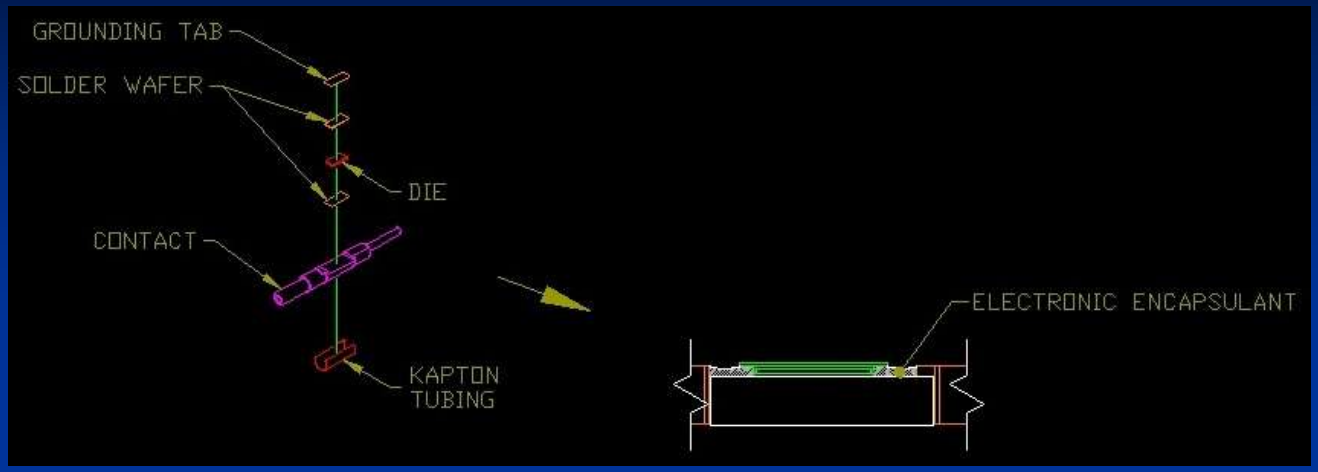
Filters, Connectors & Shielding

Presented by:

