Claims

1. An electrical resistor, ~~(1)~~ comprising:

a carrier layer having a first side and a second side facing away from the first side;

- a resistance conductor ~~(2), which is~~ applied to a first side of said carrier layer ~~(3),~~;

and

- two connection elements ~~(4), which are~~ each electrically conductively connected to ~~the~~ said resistance conductor ~~(2),~~;

~~**characterised in that** the~~ each of said two connection elements ~~(4) are~~ being configured ~~to each be~~ for ~~weldable or solderable~~ welding or soldering to a~~n~~ respective electrical contact~~,~~; ~~and in that the~~

said resistance conductor ~~(2)~~ having an overlap region for each connection element, ~~(4) has a~~said overlap region ~~(20)~~ overlapping the respective said ~~corresponding~~ connection element~~, which region~~ and electrically conductively connect~~s~~ing the corresponding said connection element ~~(4).~~;

a metal layer disposed on the second side of said carrier layer, said metal layer forming a heat sink; and

wherein at least one of the following is true: said connection elements form portions of said metal layer or said connection elements are arranged on the second side of said carrier layer.

~~2. The electrical resistor according to claim 1, **characterised in that** the resistance conductor (2) is arranged on a first side (3a) of the carrier layer (3), wherein a metal layer (5) is arranged on a second side (3b) of the carrier layer (3) facing away from the first side (3a) and forms a heat sink.~~

2~~3~~. The electrical resistor according to claim 1 ~~or 2, **characterised in that** the~~ wherein said connection elements ~~(4)~~ are arranged on the first side ~~(3a)~~ of the carrier layer ~~(3)~~.

~~4. The electrical resistor according to claim 2, **characterised in that** the connection elements (4) form portions of the metal layer (5) and/or in that the connection elements (4) are arranged on the second side (3b) of the carrier layer (3).~~

~~5. The electrical resistor according to claim 1 or 4, **characterised in that** the various regions (20) each form a plated through hole, wherein said regions (20) each extend through a through-opening (30) in the carrier layer (3) and electrically conductively connect the corresponding connection element (4).~~

~~6. The electrical resistor according to claim 5, **characterised in that** a metal layer (21) is applied to each of the regions (20) for local resistance reduction, such that each region (20) is arranged between the corresponding metal layer (21) and the corresponding connection element (4).~~

3~~7~~. The electrical resistor according to ~~any one of~~ claim~~s 2 to 6~~ 1, ~~**characterised in that** the~~ wherein said metal layer ~~(5, 4)~~ comprises ~~one of the following substances or consists of one of the following substances:~~ a material selected from the group consisting of Cu; an alloy comprising Cu and Ni; Ni; Nb; Ta; a high-grade steel; an alloy comprising Cu, Ni and Mn; an alloy comprising 55 % by weight Cu, 44 % by weight Ni and 1 % by weight Mn.

4. The electrical resistor according to claim 1, wherein said metal layer consists of a material selected from the group consisting of Cu; an alloy comprising Cu and Ni; Ni; Nb; Ta; a high-grade steel; an alloy comprising Cu, Ni and Mn; and an alloy comprising 55% by weight Cu, 44% by weight Ni and 1% by weight Mn.

5~~8~~. The electrical resistor according to ~~any one of the preceding~~ claim~~s~~ 1, ~~**characterised in that** the~~ wherein said two regions ~~(20)~~ of ~~the~~ said resistance conductor are connected to one another via a meandering portion ~~(22)~~ of ~~the~~ said resistance conductor ~~(2)~~.

6~~9~~. The electrical resistor according to ~~any one of the preceding~~ claim~~s~~ 1, ~~**characterised in that** the~~ wherein said resistance conductor ~~(2)~~ consists ~~of one of the following substances or comprises one of the following substances~~ of a metal selected from the group consisting of: Ti, Au, Cu, Ni, Pd, Nb, Cr.

7. The electrical resistor according to claim 1, wherein said resistance conductor comprises at least one metal selected from the group consisting of Ti, Au, Cu, Ni, Pd, Nb and Cr.

