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VISHAY EVERY DAY

AMERICAS SALES CONFERENCE

# ESTA Power Capacitors Division

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March 9 – 12, 2026



The DNA of tech.®

# Introduction

Vishay ESTA Power Capacitor Division

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# ESTA History

- ESTA was established in 1950 as a subsidiary division of Roederstein
- Roederstein was acquired by Vishay in 1992
- → 75 years experience in power capacitors
- The power behind stable, efficient power systems



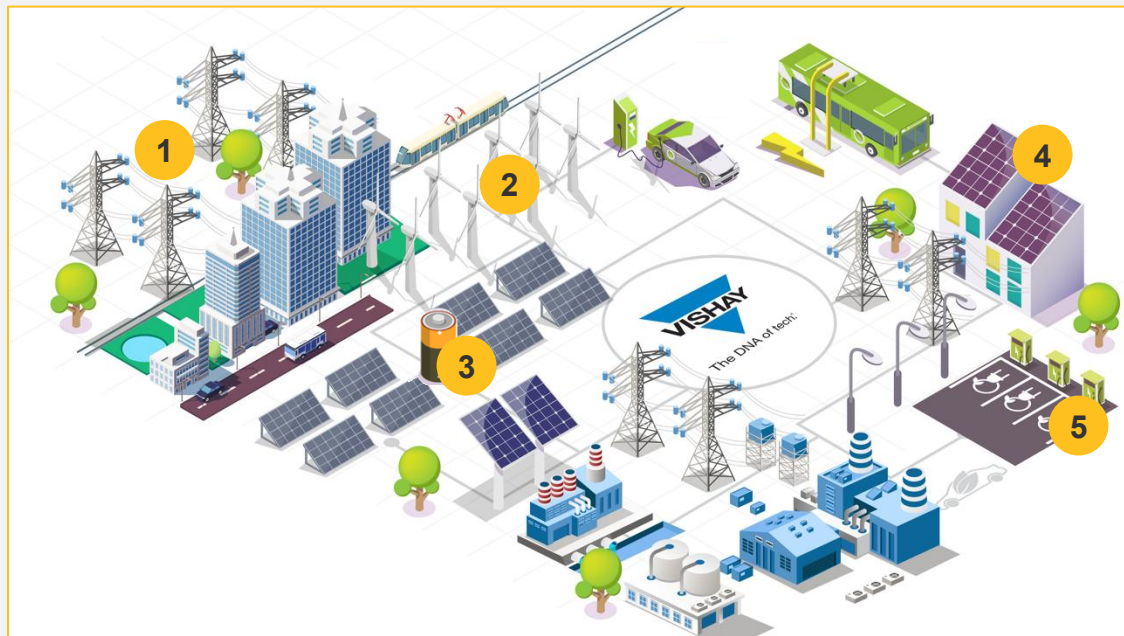
# ESTA Locations



-  Vishay ESTA Division Headquarters
-  Vishay ESTA Division MANUFACTURING

# Sustainability

## Key Power Applications



### 1 TRANSMISSION

**Capacitors:** high energy  
**Resistors:** high power

### 2 WIND POWER

**MOSFETs:** IGBT modules, HV MOSFETs  
**Diodes:** TVS, rectifiers  
**Capacitors:** power  
**Resistors:** MELF

### 3 ENERGY STORAGE

**MOSFETs**  
**Diodes & Rectifiers**  
**Capacitors:** ceramic DC-link, safety  
**Resistors:** Power Metal Strip®, NTC Thermistors

