Increasing Equipment Availability Through High Voltage Surge Elimination

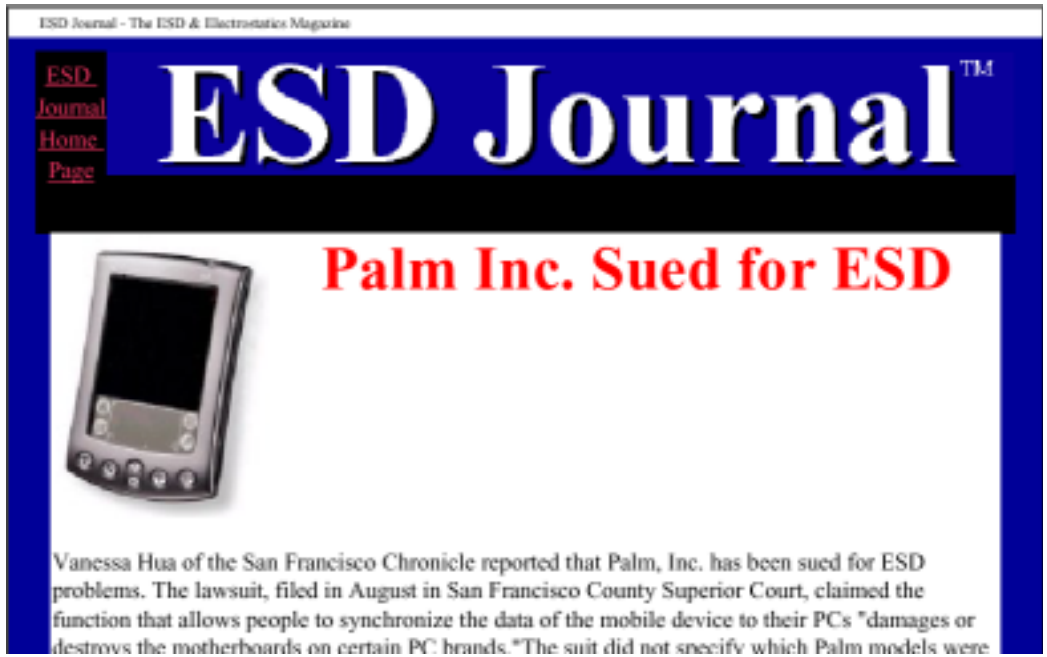
Who Is Electronic Polymers Inc. ?

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.

Cost Of Estimating Equipment Protection



ESD Journal - The ESD & Electrostatics Magazine

ESD Journal Home Page

ESD Journal™

Palm Inc. Sued for ESD

Vanessa Hua of the San Francisco Chronicle reported that Palm, Inc. has been sued for ESD problems. The lawsuit, filed in August in San Francisco County Superior Court, claimed the function that allows people to synchronize the data of the mobile device to their PCs "damages or destroys the motherboards on certain PC brands."The suit did not specify which Palm models were

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.

