

TECHNICAL PAPER

Five Advantages of AVX Poke-Home Connectors

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Abstract

The poke-home connector was originally introduced as a highly reliable solution for connecting a small number of discrete wires to a printed circuit board assembly. The wire is first stripped, and it is then inserted into the connector. Integral wire guides and an end stop assure proper positioning of the wire during insertion. Dual beam high force contacts (typically beryllium copper) provide extremely low electrical resistance and maximize wire retention.

FIVE ADVANTAGES OF AVX POKE-HOME CONNECTORS

INTRODUCTION TO POKE-HOME CONNECTORS

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Over the last decade, these connectors have demonstrated their value in manufacturing simplicity and product reliability. As such, the product line has evolved to include a variety of orientations and form factors. The [AVX poke-home lineup](#) has grown into a complete design paradigm offering a variety of advantages to traditional headers and terminal blocks. Five of these merits are discussed below.

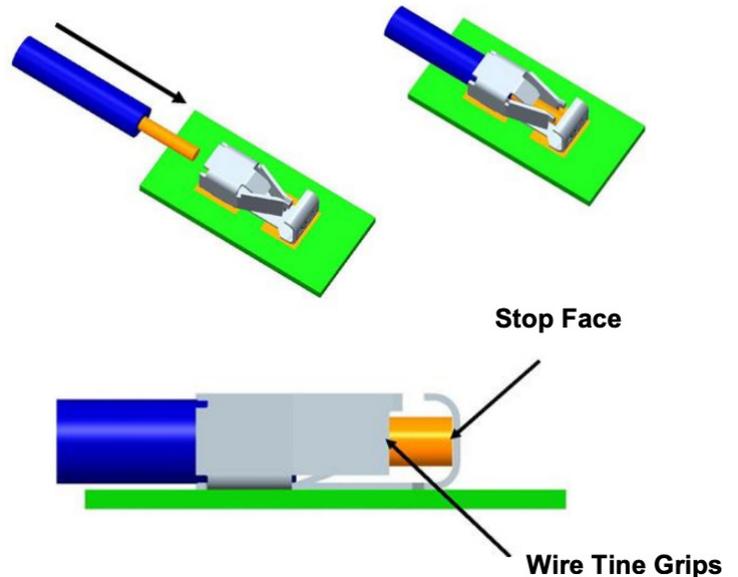


Figure 1:
Horizontal poke-home connector from AVX

ADVANTAGE #1 - CUSTOMER DRIVEN DESIGN

The AVX poke-home portfolio has evolved with the needs of various industry applications. For example, LED lighting designs require low cost wire-to-board connections that feature white non-absorbing insulation and high current capacity. Industrial applications, as another example, often require wire-to-board connectors that are extremely tolerant to mechanical variability. This led to the development of poke-home products that have no wire stop and can be freely located along the length of a jumper pin. Similar examples across numerous industries have resulted in AVX providing the broadest offering of poke-home connectors on the market.

Variants include:

- » Vertical, horizontal, and through board entry styles
- » Low profile horizontal connectors
- » Low cost contacts with no insulation
- » Contacts and connectors without wire stops
- » Wire to wire poke home connectors

FIVE ADVANTAGES OF AVX POKE-HOME CONNECTORS

ADVANTAGE #2 - WIRE GAUGE FREEDOM

Unlike many terminal block, IDC, and crimp based connectors, the poke-home contact system can accept an impressively wide range of wire gauges, in both solid and stranded variants. Most competitor solutions top out around 22 AWG, and many require wires to be tinned for optimal electrical contact. AVX's single horizontal solution, shown in figure 2, can accept wires ranging from 12-28 AWG, and features a staged current rating of up to 20A at the 12 AWG gauge. [These contacts](#) are also available without wire stops for highly flexible jumper pin designs to realize board-to-board connections.

