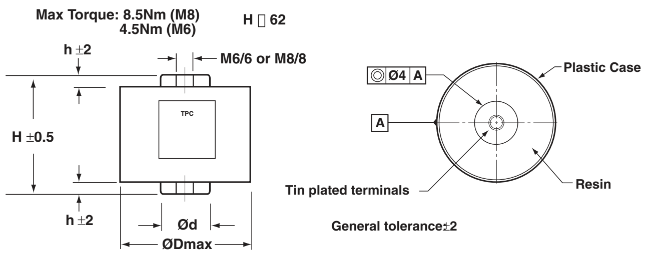
FPX (FPY RoHS Compliant)

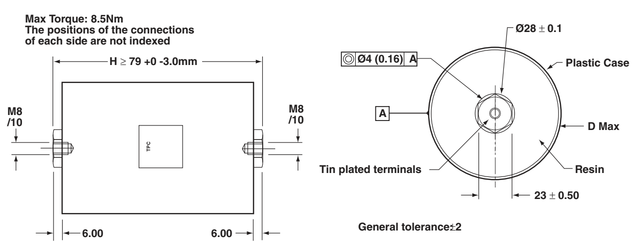
PROTECTION

PROTECTION

Plastic Case Style M6 / 6 or M8 / 8



Plastic Case Style M8 / 10



MARKING

Logo

Withstanding surge voltage

Capacitance and tolerance in clear

Nominal DC voltage in clear

RMS current in clear

Date of manufacture (IEC coding)

APPLICATIONS

- Protection of Thyristors
- Protection of Gate Turn-off Thyristor (G.T.O.)
- Clamping (Secondary Snubber)

TECHNOLOGY

Metallized polypropylene dielectric capacitor with controlled self-healing.

Reinforced metallization developed for high impulse currents.

Axial connections specially developed to reduce series inductance and to provide rigid mechanical mounting.

PACKAGING MATERIAL

Cylindrical in plastic case filled with thermosetting resin. Outputs: threaded inserts either M6 or M8.
Terminals: threaded inserts either M6 or M8.
The plastic case and the thermosetting resin are self-extinguishing materials. These two housing materials have the UL Recognition at V-0 level according to the UL 94 standard and have certified classifications according to the EN 45545-2 standard.

HOT SPOT TEMPERATURE CALCULATION

See Hot Spot Temperature, page 3.

$$\theta_{hot\ spot} = \theta_{terminals} + (P_d + P_t) \times R_{th}$$

with

P_d (Dielectric losses) = Q x $tg\delta_0$

$\Rightarrow [\ \frac{1}{2}\ \times C_n \times (V_{peak}\ to\ _{peak})^2 \times f\ ] \times (2 \times 10^{-4})$

P_t (Thermal losses) = $R_s \times (I_{rms})^2$

where

C_n in Farads
V in Volts
I_{rms} in Amperes
R_s in Ohms
f in Hertz
θ in °C
R_{th} in °C/W

Due to the design of the capacitor and its technology, the thermal impedance between the terminations and the core of the capacitor is low, it is necessary to take care that the capaci tor is never overheated by use of incorrect sized connections.

In the case where the series diodes are screwed to the capacitor, cooling of the diodes must be taken in account.

Do not use the capacitor as a heat sink.

Due to the complexity of the diode/capacitor thermal exchanges, we recommend that thermal measurements shall be made on

HOW TO ORDER

FPX	6	6	N	0154	J	--
Series	**Case Size**	**Dielectric**	**Voltage Code**	**Capacitance Code**	**Capacitance Tolerances**	**Terminal Code**
FPX = Standard FPY = RoHS Compliant	Case Size 6 Case Size 8 (See Case Style)	6 = Polypropylene	N = 2000V P = 2500V X = 3500V Z = 4500V Y = 4600V	0 + pF code 0105 = 1.0μF 0335 = 3.5μF 0504 = 0.5μF etc.	J = ± 5%	– – = Standard

Not RoHS Compliant

RoHS COMPLIANT

Please select correct termination style.

