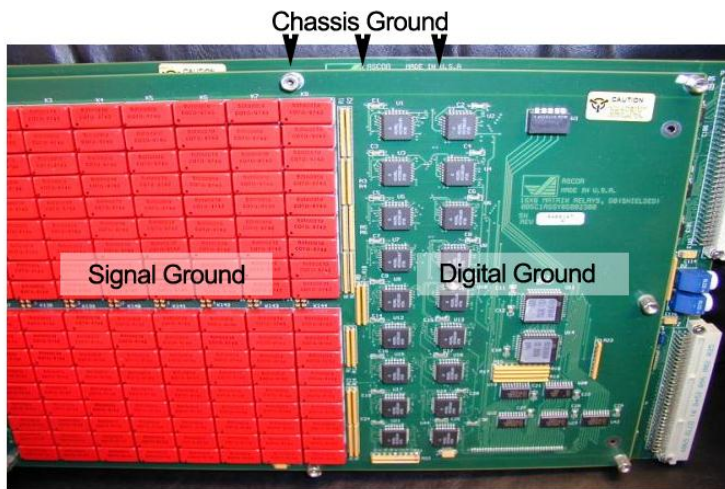
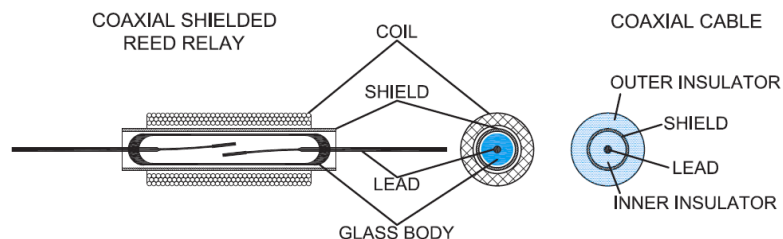
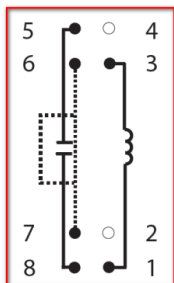


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- **3 year warranty** – All Giga-tronics^{ASCOR} switching products carry a standard 3-year warrantee. Only the microwave switch modules are excluded from this warranty.
- **Separated Groundplanes** – Many switch card manufacturers use a single groundplane for the entire board. This brings much of the chassis backplane noise into close proximity to the DUT signals we are trying to preserve. Giga-tronics^{ASCOR} boards use triple ground planes, chassis ground, Digital Ground, and Signal ground. The signal ground is isolated from the others and brought to the front panel so that this ground can be common with the DUT's ground plane.



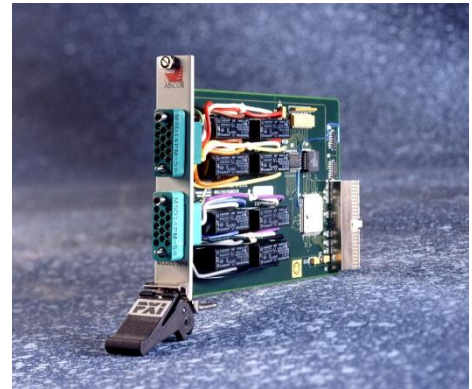
- **Stripline Design** – Even when the best connectors and relays are used, bandwidth can suffer dramatically in the path along the PC board between these components. Giga-tronics^{ASCOR} utilizes Stripline design techniques to maintain a 50ohm path from the connector to the relay. The goal is to create a switch card which is an extension of the DUT's normal cabling in order to preserve the signal integrity.
- **Shielded Reed Relays** – initially conceived of by Giga-tronics^{ASCOR}, the hermetically sealed Reed Relay is covered by a sleeve or shield which results in something approximating a 50 ohm path through the relay contact. Both ends of the sleeve are brought out of the component package so that in conjunction with proper PC board design, a continuous 50 ohm path can be maintained through the board.