### 4 SOLAR ENERGY

**Micro Inverter**  
**MOSFETs**  
**Diodes:** rectifiers, TVS Optocouplers, SSR  
**Resistors:** MELF, chips Inductors

**Inverter**  
**Power modules**  
**Capacitors:** electrolytic, DC-Link filter, safety

### 5 CHARGING STATIONS

**MOSFETs:** HV Power modules  
**FRED & SiC**  
**Capacity:** Safety & snubber  
**Resistors:** Power Metal Strip®

# Portfolio Overview, Focus Products, Value Proposition

Vishay ESTA Power Capacitor Division

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# ESTA Product Lines

**PEC T**  
Power Electronic  
Capacitors Tubular



**PEC R**  
Power Electronic  
Capacitors Rectangular



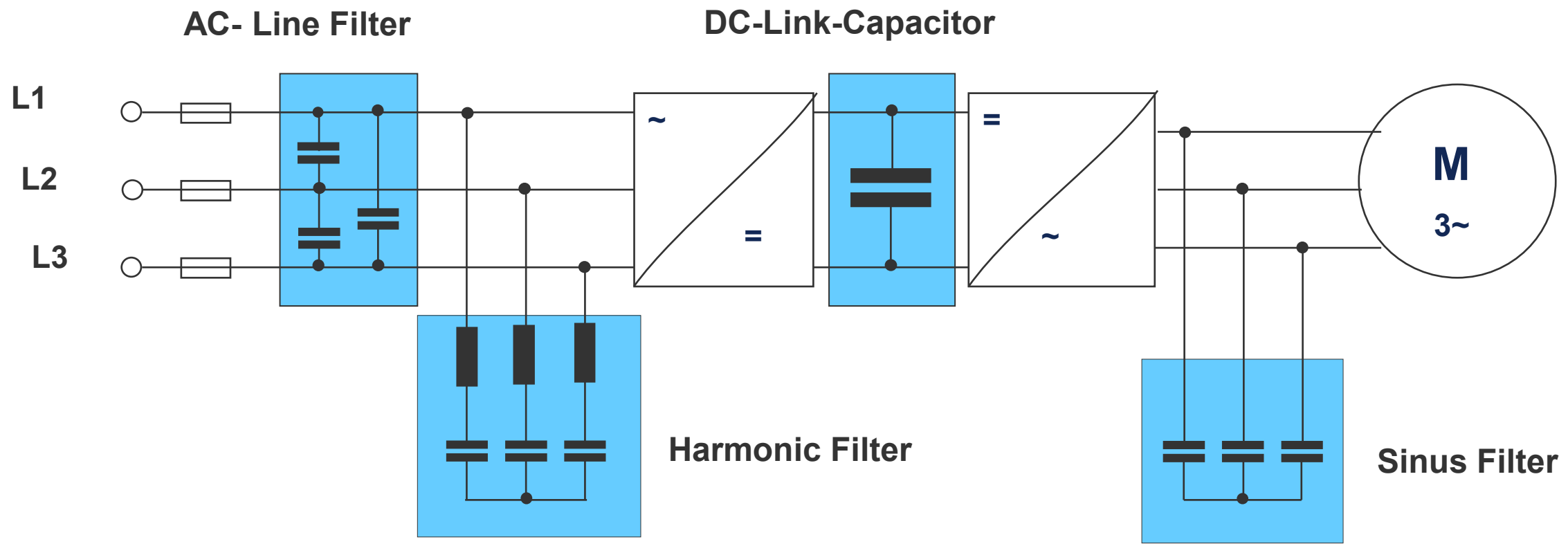
**LVAC**  
Low Voltage AC  
Capacitors



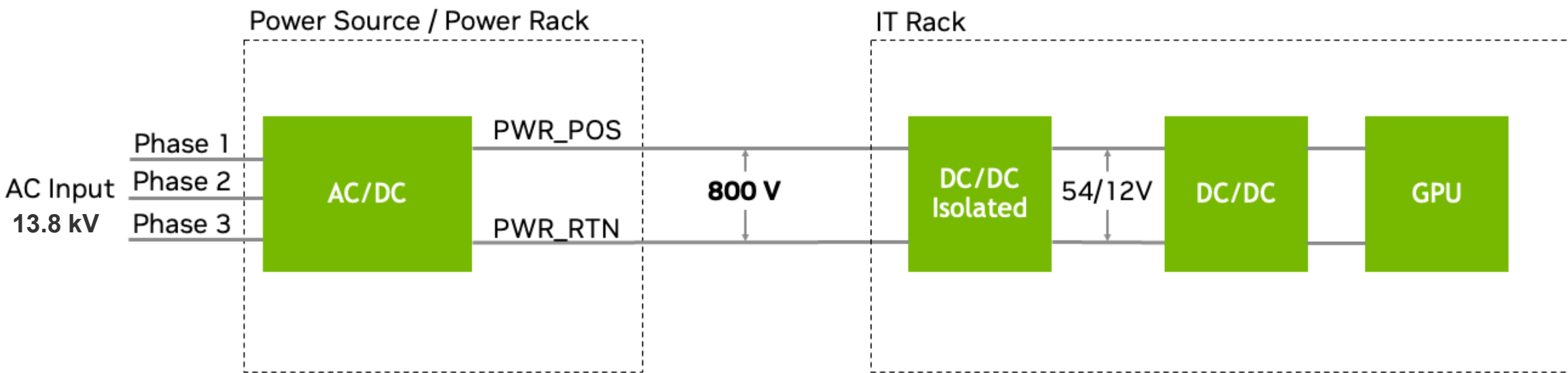
**HVAC**  
High Voltage AC  
Capacitors



# Focus Application - Industrial



# Focus Application - AI



- Supports 100 kW–1 MW racks with simpler, more reliable power delivery
- Up to 5% higher efficiency and 70% lower maintenance
- 45% less copper and lower cooling costs

# Focus Products

## DC Link

### HDMKP



### GLI



### LNK





# Value Proposition

## DC



## Where to hunt?

- DC Link in Converters, E-mobility (Chargers), Medical (X-Ray), Drives, UPS



## How to Engage Customer?

- New Series for SiC and GAN applications
- Long experience and lifetime



## How to Win? – Vishay's Advantage

- High Current, Low inductance, high impulse discharge capability
- Heavy duty shock and vibration resistant, high reliability, Non-China/TW

# Focus Products

## AC Filter

# ACMKP



# PhMKP



# PhMKPg





# Value Proposition

## AC



### Where to hunt?

- AC filtering – Converters, E-mobility (Chargers), Medical (X-Ray), Drives, UPS, Datacenters



### How to Engage Customer?

- Excellent harmonic filtering capabilities
- Flexible design options
- Comprehensive range from 230V to 1000V

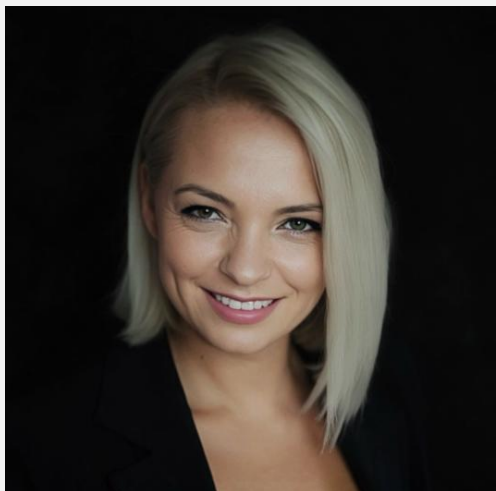


### How to Win? – Vishay's Advantage

- Safety:
  - Self healing
  - overpressure disconnecter
- ESTAspring maintenance free terminal

