

Film Capacitor Product Catalog



World Class Energy Management Solutions

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www.kgtechnologies.net

Notes

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Switch • Measure • Protect

KG Technologies, founded in 1999, is dedicated to innovative development and high-quality/high-volume manufacturing of latching relays for the Global Energy Market. We are the preferred supplier based on our ability to provide value add, cost effective solutions, flexibility and on-time deliveries to our customers. All of this translates into reducing the overall expense.

In 2015, The Hongfa Group, the leading relay manufacturer in the world, acquired KG Technologies. Being part of Hongfa brings access to a portfolio that includes HVDC Contactors, Power, Signal, Automotive and Industrial relays, adding to our existing line of Latching Relays, Current Transformers, Smart Circuit Breakers and Film Capacitors.

The combined companies have become the largest producer of latching relays in the world. As both Hongfa Group and KG Technologies continue to grow, we will add additional products to our portfolio.





KG Provides Custom Products for many Markets

- Utility Power Management
- Building Energy Management
- Renewable Energy and Energy Storage
- Electrical Vehicle and EV Charging

From metering to monitoring applications KG is the market leader with decades of experience in delivering high quality solutions.

KG products are designed, built, and tested to meet the industry's highest performance standards.

With headquarters in the USA, KG is a global company with an experienced sales and engineering team, ready to provide solutions to meet our customer's highest expectations.

***KG Works With You So That Our
Products Work For You!***

Hongfa is the Industry Leader in Relay Design, Development, Manufacturing and Testing



The Hongfa Group was founded in 1984. Hongfa has set up three relay R&D facilities and multiple production factories with nearly 14,000 employees globally. Hongfa products cover various product segments including relays, low-voltage and high-voltage devices, capacitors, precision parts and automatic production equipment, which are widely used in industrial, energy, transportation, telecommunication, home appliance, and medical areas.

- Over 35 years of experience in R&D and production
- 30 Subsidiaries globally
- Over one million square meters of plants
- 14,000 employees worldwide
- Two billion relays shipped annually



Hongfa Wufeng, established in 1984 and joined the Hongfa Group in 2016, is the Film Capacitor Group.

- Plant covers an area of over 577,139 Square feet
- Manufacturing area is about 468,478 Square feet
- Products are UL \ VDE \ TÜV \ CQC \ CE certified
- Quality System is ISO9001 \ ISO14001 certified



Film Capacitors Overview

Film capacitors are capacitors which use a thin plastic film as the dielectric. This film is made extremely thin using a sophisticated film drawing process. Once the film is manufactured, it may be metallized or left untreated, depending on the needed properties of the capacitor. Electrodes are then added and the assembly is mounted into a case which protects it from environmental factors. They are used in many applications because of their stability, low inductance and low cost. There are many types of film capacitors, including polyester film, metallized film, polypropylene film, PTFE film and polystyrene film. The core difference between these capacitor types is the material used as the dielectric, and the proper dielectric must be chosen according to the application.

PTFE film capacitors, for example, are heat-resistant and used in aerospace and military technology, while metallized polyester film capacitors are used in applications that require long term stability at a relatively low.

Key Characteristics

The following Key Characteristics of Capacitor can be found in the charts on pages 7-8 as well as the specific datasheets located on the Products Page of the KG Website

- Capacitance
- Rated Voltage
- Tolerance
- Operating Temperature Range
- Temperature Coefficient (TC)
- Leakage Current / Leakage Resistance (Rp)
- Equivalent Series Resistance (ESR)
- Equivalent Series Inductance (ESL)
- Dissipation Factor (DF)
- Volumetric Efficiency

Markets and Applications

We can provide our customers with various solutions of film capacitors for the following applications: new energy, reactive compensation, AC filter, lighting, telecommunication, home appliance, power supply, industrial control etc.

