The Capacitance Company

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ArcShield

Surface Mount Ceramic Solutions

Introduction

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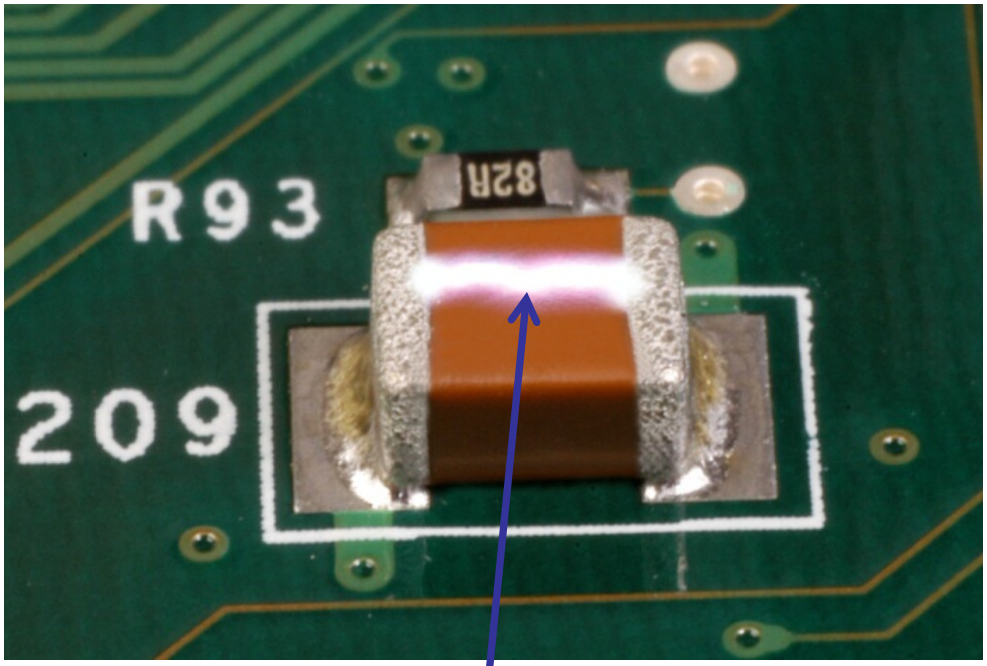
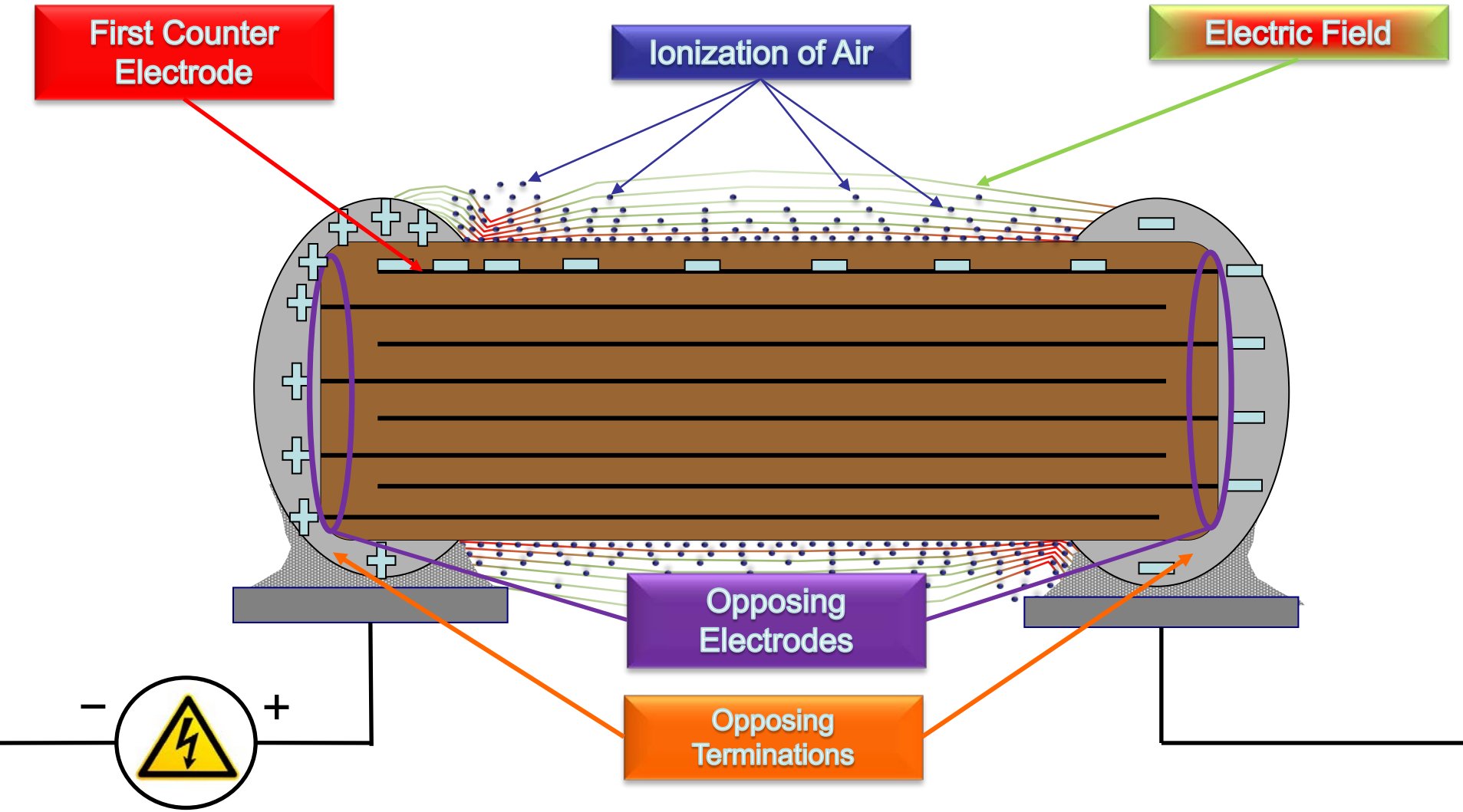
- **Purpose**
  - Introduce arc-over discharge protection technology for surface mount MLCCs
- **Objectives**
  - Discuss the phenomenon of surface arcing in High Voltage MLCCs
  - Discuss the benefits and issues associated with coating technology
  - Introduce and discuss KEMET ArcShield technology
- **Content**
  - 15 pages
- **Learning Time**
  - 20 minutes