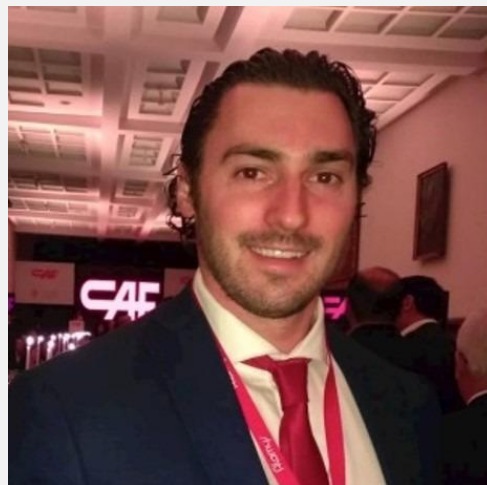
# Support in the US

## ESTA Division



**Suzana Jankuloska**  
Senior Manager Product Marketing  
ESTA Power Capacitor Division,  
Americas

[suzana.jankuloska@vishay.com](mailto:suzana.jankuloska@vishay.com)



**John Gallipeau**  
Senior Manager Product Marketing  
Film & ESTA Power Capacitor  
Division, Americas

[john.gallipeau@vishay.com](mailto:john.gallipeau@vishay.com)



**Rajeev Patil**  
Manager Application Engineering  
ESTA Power Capacitor Division,  
Americas

[rajeev.patil@vishay.com](mailto:rajeev.patil@vishay.com)



## Vishay ESTA Power Capacitors

- Optimized for performance. Trusted by engineers
- Engineered for stability. Proven in the field
- Powering reliability, market leader in power applications

# BUILT TO WIN

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*Together, we will  
shape the future of  
technology*



# Appendix

Vishay ESTA Power Capacitor Division

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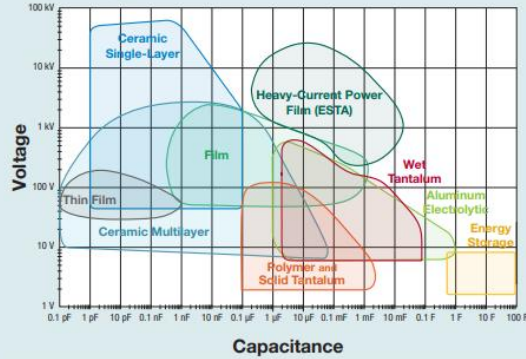
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# POWER ELECTRONIC CAPACITORS

## HIGH CURRENT, HIGH RELIABILITY

### VISHAY CAP MAP



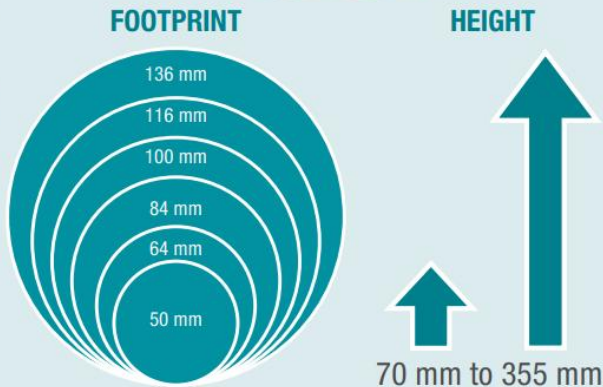
### STANDARDS

IEC 61071, IEC 61881-1

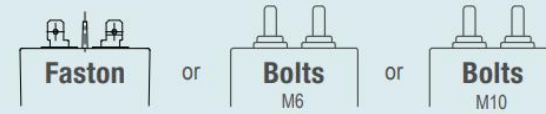
VOLTAGE AC	CAPACITANCE
<ul style="list-style-type: none"> <li>350 V - 1700 V</li> </ul>	<ul style="list-style-type: none"> <li>6.8 µF to 600 µF</li> </ul>
LIFE EXPECTANCY	FILLING AGENT
<ul style="list-style-type: none"> <li>&gt; 100 000 h</li> <li>&lt; 300 FIT</li> </ul>	<ul style="list-style-type: none"> <li>Biodegradable vegetable oil (non PCB)</li> </ul>

### FEATURES

- High reliability
- Cylindrical aluminum case
- Plastic self-extinguishing sealing cover
- Temperature class: -40 °C / +85 °C



### CONNECTION



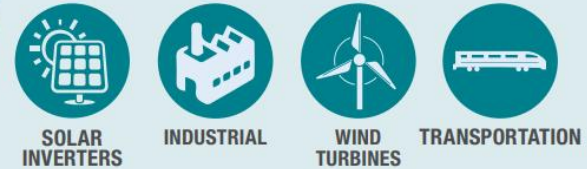
### SAFETY

- Self-healing film
- Overpressure disconnecter

### OPTIONS

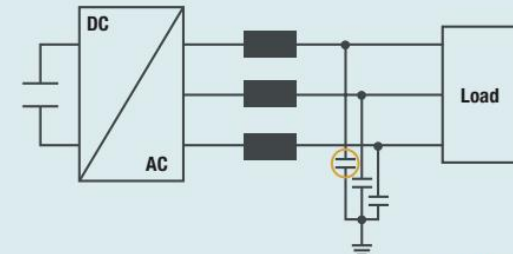


### APPLICATIONS



- Power electronic AC applications with high current and harmonics distortion with long life expectancy
- Inverter
- Filtering
- Switching

### FILTERING



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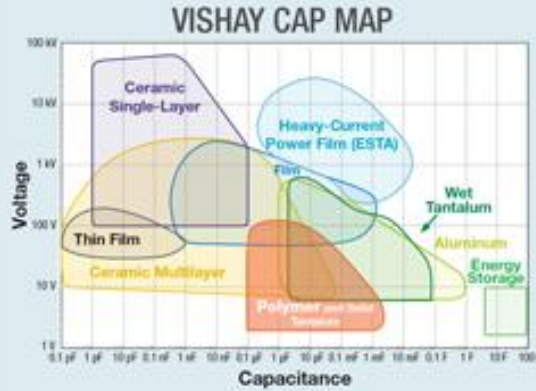
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# POWER ELECTRONIC CAPACITORS

