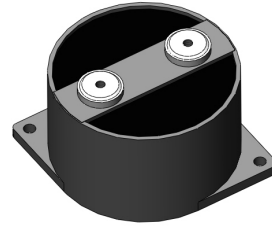


# Metallized Polypropylene Film Capacitor (Plastic Case) DC-Link Application

## DPG

High capacity DC Filter Capacitor consists of metallized polypropylene film, plastic casing filled with epoxy, screw terminal and plastic deck. This capacitor is suitable for use in DC filter circuits.



### FEATURES

High ripple current, low losses.

High capacitance density.

Self-healing property.

Long lifetime.

### APPLICATIONS

DC filtering.

Energy storage.

### ELECTRICAL CHARACTERISTICS

|                                 |                                                     |
|---------------------------------|-----------------------------------------------------|
| Rated Voltage:                  | 500Vdc ~ 1100Vdc                                    |
| Capacitance range:              | 50 $\mu$ F - 280 $\mu$ F                            |
| Capacitance Tolerance:          | $\pm$ 5%(J), $\pm$ 10%(K)                           |
| Dissipation Factor::            | $\leq$ 0.002 (0.2%) at 100 Hz at 25°C               |
| Test Voltage Between Terminal:  | 1.5 x rated voltage for 10s (terminal to terminal)  |
| Test Voltage Terminals to Case: | 3.0 kVac 50Hz/60Hz for 10s at 25 °C                 |
| Life Expectancy:                | 100,000 hours at Un @ hot-spot temperature T=+70 °C |
| Damp Heat:                      | IEC 60068-2-78                                      |
| Change of Temperature:          | IEC 60068-2-14                                      |

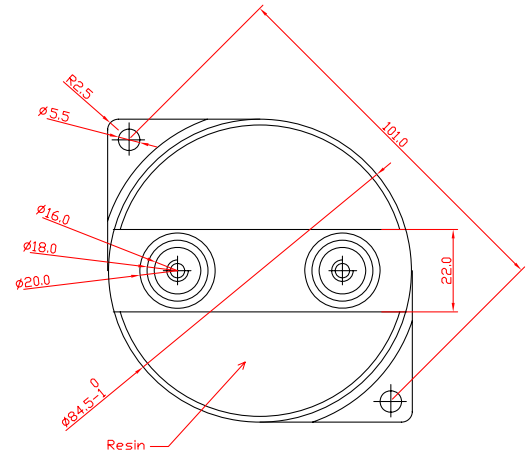
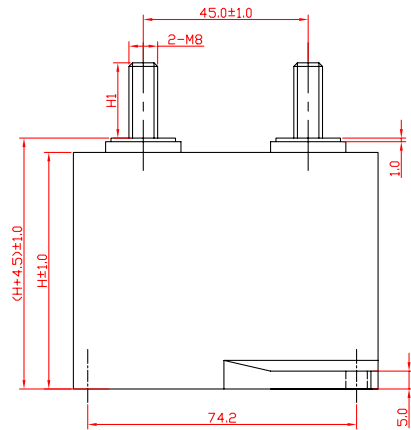
### GENERAL TECHNICAL DATA

|                           |                                                                              |
|---------------------------|------------------------------------------------------------------------------|
| Application:              | DC filtering / DC link                                                       |
| Standard:                 | IEC 61071                                                                    |
| Climatic Category:        | 40/85/21 IEC 60068-1                                                         |
| Temperature Hot-spot max: | +95°C                                                                        |
| Temperature Storage max:  | +85°C                                                                        |
| Lower Temperature T min:  | -40°C                                                                        |
| Case                      | Self extinguishing plastic case UL94 V0                                      |
| Terminals:                | M6 or M8 threaded bolt; also available with threaded female connections      |
| Construction:             | dry construction, filled by solid resin                                      |
| Packaging:                | Packed in cardboard boxes with protection for the terminals                  |
| RoHS Compliant:           | Compliant with the restricted substance requirements of Directive 2002/95/EC |

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### DIMENSION



| D  | H  | h   | P    | T               | M1            |
|----|----|-----|------|-----------------|---------------|
| ±1 | ±1 | ±1  | ±1.0 | Threaded Insert | Threaded Post |
| mm | mm | mm  | mm   | Terminations    | Terminations  |
| 85 | 40 | 4.5 | 45   | M6 x 7.5        | M8 x 20       |
| 85 | 51 | 4.5 | 45   | M6 x 7.5        | M8 x 20       |
| 85 | 64 | 4.5 | 45   | M6 x 7.5        | M8 x 20       |