What is MLCC Surface Arcing?

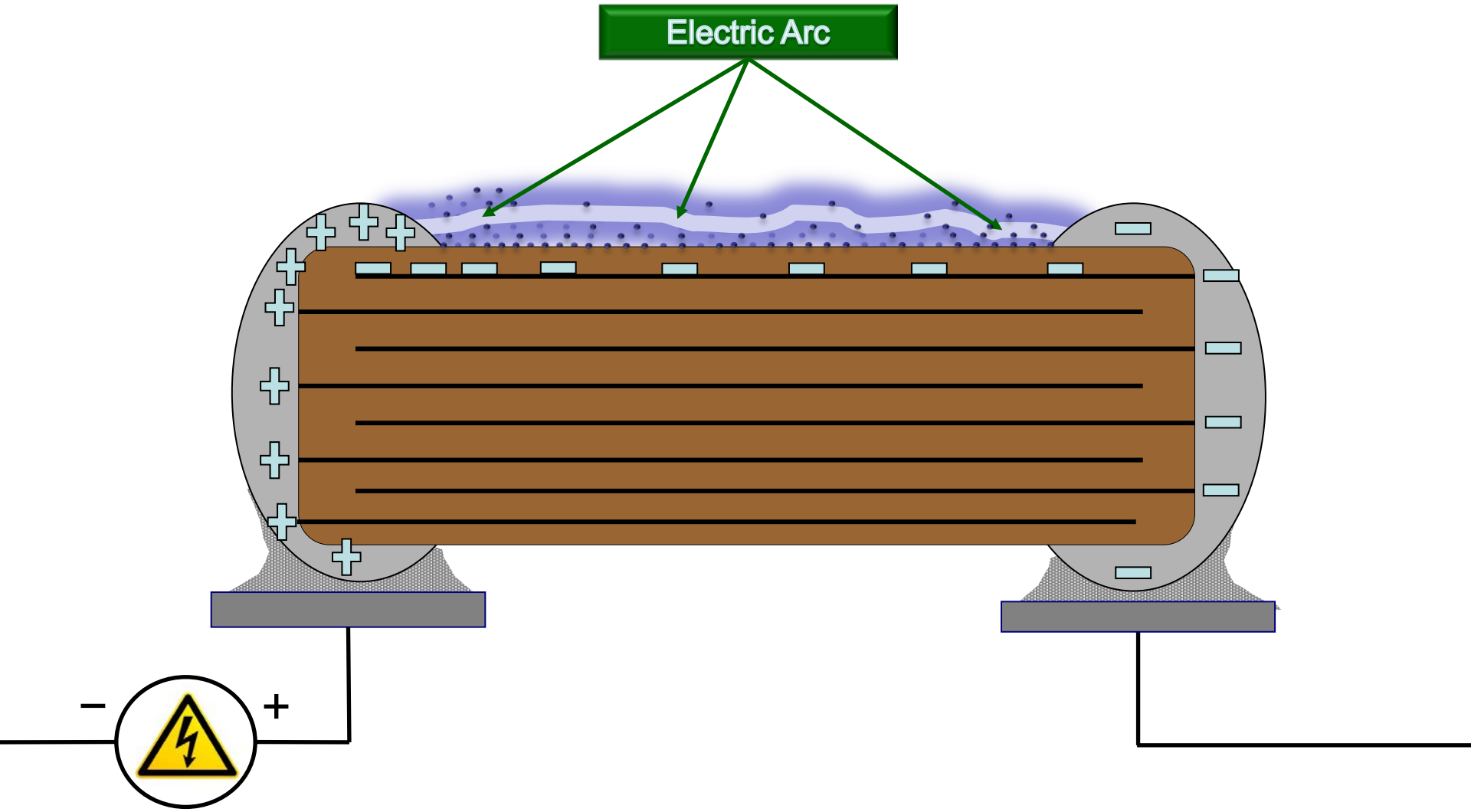


Surface arcing between termination surfaces on an MLCC. Also known as “arc-over discharge, “flash over” or “corona discharge”

