



APPLICATION NOTE

Mounting Considerations for
Gullwing-style Packages

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Introduction

VPT offers several Hybrid DC-DC converters in a surface mountable gullwing package. VPT's gullwing packages feature a central body with leads coming out of the sides parallel to the mounting surface as shown in Figure 1. The leads are usually bent down to the mounting surface leaving a small gap between the main body and mounting surface. This document discusses mounting considerations for these gullwing converters.

Thermal Considerations

During normal operation, the dominant mode of heat transfer is conduction through the baseplate. It is important to bridge the gap between the package body and the mounting surface with a thermally conductive material to achieve sufficient heat transfer. Thermal pads or dispensed thermal compounds should be selected based on the specific application requirements.

Securing the Package

If the intended application experiences any shock, vibration, or constant acceleration environments, the package should be secured to reduce stress on the leads. Inadequate or improper securing methods may result in part damage or loss of hermeticity.

Adhesives may be used as one method for securing gullwing packages. When selecting an appropriate adhesive, please note the main body of the package is gold plated. Gold plating may reduce the bonding strength of some adhesives. If a thermally conductive material with poor adhesion is selected for heat removal under the main body, a second material with improved bonding strength may be applied along the package sides. VPT has seen positive results using TRA-BOND 2151 under the package (Note: TRA-BOND 2151 is a two-part epoxy adhesive that is NASA outgassing compliant but is not considered to have high thermal conductivity). Solder is not recommended as an attach material to avoid causing damage or reflow to internal components.

For environments or applications with extreme shock, vibration, or acceleration, VPT recommends using mechanical reinforcement or a down lead equivalent part. When using mechanical reinforcement ensure there is sufficient force being applied to the package. Thermal expansion/contraction can occur during operation, and it is important that the package is being held down firmly to counteract this.

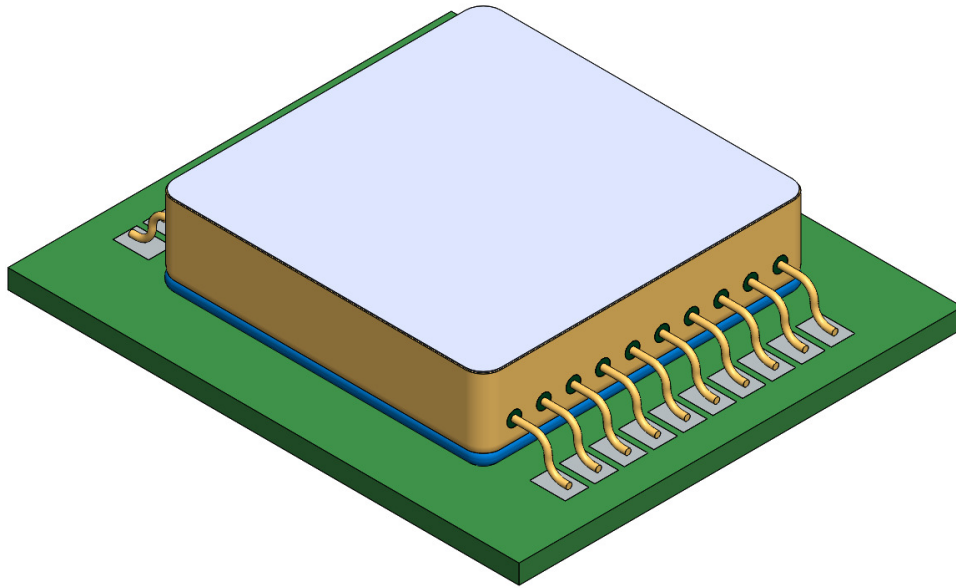


Figure 1. Example mounting configuration using TRA-BOND 2151.

Soldering

While reflow soldering is possible for this part, it is not recommended due to differences between reflow ovens. VPT recommends hand soldering the leads. To avoid any risk of internal solder melting, an alternating pattern starting with opposite corners is recommended. In Figure 2, pins 1 and 11 would be soldered first, followed by pins 10 and 20, then pins 2 and 12, then pins 9 and 19, and so forth. This alternating pattern will help ensure there is no undesired heat buildup. Recommended solder temperature and time is 350 °C for no more than 10 seconds per lead.

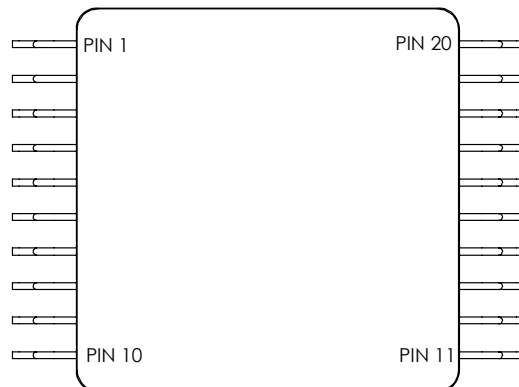


Figure 2. Example pin layout of a VPT gullwing package.



Contact Information

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