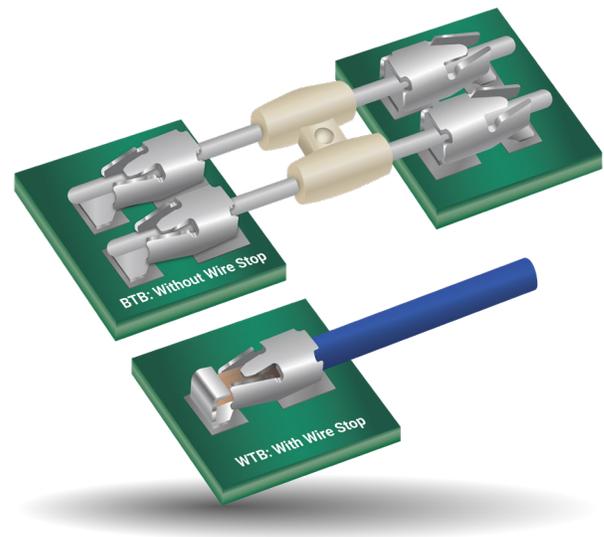


Figure 2:
AVX Single Horizontal Poke-Home Contact

ADVANTAGE #3 - LOW PROFILE

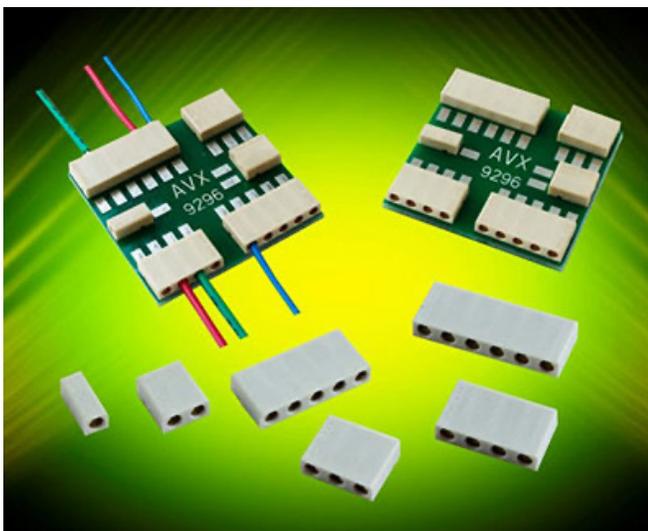


Figure 3:
AVX Low Profile Poke-home Connectors

Connector height is an often overlooked characteristic that creates problems during the mechanical and industrial design phases. Solid-state lighting is an excellent example where flexibility of the final array configuration requires high current wire-to-board and board-to-board contacts. In addition, solid-state lights are expected to be as thin as possible to allow for the greatest flexibility in final enclosure form factor. AVX offers a poke-home connector option with the smallest Z height on the market, a mere 2.5 mm, that are capable of accepting 26-20 AWG wires with current ratings up to 8 A. These connectors, shown in figure 3, feature both UL 1977 and CAN/SCA C22.2 approvals providing design engineers with a great deal of versatility and performance in a very small package.

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ADVANTAGE #4 - AVAILABLE WITHOUT HOUSING

It is often assumed that wire-to-board connectors need a plastic housing to insulate and position the contacts properly during insertion and operation. Interestingly, in many applications, the contact itself is all that is necessary. AVX offers a variety of poke-home contacts that solder directly to PCB landing pads with no housing at all, often referred to as “naked connectors.” These devices offer significant cost savings while still meeting UL regulatory requirements and customer reliability demands. Naked poke-home contacts are available in horizontal, vertical, through board, and a new micro-vertical variant shown in figure 4.

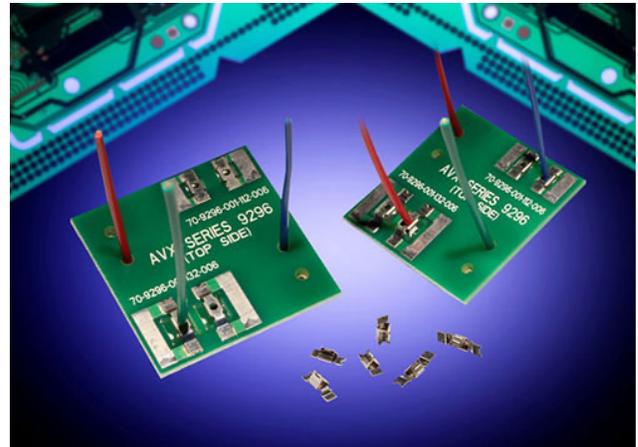


Figure 4:
AVX Micro Single Vertical 70-9296
Poke-home contact

ADVANTAGE #5 - TERMINAL BLOCK ALTERNATIVE

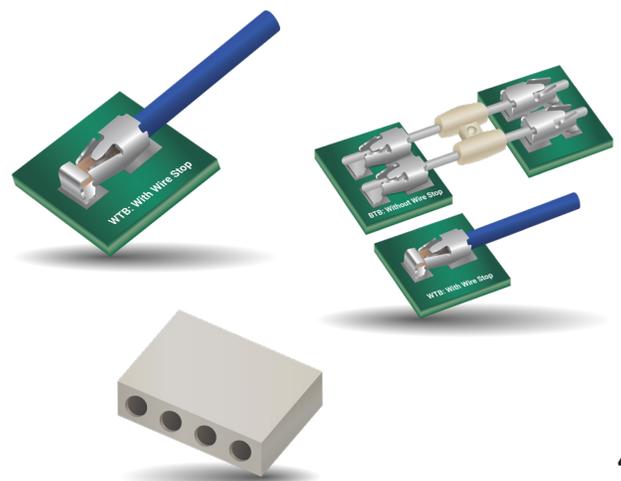
Traditional wire-to-board connectors, such as crimp and IDC, are restrictive when multiple wire gauges are required or PCB placement constraints limit the number of available positions. Terminal blocks can be helpful in this regard due to their ability to accept a range of wire gauge and the variety of available entry and mechanical locking options. Unfortunately, terminal blocks are usually costly and can introduce new

reliability issues during the manufacturing and assembly process. AVX poke-home connectors are an ideal middle ground solution to all of the aforementioned challenges. Poke-home connectors provide flexibility in wire gauge, a variety of mounting and entry options, all while maintaining a simple and reliable assembly process at a relatively low price point.

FLEXIBLE, LOW-COST POKE-HOME CONNECTORS

AVX’s Poke-home connectors should be high on the list of “go-to” components for any design engineer. Their flexibility, low cost, reliability, and ease of use are unparalleled in the industry when considering the gamut of wire-to-board, board-to-board, and wire-to-wire solutions.

To learn more, [visit the AVX website](#).





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