

Security Housing

Introduction:

Bourns® Trimpot® Product Line has developed a method of helping protect sensitive information contained in electronic equipment. Combining core competencies such as molding, laser structuring and plating, Bourns has developed a tamper responsive security housing. The housing works in conjunction with the customer's software to detect physical intrusion and attempts to remove the housing from the PCB. This technology is suitable for helping protect electronic devices that store sensitive information.

Alternative Technologies:

There are two alternate technologies, which are used to protect sensitive information from physical tampering. These technologies are:

1. Wire mesh with an epoxy cover

Advantages:

- *Inexpensive*
- *3D randomness*

Disadvantages:

- *Labor intensive*
- *Poor yields*
- *Difficult to control epoxy viscosity*
- *Cannot rework*
- *Cannot recover electronics*
- *Difficult to debug electronics*

2. PCB housing

Advantage:

- *Inexpensive*

Disadvantage:

- *Low level of security*

With either of these technologies, manufacturing costs become an issue at high volume production levels.

Benefits of Bourns® Security Housing over other solutions:

- *Simple to attach to the PCB*
- *Fewer assembly steps*
- *No epoxy potting required*
- *Allows recovery of PCB for repair or upgrade*
 - *Housing can be removed without damaging the PCB*
- *Lends itself to automated process*

Security:

A layer of delicate and geometrically fine tracks covers the inside of the housing. The thickness of the tracks is less than 10 μm and is therefore very difficult to detect using X-rays. The tracks have been designed to protect against conducting and non-conducting drill bits and are resistant to chemical attack.

Assembly:

The housings are designed to facilitate the final assembly process and therefore do not require a large degree of skill or dexterity to be mounted on the PCB. They are packaged in a tray and lend themselves to an automated assembly process.

Security Features:

- Cannot be electrically altered
- Difficult to X-ray tracks
- Virtually impossible to connect electrically to the tracks
- Can respond to conducting and non-conducting drill bits > 0.5 mm
- Opaque exterior conceals track location
- Approved by ZKA and VISA PCI

Applications:

- Secure wireless and wired communications
- Cryptographic security processor
- Point of sales terminals
- Computing systems
- Access control
- Handheld devices
- Electronic voting machines

Options:

Bourns® Trimpot® Product Line offers two different security housing options. The first option is a plastic housing cover. The second option is a ceramic housing. The ceramic housing can function at higher temperatures and environments that are more robust. Figures 1 and 2 show the plastic security housing. Figures 3 and 4 illustrate the ceramic security housing.

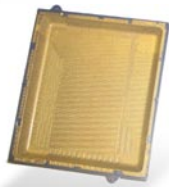


Figure 1: View of inside of plastic housing



Figure 2: View of plastic housing mounted onto PCB



Figure 3: Inside view of ceramic housing



Figure 4: View of ceramic housing mounted onto PCB

General Technical Specifications:

Table 1: Technical Comparison between Plastic and Ceramic

Criteria	Plastic	Ceramic
Track Width	150 µm max.	200 µm max.
Multiple tracks	Yes	Yes
Multiple layers	No	Yes
Size	100 x 100 x 10 mm	100 x 100 x 50 mm
Temperature	-30 °C to +70 °C	-30 °C to +250 °C
Wall angle	60°	90°
Component mount	No	Yes
Connection	Elastomers	Elastomers, connectors, wires
L/T for samples	12 wks	9 wks

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