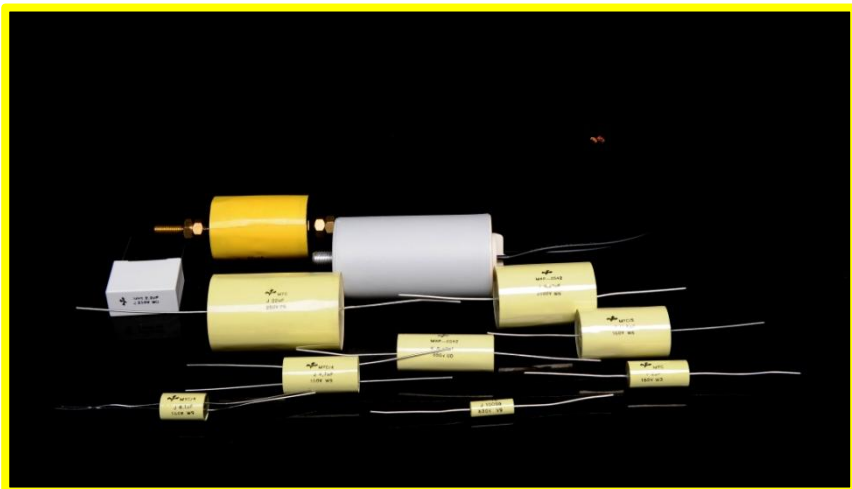


Polypropylene capacitors

Polypropylene capacitors

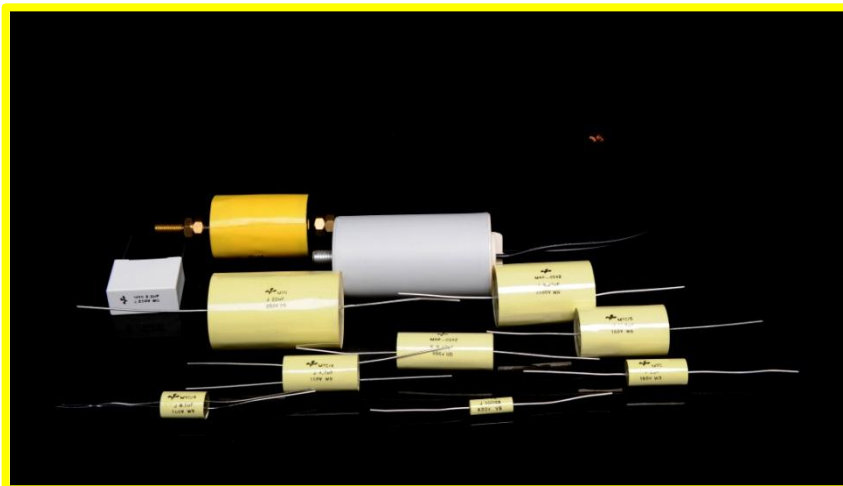
Polypropylene capacitors



DIELECTRIC	METALLIZED POLYPROPYLENE (MKP)						
Series	MYS	MKP2M	MYB	MYB/5	MYR	MYA	MYC
Capacitance range (μF)	0.001 ÷ 10	0.01 ÷ 2.2	0.005 ÷ 0.432	0.005 ÷ 0.047	0.001 ÷ 10	0.001 ÷ 10	0.001 ÷ 4.7
Capacitance tolerance (+/- %)	1 ÷ 20	5 ÷ 10	0.5 ÷ 2.5	0.5 ÷ 2.5	1 ÷ 20	1 ÷ 20	1 ÷ 20
Rated voltage							
▪ Vdc	160 ÷ 630	250 ÷ 400	63	63	160 ÷ 630	160 ÷ 630	160 ÷ 630
▪ Vac	90 ÷ 250	200 ÷ 220	-	-	90 ÷ 250	90 ÷ 250	90 ÷ 250
Pulse rise time (V/μs)	1 ÷ 55	60 ÷ 260	5 ÷ 50	10 ÷ 50	1 ÷ 20	1 ÷ 20	1 ÷ 20
Lead spacing mm	7.5 ÷ 27.5	10 ÷ 27.5	7.18 ÷ 14.3	5,08	10 ÷ 27.5	AXIAL	AXIAL
Encapsulation	Potted with epoxy resin	Potted with epoxy resin	Potted with epoxy resin	Potted with epoxy resin	Plastic wrapped and epoxy resin filled	Plastic wrapped and epoxy resin filled	Plastic wrapped and epoxy resin filled
Climatic category acc.to IEC 60068	55/100/56	55/100/56	55/85/56	55/85/56	55/100/56	55/100/56	55/100/56
Packing	Bulk	Bulk	Bulk, taped	Bulk, taped	Bulk	Bulk	Bulk, taped
International standard	IEC 60384-16	IEC 60384-16	IEC 60384-16	IEC 60384-16	IEC 60384-16	IEC 60384-16	IEC 60384-16

