Film Capacitors

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March 9 -12, 2026

VISHAY
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AMERICAS SALES CONFERENCE

High-performing film capacitors supplier focus on
quality, speed, cost efficiency and innovation

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Focus Areas

DC Link Capacitor Key functions:

- filter ripple current from the converter
- act as an energy buffer to stabilize DC voltage
- provide instantaneous power support to the load
- reduce high-frequency noise from AC grid or load

Safety Capacitor Key functions:

- EMI suppression capacitors are used to filter high frequency noise present on the AC grid or generated by the load
- X-class capacitors remove differential noise (across the line)
- Y-class capacitors remove common-mode noise (line to line bypass)

Safety (EMI) Film Capacitors

Vishay offers a broad EMI film capacitor portfolio designed to ensure extremely stable capacitance and safe operation over long service life regardless of the environmental conditions

F338 / 339 / 340 Series

- Automotive and Industrial grade X & Y film capacitors
- High robustness under high humidity performance:
  - F338 – IEC 60384-14 **Grade IB certified** *
  - F339 – IEC 60384-14 **Grade IIB certified** *
  - F340 – IEC 60384-14 **Grade IIIB certified** *
- Rated temperature: 105 °C
- Maximum permissible case temperature: 125°C
- HiPot Test: X1 = 3,4kV$_{DC}$, 60s; X2 = 2,2kV$_{DC}$, 60s ; Y2 = 3,4kV$_{DC}$, 60s
- Designed in Europe and Manufactured in India

Under development
F340X2 350VAC Series Construction, Grade IIIB

*** Design Protection Program**

DC Link Portfolio

Vishay offers a **broad and robust** high-performance DC link film capacitor portfolio tailored for automotive and industrial applications, enabling engineers **exceptional design flexibility** through:

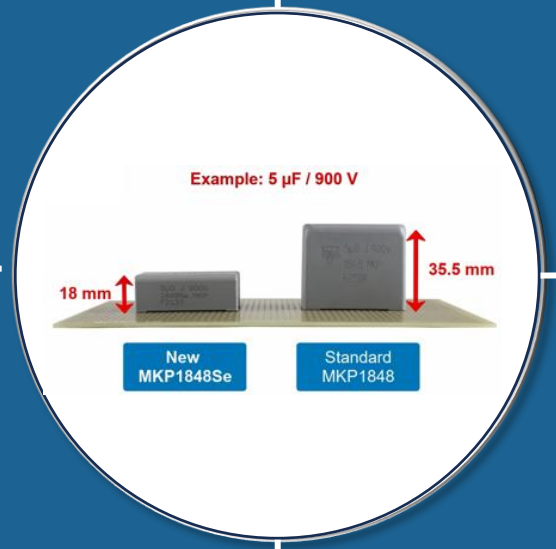
MKP 1848 Series

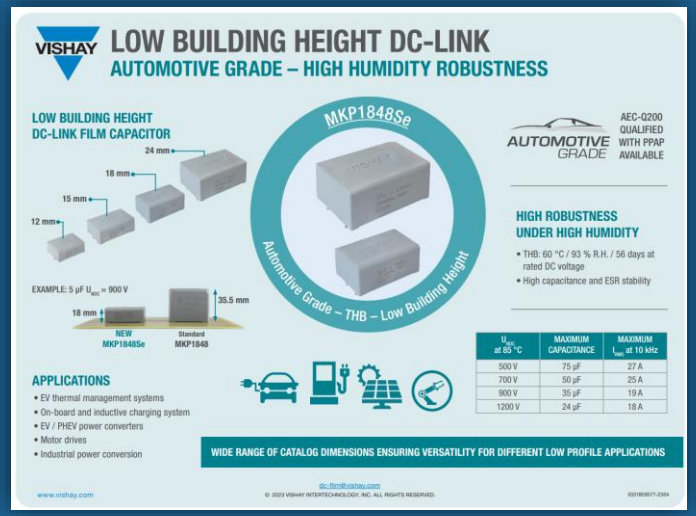
- **Dual-grade qualification:** Automotive and Industrial-grade options
- **Extended thermal endurance:** Operational temperature up to 135˚C
- **Low-profile format:** Slim version for constrained vertical space design
- **Enhanced environmental robustness:** High humidity resistance up to THB 85˚C, 85% RH, 1000h @ rated voltage
- **Wide capacitance-voltage spectrum:** Supporting diverse power conversion requirements
- **Flexible termination options**: Including leads, press-fits, tabs or busbar configurations
- **Custom-engineered solutions**: Tailored to meet specific mechanical and electrical design needs
- **Designed and Manufactured in Europe**