Film Capacitor Specifications

| Part Number | Reference Standard | Climatic Category | Operating Temp Range | Capacitance Range | Rated Voltage |
|-------------|---|-------------------------|--|-------------------|--------------------------|
| HCBA | GB/T 12747.1-2017 GB/T 12747.2-2017 | 40/55/21 | -40°C ~ +55°C | 5kVar ~ 50kVar | 250 ~ 690Vac |
| HCBB13 | GB/T10188(IEC60384-13) | 40/105/21 | -40°C ~ +105°C (+85°C~+105°C: decreasing factor 1.25% per ° for UR) | 68pF ~ 0.15μF | 100 ~ 1000Vdc |
| HCBB20 | GB/T 10190(IEC 60384-16) | 40/85/21 | -40°C ~ +85°C | 1nF ~ 20μF | 100 ~ 1250Vdc |
| HCBB22 | GB/T10190(IEC60384-16) | 40/105/21 | -40°C ~ +105°C (+85°C~+105°C: decreasing factor 1.25% per ° for UR) per° for UR) | 1nF ~ 4.7μF | 100 ~ 1250Vac |
| HCBB60 | GB/T 3667.1(IEC 60252-1) UL801 File: E222132 | 40/70/21 or 40/85/21 | -40°C ~ +70°C or -40°C ~ +85°C | 1μF ~ 100μF | 250 ~ 500Vac (50Hz/60Hz) |
| HCBB60S | GB/T 3667.1(IEC 60252-1) EN60252-1 File: R 50258744 | 40/70/21 or 40/85/21 | -40°C ~ +70°C or -40°C ~ +85°C | 1μF ~ 60μF | 250 ~ 500Vac (50Hz/60Hz) |
| HCBB61 | GB/T 3667.1 (IEC60252-1) UL801 File: E222132 | 40/70/21 or 40/85/21 | -40°C ~ +70°C or -40°C ~ +85°C | 0.5μF ~ 45μF | 250 ~ 500Vac (50Hz/60Hz) |
| HCBB61S | GB/T 3667.1 (IEC60252-1) EN 60252-1 File: R 50258753 | 40/70/21 or 40/85/21 | -40°C ~ +70°C or -40°C ~ +85°C | 0.5μF ~ 45μF | 250 ~ 500Vac (50Hz/60Hz) |
| HCBB62X2 | GB/T 6346.14 UL 60384-14 File: E311928 | 40/110/56/B | -40°C ~ +110°C | 4.7nF ~ 10μF | 250 ~ 310Vac (50/60Hz) |
| HCBB65 | GB/T 3667.1 (IEC60252-1) UL 810 File: E481493 | 40/70/21 or 40/85/21 | -40°C ~ +70°C or -40°C ~ +85°C | 1μF ~ 85μF | 250 ~ 450Vac(50Hz/60Hz) |
| HCBB81 | GB/T14579(IEC60384-17) | 40/105/21 | -40°C ~ +70°C or -40°C ~ +85°C | 1nF ~ 85μF | 630 ~ 2000Vac |
| HCL20 | GB/T7332 (IEC60384-2) | 40/105/21 | -40°C ~ +105°C (+85°C ~ +105°C: decreasing factor 1.25% per ° for UR) | 1nF ~ 10μF | 63 ~ 1000Vdc |
| HCL21 | GB/T7332(IEC60384-2) | 55/105/21 | -55°C ~ +105°C (+85°C ~ +105°C: decreasing factor 1.25% | 1nF ~ 10.0μF | 50 ~ 1250Vac |
| HCL21X | GB/T7332(IEC60384-2) | 55/105/21 | -55°C ~ +105°C (+85°C ~ +105°C: decreasing factor 1.25% | 10nF ~ 8.2μF | 250 ~ 630Vdc |
| HCL23 | GB/T7332(IEC60384-2) | 55/105/56 | -55°C ~ +105°C | 1nF ~ 47μF | 63~ 1000Vdc |
| HMKP21 | GB/T10190(IEC60384-16) | 55/105/56 | -55°C ~ +105°C (+85°C ~ +105°C: decreasing factor 1.25% | 560pF ~ 15μF | 160 ~ 2000Vdc |
| HMMKP82 | GB/T10190(IEC60384-16) | 40/105/56 | -10°C ~ +105°C | 680pF ~ 3.9μF | 250 ~ 2000Vdc |