~~10. The electrical resistor according to any one of claims 2 to 9, **characterised in that** the resistor (1) has a first and a second insulation layer (6a, 6b), wherein the first insulation layer (6a) is connected via an adhesive layer (7a) to the first side (3a) of the carrier layer (3) and covers the resistance conductor (2), and wherein the second insulation layer (6b) is connected via an adhesive layer (7b) to a second side (3b) of the carrier layer (3) and/or to the metal layer (5), wherein the second insulation layer (6b) covers the metal layer (5) at least in some portions.~~

~~11. The electrical resistor according to claim 10, **characterised in that** the connection elements (4) protrude from the resistor (1) between the two insulation layers (6a, 6b).~~

8~~12~~. An implantable defibrillator comprising an electrical resistor ~~(1)~~ according to ~~any one of~~ claim~~s~~ 1 ~~to 11~~.

9. An electrical resistor, comprising:

a carrier layer;

a resistance conductor applied to said carrier layer; and two connection elements each electrically conductively connected to said resistance conductor;

each of said two connection elements being configured for welding or soldering to a respective electrical contact; and

said resistance conductor for each connection element having an overlap region overlapping the respective said connection element and electrically conductively connecting the corresponding said connection element, each of said overlap regions forming a plated through-hole, each of said regions extending through a through-opening in said carrier layer and electrically conductively connecting the corresponding said connection element.

10. The electrical resistor according to claim 9, comprising a metal layer applied to each of said overlap regions for local resistance reduction, with each said overlap region being arranged between the corresponding said metal layer and the corresponding said connection element.

11. An electrical resistor, comprising:

a carrier layer:

a resistance conductor applied to said carrier layer; and two connection elements each electrically conductively connected to said resistance conductor;

each of said two connection elements being configured for welding or soldering to a respective electrical contact; and

said resistance conductor having an overlap region for each connection element, said overlap region overlapping the respective said connection element and electrically conductively connecting the corresponding said connection element, wherein said resistance conductor is arranged on a first side of said carrier layer, and a metal layer is disposed on a second side of said carrier layer facing away from the first side, said metal layer forming a heat sink;

first and second insulation layers, said first insulation layer being connected via an adhesive layer to the first side of said carrier layer and covering said resistance conductor, and said second insulation layer being connected via an adhesive layer to a second side of said carrier layer and/or to said metal layer, wherein said second insulation layer covers said metal layer at least in portions thereof.

12. The electrical resistor according to claim 11, wherein said connection elements protrude from said resistor between said two insulation layers.

13. A method for producing an electrical resistor ~~(1)~~, the method comprising the following steps:

- connecting a carrier layer ~~(3)~~ to a metal layer ~~(5)~~, ~~wherein~~ the metal layer form~~s~~ing a heat sink of the resistor and two connection elements ~~(4)~~ of the resistor ~~(1)~~,
- forming a separate through-opening ~~(30)~~ for each of the connection elements ~~(4)~~, each of ~~said~~ the through-openings being associated with the corresponding

connection element ~~(30)~~ and extending through the carrier layer ~~(3)~~ towards the associated connection element ~~(5),~~; and

- applying an electrically conductive material to a first side ~~(3a)~~ of the carrier layer ~~(3)~~ so as to form a resistance conductor ~~(2)~~, ~~such that~~ with the resistance conductor ~~(2)~~ extend~~s~~ing through the corresponding through-opening ~~(30)~~ towards the corresponding connection element ~~(4)~~ and contact~~s~~ing ~~this~~ the respective connection element electrically conductively, ~~whereby~~and thereby producing an electrically conductive connection ~~is produced~~ between the resistance conductor ~~(2)~~ and the two connection elements ~~(4)~~.

14. The method according to claim 13, ~~wherein the electrically conductive material~~ which comprises, in order to form the resistance conductor ~~(2), is~~ appl~~ied~~ying the electrically conductive material to the carrier layer ~~(3)~~ by coating the carrier layer ~~(3)~~ with ~~said~~ the material.

15. The method according to claim 13 ~~or 14~~, which comprises:

~~wherein~~ adhesively bonding a first insulation layer ~~(6a) is adhesively bonded~~ to the first side ~~(3a)~~ of the carrier layer ~~(3)~~, and ~~therefore~~ thereby covering the resistance conductor ~~(2) is covered,~~;

~~wherein~~ adhesively bonding a second insulation layer ~~(6b) is adhesively bonded~~ to a second side ~~(3b)~~ of the carrier layer ~~(3) pointing away~~ averted from the first side ~~(3a)~~ and/or to the metal layer ~~(5), and therefore~~ to thereby cover the metal layer ~~(5) is covered~~ at least in some portions.