Growth Accelerator: MKP1848Se (DC Link Slim)

APPLICATIONS

- **Automotive BEV/PHEV**
  - e-Cars Thermal Management
  - Onboard and Inductive Charging
  - DC/DC converters
- **Industrial Power Electronics**
  - Wall Chargers
  - PV Microinverters





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FEATURES

- **Automotive Grade – AEC-Q200**
  - Qualified up to 105°C
- **Very Low Building Height** (Slim Profile)
  - 12mm, 15mm, 18mm and 24mm height
- **High Robustness under High Humidity**
  - THB Grade III – IEC 60384-16 Edition 3
  - THB 60°C/93% RH at U_{NDC} for 1344h (56 days)

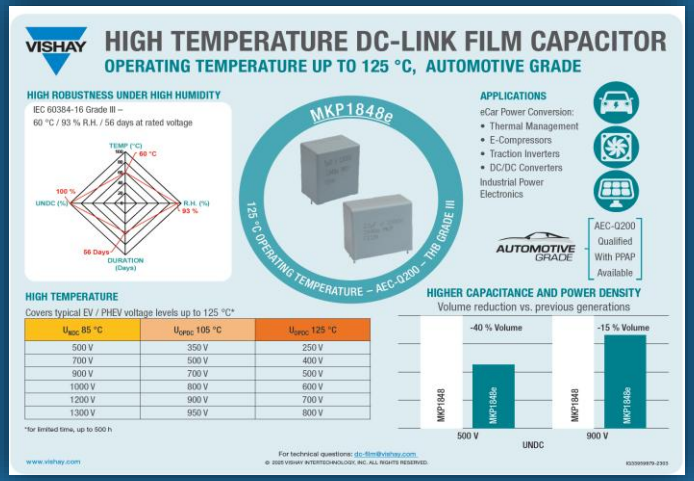
WHY CHOOSE OUR CAPACITORS?

- **Versatile Design:** Wide range of standard dimensions for flexible low-profile solutions
- **Reliable Performance:** Withstands extreme heat and humidity while maintaining stable electrical parameters
- **High-temperature Capability:** Operates up to 125°C (limited periods, upon request)
- **Design Protection Program**

Growth Accelerator: MKP1848e (DC Link 125˚C)

APPLICATIONS

- **Hybrid and Electrical Vehicles**
- **Industrial Power Electronics**
- **Renewable Energy**



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FEATURES

- **Automotive Grade – AEC-Q200**
  - Qualified up to 105°C
- **Max operating temperature up to 125˚C**
- **High density packaging**
- **High Robustness under High Humidity**
  - THB Grade III – IEC 60384-16 Edition 3
  - THB 60°C/93% RH at U_{NDC} for 1344h (56 days)

WHY CHOOSE OUR CAPACITORS?

- **Higher Reliability:** Outperforms conventional polypropylene in thermal and humidity stress
- **Extended Lifetime:** Proven endurance under severe conditions
- **Wide Voltage Range:** Supports automotive HVDC bus from $400V_{DC}$ up to $800V_{DC}$ at 125°C
- **Design Protection Program**

Growth Accelerator: MKP1848T (DC Link 135 ˚C)

Vishay´s Blended Polypropylene Technology delivers superior electrical performance and exceptional high-temperature endurance for demanding e-mobility applications

SOP 1HY 2026

Samples available

Key Features

- **Continuous Operating Temperature:** Up to 125 ˚C
- **Extreme Temperature Capability**: Up to 135 ˚C for > 500 hours
- **Automotive Grade:** AEC-Q200 Compliant
- **Advanced THB Performance:** Designed for harsh environments
  - 60°C / 93% R.H. for 1344h (56 days) at U_{NDC}
  - 85°C / 85% R.H. for 1000h at U_{NDC}
- **Broad Voltage Range:** Covers DC levels from **400V_{DC}** to **900V_{DC}** at **continuous 125°C**