Film Capacitor Specifications

| Part Number | Capacitance Tolerance | Max. Withstand Voltage | Dissipation Factor | Insulation Resistance | |
|-------------|---|--|--|---|---|
| HCBA | ±5%(J), ±10%(K) | 2.15Un (10s, 20°C ± 20°C) | ≤2×10 ⁻³ (1V, 100Hz) | 3600Vac (2s, 50Hz, 20°C±5°C) |  |
| HCBB13 | ±5%(J), ±10%(K) | 2.0Un (5s) | ≤0.0010 (1kHz, 20°C) | R ≥50 000MΩ, CN≤0.1μF RCN≥5 000s, CN>0.1μF (20°C, 100Vd.c, 1min) |  |
| HCBB20 | ±3%(H), ±5%(J), ±10%(K), ±20%(M) | 1.6Un (5s) | ≤0.0010 (1kHz, 20°C) | R≥100000MΩ CN≤0.33μF (20°C, 100Vd.c, 1min) RCN ≥30000s CN>0.33μF |  |
| HCBB22 | ±5%(J), ±10%(K) | 1.6Un (5s) | ≤0.0010 (1kHz, 20°C) | R ≥100000MΩ, CN≤0.33μF RCN ≥30000s, CN>0.33μF |  |
| HCBB60 | ±5%(J) | ¹ 2Unac(60s) ² 2000Vm(60s) | ≤0.0020 (100Hz, 20°C) | ≥3000s(20°C, 100V, 60s) |  |
| HCBB60S | ±5%(J) | ¹ 2Unac(60s) ² 2000Vm(60s) | <0.0020 (100Hz, 20°C) | ≥3000s(20°C, 100V, 60s) |  |
| HCBB61 | ±5%(J) | ¹ 2Unac(60s) ² 2000Vm(60s) | <0.0020 (100Hz, 20°C) | ≥3000s(20°C, 100V, 60s) ≥3000s(20°C, 100V, 60s) |  |
| HCBB61S | ±5%(J) | ¹ 2Unac(60s) ² 2000Vm(60s) | <0.0020 (100Hz, 20°C) | ≥3000s(20°C, 100V, 60s) ≥3000s(20°C, 100V, 60s) |  |
| HCBB62X2 | ±10%(K) | 2000VDC /2s, CN≤1.0μF 1800VDC /2s, CN>1.0μF | 0.0010μF≤CN<0.47μF≤0.0010(1kHz, 20°C) / 0.47μF≤CN<1.0μF≤0.0020(1kHz, 20°C) 1.0μF<CN≤10μF≤0.0030(1kHz, 20°C) | CN≤0.33μF, ≥15000MΩ CN>0.33μF, ≥5000s |  |
| HCBB65 | ±5%(J) | ¹ 2Unac(60s) ² 2000Vm(60s) | <0.0020 (100Hz, 20°C) | ≥3000s(20°C, 100V, 60s) |  |
| HCBB81 | ±5%(J), ±10%(K) | 1.75Un(5s) | ≤0.0020(10kHz, 20°C) | ≥100000MΩ (20°C, 100V, 1min) |  |
| HCL20 | ±5%(J), ±10%(K), ±20%(M) | 1.6Un(5s) | ≤0.0020(1kHz, 20°C) | R≥3750MΩ, CN≤0.33μF, (20°C, 10V, 1min) RCN≥1250s, CN>0.33μF |  |
| HCL21 | ±5%(J), ±10%(K) | 1.6Un(5s) | ≤0.0020(1kHz, 20°C) | RCN≥1250s, CN>0.33μF (20°C, 10V, 1min) |  |
| HCL21X | ±5%(J), ±10%(K) | 1.6Un(5s) | ≤0.8%(1kHz, 20°C) | R ≥30 000MΩ, CN≤0.33μF, RCN≥5 000s, CN>0.33μF (20°C, 100Vd.c, 1min) |  |
| HCL23 | ±5%(J), ±10%(K), ±20%(M) (20°C±5°C, 1kHz) | 1.6Un(5s) | ≤1% (1kHz, 20°C) | R≥3750MΩ, CN≤0.33μF, RCN≥12500, CN>0.33μF (20°C, 100Vd.c, 1min) |  |
| HMKP21 | ±2%(G), ±3%(H), ±5%(J), ±10%(K), ±20%(M) (20°C±5°C, 1kHz) | 1.6Un(5s) | ≤0.0010 (1kHz, 20°C) | R≥100000MΩ, CN≤0.33μF RCN≥30000s, CN>0.33μF (20°C, 100Vd.c, 1min) |  |
| HMMKP82 | ±5%(J), ±10%(K), ±20%(M) (20°C ±5°C, 1kHz) | 1.6Un(5s) | ≤0.0010 (1kHz, 20°C) | R≥100000MΩ, CN≤0.33μF (20°C, 100Vd.c, 1min) |  |

Notes: Votalge Proof ¹ = Between terminals ² = between terminals and case

KG Technologies Inc.'s commitment is to ensure that our services and products are consistently meeting our customers' expectations, delivered on-time and defect-free.

We also ensure that our products are compliant with all relevant statutory and regulatory requirements including those from IEC, ANSI and UL regulatory bodies.

Our various product delivery teams are highly skilled and are focused in ensuring that through innovation and creativity we are committed to continual improvement of our product quality and reliability, as well as the efficiency of our service offerings.

Production Quality Standards

RoHS - KG conforms to the requirements of the RoHS directive (2011/65/EU). This directive specifies the restrictions of the use of hazardous substances in Electrical and Electronic markets in Europe.

REACH - The European Union's REACH Directive (EC 1907/2006) is designed to regulate the Registration, Evaluation, Authorization and Restriction of Chemical Substances.

Conflict Minerals Policy - We are committed to support ending the violence and human rights violations in the mining of certain minerals from a location described as the "Conflict Region."

In addition to our commitments, we must meet regulatory obligations. For more information view our statement at www.kgtechnologies.net - Environmental Policies Page.

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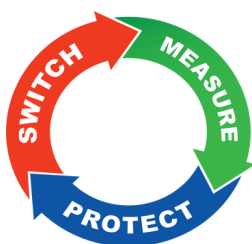
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We Speak Your Language!
KG Technologies, a Diversified Company, Serves a
Diverse Customer Base Globally



***We strive to provide our customers
with commitment, teamwork and respect!***



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