | 41 | 35 | 30.8 | 20 | 25 | 10 | - | 5 |
| VB 3,2/2/.. | Pins for printed circuit boards | 0.8 mm | EI 38/16,5 | 0.17 kg | ❷ | 41 | 35 | 30.8 | 20 | 25 | 10 | 5 | 5 |

## Dimension pictures

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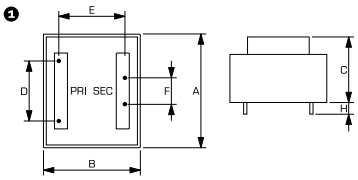


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