Increasing Equipment Availability Through High Voltage Surge Elimination
Who Is Electronic Polymers Inc.?

Electronic Polymers located near Austin Texas, Using 6,200 sq feet for Administrative, Research and Development, Manufacturing and Warehouse Operations.

An experienced company developing the next generation of surge elimination materials and national practice standards.

Expert evaluations using state of the art laboratory equipment.
ESD in this context is a high-voltage transient with fast rise time and fast decay time. Several thousand volts of ESD with a high rise time \((dv/dt)\) could break through the junction layer of protective devices easily and cause damage.
Value To Customers

“ESD losses can be as high a 10% of revenues with an estimated average negative impact of 6.5% of revenues.

Based on 1997-2001 production data. The international electronics industry is losing over $84 billion every year in ESD related product revenue overhead.

ESD control is the single most profitable opportunity for our industry in today’s economic conditions.”

Steve Halperin, President of the ESD Association, quoted in June, 2003 issue of Circuits Assembly magazine.
Moore’s Law simply states that the number of transistors on a chip doubles every 18 months.

Today we are at 90 nanometer Integrated Circuit line widths.

ESD protection is more critical then ever before.

ESD Article by IEEE Fellow
Steven H. Voldman
October 2002
Scientific American
Introducing EPI-FLO!

A high voltage surge shunt.
What is EPI - FLO

A passive polymer formulation laminated to copper foil.

- Low trigger voltage
- Low clamping voltage
- Sub Nano second trigger time
- Consistent trigger over multiple events
- Ultra low capacitance <200 Femto Farads
- Fabricated in surface mount components or array geometries
Electronic Polymers Test Equipment

TLP & ESD Gun automated with 8 Giga samples per second DSO and Lab View Software.

EPI - Transmission Line Pulser

Keytech Minizap Model MZ-15/EC
**Surge Tests and Standards**

**EPI – Flo performance verified using:**

IEC approved ESD gun for IEC 61000-4-2-X Measurements and Transmission Line Pulser (TLP)

<table>
<thead>
<tr>
<th>Transmission Line Pulser Method</th>
<th>Industry Specification Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulse Width</td>
<td>Source Impedance</td>
</tr>
<tr>
<td>40ns</td>
<td>50Ω</td>
</tr>
<tr>
<td>40ns</td>
<td>50Ω</td>
</tr>
<tr>
<td>40ns</td>
<td>50Ω</td>
</tr>
<tr>
<td>40ns</td>
<td>50Ω</td>
</tr>
<tr>
<td>40ns</td>
<td>50Ω</td>
</tr>
<tr>
<td>40ns</td>
<td>50Ω</td>
</tr>
</tbody>
</table>
Leading The Way

- Hailed by SiGe, GaAs and CMOS industry leaders for high frequency integrated circuit protection.
- 2004 ESD symposium with presentation on Device Characterization and System Level ESD Compliance.
- Providing test equipment for consistent surge excitation.
- Automated data collection documents failure cycles.
- Correlation between TLP practice and IEC standards.
- Low cost solutions in SMD components, Connector pin arrays and PCB laminations.
Integrated Circuit Designer says:
Input / Output pin shall withstand a 2000V Human Body Model (HMB) discharge and continue to operate.

Integrated Circuit Application Engineer says:
Keep Input / Output Voltage ≤ Supply Voltage VCC

OEM Product Design Engineer says:
Preserve electrical signal bandwidth, minimize shunt capacitance and reduce PCB real estate.

OEM Compliance Engineer says:
Product must pass IEC 61000-4-2-X an 8KV surge on any external electrical connection.
How To Protect Your Product

Surge energy will find the lowest potential in your product.

Shunt high voltage energy at every possible entry point.

Provide surge exit path with low potential near entry point.

Understand capacitors resistors and diodes offer slight integrated circuit protection.

Locate sensitive integrated circuits far away from a surge entry point and surge exit path.
Let Electronic Polymers help you develop a solution for protecting your product from over voltage surge events.

We fix surge problems on high speed signal I/O’s: 802.11 a/b/g RF switch, Bluetooth RF, Cellular RF, SATA, USB 2.0, Fire Wire, IEEE 1394, Flash card, MiniPCI, PCMCIA or 10/100/1000 TX interfaces.

We manufacturer array geometries for your connectors.

How Can We Help?
Call 512-583-8300
For Technical Support.