



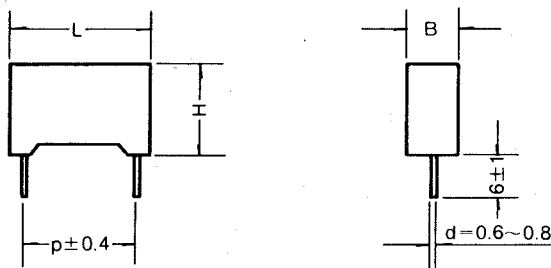
## METALLIZED POLYESTER FILM CAPACITOR

### MOLDED BOX, NON-INDUCTIVE, METALLIZED FILM CAPACITORS, RADIAL LEAD

#### FEATURES

- SEALED IN SPECIAL EXTERIOR RESIN CASES FOR SUPERIOR HEAT RESISTANCE, HUMIDITY RESISTANCE AND FLAME RETARDANT.
- SINGLE-ENDED CONSTRUCTION, UNIFORM DIMENSIONS, AND FIXED LEAD SPACING SIMPLIFY HAND INSERTION PROCEDURES.
- LOW SELF-INDUCTANCE, HIGH VOLTAGE STRESS CAPABILITY. IDEAL FOR IC DECOUPLING APPLICATIONS.

$p=10 \sim 27.5 \text{ mm}$



All dimensions are in mm.

B	≤ 4	> 4
∅d	0.6	0.8

### GENERAL TECHNICAL DATA

**Dielectric :**  
polyester film

**Plates :**  
aluminium layer deposited by evaporation under vacuum.

**Winding :**  
non-inductive type.

**Leads :**  
tinned wire(minimum lead content 5%).

**Protection :**  
Plastic case, epoxy resin filled. Box made of solvent resistant material.

**Marking :**  
capacitance, tolerance, DC nominal voltage.

**Climatic category :**  
FME DIN 40040. 55/100/56 IEC 68-1

**Technical terms and tests :**  
IEC 384-2 CECC 30400 DIN 44110 T1 DIN 45910 T11.

**Detail specification :**  
CECC 30401-009/011/023 DIN 44112.

**Reliability :**

LR DIN 40040
L = 300 FIT
R = 10 <sup>5</sup> hours

1 FIT = 1 × 10<sup>-9</sup> failures/components × h.  
Considering a practical application at +40°C and 0.5 × V<sub>n</sub> we can assume a failure quote of 10 FIT.

**Failure criteria**(according to DIN 44122)

Short or open circuit

Capacitance change  $\Delta C/C$  : > ±10%

Dissipation factor : > 2 × limit value

insulation resistance : < 0.005 × limit value.

### ELECTRICAL DATA

**Nominal voltage(V<sub>n</sub>) :** 63 Vdc-100Vdc-  
160 Vdc-250 Vdc-  
400 Vdc-630 Vdc-  
1000 Vdc.

**Category voltage(V<sub>c</sub>) :** up to 85°C V<sub>c</sub> = V<sub>n</sub>  
For temperature between +85°C and +100°C a decreasing factor of 1.25% per degree °C on the nominal voltage V<sub>n</sub> has to be applied.

**Capacitance range :** 1000pF to 10μF.

**Capacitance values :**  
values in compliance with IEC 63 Norm. E6 series.

**Capacitance tolerances**  
±10% : ±20% : (upon request ± 5%).

**Total self inductance(L) :**

pitch(mm)	10	15	22.5	27.5
L(nH) ≈	9	10	18	18

**Dissipation Factor(DF) :** tg δ × 10<sup>-4</sup> at +25°C ±5°C

KHz	C ≤ 1μF	C > 1μF
1	< 100	< 100
10	< 150	

**Insulation resistance:**

**Test conditions**

Temperature : +25°C ± 5°C

Voltage charge time : 1minute

Voltage charge : 50Vdc for V<sub>n</sub> < 100Vdc  
100Vdc for V<sub>n</sub> < 1000Vdc

**For V<sub>n</sub> > 100Vdc :**

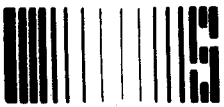
> 30,000MΩ for C < 0.33μF(5.10<sup>4</sup>MΩ) (\*)  
> 10,000sec. for C > 0.33μF(17000sec.) (\*)

**For V<sub>n</sub> < 100Vdc :**

> 10,000MΩ for C < 0.1μF(5.10<sup>4</sup>MΩ) (\*)  
> 1,000sec. for C > 0.1μF(5000sec.)

**Test voltage between terminals :**

1.6 × V<sub>n</sub> applied for 2sec. at +25°C ±5°C



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Maximum pulse rise time  $dv/dt$  ( $V/\mu\text{sec}$ ) :

Vn	Pitch(mm)			
	10	15	22.5	27.5
63	3	1.5	1	1
100	6	3	2	1
160	8	5	3	2
250	11	7	4	3
400	20	10	5.5	5
630	30	15	8	7
1000	60	25	15	10

If the working voltage(V) is lower than the nominal voltage(Vn), the capacitor can work at higher  $dv/dt$ . In this case the maximum value allowed is obtained by multiplying the above value(see

table) with the ratio  $\frac{Vn}{V}$

**Soldering :**

Test conditions

Soldering temperature: +260°C ± 5°C

Soldering duration : 10sec. ± 1sec.

