

BCE APPLICATION NOTE

BCE'S 9 PIN VACUUM FEEDTHROUGH: UHV COMPATIBLE TECHNOLOGY SERVING THE SEMICONDUCTOR INDUSTRY

Some of the most stringent tolerances and vacuum requirements exist in the ever-expanding semiconductor industry. Tight restrictions in vacuum ports, high temperature applications and exposure to high stress environments further add to the challenge of designing an electrical feedthrough that can be manufactured quickly and installed with ease. An American multinational manufacturer of chips and microprocessors approached BCE with these exact requirements in order to replace their existing vacuum feedthroughs incapable of providing an adequate performance in ultra-high vacuum environments. Furthermore, their existing supplier had long lead times and the procured feedthroughs needed to be replaced often as their contacts would fail due to oxidation formation on the conductive layer.

SCOPE

The feedthrough needed to satisfy the following requirements:

- Ultra-High Vacuum (UHV) compatibility up to 1×10^{-10} atm.cc/sec
- Remain operable at temperatures exceeding 250°C
- Pins preventing oxidation of conductive layer for longevity
- 9 pin feedthrough configuration
- Voltage requirement: 750 AC RMS
- Current requirement: 7 AMPS
- Quick-turnaround on feedthrough manufacturing
- Robust seal withstanding high stress environments
- Ease in installation, simple design
- Low cost for application

OUTCOME:

All customer requirements were exceeded by BCE's 9 pin vacuum feedthrough. Not only did it meet all electrical and configuration specifications, it provided a vacuum compatibility twice as much as that required by the customer allowing them to expand their capabilities to higher vacuum thresholds. It also remained operable at higher temperatures, nearing maximums of 300°C. Furthermore, the gold plated pins proved to be ideal in the prevention of oxidative layers inhibiting current flow. Moreover, BCE's proprietary ceramic seal achieved the desired robustness and allowed the feedthrough to remain operable under high stress conditions. Finally, the client was equally impressed by BCE's quick-turnaround time and competitive pricing.

For more information and drawings click [here](#).



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