## HIGH CURRENT, LOW INDUCTANCE

### IN A NUTSHELL



**STANDARDS**  
IEC 61071, IEC 61881-1

**RoHS**  
COMPLIANT

**VOLTAGE DC**

• 900 V to 2700 V

**CAPACITANCE**

• 40 µF to 2235 µF

**LIFE EXPECTANCY**

• > 100 000 h  
• < 100 FIT

**FILLING AGENT**

• ESTAdry resin  
• UL94 V-0

**FEATURES**

- High RMS current rating
- High impulse current rating
- High reliability and lifetime expectation
- Resistance to heavy-duty shock vibration
- Non-polar, low loss dielectric
- Temperature class: -40 °C / 70 °C

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**CONNECTION**



**SAFETY**

- Self-healing film

**OPTIONS**

CUSTOMIZABLE

**APPLICATIONS**



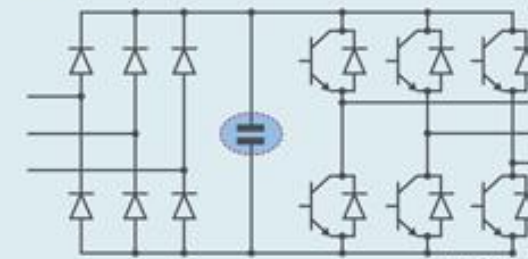
**WIND TURBINE**

- DC-Link and DC filters for industrial and traction converters
- DC-Link for low power drives
- DC-Link for wind turbine converters
- Impulse discharge capacitors for magnetizing and welding

**INDUSTRIAL**

- Replacement of aluminum electrolytic capacitors

**DC-LINK**



VMN-MS7366-1709

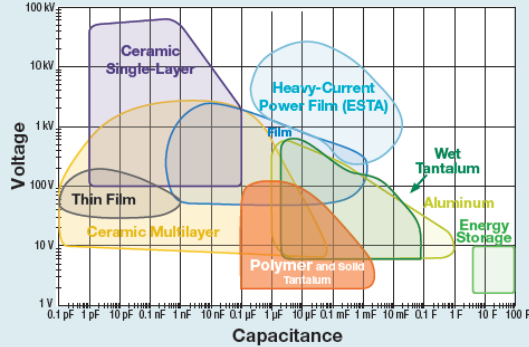




# POWER ELECTRONIC CAPACITORS

## HIGH CURRENT, HIGH RELIABILITY

VISHAY CAP MAP

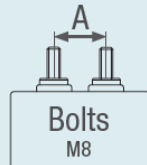


**STANDARDS**  
IEC 61071, IEC 61881-1

**RoHS**  
COMPLIANT

**CONNECTION**

Max. Torque  
6 Nm



$D \leq 84.4 \text{ mm}$   
 $D = 116 \text{ mm}$

$A = 32 \text{ mm}$   
 $A = 50 \text{ mm}$

**SAFETY**

- Self-healing film

**OPTIONS**



**FEATURES**

- High impulse current rating
- Low inductance
- High reliability and lifetime expectation
- Resistance to heavy-duty shock vibration
- Non-polar dielectric
- Temperature class: -40 °C / +70 °C

**VOLTAGE AC**

- 880 V to 2200 V

**CAPACITANCE**

- 30  $\mu\text{F}$  to 1000  $\mu\text{F}$

**LIFE EXPECTANCY**

- > 100 000 h
- < 200 FIT

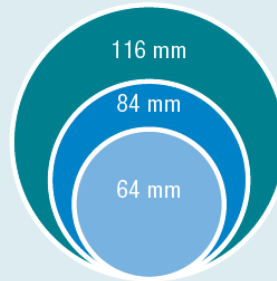
**FILLING AGENT**

- ESTAdry resin
- UL 94 V-0

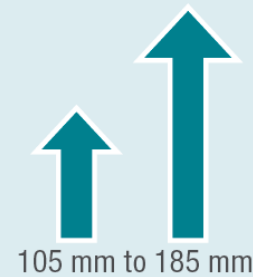
**APPLICATIONS**

- DC-link and DC filters for industrial and traction converters
- DC-link in low power drives
- Impulse discharge capacitors for magnetizing and welding

**FOOTPRINT**



**HEIGHT**



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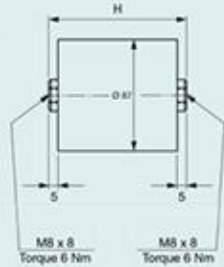
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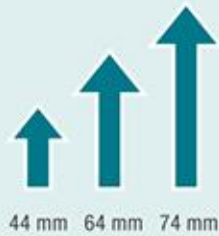
# POWER ELECTRONIC CAPACITORS

## HIGH CURRENT, VERY LOW INDUCTANCE

### FOOTPRINT



### HEIGHT



### FEATURES

- Very low inductance
- Extremely low losses at high frequencies
- Low serial resistance
- High current ratings
- High impulse discharge current capability
- Resistance to heavy duty shock and vibration
- High reliability and life expectation

