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# L. GORDON PACKAGING

## L Gordon Packaging Says...

### **L. Gordon Packaging's Paper-Based IC Carriers Protect Chips Against Static, Protect The Environment Against Plastic Waste**

L. Gordon Packaging offers manufacturers a cost-effective and environmentally-friendly alternative to the traditional plastic carriers used to ship sensitive electronic components. Over 10 years ago, we designed and manufactured a series of folders made with dissipative corrugated board in response to a customer request to provide an alternative to plastic trays for shipping their RF/Microwave components. The resulting product line uses several types of fully-biodegradable paper-based ESD-protective boards to create carriers that protect leads and prevent part movement in transit. The company now offers low cost custom adaptations of folders for customer custom requirements.

L. Gordon Packaging employs simple design concepts that cut waste by eliminating the too often excessive over packaging of parts for shipment (or over-dependence on all purpose plastic trays to handle a range of different package styles). They provide appropriate ESD and physical protection for a wide range of other device package configurations. Their "lead shunts", made of several ESD safe board materials, and excel in protecting leads – both flat and formed.

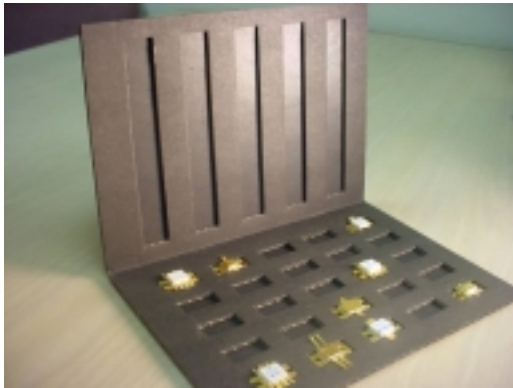
Leadless parts ship well in these folders in cavities because the package can be adjusted to fit the precise thickness of the parts. Custom adaptations of the basic lead shunts, shipping folders, and inserts for boxes, for even small runs, can be provided at modest tooling cost when using biodegradable materials.

## **analogZONE's Lee Goldberg Says...**

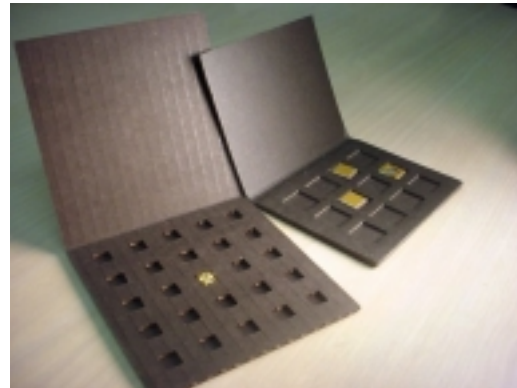
Marjorie Gordon, CEO of L Gordon Packaging, is passionate about packaging. Although most of us find the simple carriers we use to house our delicate ICs and sub assemblies to be about the least glamorous aspect of our trade, Ms. Gordon's enthusiasm for her products is infectious. After spending an hour with her discussing the Gordon Company's unique series of paper-based component carriers, one can not help being almost as excited as she is about these efficient, well-engineered products. Of course, her stories of the early days of the company when it transitioned from making boxes for Whitman's Chocolates, to high-tech IC carriers (see Sidebar, below) only adds to the cachet of her products.

But all frivolity aside, Gordon Packaging's products are an excellent example of how creativity and attention to detail are some of the key tools in successful green designs. While reducing the mass of plastic in the electronics waste stream may not be as glamorous as some other green electronic initiatives, increasing the use of renewable, biodegradable materials does have a positive environmental impact. And using them may also help manufacturers meet the increasingly stringent environmental requirements being imposed throughout Europe.

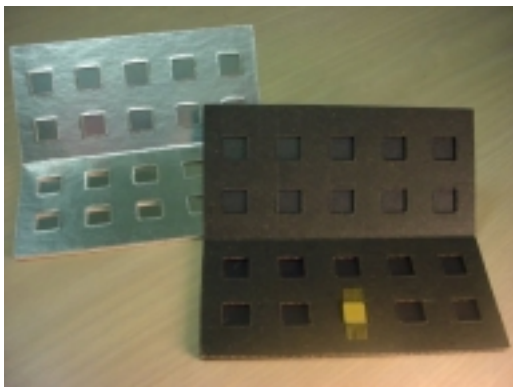
The packages I saw are deceptively simple, made out of several kinds of cardboard that's been precision die-cut and assembled to cradle and protect components from both mechanical and electrical damage. Ms. Gordon proudly showed me several examples of how her design team were able to adapt their basic chip carrier designs to secure both leaded (see Fig. 1) and leadless chips (see Fig. 2) while still making them easy to remove for use.