Polypropylene capacitors

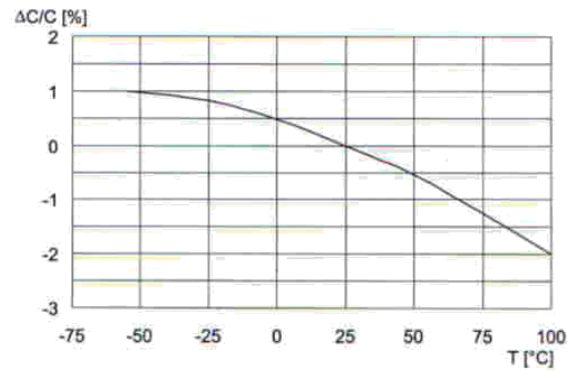
Polypropylene capacitors



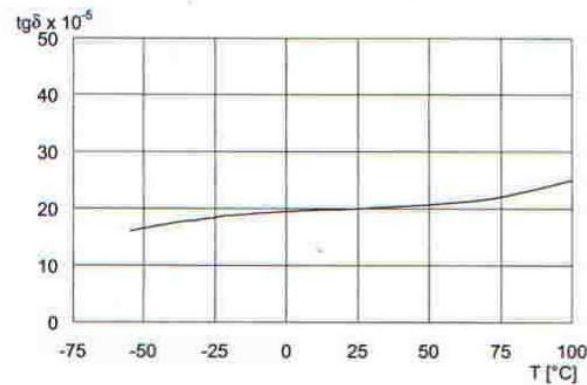
DIELECTRIC		POLYPROPYLENE FILM FOIL (KP)					
Series	YB	YB/5	YS	YS/5	HYS	YC	HYC
Capacitance range (μF)	0.0001 ÷ 0.0442	0.000022 ÷ 0.008	0.0001 ÷ 0.1	0.0001 – 0.022	0.0001 ÷ 0.22	47pF ÷ 0.47	0.0001 ÷ 0.33
Capacitance tolerance (+/- %)	0.5 ÷ 2.5	0.5 ÷ 2.5	1 ÷ 20	1 ÷ 20	1 ÷ 20	1 ÷ 20	1 ÷ 20
Rated voltage							
▪ Vdc	63	63	100 ÷ 630	63 ÷ 250	630 ÷ 2000	100 ÷ 630	630 ÷ 2000
▪ Vac	-	-	63 ÷ 200	40 ÷ 160	300 ÷ 500	63 ÷ 200	300 ÷ 500
Pulse rise time (V/μs)	50	50	800 ÷ 11000	1000	1800 ÷ 27000	1000 ÷ 13000	1800 ÷ 27000
Lead spacing mm	7.18 - 14.3	5.08	7.5 ÷ 15	5	15 ÷ 27.5	AXIAL	AXIAL
Encapsulation	Potted with epoxy resin	Potted with epoxy resin	Potted with epoxy resin	Potted with epoxy resin	Potted with epoxy resin	Plastic wrapped and epoxy resin filled	Plastic wrapped and epoxy resin filled
Climatic category acc.to IEC 60068	55/85/56	55/85/56	55/100/56	55/100/56	55/100/56	55/100/56	55/100/56
Packing	Bulk, taped	Bulk, taped	Bulk	Bulk	Bulk	Bulk, taped	Bulk, taped
International standard	IEC 60384-13	IEC 60384-13	IEC 60384-13	IEC 60384-13	IEC 60384-13	IEC 60384-13	IEC 60384-13