ELECTRICAL CHARACTERISTICS

Capacitance range C_n	0.5µF to 6µF
Tolerance on C_n	±5%
Rated DC voltage $V_n$dc	1000 to 3000 V
Peak voltage V_{peak}	1600 to 4000 V
Allowable overvoltage V_s (for 10 s/day)	2000 to 4600 V
Stray inductance	5 to 20 nH
RMS current	I_{rms} max. = up to 160 A The currents shown in the tables are maximum. It is necessary to respect the thermal limits of the dielectric 85°C see “Hot spot temperature calculation”
Insulation resistance	Ri x C ≥ 30,000 s
Impulse current	I^2.t maxi. = up to 729 A^2.s Spikes or peak currents in the capacitors may cause a deterioration of the bonding between the metallization and the connections. These bonds are capable of withstanding only a limited amount of energy for each spike. The table shows the maximum energy permitted in the form (I^2.t), where I is in Ampere, and t is in seconds.
Note: The formula (I^2.t) replaces dV/dt which is less easy to use as it is not an expression of energy (I = C.dV/dt). This type of capacitor has been designed to withstand high (I^2.t) values.	
Variation of capacitance with temperature	$\frac{\Delta C}{C}$ ≤ ±2% between -40 and +85°C
Climatic category	40/085/56 (IEC 60068)
Test voltage between terminals @ 25°C	Vs for 10s
Test voltage between terminals and case @ 25°C (Type test)	@ 7 kV_{rms} @ 50 Hz for 1 min.
Dielectric	Polypropylene

FPX (FPY RoHS Compliant) Table of Values

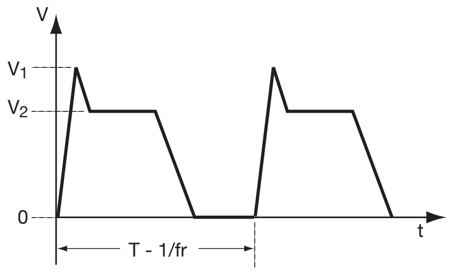
PROTECTION

Part Number	Cn (µF)	Dimensions: Case Style	H* ±0.5 (mm)	h ±2 (mm)	D max. (mm)	d ±0.5 (mm)	I^2.t max. (A^2.s)	I_{rms} max. (A)	R_s (mΩ)	Rth (°C/W)	Typical Weight (g)
FPX 2000V $V_n$dc = 1000V V_{peak} = 1600V V_{rms} = 560V V_s = 2000V (Voltage Code N)											
FPX66N0105J--	1	Plastic case M6/6	52	5	40	18	2	15	2.4	14)	120
FPX86N0205J--	2	Plastic case M8/8	52	5	60	22	8	30	1.2	6.1	190
FPX86N0305J--	3	Plastic case M8/8	52	5	72	22	18	45	0.9	4.5	260
FPX86N0355J--	3.5	Plastic case M8/8	52	5	72	22	25	50	0.85	4.5	260
FPX86N0405J--	4	Plastic case M8/8	52	5	82	22	32	60	0.75	3.5	320
FPX86N0505J--	5	Plastic case M8/8	52	5	82	22	50	70	0.65	2.5	320
FPX 2500V $V_n$dc = 1300V V_{peak} = 2000V V_{rms} = 700V V_s = 2500V (Voltage Code P)											
FPX66P0504J--	0.5	Plastic case M6/6	52	5	40	18	1	15	3	14	120
FPX86P0105J--	1	Plastic case M8/8	52	5	60	22	3	20	2.3	10.5	190
FPX86P0155J--	1.5	Plastic case M8/8	52	5	60	22	7	30	1.5	6.1	190
FPX86P0205J--	2	Plastic case M8/8	52	5	72	22	12.7	40	1.1	4.5	260
FPX86P0255J--	2.5	Plastic case M8/8	52	5	72	22	20	60	0.89	3.7	260
FPX86P0305J--	3	Plastic case M8/8	52	5	82	22	28	60	0.85	3.2	320
FPX86P0355J--	3.5	Plastic case M8/8	52	5	82	22	39	65	0.78	2.9	320
FPX 3500V $V_n$dc = 2000V V_{peak} = 2400V V_{rms} = 850V V_s = 3500V (Voltage Code X)											
FPX86X0205J--	2	Plastic case M8/8	62	5	72	22	23	41	1.24	6.1	310
FPX86X0305J--	3	Plastic case M8/8	62	5	92	22	50	62	0.92	3.9	475
FPX86X0355J--	3.5	Plastic case M8/8	62	5	92	22	70	72	0.83	3.4	475
FPX86X0405J--	4	Plastic case M8/8	62	5	92	22	85	80	0.78	3.1	475
FPX 4500V $V_n$dc = 2500V V_{peak} = 3200V V_{rms} = 1130V V_s = 4500V (Voltage Code Z)											
FPX86Z0904J--	0.9	Plastic case M8/8	62	5	72	22	15	40	1.5	6.2	310
FPX86Z0105J--	1	Plastic case M8/8	62	5	72	22	15	38	1.4	6.2	310
FPX86Z0205J--	2	Plastic case M8/8	62	5	92	22	70	75	0.85	3.1	475
FPX 4600V $V_n$dc = 3000V V_{peak} = 4000V V_{rms} = 1400V V_s = 4600V (Voltage Code Y)											
FPX86Y0504J--	0.5	Plastic case M8/8	62	5	72	22	7	40	1.7	12	310
FPX86Y0684J--	0.68	Plastic case M8/8	62	5	72	22	14	35	1.59	6.2	310
FPX86Y1254J--	1.25	Plastic case M8/8	62	5	92	22	50	65	1	3.3	475
FPX86Y0155J--	1.5	Plastic case M8/10	79	6	98	–	32	60	1.4	8.3	630
FPX86Y0175J--	1.7	Plastic case M8/10	79	6	98	–	40	70	1.3	7.4	630
FPX86Y0205J--	2	Plastic case M8/10	79	6	98	–	56	80	1.1	6.3	630
FPX86Y0255J--	2.5	Plastic case M8/10	118	6	98	–	200	130	0.8	1.1	1020
FPX86Y0275J--	2.7	Plastic case M8/10	118	6	98	–	232	140	0.7	1.1	1020
FPX86Y0305J--	3	Plastic case M8/10	143	6	98	–	128	100	0.9	1.5	1280
FPX86Y0355J--	3.5	Plastic case M8/10	143	6	98	–	170	110	0.8	1.4	1280
FPX86Y0405J--	4	Plastic case M8/10	143	6	98	–	224	115	0.8	1.4	1280
FPX86Y0455J--	4.5	Plastic case M8/10	163	6	98	–	522	120	0.6	1.7	1500
FPX86Y0505J--	5	Plastic case M8/10	163	6	98	–	600	130	0.6	1.7	1500
FPX86Y0605J--	6	Plastic case M8/10	163	6	98	–	729	160	0.5	1.7	1500