### VOLTAGE DC

- 700 V to 2150 V or customizable

### CAPACITANCE

- 11  $\mu$ F to 230  $\mu$ F

### LIFE EXPECTANCY

- > 100 000 h
- < 300 FIT

### FILLING AGENT

- ESTAdry resin
- UL 94 V-0

### STANDARDS

IEC 61071, IEC 61881-1

**RoHS**  
COMPLIANT

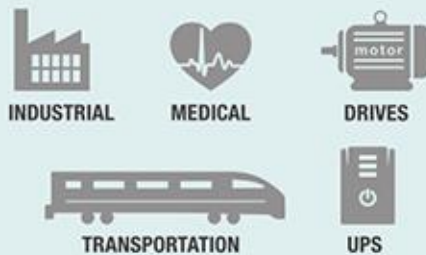
### CONNECTION



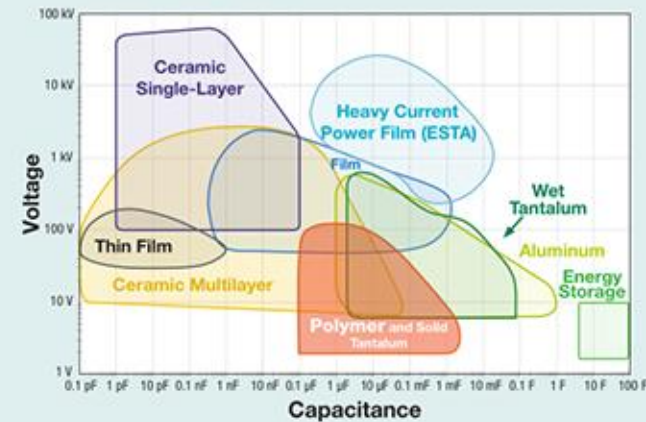
### SAFETY

- Self-healing film

### APPLICATIONS



### VISHAY CAP MAP

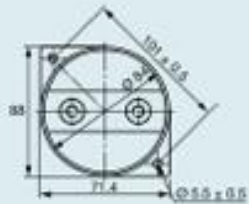




# POWER ELECTRONIC CAPACITORS

## HIGH CURRENT, VERY LOW INDUCTANCE

### FOOTPRINT



### HEIGHT



### FEATURES

- Very low inductance
- Extremely low losses at high frequencies
- Low serial resistance
- High current ratings
- High impulse discharge current capability
- Resistance to heavy-duty shock vibration
- High reliability and life expectation
- Integrated flanges for easy mounting

### VOLTAGE DC

- 700 V to 2150 V or customizable

### CAPACITANCE

- 15  $\mu$ F to 230  $\mu$ F

### LIFE EXPECTANCY

- > 100 000 h
- < 300 FIT

### FILLING AGENT

- ESTAdry resin
- UL 94 V-0

### STANDARDS

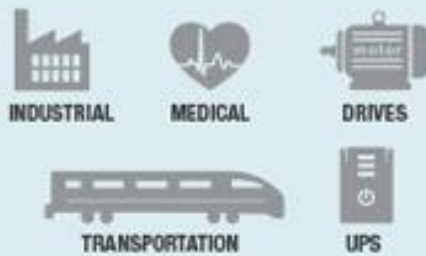
IEC 61071, IEC 61881-1



### CONNECTION



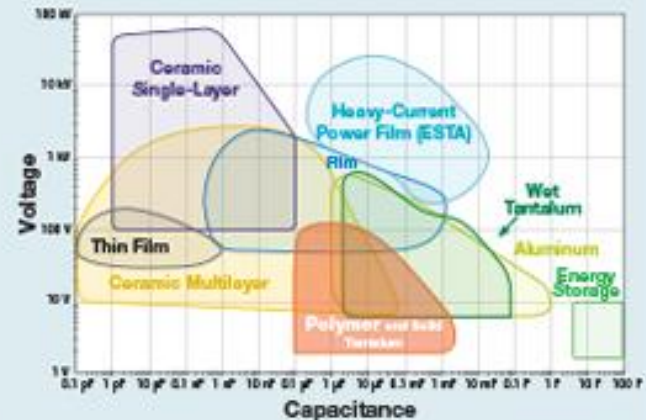
### APPLICATIONS



### SAFETY

- Self-healing film

### VISHAY CAP MAP

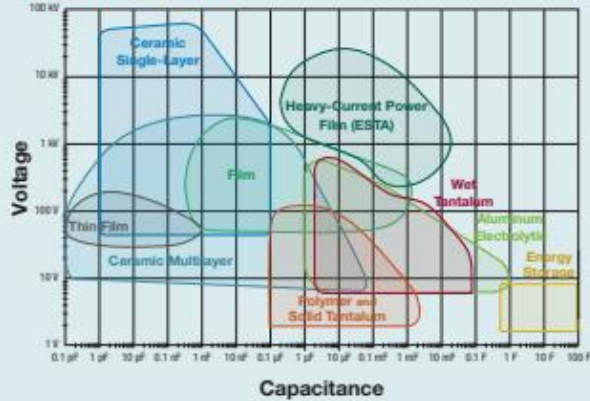


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IC14190041-1011

### VISHAY CAP MAP



### STANDARDS

IEC 61071, IEC 61881-1



<b>VOLTAGE DC</b> <ul style="list-style-type: none"> <li>450 V<sub>DC</sub> to 3800 V<sub>DC</sub></li> </ul>		<b>CAPACITANCE</b> <ul style="list-style-type: none"> <li>110 µF to 8000 µF</li> </ul>	
<b>LIFE EXPECTANCY</b> <ul style="list-style-type: none"> <li>&lt; 200 FIT</li> <li>&gt; 100 kh at U<sub>NDC</sub> / 70 °C T<sub>hotspot</sub></li> </ul>		<b>FILLING AGENT</b> <ul style="list-style-type: none"> <li>ESTAdry resin</li> </ul>	
<b>CASE MATERIAL</b> <ul style="list-style-type: none"> <li>Plastic casing</li> <li>UL 94 V-0</li> </ul>			