Typical curves

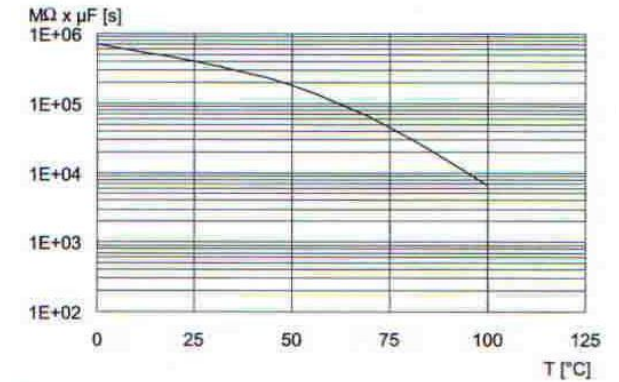
Polypropylene capacitors



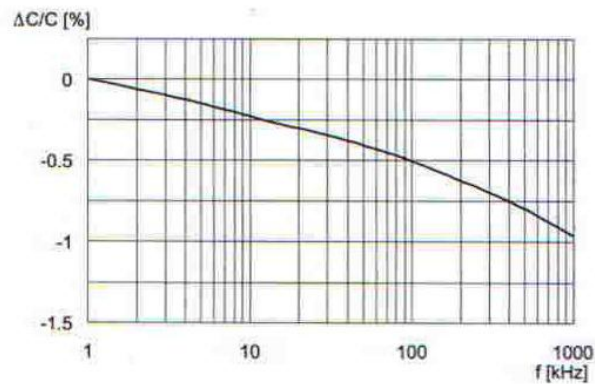
Capacitance variation as a function of temperature at 1 KHz



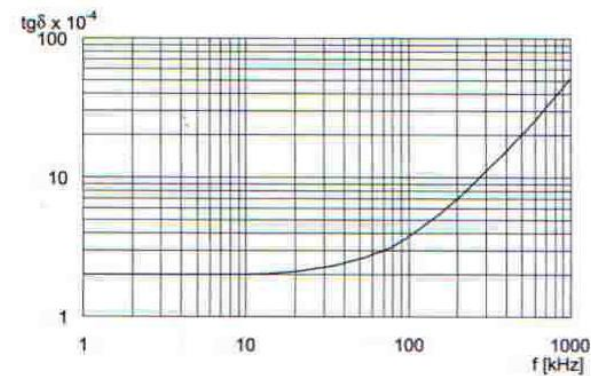
Dissipation factor variation as a function of temperature at 1 KHz



Time constant as a function of temperature



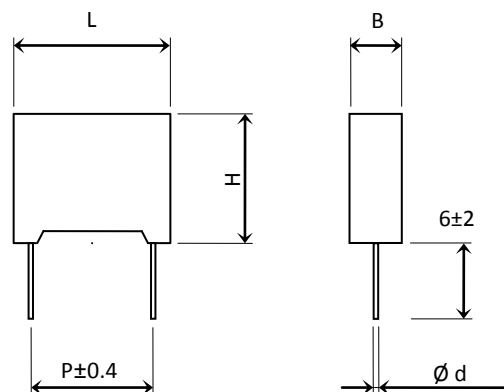
Capacitance resistance as a function of frequency (room temperature)



Dissipation factor variation as a function of frequency (room temperature)

Type MYS

Polypropylene capacitors



All dimensions are in mm

GENERAL TECHNICAL DATA

Dielectric	polypropylene film
Plates	aluminium layer deposited by evaporation under vacuum
Winding	non-inductive type
Leads	tinned copper wire
Construction	radial leads, box type
Protection	plastic case, made of solvent resistant material, sealed with epoxy resin
Marking	manufacturer's name or logo, type, capacitance, tolerance, D.C.rated voltage and manufacturing date code
Climatic category	55/100/56 IEC 60068-1
Standard references	IEC 60384-16

ELECTRICAL CHARACTERISTICS

Rated voltage (Vr) 160 Vdc - 250 Vdc - 400 Vdc - 630 Vdc

Category voltage (Vc) up to 85 °C Vc = Vr

For temperature between +85 °C and +100 °C a decreasing factor of 2% per degree °C on the rated voltage (dc and ac) has to be applied

Capacitance values normal values in compliance with IEC standard series

E6 - E12 - E24 - E48 - E96 (IEC 60063 Norm)

