Gecko vs Micro-D Connectors

- A Comparison

When design engineers are creating equipment for the toughest conditions on earth, they have a bewildering range of decisions to make. The choice of components is particularly confusing, and nowhere is this more obvious than in the world of connectors.

For many years, the D-connector was one of the most popular choices. When it was introduced, it was revolutionary. Slim and compact, with a high density of electrical contacts, the D connector quickly found applications across almost all sectors of industry. From commercial equipment to the high-performance space vehicles, the D connector has provided reliable service since the 1960s.

The Micro-D

Despite the advantages of the D connector, the miniaturization of electronics soon demanded connectors of smaller size and higher density. From these requirements, the Micro-D was born. Sharing many of the features of the original D connector – notably its distinctive shape and staggered contact arrangement – the Micro-D was designed to provide engineers with more compact solutions for electronic equipment. Unlike the original D connector, the Micro-D has found less widespread use across industry. Instead, it has established itself as a connector for use in applications where high performance is paramount.

As a result, the Micro-D can be found in a variety of high-end equipment, from missiles and aircraft to medical equipment and robotics. For military users, Micro-D has its own specification in MIL-DTL-83515 which governs its design and performance.

However successful the Micro-D has become in its adopted markets, the electronics industry has continued to evolve as systems continue to get smaller. The features that were so revolutionary in the past now limit the usefulness of the Micro-D in today's market. The D-shape and the limited number of contact arrangements mean that the Micro-D is less versatile than modern alternatives.

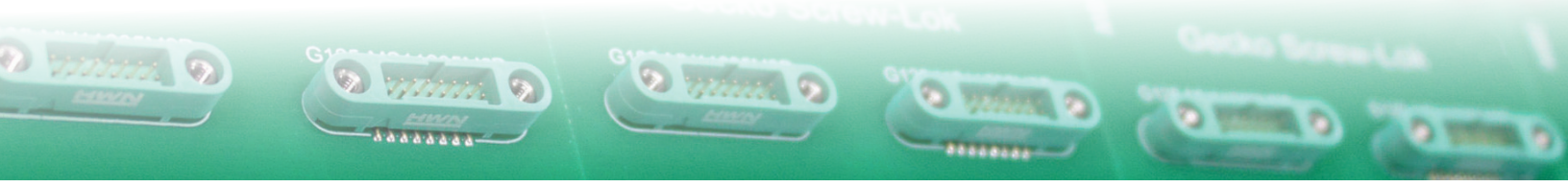
Introducing the Gecko

Gecko (the G125 series) is an alternative to the Micro-D connector with features ideal for modern electronics applications. Gecko is a dual-row connector that uses high-reliability screw machined contacts on a pitch of 1.25mm (the distance between the centre of each contact to the next).

The electrical contact is at the heart of Gecko's performance. Machined contacts are manufactured from solid material, giving them high mass and good electrical performance. The contacts are also gold plated to ensure the lowest possible electrical resistance and high reliability. This construction means that the current rating of the contact is 2 Amps when a connector is fully powered.

The Micro-D inherited its layout from the original D connector design, with rows of contacts arrayed in a staggered formation with a limited number of contact counts. In most cases, this means that Micro-D connectors are only available with an odd number of circuits.

In contrast, the two-row design and rectangular housing of Gecko allows a greater choice of contact arrangements with even numbers of contacts. This allows designers to select a product that is more appropriate for their application. For example, a design that requires 12 circuits could use a 12-way Gecko connector. If the designer selected a Micro-D connector, the best option would be 15-way. Not only does this require more space, it also incurs additional expense in the unused contacts.



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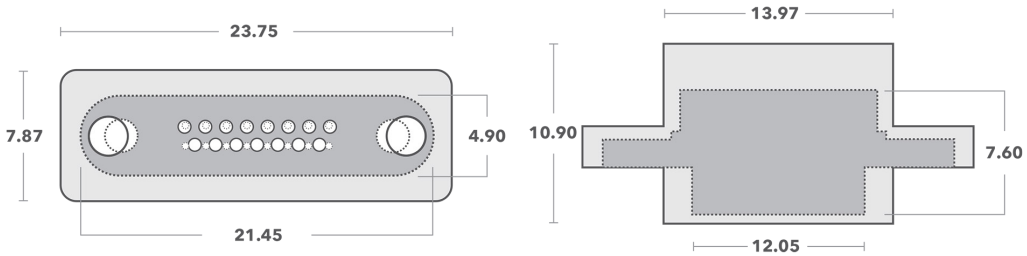
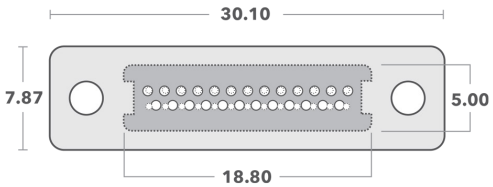
Space Saving and Power Density