The Phenomenon of Surface Arcing



The Phenomenon of Surface Arcing



Porous Dielectric Materials are more prone to surface arcing

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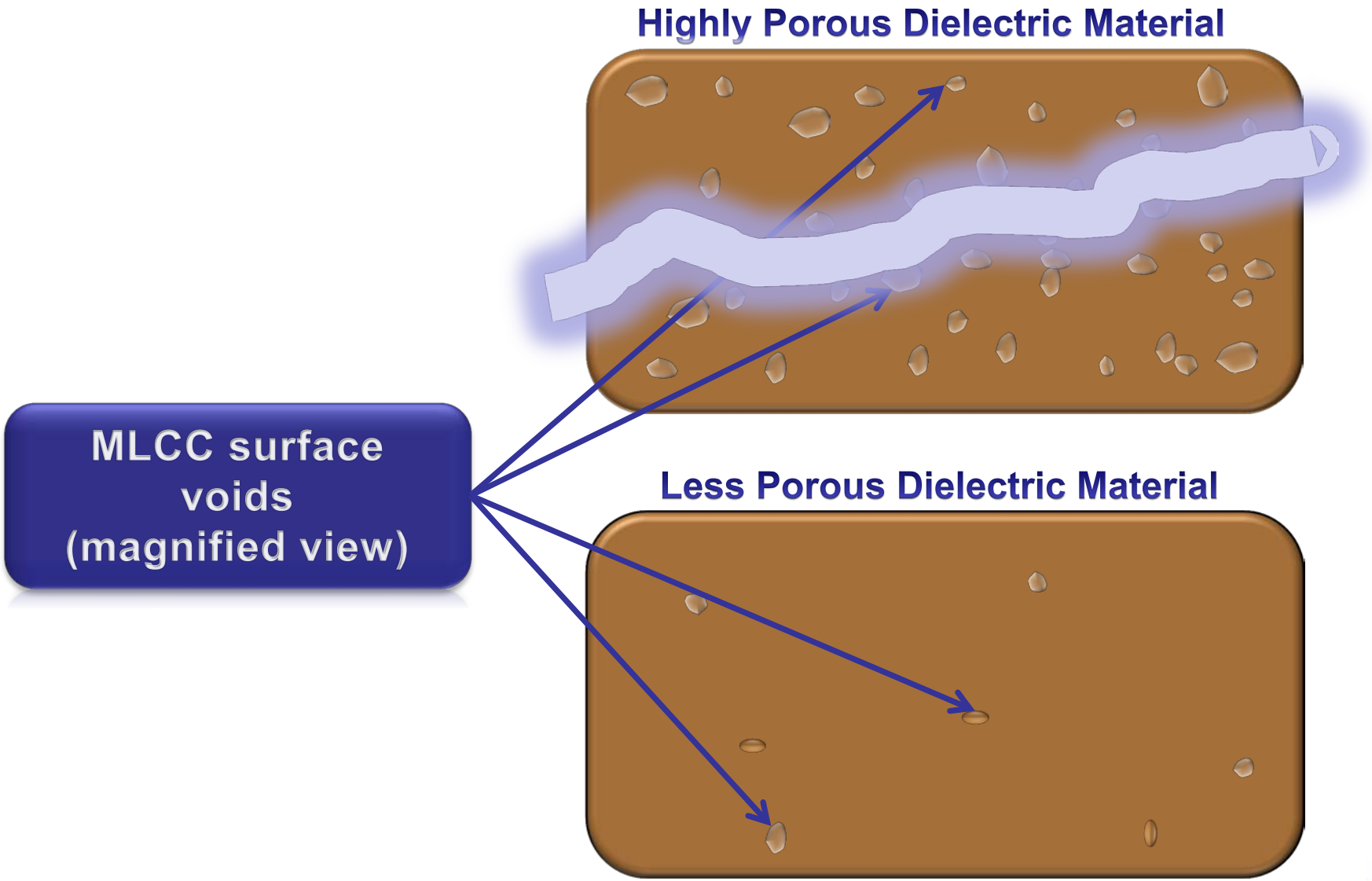
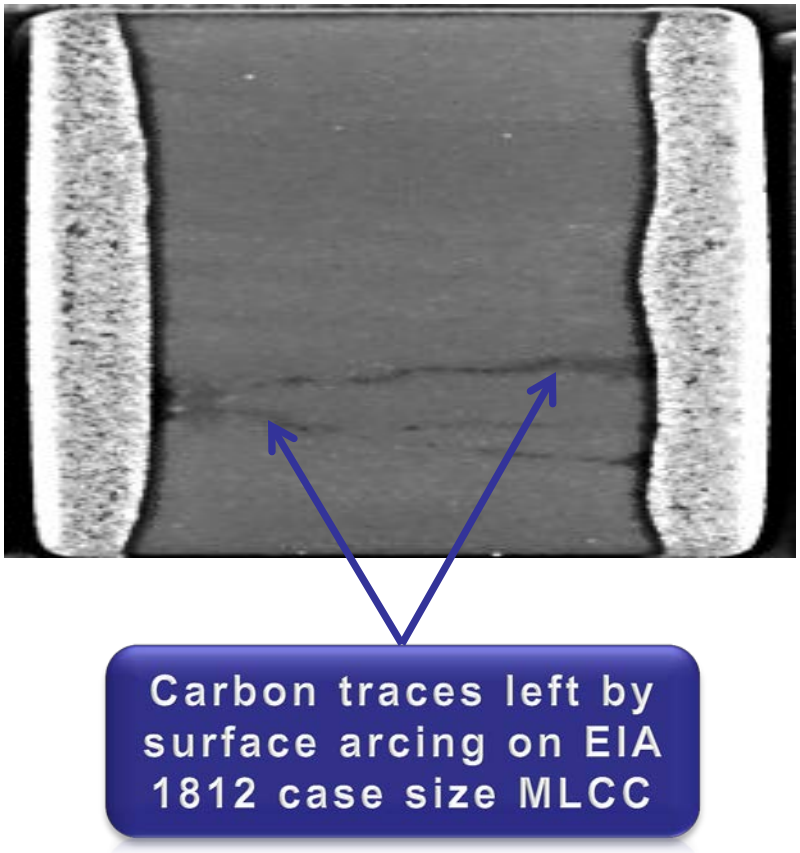
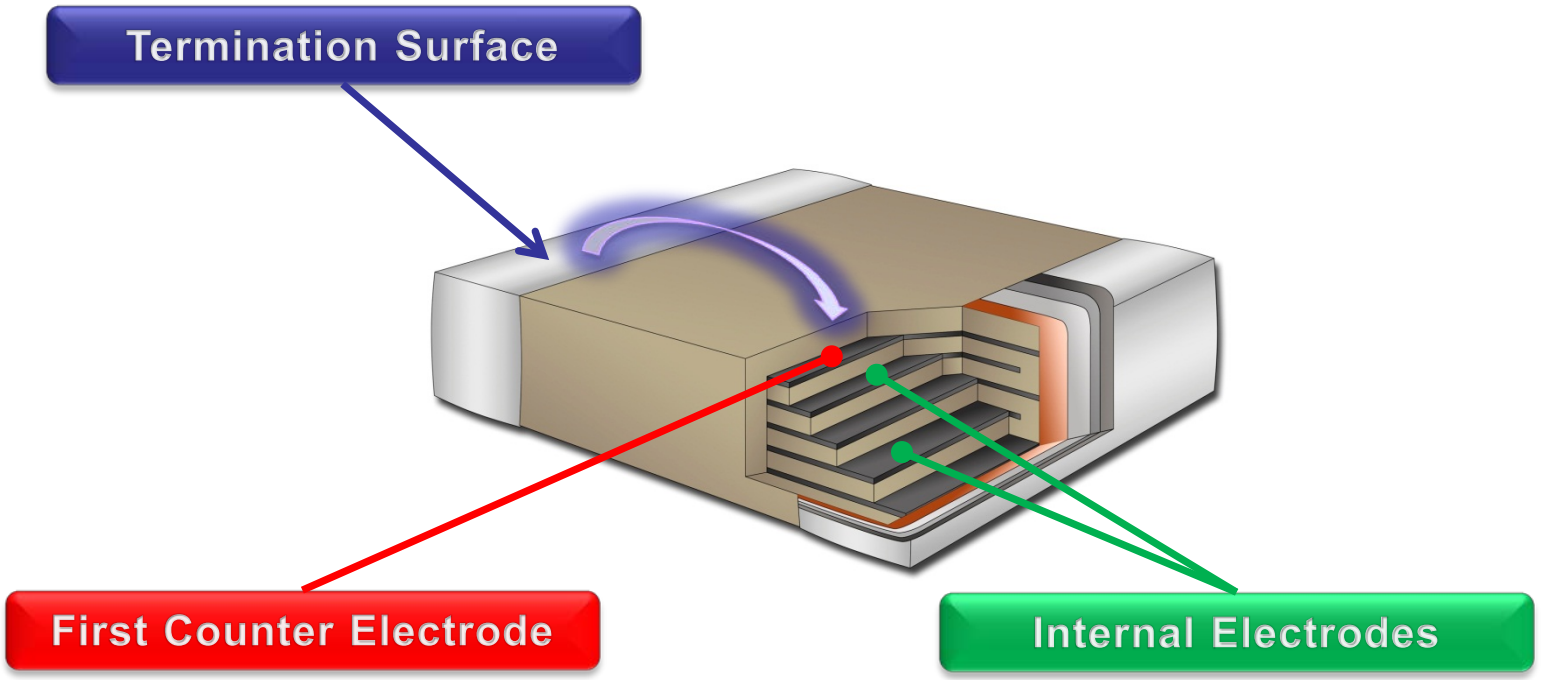