Growth Accelerator: MKP1848HD (DC Link Compact)

Vishay is developing a compact, **high-density DC-Link** film capacitor for advanced power conversion systems

Key Features

- **Ultra-Compact Design :** Industry's smallest footprint for high-density DC-Link applications
- **High Humidity Robustness:** Reliable performance under harsh environmental conditions
- **Automotive Grade :** AEC-Q200 Qualified
- **Continuous Operating Temperature:** Up to 105˚C
- **Broad voltage range:** Available from **700Vdc up to 1800Vdc**
- **Optimized ESL:** Lower equivalent series inductance for improved compatibility with WBG switches
- **Pitch size:** From 22,5mm to 52.5mm

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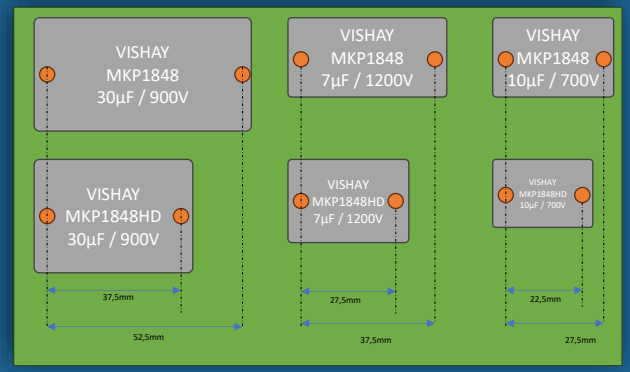
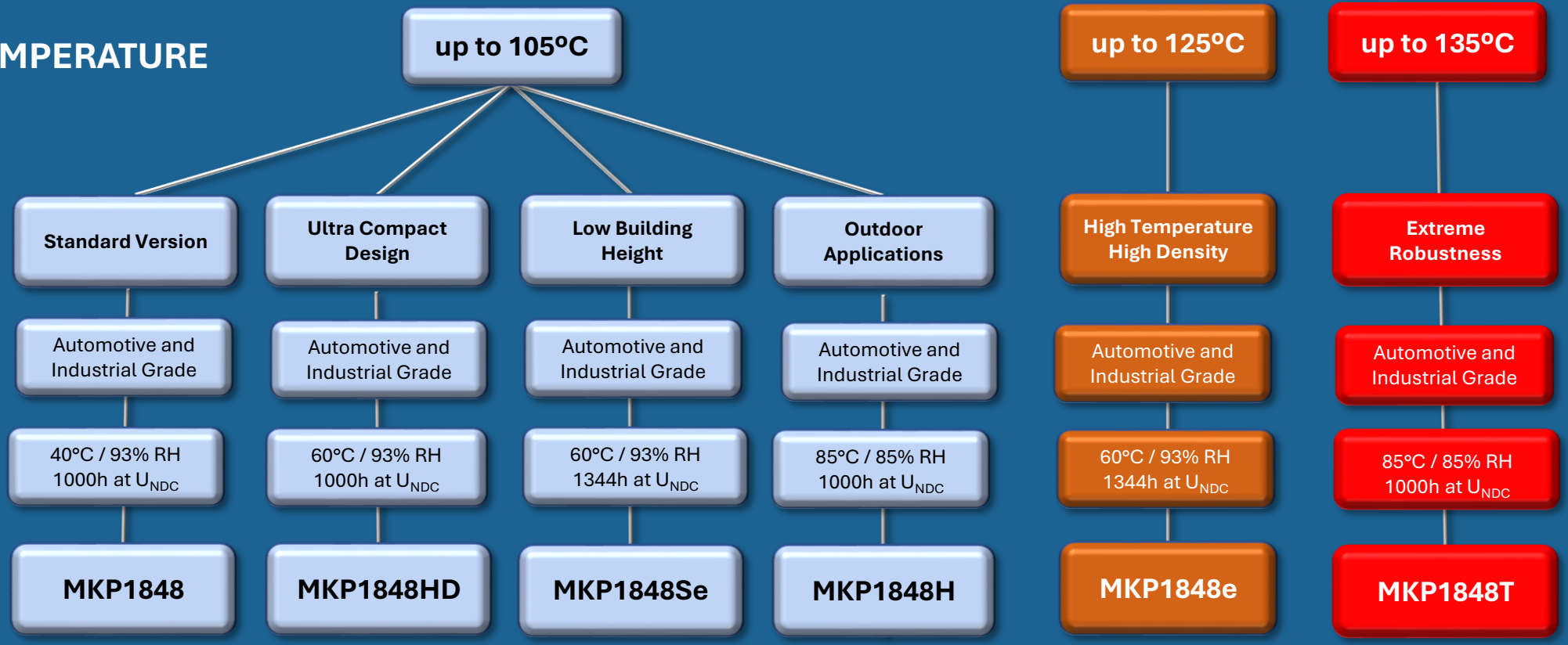
Samples available



