Medium Power Film Capacitors

FSM (FSN RoHS Compliant)
New Design can use FFV Range

APPLICATIONS
Recovery capacitor for G.T.O. switching (secondary snubber or clamp capacitor).
High current DC filtering.

FEATURES
Metallized polypropylene dielectric specially treated to withstand high DC voltage stresses up to 85°C.
Controlled self-healing.
Internal geometry and connections specially developed for high currents (Irms up to 100 A).
No liquid impregnant.
Special metallization for DC voltage and high currents.

PACKAGING MATERIAL
Self-extinguishing rectangular plastic case (in accordance with UL 94 VO) (12 kV/50 Hz isolation).
Filled with thermosetting resin.
M8 outputs.
Fixing in two planes.
Vibrations and shocks resistant to IEC 60077.
Average weight 0.95 kg.

DIMENSIONS

MARKING
Logo TPC
FSM
Capacitance and tolerance in clear
Nominal voltage in clear
RMS current in clear
Date of manufacture (IEC coding)

ELECTRICAL CHARACTERISTICS
Climatic category 40/085/56
Working temperature -40°C to +85°C
(according to the power to be dissipated)
Capacitance range $C_n$ 20μF to 54μF
Tolerance on $C_n$ ±10%
Rated DC voltage $V_{dc}$ 750 to 1350 V
Allowable overvoltages $V_s = 1.1 \times V_{dc} - 1/3$ of the time
1.3 $V_{dc}$ – 1 min./day
2 $V_{dc}$ – 100 ms/day for
$V_{dc} = \leq 1150$ V
1.75 $V_{dc}$ – 100 ms/day for
$V_{dc} = 1350$ V
DC test voltage between 10s at 20°C ± 15°C$ V_{test} = 1.5 \times V_{dc}$ (IEC 61071)
RMS current $\text{Irms}$ max. = 65 to 105 A
Impulse current $\text{I}_{2.5}$ max. = 100 to 270 A²s
Tangent of loss angle $\tan \theta$ see table of values
Series inductance $L_s$ ≤ 25 nH
Thermal resistance $R_{th}$ ambient/hot spot = 9.2°C/W
Rth case/hot spot = 3.3°C/W
Dielectric Polypropylene

HOW TO ORDER

FSM 2 6 0546

Series Case Size Dielectric Voltage Code Capacitance Code Capacitance Tolerances Terminal Code
FSM = Standard 2 = Standard 6 = Polypropylene A = 750Vdc 0 = ±10%
FSN = RoHS Compliant

K = – – Standard (Male Threaded)
1) RECOVERY OF G.T.O. SWITCHING ENERGY

Choice of voltage:
\[ V_1 \leq V_{ndc} \]

Repetitive surge:
\[ 1.1 V_{ndc} – 1/3 \text{ of the time} \]

Non-repetitive surge:
\[ 1.3 V_{ndc} – 1 \text{ min./day} \]

Occasional max. surge:
\[ 2 V_{ndc} – 100 \text{ ms/day for } V_{ndc} = \leq 1150 \text{ V} \]
\[ 1.75 V_{ndc} – 100 \text{ ms/day for } V_{ndc} = 1350 \text{ V} \]

RMS current limits:
The currents given in the tables are maximum. The thermal limits of the dielectric (85°C) must be respected. The self-heating can be calculated from the series resistance, \( Tg \delta \) and the thermal resistance given in the table of values
\[ \Delta \theta = P \times R_{th} \leq 85 \degree C - \theta \text{ ambient} \]

\( R_{th} \): is given for still air with the capacitor not being subjected to any other heat source.

\[ P = (I_{rms})^2 \times R_s + \frac{\pi}{2} \times C \times (V_1 - V_2)^2 \times f_r \times 10^{-4} \]

Temperature measuring point*
Measurement of the case temperature (\( \Theta_B \)) together with the losses gives the temperature of the hot spot.
\[ \Theta = (R_{th}B \times P) + \Theta_B \leq 85 \degree C \]

*Important for series/parallel operations.

Important
Due to the modular nature of this capacitors series parallel assemblies can be made to increase the capacitance and/or voltage.

Ensure that suitable sized connections are used so that the capacitors will not be overheated. The inductance of the connections must be low enough to ensure equal current sharing of capacitors in parallel.

For series assemblies, connect resistor across each capacitor. Optimal resistance value will be:
\[ R \# 30 \text{ M}\Omega/C \text{ in } \mu\text{F} \]
\[ (1.5 \text{ M}\Omega \text{ for } C = 20 \mu\text{F}) \]

2) DC FILTERING
Nominal Capacitance

**RATINGS AND PART NUMBER REFERENCE – POLYESTER DIELECTRIC**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Capacitance (( \mu \text{F} ))</th>
<th>( V_{ndc} ) (V)</th>
<th>Irms max.* (A)</th>
<th>(( f \times t )) max. (A²s)</th>
<th>( Tg \delta ) (f=kHz) (10⁻⁴)</th>
<th>Rs (mΩ)</th>
<th>Typical Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FSM26A0546K--</td>
<td>54</td>
<td>750</td>
<td>105</td>
<td>270</td>
<td>2 + 3.4f</td>
<td>1</td>
<td>9500</td>
</tr>
<tr>
<td>FSM26C0446K--</td>
<td>42</td>
<td>900</td>
<td>100</td>
<td>220</td>
<td>2 + 2.8f</td>
<td>1.05</td>
<td>9500</td>
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<tr>
<td>FSM26L0336K--</td>
<td>33</td>
<td>1000</td>
<td>95</td>
<td>170</td>
<td>2 + 2.3f</td>
<td>1.1</td>
<td>9500</td>
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<tr>
<td>FSM26UO286K--</td>
<td>28</td>
<td>1150</td>
<td>85</td>
<td>150</td>
<td>2 + 2f</td>
<td>1.15</td>
<td>9500</td>
</tr>
<tr>
<td>FSM26V0206K--</td>
<td>20</td>
<td>1350</td>
<td>65</td>
<td>100</td>
<td>2 + 1.6f</td>
<td>1.25</td>
<td>9500</td>
</tr>
</tbody>
</table>

*Function of power dissipation