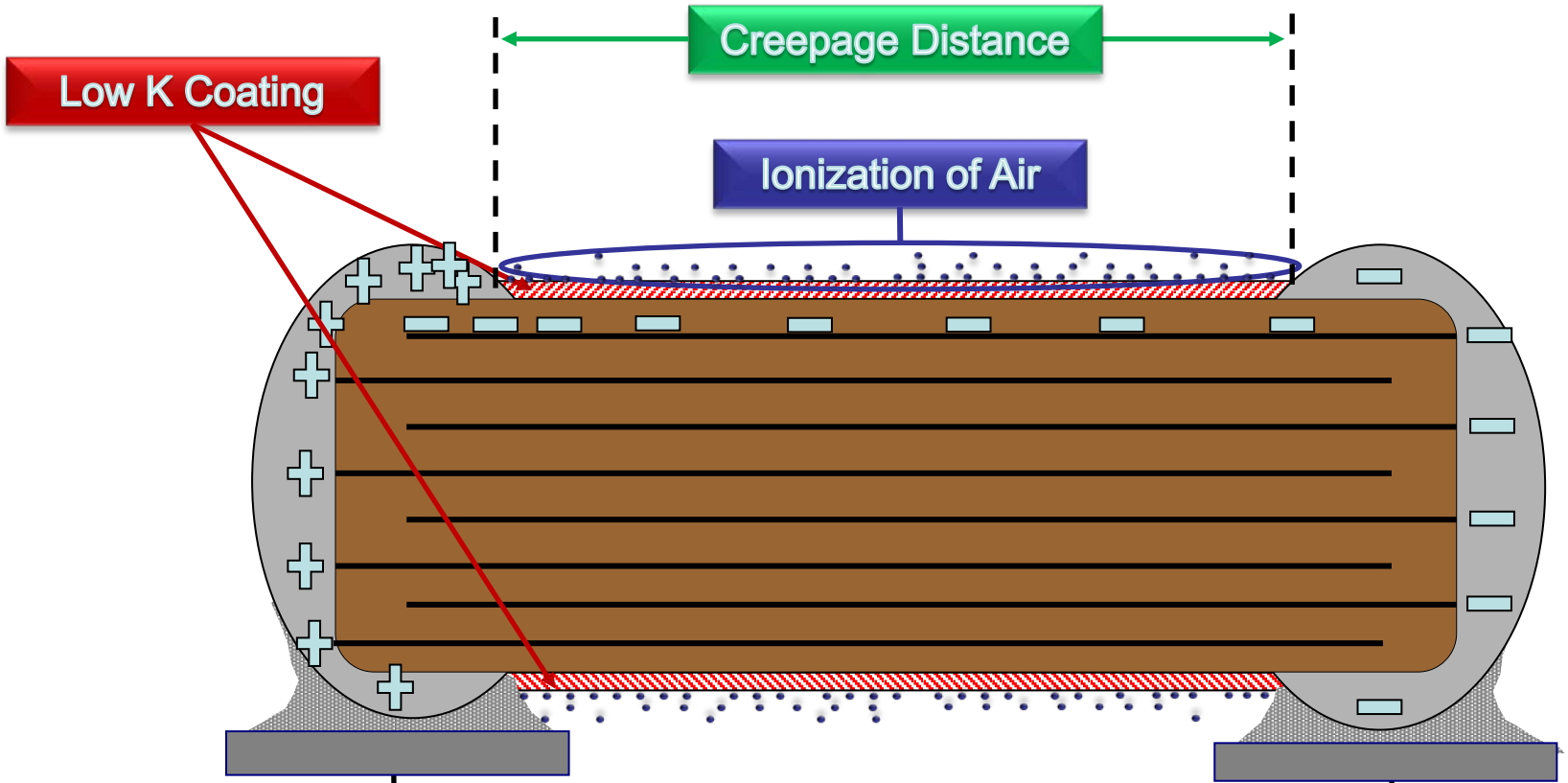
Surface Arcing Between MLCC Termination Surfaces.



