Claims

1. Activatable thermal fuse (10) comprising
- a first (1) and a second (2) electrical terminal,
- an electrically conductive bridge element (3),
- at least a part (4) of said bridge element being displaceable from a first position, in which a first electric contact between the electrically conductive bridge element (3) and said first electrical terminal (1) is established and in which first position said electrically conductive bridge element (3) is in a second electric contact with said second terminal (2), to a second position in which said first contact is opened,
- a thermally sensitive member (5) holding said part in said first position and releasing said part as soon as said thermally sensitive member is exposed to a predetermined temperature value,
- a biasing member (6) biasing said part towards said second position, and
- a mechanically displaceable activating element (7) blocking displaceability of said part in said first position in a first position of said activating element and enabling said displaceability of said part in a second position of said activating element,
characterized in that
said first electric contact and said second electric contact are open in the second position of said part (4) of the bridge element.

2. Activatable thermal fuse according to claim 1, comprising a guiding element defining a path of movement of said activating element (7), the path of movement being at least one of a translation, a rotation, a screw movement.

3. Activatable thermal fuse according to claim 1 or claim 2, comprising a snapping mechanism (13) preventing a returning of said activating element (7) from the second position of said activating element to the first position of said activating element.

4. Activatable thermal fuse according to any one of claims 1 to 3, wherein the predetermined temperature value (T_L) is in the range up to 240°C, preferably in the range from 150°C to 240°C, both limits included.

5. Activatable thermal fuse according to any one of claims 1 to 4, wherein the thermally sensitive member (5) comprises a solder.

6. Activatable thermal fuse according to any one of claims 1 to 5, wherein the thermally sensitive member (5) comprises at least one of a bimetal strip, a bimetal disc, a shape memory alloy.

7. Activatable thermal fuse according to any one of claims 1 to 6, comprising a housing (11) having a bottom side on

which said first (1) and second (2) electrical terminal are arranged.

8. Activatable thermal fuse according to claim 7, wherein the activating element (7) is integrated into the housing (11), in particular designed as one piece with the housing, and is accessible from a top side and/or from a bottom side and/or from a lateral side of the housing.

9. Activatable thermal fuse according to claim 8, wherein the position of the activating element (7) is visible from a top side of the housing (11).

10. Activatable thermal fuse according to any one of claims 1 to 9, wherein said biasing member (6) is a compressed, stretched, bended or twisted elastic element.

11. Activatable thermal fuse according to any one of claims 1 to 10, wherein the biasing member (6) comprises an elastic section of the bridge element (3).

12. Activatable thermal fuse according to any one of claims 1 to 11, wherein the biasing member (6) has the form of a coil spring, a spiral spring or a leaf spring.

13. Activatable thermal fuse according to any one of claims 1 to 12, wherein said bridge element is a substantially rigid element.

14. Activatable thermal fuse according to any one of claims 1 to 13, wherein the thermal fuse is adapted to carry electrical current higher than 5 Ampère, preferably higher than 30 Ampère and up to 100 Ampère.

15. Activatable thermal fuse according to any one of claims 1 to 14, wherein a current-limiting fuse element (61) is arranged in a conducting path (62) between said first and said second (2) electrical terminal.

16. Activatable thermal fuse according to claim 15, wherein said current-limiting fuse element (61) is formed as constriction in a conducting path (62), in particular as constriction in a conducting path (62) on an electrically isolating substrate (63).

17. Activatable thermal fuse according to any one of claims 1 to 16, wherein at least said bridge element (3) comprises an alloy having a temperature coefficient of resistance, the absolute value of said temperature coefficient of resistance being below 500 parts per million per Kelvin at room temperature.

18. Activatable thermal fuse according to any one of claims 1 to 17, wherein the activatable thermal fuse has further electrical terminals (71, 72) in addition to said first (1) and said second (2) electrical terminal.

19. Method of manufacturing a printed circuit board (20) with an activatable thermal fuse (10) according to any one of the claims 1 to 18, comprising the steps of
- covering conductive soldering pads (21, 22) of the printed circuit board with a solder (23),
- positioning the first (1) and second (2) electrical terminal of the thermal fuse on conductive soldering pads covered with said solder (23),
- ensuring that the activating element (7) of the thermal fuse is in said first position of the activating element,
- heating the printed circuit board to a temperature above the melting point of the solder,
- cooling down the printed circuit board below the melting point of the solder, and
- moving the activation element (7) of the thermal fuse (10) into the second position of the activation element.

20. Electronical circuit (40) comprising an activatable thermal fuse (10) according to any one of the claims 1 to 18 being connected in series to a current conducting path of a high power semiconductor device (41).

21. Electronical circuit (40) according to claim 20, wherein the activatable thermal fuse (10) and the high power semiconductor device (41) are arranged in a common housing.

22. Method of monitoring the state of an activatable thermal fuse (10) according to any one of claims 1 to 18 or an electronical circuit (40) according to claim 20 or 21, said state including a triggering state and/or a current and/or a temperature, wherein a voltage between two electrical terminals of said activatable thermal fuse is measured.

23. Method according to claim 22, wherein
- a voltage between said first (1) and said second (2) electrical terminal is measured and
- a current flowing through the activatable thermal fuse is determined from said voltage and a predetermined resistance value of the activatable thermal fuse.