### FEATURES

- High impulse current rating
- Low inductance
- High reliability and lifetime expectation
- Resistance to heavy duty shock vibration
- Non-polar dielectric
- Dry resin filled
- Made for busbar connections
- Weight-reducing, flame-retardant plastic case



INDUSTRIAL



WIND TURBINES



TRANSPORTATION

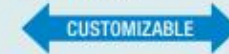
### APPLICATIONS

- DC-Link capacitors
- Static converters for transportation:
  - Heavy haul locomotives
  - Light local trains
  - Trolley buses
  - Trams / streetcars
- Industrial converters
- DC supply equipment
- High voltage testing systems
- Impulse discharge energy
- Harmonic filtering

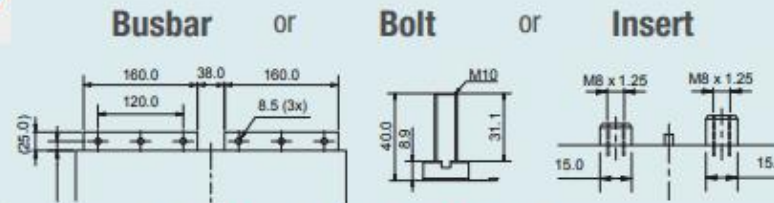
### SAFETY

- Self-healing film
- Segmented film

### OPTIONS



### CONNECTION

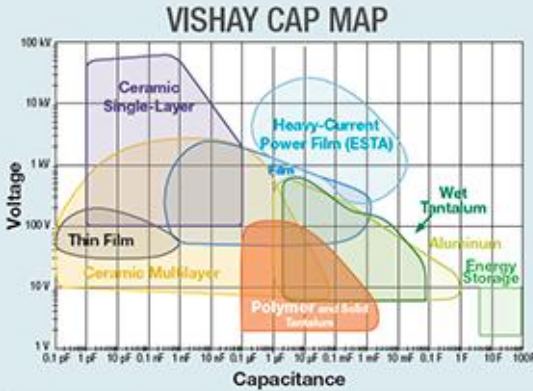


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# POWER ELECTRONIC CAPACITORS

## HIGH CURRENT, HEAVY DUTY

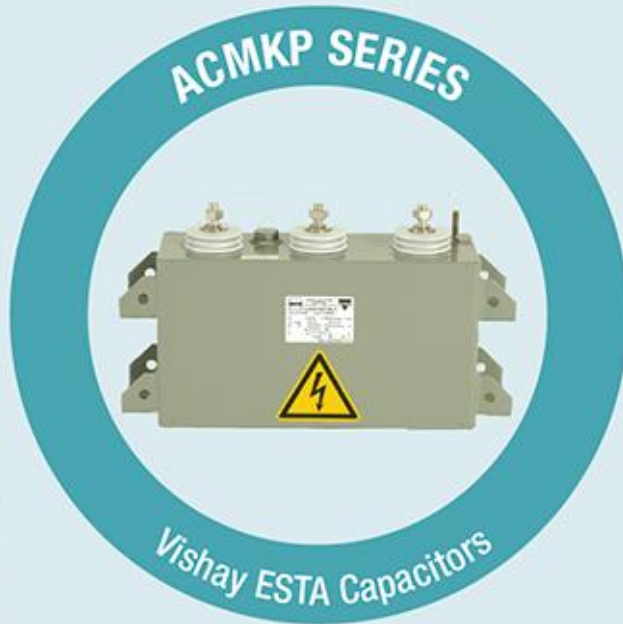


STANDARDS  
IEC 61071, IEC 61881-1



<b>VOLTAGE AC</b>	<b>CAPACITANCE</b>
• 210 V <sub>AC</sub> to 3300 V <sub>AC</sub>	• 30 µF to 15 mF
<b>LIFE EXPECTANCY</b>	<b>FILLING AGENT</b>
• < 100 FIT • > 250 kh at U <sub>N</sub> / < 70 °C	• ESTAdry dry resin
<b>CASE MATERIAL</b>	<b>FINISH</b>
• Stainless steel (1.4301) • Aluminum	• Painted • Unpainted

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### FEATURES

- Self-healing technology
- Robust design
- High current ratings
- Vibration- and shock-resistant
- Dry filling and specific internal wiring
- Optional safety system (pressure relief valve or pressure switch)
- Flexible dimensions

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### CONNECTION



### SAFETY

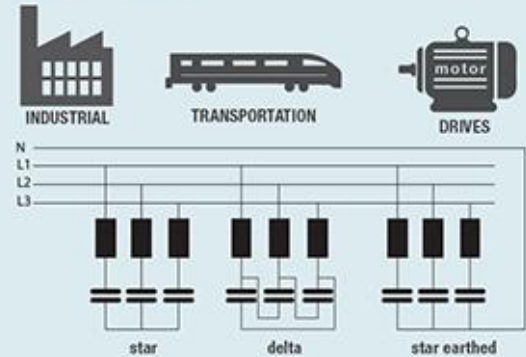
- Self-healing film
- Pressure valve
- Pressure switch

### OPTIONS



### APPLICATIONS

- ACMKP rectangular capacitors for traction and industrial applications
- The AC capacitor is working as a filter within a 2-phase or 3-phase system either in a delta or star connection



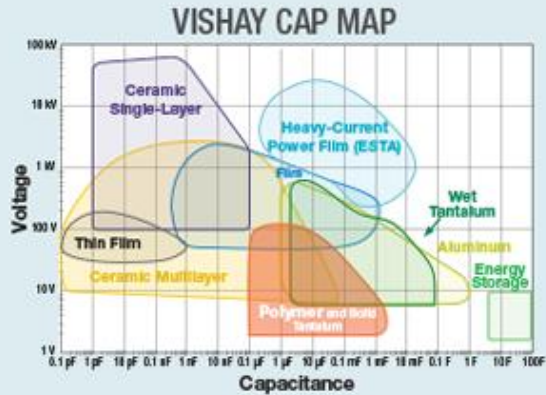
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# POWER ELECTRONIC CAPACITORS