Performance

Capacitance change  $\Delta C/C$ : < ± 2%

DF change  $\Delta tg\delta$ : < 30.10<sup>-4</sup> at 10KHz for C<1μF

< 20.10<sup>-4</sup> at 1KHz for C>1μF

Insulation resistance : < limit value.

**Damp heat test :**

Test conditions

Temperature : + 40°C

Relative humidity : 93% ± 2%

Test duration : 56days

Performance

Capacitance change  $\Delta C/C$ : < ± 5%

DF change  $\Delta tg\delta$  : < 50.10<sup>-4</sup> at 1KHz

Insulation resistance: > 50% of limit value.

**Life test :**

Test conditions

Temperature : + 85°C

Test duration : 1000h

Voltage applied : 1.25 × Vn

Performance

Capacitance change  $\Delta C/C$ : < ± 5%

DF change  $\Delta tg\delta$ : < 30.10<sup>-4</sup> at 10KHz for C<1μF

< 20.10<sup>-4</sup> at 1KHz for C<1μF

Insulation resistance < 50% of the limit value.

**Long term stability(after two years)**

Storage-Standard environmental conditions.

Performance

Capacitance change  $\Delta C/C$ : < ± 3% for C<0.1μF

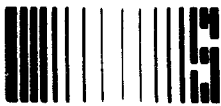
< ± 3% for C>0.1μF

**■ DIMENSIONS**

Rated Capacitance(μF)	63V~/40V~				100V~/63V~				160V~/90V~				250V~/160V~				400V~/200V~				630V~/220V~				1000~/250V~					
	B	H	L	P	B	H	L	P	B	H	L	P	B	H	L	P	B	H	L	P	B	H	L	P	B	H	L	P		
0.001	4	9	13	10	4	9	13	10	4	9	13	10	4	9	13	10	4	9	13	10	4	9	13	10	4	9	13	10		
0.0015	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"		
0.0022	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"		
0.0033	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"		
0.0047	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	5	11	13	10			
0.0068	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	6	12	13	10			
0.010	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	5	11	18	15			
0.015	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	5	11	13	10	"	"	"	"
0.022	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	6	12	13	10	7.5	13.5	18	15
0.033	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	5	11	18	15	6	15	26.5	22.5
0.047	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	5	11	18	15	6	12	18	15
0.068	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
0.10	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
0.15	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
0.22	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
0.33	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
0.47	5	11	13	10	"	"	"	"	6	12	18	15	6	15	26.5	22.5	8.5	17	26.5	22.5	11	20	32	27.5	13	22	32	27.5		
0.68	5	11	18	15	6	12	18	15	7.5	13.5	18	15	7	16	26.5	22.5	10	18.5	26.5	22.5										
1.0	"	"	"	"	"	"	"	"	8.5	14.5	18	15	"	"	"	"	11	20	32	27.5										
1.5	6	12	18	15	7	16	26.5	22.5	8.5	17	26.5	22.5	10	18.5	26.5	22.5														
2.2	7.5	13.5	18	15	8.5	17	26.5	22.5	10	18.5	26.5	22.5	11	20	32	27.5														
3.3	7	16	26.5	22.5	10	18.5	26.5	22.5	11	20	32	27.5	13	22	32	27.5														
4.7	8.5	17	26.5	22.5	11	20	32	27.5	13	22	32	27.5	15	30	32	27.5														
6.8	10	18.5	26.5	22.5	13	22	32	27.5	15	30	32	27.5	18	33	32	27.5														
10	11	20	32	27.5	15	30	32	27.5	18	33	32	27.5	22	37	32	27.5														

