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.

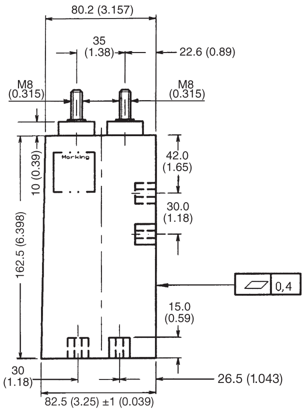
M8 outputs.

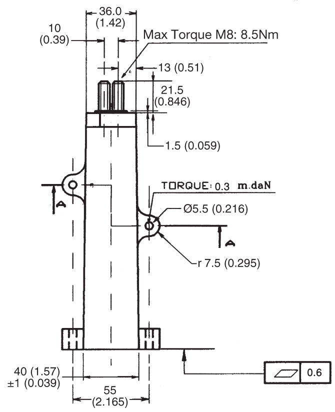
Fixing in two planes.

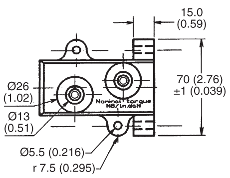
Vibrations and shocks resistant to IEC 60077.

Average weight 0.95 kg.

DIMENSIONS







General tolerances: ± 0.5 (0.02)

Dimensions: mm (inches)

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 $V_n$dc	750 to 1350 V
Allowable overvoltages	V_s = 1.1 $V_n$dc – 1/3 of the time 1.3 $V_n$dc – 1 min./day 2 $V_n$dc – 100 ms/day for $V_n$dc = ≤ 1150 V 1.75 $V_n$dc – 100 ms/day for $V_n$dc = 1350 V
DC test voltage between terminals	10s at 20°C ± 15°C $V_e$dc – 1.5 $V_n$dc (IEC 61071)
RMS current	Irms max. = 65 to 105 A
Impulse current	I^2.t max. = 100 to 270 A^2s
Tangent of loss angle	Tgδ: see table of values
Series inductance L_s	≤ 25 nH
Thermal resistance	Rth ambient/hot spot = 9.2°C/W Rth case/hot spot = 3.3°C/W
Dielectric	Polypropylene

HOW TO ORDER

FSM	2	6	A	0546	K	– –
Series FSM = Standard FSN = RoHS Compliant	**Case Size** 2 = Standard	**Dielectric** 6 = Polypropylene	**Voltage Code** A = 750Vdc C = 900Vdc L = 1000Vdc U = 1150Vdc V = 1350Vdc	**Capacitance Code** 0 + pF code 0546 = 54µF 0336 = 33µF 0206 = 20µF etc.	**Capacitance Tolerances** K = ±10%	**Terminal Code** – – = Standard (Male Threaded)

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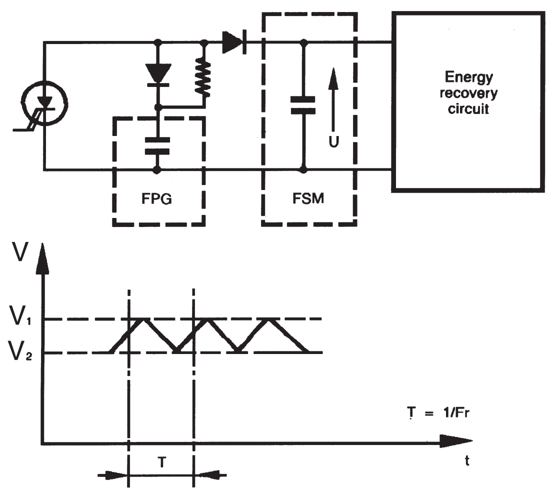
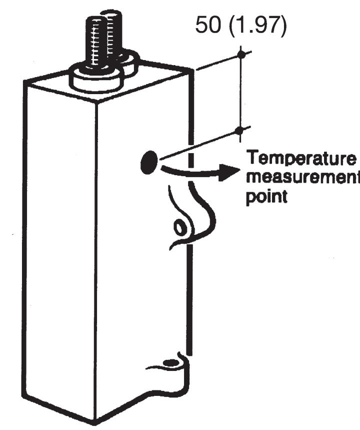
1) RECOVERY OF G.T.O. SWITCHING ENERGY

Typical application





Choice of voltage:
$V_1 \leq V_n dc$

Repetitive surge:
1.1 $V_n$dc – 1/3 of the time

Non-repetitive surge:
1.3 $V_n$dc – 1 min./day

Occasional max. surge:
2 $V_n$dc – 100 ms/day for $V_n$dc = ≤ 1150 V
1.75 $V_n$dc – 100 ms/day for $V_n$dc = 1350 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, Tgδ and the thermal resistance given in the table of values

$$\Delta\emptyset = P \times Rth \leq 85°C - \emptyset \text{ ambient}$$

Rth: is given for still air with the capacitor not being subjected to any other heat source.

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

Temperature measuring point*
Measurement of the case temperature (ΘB) together with the losses gives the temperature of the hot spot.

$$\Theta = (RthB \times P) + \Theta B \leq 85°C$$

*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 MΩ/C in μF
(1.5 MΩ for C = 20 μF).

2) DC FILTERING

Nominal Capacitance

RATINGS AND PART NUMBER REFERENCE – POLYESTER DIELECTRIC

Part Number	Capacitance (μF)	Vndc (V)	Irms max.* (A)	(I^2.t) max. (A^2s)	Tgδ (f→kHz) (10^{-4})	Rs (mΩ)	Typical Weight (g)
FSM26A0546K--	54	750	105	270	2 + 3.4 f	1	9500
FSM26C0446K--	42	900	100	220	2 + 2.8 f	1.05	9500
FSM26L0336K--	33	1000	95	170	2 + 2.3 f	1.1	9500
FSM26U0286K--	28	1150	85	150	2 + 2 f	1.15	9500
FSM26V0206K--	20	1350	65	100	2 + 1.6 f	1.25	9500

*Function of power dissipation