FilConn

May 30, 2013

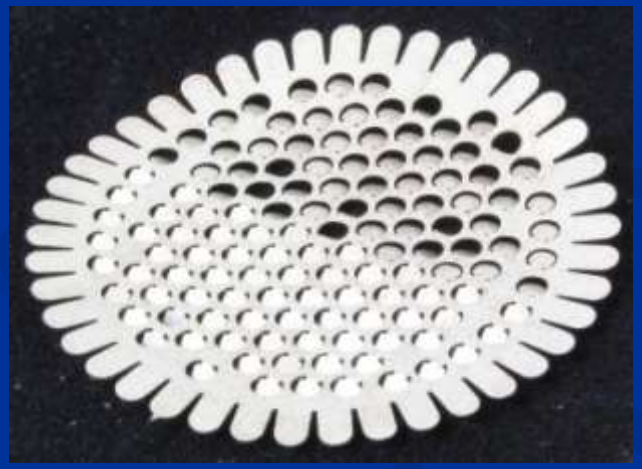


TVS DIE CONTACT LAYOUT

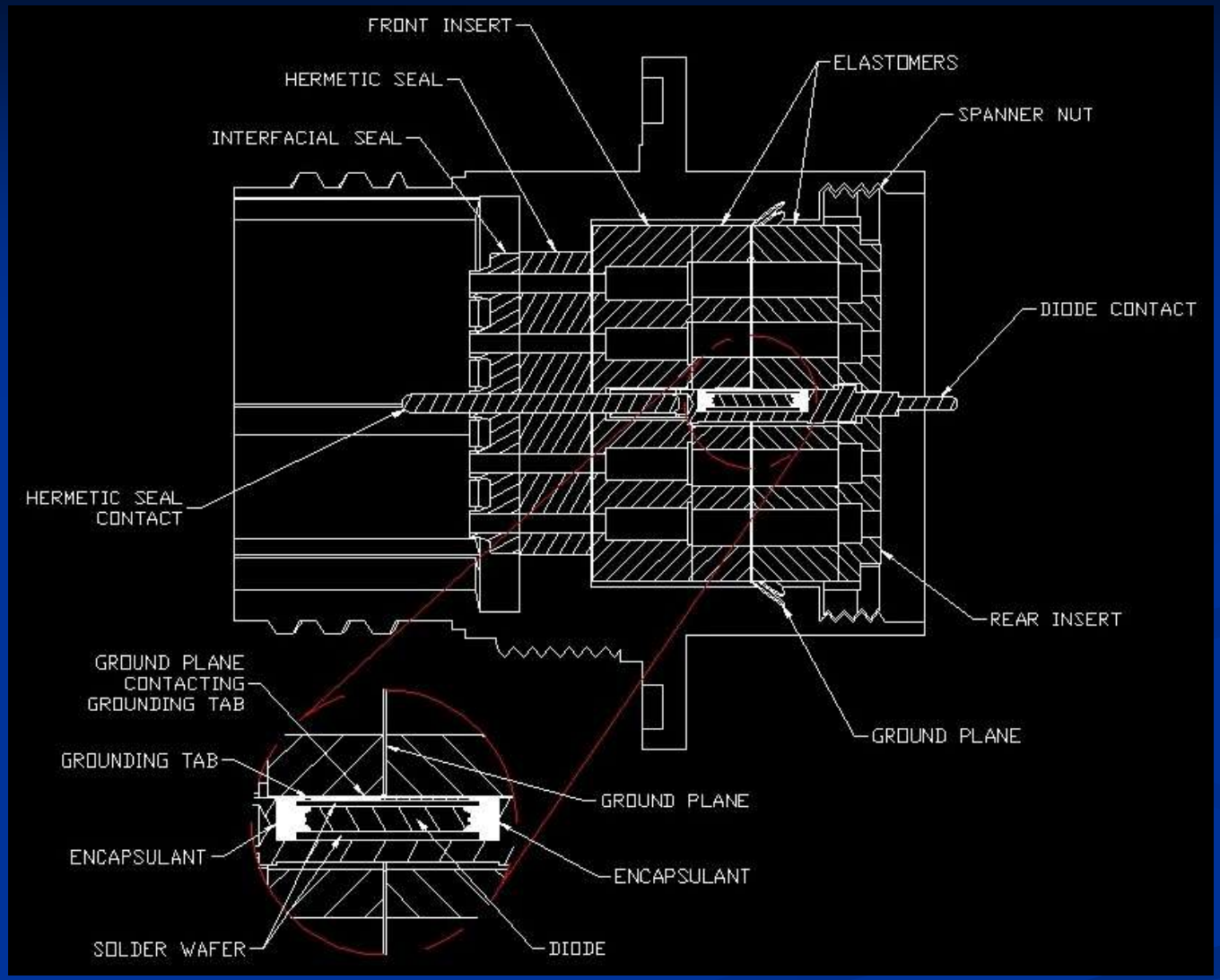
RAW CONTACT UNASSEMBLED

DIE CONTACT ASS'Y
WITHOUT ENCAPSULANT

DIE CONTACT ASS'Y
WITH ENCAPSULANT



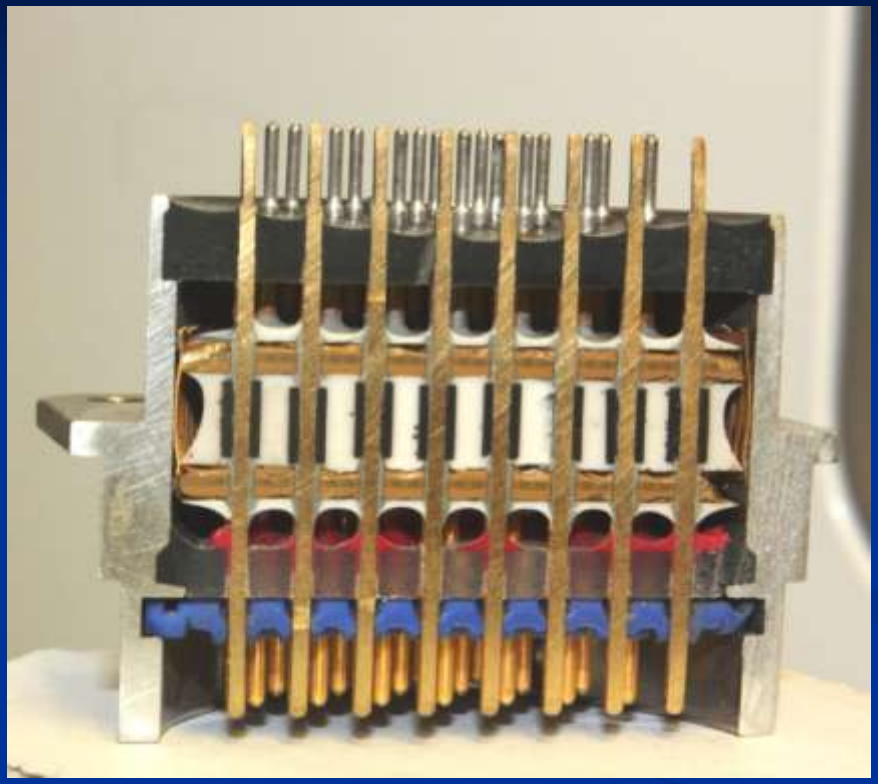
GROUND PLANE



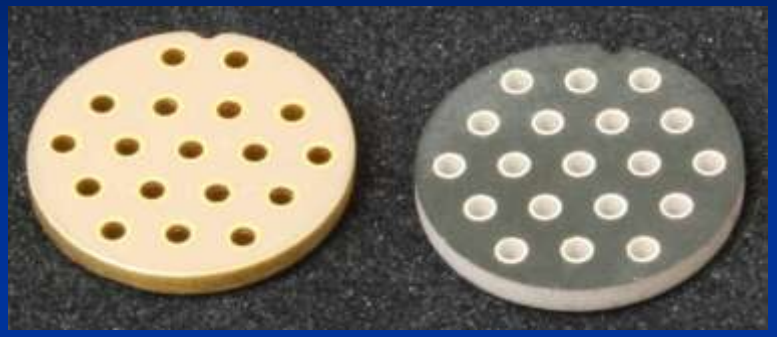
FULL ASSEMBLY CALL OUTS WITH DIE CONTACT IN HERMETIC CONNECTOR

PI-FILTER WITH ATTACHED
GROUND SPRING

L-FILTER WITHOUT
GROUND SPRING



PI-FILTERED SECTION VIEW CONNECTOR



PLANAR CAPACITOR AND
MOV PLANAR ARRAY

CONNECTOR WITH TAPPED
PCB MOUNTING HOLES

MOV Planar Arrays

Capability

The Planar array is a unitary block of ceramic containing Varistors or combination of different voltage Varistors, unfiltered feedthroughs and ground lines. Our capability extends from a simple two hole unit to a complex 155 way device. Individual line connection is made to each varistor through a terminated hole, whilst the ground connection is made to the device perimeter.

Mechanical specification

Drawing on Syfer's extensive background in manufacturing Capacitor Planar Arrays, a comprehensive range of planforms is available in MOV format, these include the following:-

- Circular (MIL-C-38999 and similar)
- ARINC 404 and 600
- "D" SUB (rectangular and trapezoidal)
- High Density "D" SUB
- Micro-D (MIL-C-83513)

Special custom shapes are also available upon request. Component thicknesses are produced from a minimum of 1.4mm (0.055") to a maximum of 3.18mm (0.125").

SYFER

Multilayer Varistor Planar Arrays

The MOV (Metal Oxide Varistor) Planar Array is an application specific component designed for use in multi-line EMI filter circuits typically found in filtered connectors.