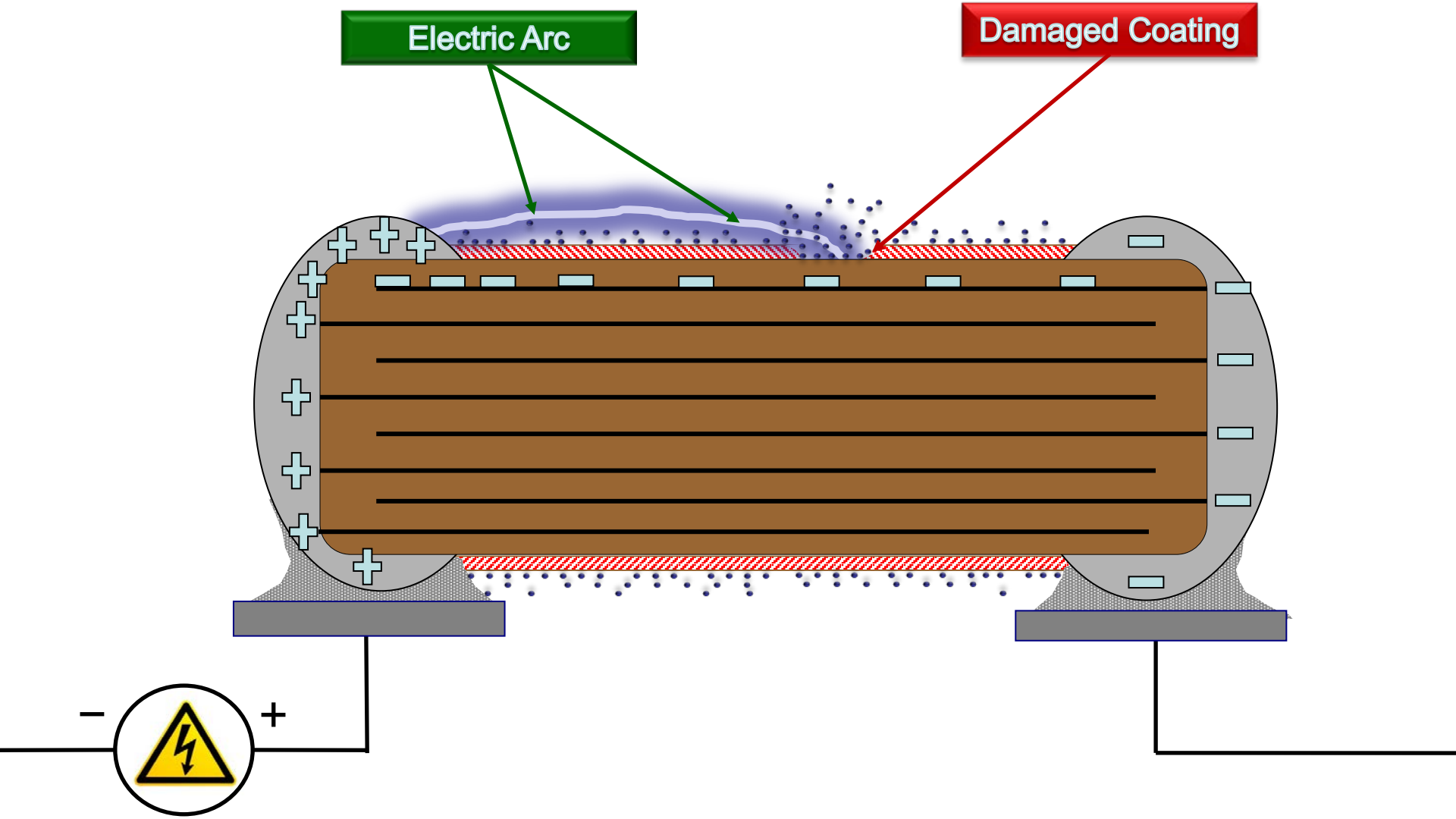
Surface Arcing Between an MLCC Termination Surface and the Internal Electrode Structure?



