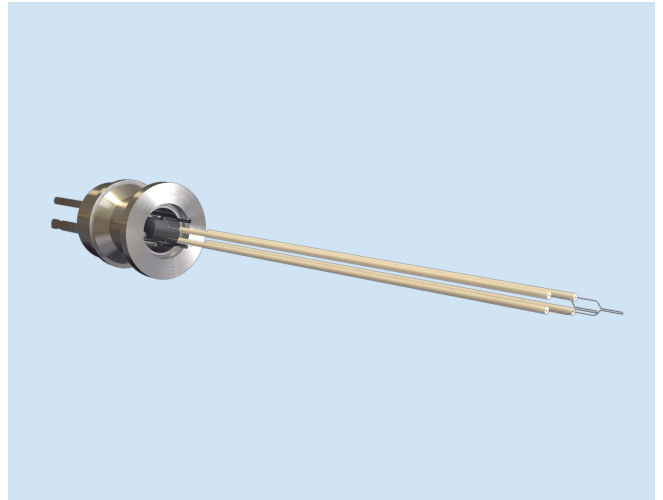


# BCE APPLICATION NOTE

## TWIN TYPE-C THERMOCOUPLE VACUUM FEEDTHROUGH

### BACKGROUND

An application was presented to BCE in the semiconductor equipment industry for a high temperature, high vacuum thermocouple (TC). There was space limitation with a requirement for a multi-point TC to sense a very small insertion dimension. The TC probe area must be able to bend to allow the sensor tip to penetrate the temperature sensing zone.



The BCE engineers and technicians were ready for the challenge with their experience in ceramic-to-metal sealing and high temp sensors.

### SCOPE:

Twin Type-C Thermocouple Vacuum Feedthrough needed to satisfy the following criteria:

- <math>1425^{\circ}\text{C}</math> continuous operating temperature in probe area
- Two independent type "C" thermocouple probes
- KF16 Flange
- Vacuum rating:  $10^{-9}$  ATM-CC/Sec
- Feedthrough Seal Temp:  $-25^{\circ}\text{C}$  to  $300^{\circ}\text{C}$
- Probe section needs to be bendable and vacuum compatible with SEMI standard
- ALL TESTS PERFORMED AT ROOM TEMPERATURE

### OUTCOME

BCE designed an effective High Temperature Vacuum TC that was delivered for prototyping and customer testing. The application requirement was met and the function was sound. All tests performed prior to shipping were completed at BCE. A standard operating procedure (SOP) was finished and the part is production ready.



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