Other values available upon request

Capacitance tolerances ±1% (F); ±1.25% (E); ±2% (G); ±2.5% (H); ±5% (J); ±10% (K); ±20% (M) measured at 1 kHz

Total self-inductance (L) Pitch (mm) 7.5 10 15 22.5 27.5

Lead length ~ 2mm L (nH) ≈ 8 9 10 18 18

Dissipation factor (tgδ) ≤6 x 10⁻⁴ at 1 kHz
At +25°C ±5°C ≤20 x 10⁻⁴ at 10 kHz for C ≤ 1 µF

Insulation resistance ≥ 1 x 10⁵ MΩ for C ≤ 0.33 µF
≥ 30000 s for C > 0.33 µF

Test conditions Temperature: +25°C ±5°C
Voltage charge time: 1 min
Voltage charge: 100Vdc

Test voltage between terminals 1.6 x Vr applied for 2 s at 25 °C ±5 °C

		Pitch (mm)				
Maximum pulse rise time (V/µs)	Vr	7.5	10	15	22.5	27.5
		5.5	4	2	1.5	1
	160	15	11	7	4	3
	250	35	20	10	5.5	5
	400	55	30	15	8	7
	630					

If the working voltage (V) is lower than the rated voltage (Vr), the capacitor can work at higher dv/dt. In this case the maximum value allowed is obtained multiplying the above value with the ratio Vr/V

Type MYS

Polypropylene capacitors

QUALITY TEST	
Damp heat test	at temperature +40 °C ±2°C, RH 93% ±2% , test duration 56 days capacitance change $ \Delta C/C \leq 2\%$ dissipation factor change $\Delta \text{tg}\delta \leq 10 \times 10^{-4}$ at 1 kHz insulation resistance $\geq 50\%$ of initial limit
Long term stability	at standard environmental conditions after 2 years capacitance change $ \Delta C/C \leq 0.5\%$
Soldering	test IEC 60068-2-20 TB method 1A, solder bath at 260 °C ±5 °C for 10 s ±1 s (with heat screen) capacitance change $ \Delta C/C \leq 1\%$ dissipation factor change $\Delta \text{tg}\delta \leq 10 \times 10^{-4}$ for C > 1 µF at 1 kHz $\leq 10 \times 10^{-4}$ for C ≤ 1 µF at 10 kHz insulation resistance $\geq$ initial limit
Life test	at temperature +85 °C ±2°C, voltage applied 1.25 x Vr (d.c.), test duration 2000 h capacitance change $ \Delta C/C \leq 3\%$ dissipation factor change $\Delta \text{tg}\delta \leq 10 \times 10^{-4}$ for C > 1 µF at 1 kHz $\leq 10 \times 10^{-4}$ for C ≤ 1 µF at 10 kHz insulation resistance $\geq 50\%$ initial limit

Rated	160 Vdc - 90 Vac				250 Vdc - 200 Vac				400 Vdc - 220 Vac*				630 Vdc - 250 Vac*			
Capacitance	B	H	L	P	B	H	L	P	B	H	L	P	B	H	L	P
1000-4700 pF													4	9	10.5	7.5
6800									4	9	10.5	7.5				
0.010 µF									4	9	10.5	7.5				
0.015					4	9	10.5	7.5								
0.022					4	9	10.5	7.5								
0.033	4	9	10.5	7.5												
0.047	4	9	10.5	7.5												
0.068	4	9	10.5	7.5												
0.10	5	11	10.5	7.5												
0.15	6	12	10.5	7.5												