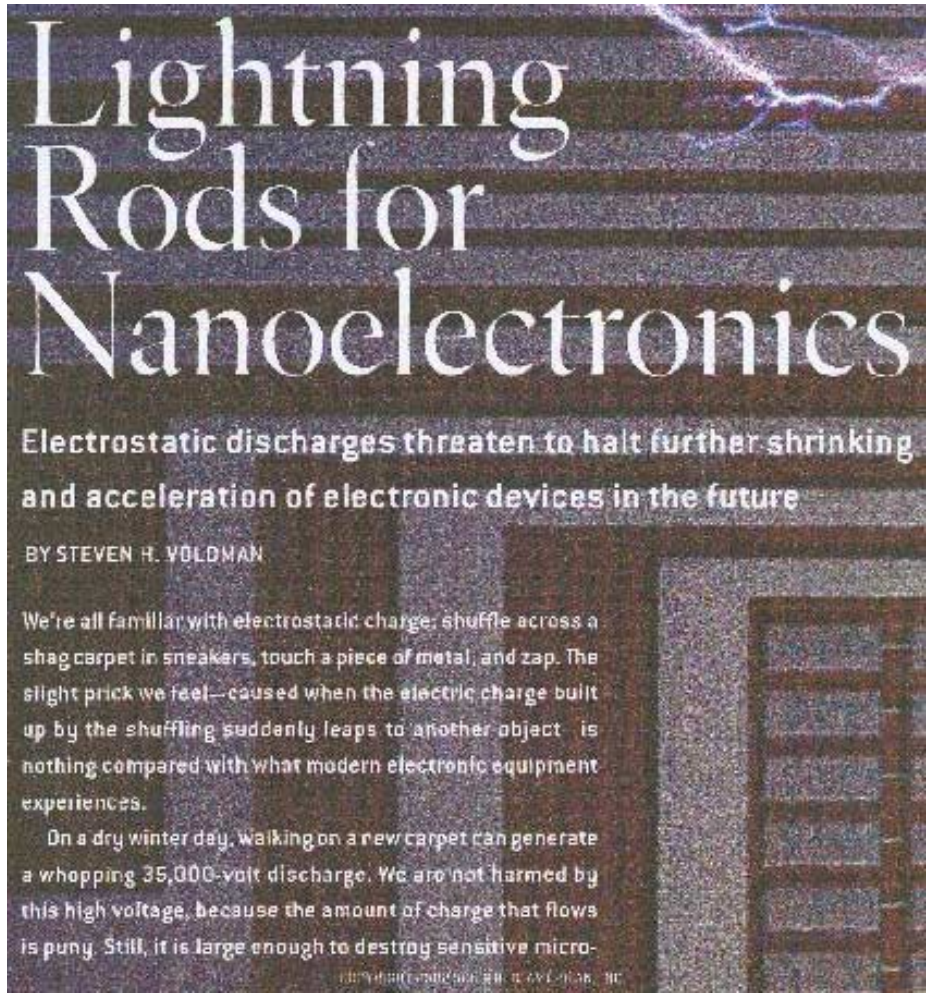
ESD Is Everywhere

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



Lightning Rods for Nanoelectronics

Electrostatic discharges threaten to halt further shrinking and acceleration of electronic devices in the future

BY STEVEN H. VOLDMAN

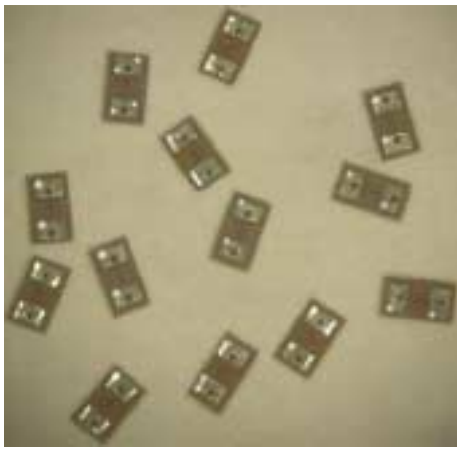
We're all familiar with electrostatic charge: shuffle across a shag carpet in sneakers, touch a piece of metal, and zap. The slight prick we feel—caused when the electric charge built up by the shuffling suddenly leaps to another object—is nothing compared with what modern electronic equipment experiences.

On a dry winter day, walking on a new carpet can generate a whopping 35,000-volt discharge. We are not harmed by this high voltage, because the amount of charge that flows is puny. Still, it is large enough to destroy sensitive micro-

Surge Protection Materials

Introducing EPI-FLO!

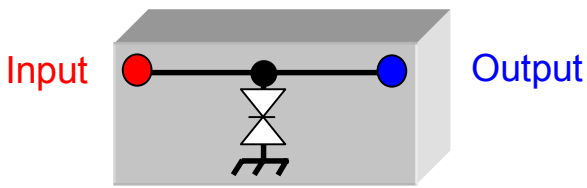
A high voltage surge shunt .

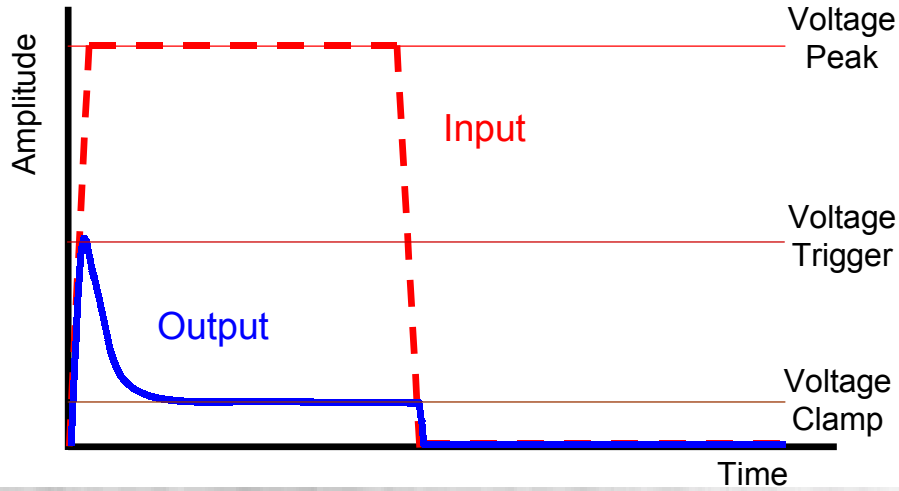


What is EPI - FLO

A passive polymer formulation laminated to copper foil.

