

## Claims

1. An integrated circuit device comprising:  
a substrate having a first surface and a second surface opposite the first surface;  
5 a protected circuit disposed on the first surface of the substrate; and  
a protective layer disposed within the substrate, between the first surface and the  
second surface, and configured to protect the protected circuit by absorbing laser  
radiation targeted at the protected circuit through the substrate, the protective layer being  
continuous over an entirety of the substrate in parallel to the second surface of the  
10 substrate; and  
intermediate circuitry disposed between the protected circuit and the protective  
layer, the intermediate circuitry protruding into the substrate from a direction of the  
protected circuit.
- 15 2. The integrated circuit device as claimed in claim 1, wherein the protective layer is  
disposed such that removal of the protective layer causes physical damage to the  
protected circuit.
3. The integrated circuit device as claimed in claim 2, wherein the physical damage  
20 to the protected circuit is physical damage to the intermediate circuitry.
4. The integrated circuit device as claimed in claim 1, further comprising detection  
circuitry configured to detect a change in an electrical property of the integrated circuit  
device indicative of removal of the protective layer, and, in response to detecting the  
25 change in the electrical property, cause the protected circuit to be disabled.
5. The integrated circuit device as claimed in claim 4, wherein the electrical property  
is capacitance.
- 30 6. The integrated circuit device as claimed in claim 4, wherein the detection circuitry  
comprises a DRAM cell or a bipolar transistor.
7. The integrated circuit device as claimed in claim 1, wherein the protective layer  
comprises a doped semiconductor.

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8. The integrated circuit device as claimed in claim 7, wherein the doped semiconductor has a dopant concentration of  $10^{19} \text{ cm}^{-3}$ ,  $10^{20} \text{ cm}^{-3}$ ,  $5 \times 10^{20} \text{ cm}^{-3}$  or  $10^{21} \text{ cm}^{-3}$ .
- 5 9. The integrated circuit device as claimed in claim 1, wherein the protective layer has a transmittance of the laser radiation that is less than or equal to one of 40 %, 20 %, 15 %, 10 %, 5 %, or 2 %.
- 10 10. The integrated circuit device as claimed in claim 1, wherein the laser radiation is infra-red radiation.
11. The integrated circuit device as claimed in claim 1, wherein the protective layer has a transmittance of the laser radiation that is less than a transmittance of the laser radiation of the substrate.
- 15 12. An integrated circuit device comprising:  
a protected circuit on a first surface of a substrate;  
material within the substrate configured to protect the protected circuit by absorbing laser radiation targeted at the protected circuit through the substrate, the  
20 material being continuous over an entirety of the substrate in parallel to a second surface of the substrate; and  
detection circuitry configured to detect a change in an electrical property of the device indicative of removal of the material from the substrate, and, in response to detecting the change in the electrical property, cause the protected circuit to be disabled;  
25 and  
intermediate circuitry disposed between the protected circuit and the material within the substrate, the intermediate circuitry protruding into the substrate from a direction of the protected circuit.
- 30 13. An integrated circuit device comprising:  
a protected circuit on a first surface of a substrate;  
material within the substrate configured to protect the protected circuit by absorbing laser radiation targeted at the protected circuit through the substrate, the material being continuous over an entirety of the substrate in parallel to a second surface  
35 of the substrate; and  
intermediate circuitry disposed between the protected circuit and the material within the substrate, the intermediate circuitry protruding into the substrate from a

direction of the protected circuit, the device being configured such that removal of the material from the substrate causes physical damage that disables the protected circuit, wherein the physical damage that disables the protected circuit is physical damage to the intermediate circuitry.