* Tol: +0 / -3mm for H ≥ 118mm

PROTECTION

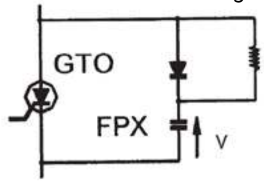
G.T.O.



Choice of voltage: $V_1 \leq V_{peak}$

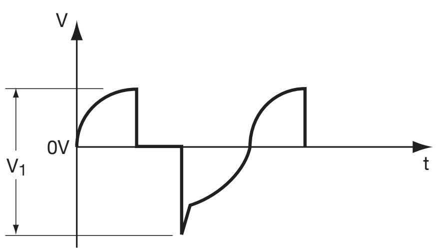
$V_2 \leq V_n dc$

Maximun overvoltage $\leq V_s$ (10s/day)



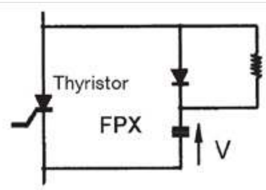
Nominal DC voltage ($V_n$dc) and peak voltage (V_{peak}) are given in the tables.

THYRISTOR



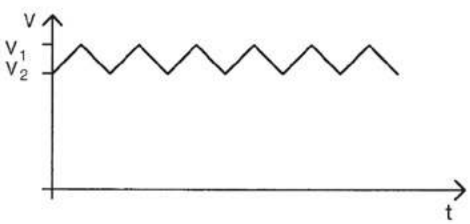
Choice of voltage: $V_1 \leq V_{peak}$

Note that V_1 is the voltage peak to peak and cannot be symmetrical vs 0 V



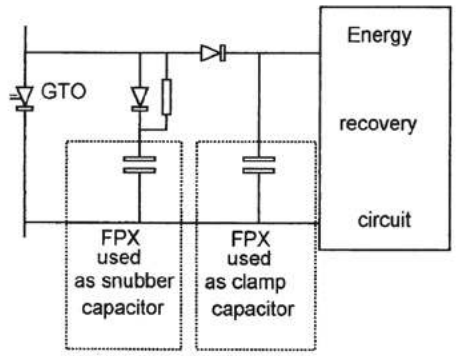
Peak voltage is given in the tables.

CLAMPING



Choice of voltage: $V_1 \leq V_{peak}$

$V_2 \leq V_n dc$



Nominal DC voltage ($V_n$dc) and peak voltage (V_{peak}) are given in the tables.