Like the Micro-D, Gecko can be used in a wide range of connector applications, including board-to-board, wire-to-board and wire-to-wire. Unlike the Micro-D however, Gecko is available with a range of different housing arrangements and mounting styles to suit the application. For wire-to-board applications, it might be necessary to employ the Screw-Lok version that provides secure retention in harsh conditions.



In this example, the footprint of a 16-pole Gecko connector (in grey) has been overlaid with an equivalent 15-way Micro-D connector. The image clearly shows a saving of as much as 45% when using Gecko.



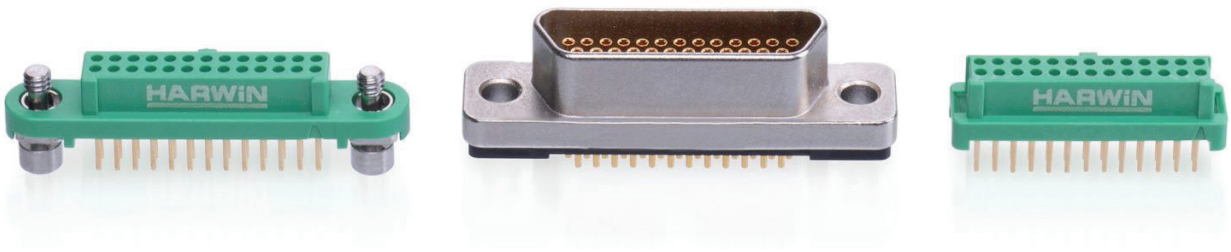
A board-to-board application will be able to use Gecko's low-profile latching system, delivering more capability than a Micro-D solution. To demonstrate this, it is possible to compare the power density delivered by each connector type. In this example, a 26-pole Gecko connector (in grey) can deliver 52 Amps (26 contacts rated at 2 Amps per contact) in a length of 18.80mm (0.740"). This leads to a power density of nearly 70.3 Amps per inch (25.4mm).

By comparison, the Micro D delivers 75 Amps (25 contacts rated at 3 Amps per contact), but in a length of 30.10mm (1.185"). This results in a power density of 63.3 Amps per inch (25.4mm). Using a Gecko fitted with latches allows 11% additional power to be delivered for a given length of connector. To compound this advantage, the Gecko is not only shorter than the Micro-D but also slimmer, resulting in an even greater space saving for a given power rating.

Smaller, but no less capable

Gecko offers savings of space and weight, but not at the cost of reduced performance. The materials used in its construction provide reliability that out-performs the Micro-D. One of the key measures of a connector's performance is its mating cycles – the number of times a connector can be mated and unmated without adversely affecting the electrical characteristics. The Screw-Lok version of Gecko delivers a working life of 1000 mating cycles compared to 500 of a comparable Micro-D connector.

Other characteristics of Gecko include a wide operating temperature range and good performance when subjected to vibration and shock. In addition, the materials used for the connector housing of Gecko provide excellent performance in specific conditions. Vacuum or high-temperature environments can be found in a range of medical and research applications. Under these conditions, it is important to select materials that will not damage sensitive equipment due to outgassing. The glass-filled thermoplastic used in the construction of Gecko produces low Total Mass Loss, making them a genuine alternative to traditional connectors for these applications.



Comparison of female Micro-D (center) with female Gecko-SL (left) and female Gecko compatible with latches (right)

Conclusion

The Micro-D connector has a long history of reliable service, and for customers who require a military-qualified connector it will remain a prime choice. However, the combination of high performance, small size and superior power density means that Gecko provides a real solution to engineers working in almost all sectors.

Discover the Gecko connector range - view technical information, test reports and product training modules.