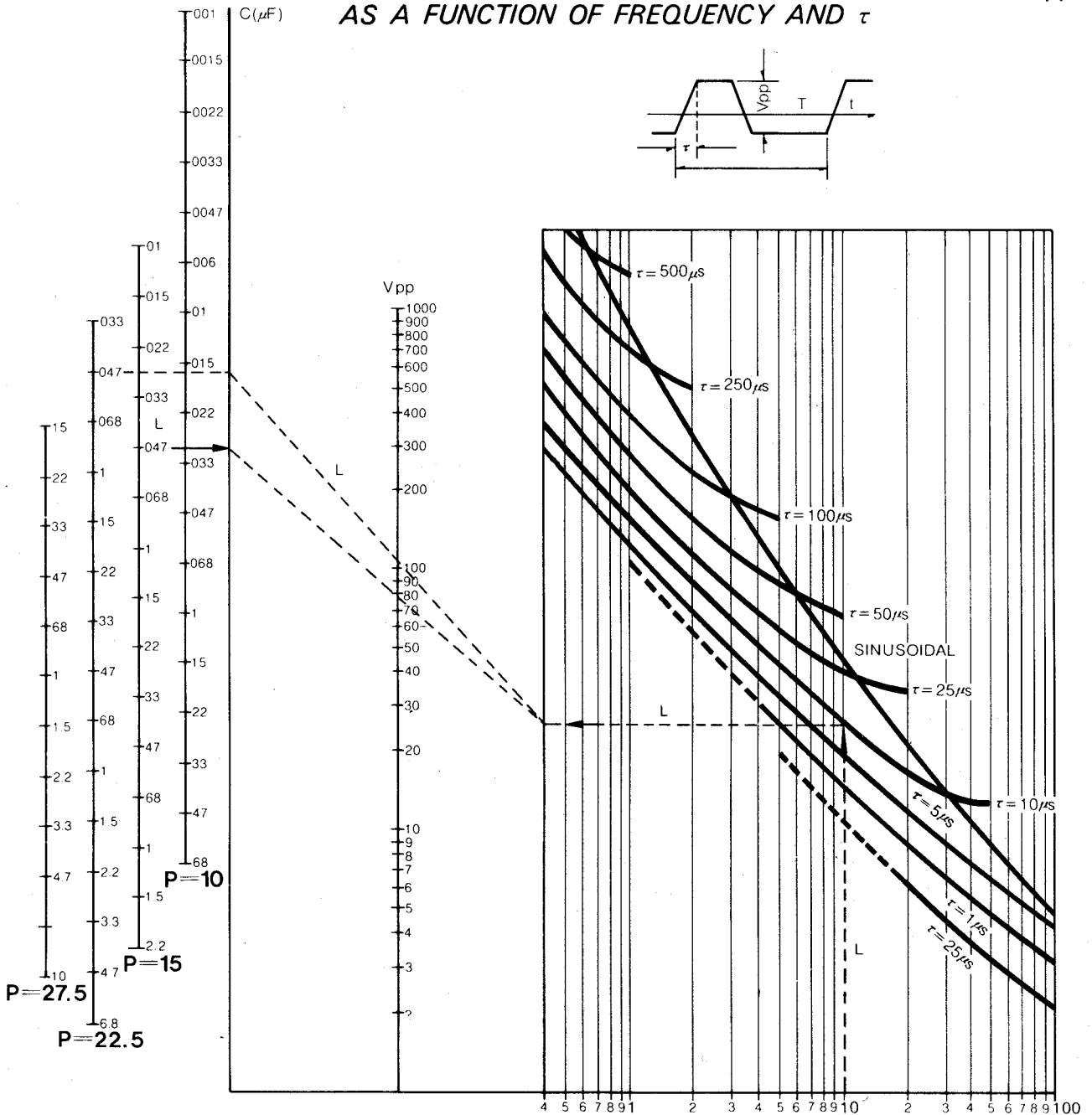
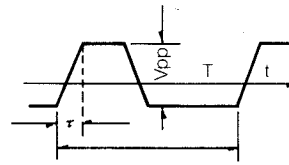
**■ SMMY (OPTIONAL SIZES)**

0.1													5	11	13	10	5	11	18	15	6	12	18	15	8.5	14.5	18	15				
0.15													4	9	13	10	"	"	"	"	6	12	18	15	8.5	14.5	18	15				
0.22					4	9	13	10	"	"	"	"	"	"	"	"	8.5	14.5	18	15	"	"	"	"	"	"	"	"	"	"	"	"
0.33					5	11	13	10	5	11	13	10	5	11	18	15	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"
0.47	4	9	13	10	"	"	"	"	6	12	13	10	7.5	13.5	18	15																
0.68	5	11	13	10	6	12	13	10	5	11	18	15	8.5	14.5	18	15																
1.0	6	12	13	10	"	"	"	"	6	12	18	15	"	"	"	"																
1.5	5	11	18	15	6	12	18	15	7.5	13.5	18	15																				
2.2	6	12	18	15	8.5	14.5	18	15																								



**METALLIZED POLYESTER FILM CAPACITOR**

**NOMOGRAPH OF THE ADMISSIBLE PEAK VOLTAGE  $V_{pp}$  AS A FUNCTION OF FREQUENCY AND  $\tau$**



**EXAMPLE**

Let us consider the following Working data:  
 $f=10\text{KHz}$ (Repetition frequency)  
 $\tau=10\mu\text{sec}$ (Rise time)  
 $V_{pp}=90\text{V}$ (Voltage load)  
 a capacitor  $C=.047\mu\text{F}$   
 with  $p=15\text{mm}$ (lead spacing)  
 The dashed line L identifies a max admissible peak voltage of 80 Vpp.

This result is lower than the voltage load (90Vpp), therefore it is necessary to select another capacitor with higher working voltage and/or bigger dimension and lead spacing. In fact for a capacitor with  $p=22.5\text{mm}$  the admissible peak voltage is 110 Vpp > 90 Vpp (Voltage load request)