### DIMENSION (Part Number Reference: Threaded Insert Terminations)

| Cap   | Vdc  | Dimensions |    |    | Irms       | Peak    | ESR  | ESL | Thermal | dv/dt | Pkg | Part Number     |
|-------|------|------------|----|----|------------|---------|------|-----|---------|-------|-----|-----------------|
| Value |      | D          | H  | P  | 10KHz 50°C | Current | 1KHz |     | Res     |       | Qty |                 |
| uF    |      | mm         | mm | mm | A          | A       | mΩ   |     | °C/W    |       | pcs |                 |
| 150   | 500  | 85         | 40 | 45 | 65         | 5250    | 1.8  | 25  | 4.3     | 35    | 8   | DPG-157K2HB45F5 |
| 220   | 500  | 85         | 51 | 45 | 65         | 5500    | 1.8  | 40  | 4.8     | 25    | 8   | DPG-227K2HB45F5 |
| 280   | 500  | 85         | 64 | 45 | 70         | 5600    | 1.6  | 40  | 5.4     | 20    | 8   | DPG-287K2HB45F5 |
| 100   | 600  | 85         | 40 | 45 | 70         | 3500    | 1.5  | 25  | 5.0     | 35    | 8   | DPG-107K2RB45F5 |
| 150   | 600  | 85         | 51 | 45 | 80         | 3750    | 1.4  | 30  | 6.5     | 25    | 8   | DPG-157K2RB45F5 |
| 220   | 600  | 85         | 64 | 45 | 90         | 4400    | 1.5  | 40  | 4.5     | 20    | 8   | DPG-227K2RB45F5 |
| 66    | 800  | 85         | 40 | 45 | 70         | 2310    | 2.0  | 25  | 5.0     | 35    | 8   | DPG-666K2KB45F5 |
| 100   | 800  | 85         | 51 | 45 | 75         | 2500    | 1.8  | 30  | 5.0     | 25    | 8   | DPG-107K2KB45F5 |
| 140   | 800  | 85         | 64 | 45 | 80         | 2800    | 1.6  | 40  | 8.4     | 20    | 8   | DPG-147K2KB45F5 |
| 220   | 800  | 85         | 64 | 45 | 100        | 4400    | 1.4  | 40  | 4.8     | 20    | 8   | DPG-227K2KB45F5 |
| 66    | 1000 | 85         | 40 | 45 | 70         | 2310    | 1.0  | 25  | 4.2     | 35    | 8   | DPG-666K3AB45F5 |
| 120   | 1000 | 85         | 51 | 45 | 85         | 3000    | 2.2  | 30  | 5.2     | 25    | 8   | DPG-127K3AB45F5 |
| 140   | 1000 | 85         | 64 | 45 | 100        | 2800    | 1.5  | 40  | 3.1     | 20    | 8   | DPG-147K2KB45F5 |
| 50    | 1100 | 85         | 40 | 45 | 55         | 1750    | 2.4  | 30  | 4.5     | 35    | 8   | DPG-506K3LB45F5 |
| 100   | 1100 | 85         | 51 | 45 | 55         | 2500    | 2.0  | 30  | 4.5     | 25    | 8   | DPG-107K3LB45F5 |