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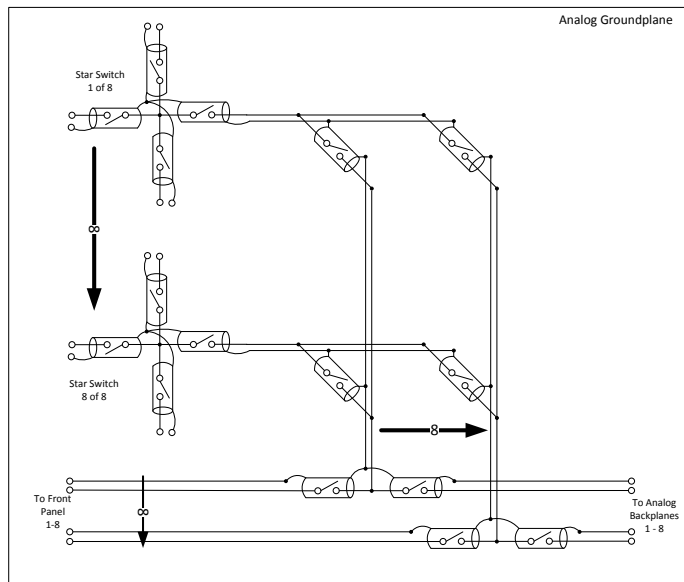
- **Signal Integrity** – Maintaining signal integrity is of utmost importance when designing a Test System. Test engineers spend long hours matching cable types and selecting proper connectors and contacts. The goal of all of this is to design a signal path which approximates the system in which the DUT will operate. Giga-tronics^{ASCOR} hallmark has been the philosophy that the switching system is merely an extension of this cabling system. The items mentioned above, Separated Groundplane, Stripline Design, and use of Shielded Relays each play a role in maintaining this balanced signal path. Taking this unique approach to designing switch cards allows signals to traverse the board without experiencing any impedance discontinuities while maintaining signal integrity. In addition, signal shielding is maintained, improving the crosstalk and isolation characteristics.

- **Discrete Wired Construction** – Design of power distribution cards is often over simplified. Many manufacturers concerned with cost, use oversized traces on PC boards to carry high current power signals. While this method works well, and reduces the manufacturing cost of the product, it can have disastrous effects on the production line. One DUT containing an unintentional short can literally destroy the power distribution switch card, turning it into a charred un-repairable mess. All Giga-tronics^{ASCOR} Power Switching cards use discrete wires between the front panel connector and the relay. In event of unintentional damage, the wire can simply be replaced. One replacement card can wipe out the minimal savings of numerous cards.



- **Matrix Expansion** – Expanding Matrices across multiple cards creates a multitude of problems, not the least of which is its corresponding impact on bandwidth. The Giga-tronics^{ASCOR} GT-8400 Chassis for our 4000 series switching cards provides sixteen differential channel (32 Single Ended) 500MHz analog backplane. This analog backplane allows Matrices to be expanded along its backplane without adding bandwidth killing stub cables across the front of the switching cards. This chassis is LAN or GPIB controlled, and provides slots for up to 8 cards. In the case of our 4513 matrix card, each with an (8x8) 50MHz matrix on board, an (8x64) matrix can be provided in the 3U chassis. But these matrix cards provide much more than just an (8x8) matrix.

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As the diagram shows, there is an (8x8) shielded matrix on the card. Each row of the matrix is fed by a star switch configuration. This configuration allows several high bandwidth paths for entering the matrix, or for bypassing the matrix. One way this configuration has been used is to bring the DUT pin in on one pole of the star, a digital test resource on a second pole, and possibly an analog test resource on the third pole. In this way the DUT can be connected to either resource via this high bandwidth path, while still maintaining the flexibility to use the matrix to connect any of these three to any other DUT or test resource on another row or even another card. This design provides flexibility limited

only by the test engineer's imagination, and will provide many escape paths during test integration as test plans are refined and/or expanded. There are also de-coupling relays at the base of the columns to prevent the boards not using the analog backplane from loading down this high bandwidth path. In addition there are second set of decoupling relays to the front panel which can be used to connect the matrices across the front, or for other DUT or test resources.

- **Expertise in Custom Design** – Giga-tronics^{ASCOR} has a long history of designing the highest performance switching systems. In addition to the large variety of COTS products offered by Giga-tronics^{ASCOR}, we have frequently been called upon to develop custom switching solutions for some of the most prestigious companies in the test and measurement industry who are looking for the highest performance possible. Among our customers are companies like Agilent and Teradyne as well as nearly all of the top Mil-Aero companies. In some cases a design is as simple as combining several of our COTs products to form a complete switching system, and in other cases it can be as complex as designing a new switching system from scratch specifically around a customer's requirements. Giga-tronics^{ASCOR} would be pleased to assist you with any switching issues you might be facing.

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**“let’s build a smarter ATE
switch system”**



ask Jeff

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