The Benefits of Coating Technology



Issues With Coating Technologies



KEMET ArcShield Technology

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Patent Pending Electrode Design
- Suppresses an arc-over event while increasing available capacitance

Permanent Protection!
- Competitive versions often use a non-permanent surface coating

BME X7R Dielectric

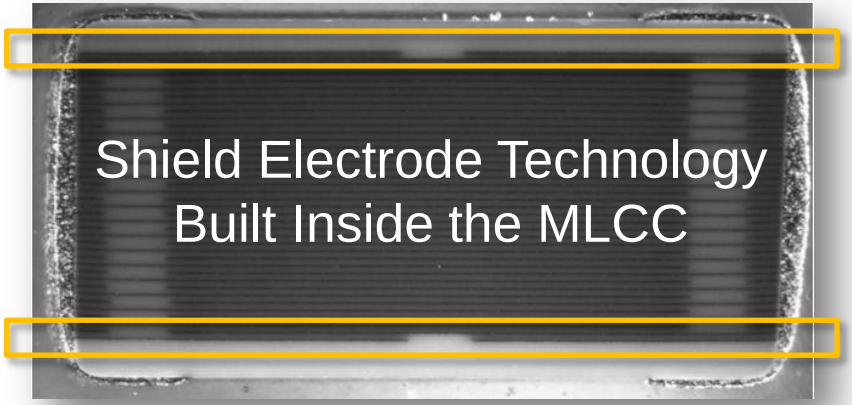
500, 630 and 1,000Vdc Ratings

0805 -1812 Case Sizes

Industry Leading Capacitance Values

Flexible Termination

Excellent Surge Voltage performance (especially smaller case sizes)



ARCSHIELD
CIRCUIT PROTECTION

KEMET ArcShield Technology

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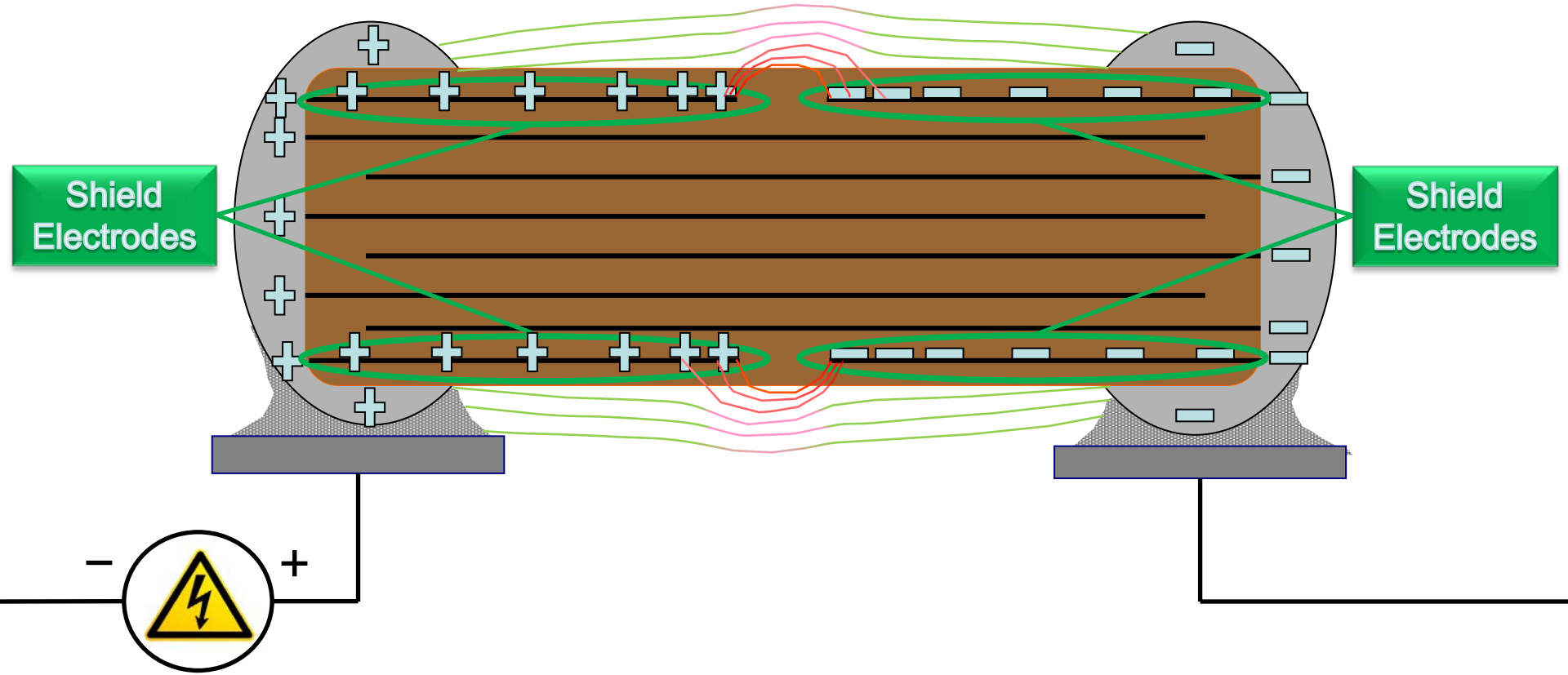