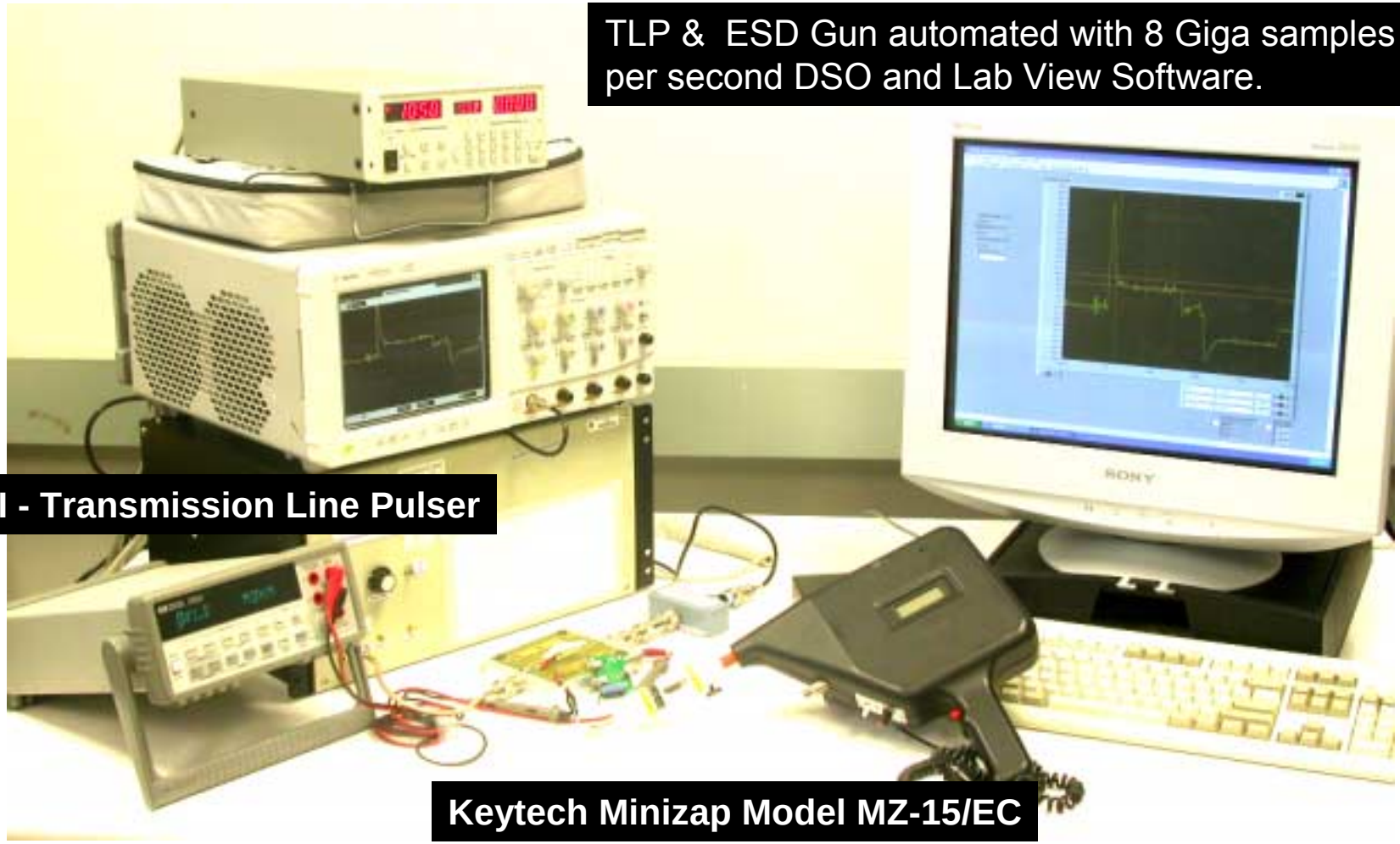
- Low trigger voltage
- Low clamping voltage
- Sub Nano second trigger time
- Consistent trigger over multiple events
- Ultra low capacitance <200 Femto Farads
- Fabricated in surface mount components or array geometries





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)

Transmission Line Pulser Method				Industry Specification Methods			
Pulse Width	**Source Impedance**	**V_{in}**	**I_{in}**	**Industry Specification**	**Source Impedance**	**V_{in}**	**I_{in}**
40ns	50Ω	150V	6A	HBM 4kV	1500Ω	4kV	2.7A
40ns	50Ω	250V	10A	HBM 8kV	1500Ω	8kV	5.3A
40ns	50Ω	300V	12A	IEC 61000-4-2-X	330Ω	4kV	12A
40ns	50Ω	500V	20A				
40ns	50Ω	600V	24A	IEC 61000-4-2-X	330Ω	8kV	24A
40ns	50Ω	1900V	76A	IEC 61000-4-2-X	330Ω	25kV	76A

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.**

Design At The System Level

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.

How Can We Help?

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.