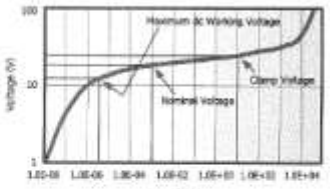
MOV Planar Arrays, when used in isolation or together with Syfer's Capacitor Planar Arrays, can provide a complete over-voltage transient protection and EMI filtering solution to connector manufacturers.

With the MOV Planar Array's inherent capacitance, it can be used as a simple C filter or as one half of a Pi or unbalanced Pi filter.

Planar array technology affords the user weight and volumetric efficiency compared to other transient protection or capacitor devices.

The crystal structure of a Varistor has no directionality, and therefore Varistors are bi-polar devices. With symmetrical, sharp voltage breakdown characteristics, they exhibit an electrical behaviour similar to back-to-back Zener diodes.

Varistor V-I Characteristics



Typical Varistor V-I Curve

Maximum continuous dc Working Voltage
This is the maximum continuous dc working voltage which may be applied up to the maximum operating temperature of the Varistor.

Nominal voltage
This is the voltage across the Varistor when allowing a dc current of 1 mA. It is this point that is notionally the start of the Region of Normal Varistor Operation.

Maximum Clamping Voltage
As a Varistor is designed for handling Transient Voltages, all tests requiring currents in excess of 1 mA are conducted as pulse tests.
The Clamping Voltage of a Varistor is the peak voltage appearing across the device when measured under the conditions of a specified pulse current and a specified waveform.

Operating Temperature Range:	-55°C to +125°C
Leakage Current:	5µAmps at +25°C 50µAmps at +125°C
Capacitance:	Measured at 1Vrms at 1kHz
Maximum DC working Voltage:	10 to 45 Vdc
Maximum AC working Voltage:	7 to 35 Vac
Nominal Voltage (VNom):	See table below
Maximum Clamping Voltage:	30 to 100 Vdc
Maximum Energy:	See table below, measured using 10/700µS waveform
Maximum Peak Current:	See table below, measured using 8/20µS waveform

Typical Varistor electrical characteristics below are based on a medium density (18-32) planform.

Max DC working voltage Vdc	Max AC working voltage Vrms	VNom Min Vdc	VNom Max Vdc	Maximum Clamping voltage Vdc	Leakage Current @ +25°C	Max Energy	Peak Current	Capacitance
10	7	13	18	30	5µAmps	1.5J	500Amps	5nF ± 10%
18	11	18	25	40	5µAmps	1.5J	500Amps	2nF ± 10%
26	18	30	40	60	5µAmps	1.5J	500Amps	1nF ± 10%
40	28	40	52	80	5µAmps	1.5J	500Amps	820pF ± 10%
45	35	50	68	100	5µAmps	1.5J	500Amps	470pF ± 10%

The above are typical and will vary depending on planform, hole size and unit thickness.

For other values please consult the Syfer Sales office.

Multiple voltage values are available within a single Planar Array. In addition unused or feedthrough, and/or grounded lines can be included with the same unit. Voltage levels outside the minimum and maximum quoted above are outside Syfer's current manufacturing capability.

Traditionally Peak Current has been quoted as a single pulse capability, whereas modern multilayer Varistors have been shown to be able to withstand multiple Peak Current pulses, up to 10,000, which makes these devices an excellent choice for transient protection.

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Integrated banding platform for EMI applications

IBP ADVANTAGES

- 1. one piece design provides direct termination to the shell of the connector providing the best possible grounding. DC resistance .5 milliohms or less
- 2. No backshell means no coupling nut issues as in coming loose or cross threading. No alignment issues

3. the one piece design makes installation and rework much easier with no backshell in the way

IBP ADVANTAGES

- 1. 60% lower overall profile than the traditionally connector and backshell configuration.
- 2. 40% weight savings over the traditional configuration
- 3. one part number reduces inventory and part count

EMI and STRAIN RELIEF

Low profile 90 eliminates chafing

90 DEGREE SOLUTION

QUESTIONS OR COMMENTS