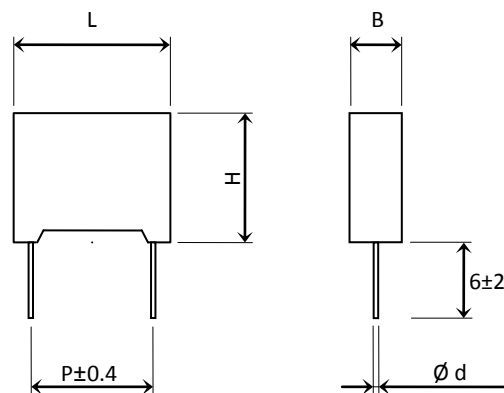
All dimensions are in mm

* Not suitable for across-the-line applications

Lead spacing 10 ± 27.5																
Rated	160 Vdc - 90 Vac				250 Vdc - 200 Vac				400 Vdc - 220 Vac*				630 Vdc - 250 Vac*			
Capacitance	B	H	L	P	B	H	L	P	B	H	L	P	B	H	L	P
1000-6800 pF													4	9	13	10
0.010 µF													4	9	13	10
0.015									4	9	13	10	5	11	13	10
0.022									4	9	13	10	5	11	13	10
0.033									4	9	13	10	6	12	13	10
0.047	4	9	13	10	5	11	13	10	6	12	13	10	7.5	13.5	18	15
0.068	4	9	13	10	6	12	13	10	6	12	13	10	8.5	14.5	18	15
0.10	5	11	13	10	5	11	13	10	7.5	13.5	18	15	7	16	27	22.5
0.15	5	11	13	10	6	12	13	10	8.5	14.5	18	15	8.5	17	27	22.5
0.22	5	11	13	10	7.5	13.5	18	15	7	16	27	22.5	9	17	32	27.5
0.33	6	12	13	10	6	12	13	10	8.5	17	27	22.5	13	22	32	27.5
0.47	7.5	13.5	18	15	7	16	27	22.5	9	17	32	27.5	14	28	32	27.5
0.68	6	15	27	22.5	10	18.5	27	22.5	11	20	32	27.5	14	28	32	27.5
1	8.5	17	27	22.5	11	20	32	27.5	13	22	32	27.5	18	33	32	27.5
1.5	10	18.5	27	22.5	13	22	32	27.5	14	28	32	27.5				
2.2	11	20	32	27.5	15	24.5	32	27.5	18	33	32	27.5				
3.3	13	22	32	27.5	18	33	32	27.5								
4.7	14	28	32	27.5	22	37	32	27.5								
6.8	18	33	32	27.5												
10	22	37	32	27.5												

Type MKP2M

Polypropylene capacitors



Pitch ≤ 10 = Ø d 0.6
Pitch > 10 = Ø d 0.8

All dimensions are in mm

GENERAL TECHNICAL DATA

Dielectric	polypropylene film
Plates	double sided metallized polyester film
Winding	non-inductive type
Leads	tinned copper wire
Construction	radial leads, box type
Protection	plastic case, made of solvent resistant material, sealed with epoxy resin
Marking	manufacturer's name or logo, type, capacitance, tolerance, D.C. rated voltage and manufacturing date code
Climatic category	55/100/56 IEC 60068-1
Standard references	IEC 60384-16

ELECTRICAL CHARACTERISTICS

Rated voltage (Vr)	250 Vdc - 400 Vdc				
Category voltage (Vc)	up to 85 °C Vc = Vr				
For temperature between +85 °C and +100 °C a decreasing factor of 1.25% per degree °C on the rated voltage (dc and ac) has to be applied					
Capacitance values	normal values in compliance with IEC standard series E6 (IEC 60063 Norm) Other values available upon request				
Capacitance tolerances	±5% (J) ; ±10% (K) measured at 1 kHz				
Total self-inductance (L)	Pitch (mm)	10	15	22.5	27.5
Lead length ~ 2mm	L (nH) ≈	9	10	18	18
Dissipation factor (tgδ) At +25°C ±5°C	≤6 x 10 ⁻⁴ at 1 kHz ≤20 x 10 ⁻⁴ at 10 kHz for C ≤ 1 μF				
Insulation resistance	≥ 1 x 10 ⁵ MΩ for C ≤ 0.33 μF ≥ 30000 s for C > 0.33 μF				
Test conditions	Temperature: +25°C ±5°C Voltage charge time: 1 min Voltage charge: 100Vdc				
Test voltage between terminals	1.6x Vr applied for 2 s at 25 °C ±5 °C				

		Pitch (mm)			
Maximum pulse rise time (V/µs)	Vr	10	15	22.5	27.5
	250	170	150	80	60
	400	260	200	120	100

If the working voltage (V) is lower than the rated voltage (Vr), the capacitor can work at higher dv/dt. In this case the maximum value allowed is obtained multiplying the above value with the ratio Vr/V