One world. One KEMET.

ArcShield Key Features and Benefits

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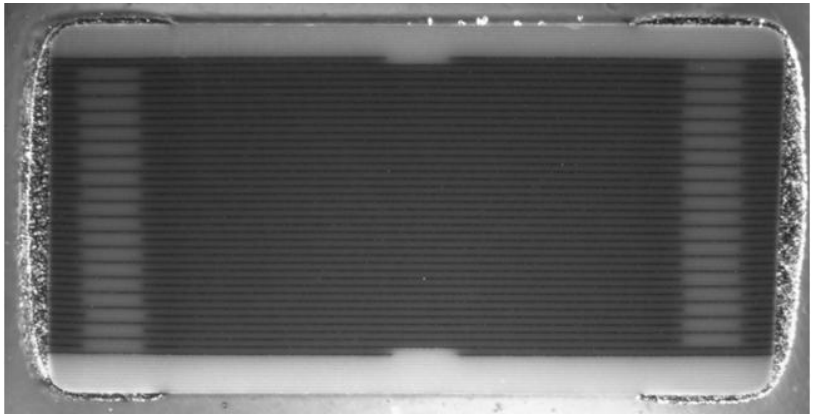

- Capacitance Values up to 0.33uF
- Smaller Footprint
- Higher Breakdown Voltage Capability
- No Degradation in Impedance/ESR
- Ideal for Snubbers, V Multipliers, and General Lighting Applications.
- Automotive Grade Available

ArcShield Ordering Information

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CIRCUIT PROTECTION

C	1812	V	334	K	C	R	A	C	TU
Ceramic	Case Size (L" x W")	Specification/ Series	Capacitance Code (pF)	Capacitance Tolerance	Voltage	Dielectric	Failure Rate/ Design	Termination Finish[1]	Packaging/Grade (C-Spec)[2]
	0805 1206 1210 1808 1812	V = ArcShield W = ArcShield w/Flexible Termination	2 Sig. Digits + Number of Zeros	J = ±5% K = ±10% M = ±20%	C = 500V B = 630V D = 1000V	R = X7R	A = N/A	C = 100% Matte Sn L = SnPb (5% min)	Blank = Bulk TU = 7" Reel Unmarked TM = 7" Reel Marked AUTO = Automotive Grade 7" Reel Unmarked

[1] *Additional termination finish options may be available. Contact KEMET for details.*

[1,2] *SnPb termination finish option is not available on automotive grade product.*

[2] *Additional reeling or packaging options may be available. Contact KEMET for details.*

Summary

- Permanent protection against arc-over discharge without the need of a protective coating.
- Eliminates need for material qualification and process validation associated with coating technologies.
- Eliminates the need for expensive post assembly coating of PCBs (Except when necessary to meet specific electrical safety standards)
- Higher breakdown voltage capability than similarly rated devices using coating technology.
- Downsizing and board space saving opportunities.
- Automotive Grade is available.

High Voltage Landing Page

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www.kemet.com/highvoltage

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