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Connecting Electrical Leads to Piezo Elements

The general soldering procedure and materials recommendations presented here are suitable for applying electrical connections to most APC piezoelectric ceramic elements. To minimize the effects of heat on the piezoelectric properties of the ceramic, strive to keep the soldering time to 2 seconds or less. As an added service, APC International can supply and solder leads.

Equipment & Materials

- Piezoelectric ceramic element with silver electrodes
- Soldering iron (~ 375°C ±25°C)
- Solder Sn96; Indium 241 (Sn95.5/Ag3.8/Cu0.7); Alpha Lead-Free (Sn96.5/Ag3.0/Cu0.5); or similar if RoHS compliance is desired.
- Active rosin flux: Kestor 1544; Radio Shack 64-021; or similar
- Leads (common sizes 26AWG-32AWG)
- Solvent to remove excess flux; denatured ethyl alcohol
- Cotton swabs

Procedure

1) Turn on the soldering iron and allow it to reach a stable operating temperature.
2) Place a small amount of flux on the ceramic and the wire.
3) Melt a small amount of solder onto the soldering iron tip.
4) Place the wire on the ceramic in the desired direction and location.
5) Place the iron with the solder on the wire and the ceramic. Hold for approximately 1 second and then remove the iron. This should allow the solder to flow from the iron to the wire and the ceramic.
6) Allow the solder joint to cool prior to moving the wire.
7) Remove excess flux with solvent.
8) Repeat steps 2 – 7 for each part.

If RoHS compliance is not required, Sn62 solder may be used as a substitute. If using Sn62 solder, the soldering iron should be set to ~ 350°C ±25°C for best results.

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