## HIGH RELIABILITY AND LIFETIME

### IN A NUTSHELL



STANDARDS  
IEC 61071, IEC 61881-1



#### VOLTAGE DC

- 750 VDC to 10000 VDC



#### CAPACITANCE

- 50 uF to 20000 uF



#### LIFE EXPECTANCY

- < 100 Fit
- > 250 kh @ Undc / < 70 °C



#### FILLING AGENT

- ESTAdry resin



#### CASE MATERIAL

- Stainless steel (1.4301)
- Aluminum



#### FINISH

- Painting
- Shot blasting
- Chemical treatment



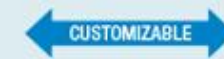
#### CONNECTION



#### SAFETY

- Self-healing film
- Segmented film
- Pressure valve
- Pressure switch

#### OPTIONS



#### APPLICATIONS

- DC-Link capacitors for HVDC / STATCOM
- Static converters for transportation:
  - Heavy haul locomotives
  - Light local trains
  - Trolley buses
  - Trams / streetcars
- Industrial converters
- DC supply equipment
- High voltage testing systems
- Impulse discharge energy
- Harmonic filtering



HVDC  
TRANSMISSION



INDUSTRIAL



WIND TURBINES



TRANSPORTATION

#### FEATURES

- High impulse current rating
- Low inductance
- High reliability and lifetime expectation
- Resistance to heavy duty shock vibration
- Non-polar dielectric
- Dry resin filled

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# LVAC POWER CAPACITORS

## LOW LOSS MKP TECHNOLOGY

# IN A NUTSHELL

### FLEXIBLE DESIGN OPTIONS

FOOTPRINT



64 mm / 84 mm /  
116 mm / 136 mm

HEIGHT



82 mm to 340 mm

### HIGHLIGHT



#### ESTAspring

maintenance-free,  
vibration-proof and reduce  
assembly times up to 60 %



ESTAspring  
brochures

### STANDARDS

IEC 60831

### ESTAspring CONNECTION

Lever operated spring connection

Cable cross section: 2.5 mm<sup>2</sup> up to 25 mm<sup>2</sup>

Max. terminal current = 90 A<sub>RMS</sub>

Protection level: IP20

Voltage AC RMS

230 V

1000 V

Output

2.0 kVAr

37.1 kVAr

3-Phase Delta  
Capacitance

11.5 μF

335 μF

Customizable



RoHS  
COMPLIANT



### TEMPERATURE CLASS

- 40 °C / D



### LIFE EXPECTANCY

- > 130 000 h
- 100 FT



### SAFETY FEATURES

- Internal tear-off fuses
- Self-healing film
- Discharge resistor  
< 50 V/1 minute



### FILLING AGENT

- ESTAdry gas
- ESTAprop oil



### APPLICATIONS



WIND POWER  
PLANTS



HARMONIC FILTERS



THERMAL POWER  
STATIONS



SOLAR PANELS  
AND INVERTERS



POWER FACTOR  
CORRECTION



# LVAC POWER CAPACITORS

## LOW LOSS MKP TECHNOLOGY

# SNAPSHOT

### HIGHLIGHT

Triangular design provides lowest height for 50 kVAr; custom heights for higher outputs on request

### HEIGHT



Maintenance-free, vibration-proof bolt-terminal by counter nuts, 20 Nm



### STANDARDS

IEC 60831

### CONNECTION

M10 threaded bolt, 20 Nm

Max. terminal current = 110 A<sub>RMS</sub>

Protection level: IP00, terminal covers upon request

### Voltage AC RMS

230 V

1000 V

### Output

30 kVAr

56.2 kVAr

### 3-Phase Delta Capacitance

115.5 μF

331.6 μF

Also Customizable for Outdoor Applications

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RoHS COMPLIANT



### TEMPERATURE CLASS

- 40 °C / D



### LIFE EXPECTANCY

- > 130 000 h
- 100 FIT



### SAFETY FEATURES

- Internal tear-off fuses
- Self-healing film
- Discharge resistor  
≤ 50 V/1 minute (indoor)  
≤ 75 V/3 minutes (outdoor)



### FILLING AGENT

- ESTAdry solid resin



### APPLICATIONS



WIND POWER PLANTS



POLE-MOUNTED OUTDOOR



SOLAR PANELS AND INVERTERS



HARMONIC FILTERS



THERMAL POWER STATIONS



POWER FACTOR CORRECTION

≤ 1000 VAC<sub>RMS</sub>

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VMN-MS7367-1809



# HVAC POWER CAPACITORS

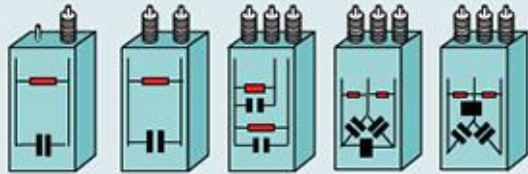
## LOW LOSS ALL-FILM TECHNOLOGY

### ELECTRICAL RATINGS PER UNIT

- Frequency 50 Hz or 60 Hz
- Voltage 1 kV to 36 kV
- Output 25 kVAr to 1000 kVAr
- BIL up to 70 kV / 170 kVp

### CONNECTION

- Porcelain  
M12 or M16
- 30 Nm maximum torque
  - 220 A maximum terminal current
  - 1200 mm maximum creepage distance