# Metallized Polypropylene Film Capacitor (Plastic Case)

## DC-Link Application

**DPG**

### ■ DIMENSION (Part Number Reference: Threaded Post Terminations)

| Cap   | Vdc  | Dimensions |    |    | Irms       | Peak    | ESR  | ESL | Thermal | dv/dt | Pkg | Part Number     |
|-------|------|------------|----|----|------------|---------|------|-----|---------|-------|-----|-----------------|
| Value |      | D          | H  | P  | 10KHz 50°C | Current | 1KHz |     | Res     |       | Qty |                 |
| uF    |      | mm         | mm | mm | A          | A       | mΩ   |     | °C/W    | V/us  | pcs |                 |
| 150   | 500  | 85         | 40 | 45 | 65         | 5250    | 1.8  | 25  | 4.3     | 35    | 8   | DPG-157K2HA45HA |
| 220   | 500  | 85         | 51 | 45 | 65         | 5500    | 1.8  | 40  | 4.8     | 25    | 8   | DPG-227K2HA45HA |
| 280   | 500  | 85         | 64 | 45 | 70         | 5600    | 1.6  | 40  | 5.4     | 20    | 8   | DPG-287K2HA45HA |
| 100   | 600  | 85         | 40 | 45 | 70         | 3500    | 1.5  | 25  | 5.0     | 35    | 8   | DPG-107K2RA45HA |
| 150   | 600  | 85         | 51 | 45 | 80         | 3750    | 1.4  | 30  | 6.5     | 25    | 8   | DPG-157K2RA45HA |
| 220   | 600  | 85         | 64 | 45 | 90         | 4400    | 1.5  | 40  | 4.5     | 20    | 8   | DPG-227K2RA45HA |
| 66    | 800  | 85         | 40 | 45 | 70         | 2310    | 2.0  | 25  | 5.0     | 35    | 8   | DPG-666K2KA45HA |
| 100   | 800  | 85         | 51 | 45 | 75         | 2500    | 1.8  | 30  | 5.0     | 25    | 8   | DPG-107K2KA45HA |
| 140   | 800  | 85         | 64 | 45 | 80         | 2800    | 1.6  | 40  | 8.4     | 20    | 8   | DPG-147K2KA45HA |
| 220   | 800  | 85         | 64 | 45 | 100        | 4400    | 1.4  | 40  | 4.8     | 20    | 8   | DPG-227K2KA45HA |
| 66    | 1000 | 85         | 40 | 45 | 70         | 2310    | 1.0  | 25  | 4.2     | 35    | 8   | DPG-666K3AA45HA |
| 120   | 1000 | 85         | 51 | 45 | 85         | 3000    | 2.2  | 30  | 5.2     | 25    | 8   | DPG-127K3AA45HA |
| 140   | 1000 | 85         | 64 | 45 | 100        | 2800    | 1.5  | 40  | 3.1     | 20    | 8   | DPG-147K2KA45HA |
| 50    | 1100 | 85         | 40 | 45 | 55         | 1750    | 2.4  | 30  | 4.5     | 35    | 8   | DPG-506K3LA45HA |
| 100   | 1100 | 85         | 51 | 45 | 55         | 2500    | 2.0  | 30  | 4.5     | 25    | 8   | DPG-107K3LA45HA |

# Metallized Polypropylene Film Capacitor (Plastic Case) DC-Link Application

## DPG

## PART NUMBERING SYSTEMS

### ■ EXPLANATION OF ARTICLE CODE

|         |       |   |     |   |     |   |   |
|---------|-------|---|-----|---|-----|---|---|
| D P G - | 2 2 7 | K | 2 R | B | 4 5 | E | S |
| ①       | ②     | ③ | ④   | ⑤ | ⑥   | ⑦ | ⑧ |

#### ① Capacitor Type

|      |      |
|------|------|
| TYPE | DPG  |
| CODE | DPG- |

#### ② Rated Capacitance (EIA Code)

The rated Capacitance value of the product is indicated with three digits. The first two digits indicate the two most significant digits of the capacitance value, and the third digit gives the number of following zeroes. This gives the capacitance value expressed in picofarads.

Examples:

|     |   |              |   |          |   |      |
|-----|---|--------------|---|----------|---|------|
| 105 | = | 1,000,000pF  | = | 1,000nF  | = | 1uF  |
| 106 | = | 10,000,000pF | = | 10,000nF | = | 10uF |

#### ③ Capacitance Tolerance

|           |     |      |      |
|-----------|-----|------|------|
| TOLERANCE | ±5% | ±10% | ±20% |
| CODE      | J   | K    | M    |

#### ④ Rated Voltage

Code for DC Voltage: (expressed in one digit & one letter code)

|         |      |      |      |      |      |      |       |       |       |       |
|---------|------|------|------|------|------|------|-------|-------|-------|-------|
| VOLTAGE | 600V | 630V | 700V | 800V | 850V | 900V | 1000V | 1100V | 1200V | 1400V |
| CODE    | 2R   | 2J   | 2S   | 2K   | 2T   | 2U   | 3A    | 3L    | 3M    | 3V    |

#### ⑤ Terminal Configuration

|      |      |        |
|------|------|--------|
| FORM | Male | Female |
| CODE | A    | B      |

#### ⑦ Terminal

|          |    |    |    |    |    |     |     |
|----------|----|----|----|----|----|-----|-----|
| TERMINAL | M3 | M4 | M5 | M6 | M8 | M10 | M12 |
| CODE     | C  | D  | E  | F  | J  | L   |     |