**Fig. 1: Product 449 Leaded Chip Carrier**



**Fig. 2: Product 9F Leadless Chip Carrier**



The Gordon Company's earlier products solve stringent ESD requirements by applying conductive foil on its cardboard surfaces. But while foil is still used in some applications (see Fig. 3) where the utmost in conductivity is required, most static control is now accomplished by an organic conductive coating that is specifically designed to be static-dissipative. Besides having extremely well-defined resistive characteristics specifically developed for static control, the coating does not interfere with most recycling processes.

**Fig. 3: Product MLS available with either foil or conductive coating ESD protection**

While not applicable for every application, this unique packaging concept should provide a cost-effective means of protecting many electronic products. And the flexibility of Gordon's manufacturing process will ensure that you get a solution that precisely fits your needs.

Prices for a typical dissipative corrugated board folder, PN 449, (8.250" x 5.875" folded size) provides shipment for 25 parts for cost of \$0.12 per part for 1000-piece lots. Smaller folders to hold 15 or 10 parts are made when parts dictate smaller configuration for best protection. Single packs are also available.

Prices for typical single lead shunts (2" x 2", or 2.5" x 3" folded size) average \$0.50 to \$0.90 for 1000-piece lots. Multiple lead shunts that hold 10 parts per folder average cost of \$0.12 per part in 1000-piece lots.

Lee's Saltshaker Rating = 1.0 Saltshakers

## **How We Got From Chocolates To Circuits**

*by Marjorie Gordon*

In 1978, L. Gordon Packaging was a 3<sup>rd</sup>-generation manufacturer of specialty packaging and set-up paper boxes, with the 2 lb Whitman Sampler candy box a major product. RCA in Somerville, NJ was also a customer for which we made a product promotional display. We were asked by an RCA engineer, in that year, to help them find an alternative to their current unsatisfactory use of conductive foam in a plastic box to ship flatpacs. In those days, the foam materials in the antistatic foam was sometimes interacting with the IC leads and affecting their solderability. Equally problematic, engineers found that storage between 2 foam pieces in a plastic box did not always keep the leads straight.

We solved the problem by laminating aluminum foil to cardboard, providing a conductive surface (a shunt) that would not affect leads adversely. We then created a folder out of that material that we called a "leadshunt." It provided the rigidity needed to protect the leads from being distorted and an ESD-safe surface. For years these folders were referred to as "match books." Old timers may remember them as such. We also created coordinated shipping boxes that provided a Faraday cage to give further value. (We are still doing all this and in other ESD materials.) When I wondered then, "Who else might be interested in this solution," I found a whole new world of electronics was interested. An engineer in the Navy (Mr Oishi) who was receiving parts from RCA shipped in our new "leadshunts," called to encourage me to attend a meeting in Denver where a new organization related to static control was being formed. I went and became a founding member of the EOS-ESD association, now the ESD association.

Over the years, many patient engineers were hired to teach me what static is and what is needed to protect parts and why. Joining professional and trade associations taught where our products and services were needed and introduced me to many aspects of the electronics industry. Attending trade shows was another challenging way to get to know that world. I began using other types of ESD boards (conductive chip, dissipative corrugated) to create more appropriate shipping units for new component configurations. A new dissipative corrugated plastic material was also bought and converted into products for use in clean room applications.

Adapting to changing technologies and specializing in custom solutions to new package configurations was our niche. When engineers say that our products are elegant, I know that my effort to create solutions that are simple and space and material saving is on target. L Gordon likes to be "green" and our customers approve. We do not sell a commodity: we sell innovative and appropriate ESD-protective shipping solutions with personal and responsive service.

Chocolates were made famous shipped in Whitman Sampler candy boxes that we used to make: now static-sensitive micro-circuits are kept safe, shipped in packages by L Gordon Packaging.

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*L Gordon Packaging is a certified woman-owned small business*