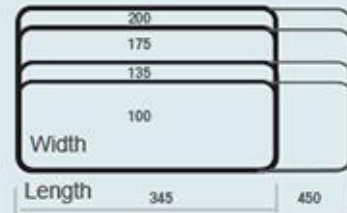
### STANDARDS

IEC 60871; IEC 60143; ANSI/IEEE 18; AS 2897

### HEIGHT



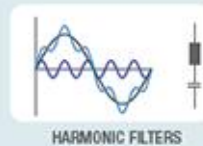
### FOOTPRINT



Protection level: IP00, IP55  
Terminal covers upon request



### APPLICATIONS



### TEMPERATURE RANGE

Lowest temperatures  
-50 °C, -40 °C, -25 °C,  
-5 °C, +5 °C



Maximum ambient air temperature  
40 °C, 45 °C, 50 °C, 55 °C

### SAFETY FEATURES

- Internal fuse
- Fuseless
- Pressure monitoring device



### DISCHARGE RESISTOR

- ≤ 50 V / 5 minutes
- ≤ 75 V / 10 minutes



### FILLING AGENT

- Synthetic oil (non-PCB)



### CASING

- Stainless steel
- Customizable

### FINISH

- Two-component agent on acryl basis



# HVAC LINE FREQUENCY CAPACITORS

## ALL-FILM / SELF-HEALING TECHNOLOGY

### ELECTRICAL RATINGS PER UNIT

- Frequency 50 Hz or 60 Hz
- Voltage 200 V to 3000 V
- Output 10 kVAR to 800 kVAR
- Capacitance tolerance -5 % / +5 %

### CONNECTION

- Porcelain screw type
- M12 or M20
- 20 Nm or 40 Nm maximum torque
- 350 A maximum current per terminal

### STANDARDS

IEC CEI 60110-1

### FORMS OF CONSTRUCTION

#### HEIGHT

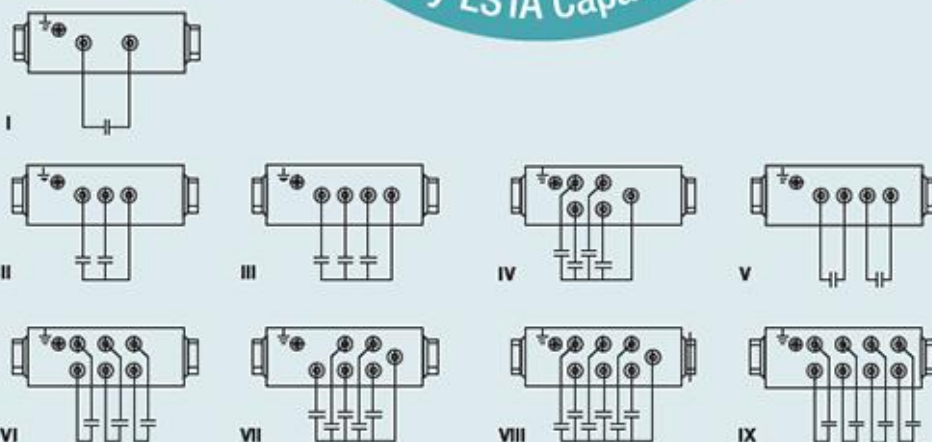


max. 1200 mm

#### FOOTPRINT in mm

Width	175
Length	130
Width	345

#### CIRCUITRY VERSIONS



### TEMPERATURE RANGE

- Lowest temperatures -25 °C, -5 °C, +5 °C
- Maximum ambient air temperature +40 °C, +45 °C, other temperatures on request



### SAFETY FEATURES

- Internal fuses
- Self-healing
- Pressure monitoring device



### FILLING AGENT

- Synthetic oil (non-PCB)
- Resin (dry)



### CASING

- Stainless steel
- Customizable



### FINISH

- Two-component agent on acryl basis



### APPLICATIONS



FORGING



MELTING



# HVAC SURGE SUPPRESSOR CAPACITORS

## ALL-FILM TECHNOLOGY

### ELECTRICAL RATINGS PER UNIT

- Frequency: 50 Hz or 60 Hz
- Voltage: 1 kV to 36 kV
- Capacitance: 0.05  $\mu\text{F}$  to 0.5  $\mu\text{F}$
- BIL up to 70 kV / 170 kV<sub>p</sub>

### TEMPERATURE RANGE

- Lowest temperatures:  
-50 °C, -40 °C, -25 °C, -5 °C, +5 °C
- Maximum ambient air temperatures:  
40 °C, 45 °C, 50 °C, 55 °C

### FEATURES

- Surge suppression
- Winding protection of motors and transformers against high voltage impulses

### DAMPING RESISTOR

- Available with optional 10  $\Omega$  to 50  $\Omega$  damping resistor

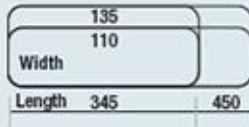
### HEIGHT



Max. 1200 mm



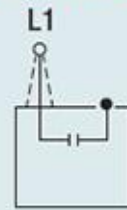
### FOOTPRINT



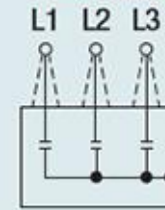
### CONNECTION

- Porcelain
- M12 or M16
- 30 Nm maximum torque

### SINGLE PHASE



### THREE PHASE



### FILLING AGENT

- Synthetic oil (non-PCB)

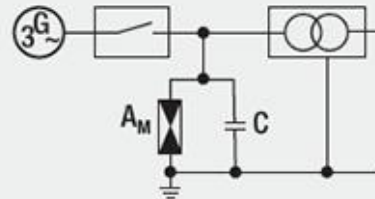
### CASING

- Stainless steel
- Customizable

### FINISH

- Two-component agent on acryl basis

### CIRCUIT DIAGRAM



### APPLICATIONS