#### ⑧ Terminal Length (mm)

|        |      |      |      |     |     |     |     |      |      |
|--------|------|------|------|-----|-----|-----|-----|------|------|
| LENGTH | 20.0 | 15.0 | 16.0 | 2.0 | 4.0 | 5.0 | 9.0 | 28.0 | 22.0 |
| CODE   | A    | B    | C    | 2   | 4   | 5   | 9   | D    | E    |

# Metallized Polypropylene Film Capacitor (Plastic Case) DC-Link Application

DPG

PART NUMBERING SYSTEMS

## ■ PERFORMANCE NOTES

$R_s$ : Equivalent series resistance - Ohmic resistances (Ohm)

Dielectric Dissipation Factor:  $\tan\delta$  ( Polypropylene: 0.0002)

$T_a$ : Ambient temperature

$R_{th}$ : Thermal resistance °C/W, indicates hot spot temperature rise due to power dissipation losses

$P_j$ : Joule losses  $P_j = R_s \cdot I_{rms}^2$

$P_d$ : Dielectric losses

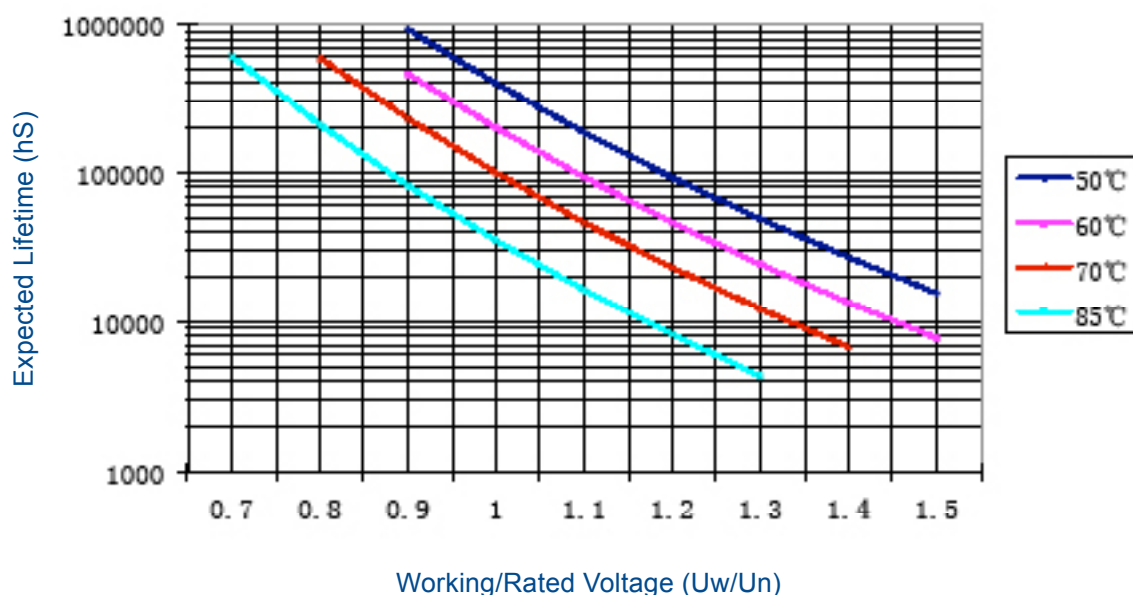
$$P_d = X_c \cdot I_{rms}^2 \cdot \tan\delta = I_{rms}^2 / (2 \cdot \pi \cdot f \cdot C) \cdot \tan\delta$$

$T_{hs}$ : Hot spot temperature within the capacitor

$$T_{hs} = T_a + (P_j + P_d) \cdot R_{th}$$

Design life: 100,000 hours at  $U_n$  @ Hot-Spot temperature  $\leq +70^\circ\text{C}$

### Expected Life Curve



## ■ CAUTIONS AND WARNING

- In case of dents of more than 1 mm depth or any other mechanical damage, capacitors must not be used at all.
- Lateral brackets for fixing are standard for all types.
- Do not handle the capacitor before it is discharged.
- Check tightness of the connection/terminals periodically.
- It is necessary to verify that maximum hot-spot temperature is not exceeded at extreme condition.
- Do not use or store capacitor in corrosive atmosphere, in the dusty environments regular maintenance and cleaning especially of the terminals is required to avoid conductive path between phase / or phase and ground.
- Do not have unlimited service life expectancy, the max service life expectancy may vary depending on the application the capacitor is used in.