DC Link Portfolio – Focus Series



Competitive Advantages & Winning Together

Competitive Advantages

- Proven Expertise: over 100 years of specialization in film capacitors technology ensure optimized designs for demanding applications
- Future-Ready Solutions: Broad voltage range and high-temperature capability meet the evolving requirements of e-mobility and renewable. The extensive portfolio is engineered to maximize design flexibility and ensure long-term reliability
- Strong financial backing for growth and innovation
- Solid market position in strategic market segments such automotive, industrial, and renewable energy industry

Support for Growth

- Technical & Commercial Support: Local expertise for faster response and engagement
- Customized Solutions: Tailored designs for specific applications needs
- Design Protection Programs & Competitive Pricing on Key Product series
- Competitive LTs to meet dynamic production schedules and reduce time-to-market
- Digital Tools and Resources: On-line selector tools, product videos, technical documentation, and applications notes

DC Link Capacitors

Through-Hole Film Capacitors

WHERE TO HUNT

Automotive: DC/DC Converters, Coolant-cooled Systems, On-Board and Inductive Chargers, e-Compressors

Industrial: Drives, AI Power Systems, UPS, Welders, EV Chargers

Renewable: PV, Microinverters, Energy Storage Systems, H2 Electrolysis

DOOR OPENER QUESTIONS

- **Electrical requirements**: Capacitance, Voltage and Ripple Current
- **Lifetime challenges:** Mission Profile
- **THB requirement**: Environment conditions of Heat and Humidity
- **Mechanical constraints**: Height, width, vibration, terminals

WHAT SETS US APART

- **Dual-grade qualification:** Automotive and Industrial-grade options
- **Extended thermal endurance:** Reliable operation up to 135ºC
- **Low-Profile format:** Slim versions for height constrained designs
- **Wide capacitance / voltage spectrum:** Supports a broad capacitance range for converters up to 1800 Vdc
- **Flexible Terminations**: Leads, press-fit, tabs, or busbar configurations
- **Designed in Europe & Manufactured in Europe and India:** Supply stability & Quality assurance

HOW TO SELL: Sell the Solution, not the component

“Highlight how Vishay solves system-level challenges”

- Higher power density without thermal compromises
- Fit into tight mechanical envelops and low-profile layouts
- Ensure long-term reliability under harsh THB conditions
- Support any architecture with wide C/V options
- Reduce supply-chain risk with European manufacturing
- Accelerate design cycles with co-engineering and fast response support
- Competitive LTs to meet dynamic production schedules

HOW TO CLOSE: Advancing the opportunity

“We don´t just deliver capacitors – we solve system challenges.”

- Engage FAEs / RM early for thermal, electrical, and mechanical tuning
- Share simulations and on-line design tools (ripple, ESL, ESR, thermal)
- Provide quick-turn samples for customer validation
- Clarify decision criteria and success metrics
- Align on program timing and key milestones
- Always close with clear objectives and defined next step

Vishay Capacitors – A Powerful Portfolio

Film – ESTA – Aluminum – Tantalum - MLCC - Ceramic Technologies