Type MKP2M

Polypropylene capacitors

QUALITY TEST			
Damp heat test	at temperature +40 °C ±2°C, RH 93% ±2% , test duration 56 days capacitance change $ \Delta C/C \leq 2\%$ dissipation factor change $\Delta \text{tg}\delta \leq 10 \times 10^{-4}$ at 1 kHz insulation resistance $\geq 50\%$ of initial limit	Soldering	test IEC 60068-2-20 TB method 1A, solder bath at 260 °C ±5 °C for 10 s ±1 s (with heat screen) capacitance change $ \Delta C/C \leq 1\%$ dissipation factor change $\Delta \text{tg}\delta \leq 10 \times 10^{-4}$ for $C > 1 \mu\text{F}$ at 1 kHz $\leq 10 \times 10^{-4}$ for $C \leq 1 \mu\text{F}$ at 10 kHz insulation resistance $\geq$ initial limit
Long term stability	at standard environmental conditions after 2 years capacitance change $ \Delta C/C \leq 0.5\%$	Life test	at temperature +85 °C ±2°C, voltage applied $1.25 \times V_r$ (d.c.), test duration 2000 h capacitance change $ \Delta C/C \leq 3\%$ dissipation factor change $\Delta \text{tg}\delta \leq 10 \times 10^{-4}$ for $C > 1 \mu\text{F}$ at 1 kHz $\leq 10 \times 10^{-4}$ for $C \leq 1 \mu\text{F}$ at 10 kHz insulation resistance $\geq 50\%$ of initial limit

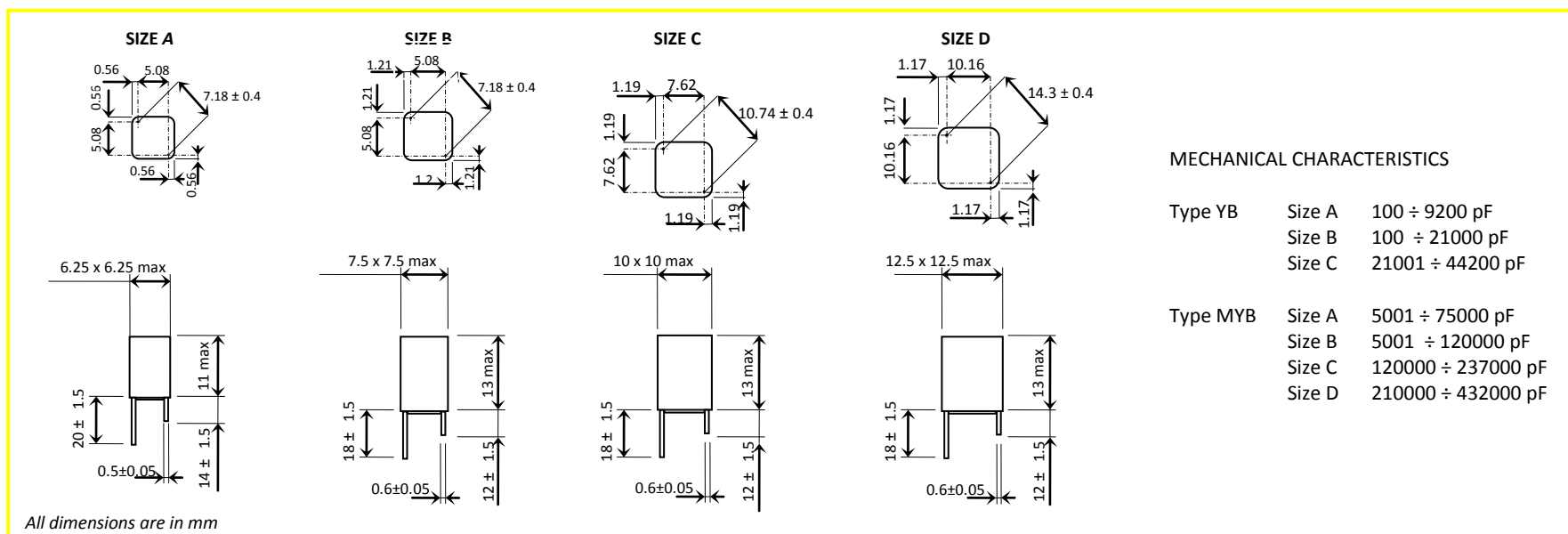
Rated	250 Vdc - 200 Vac				400 Vdc - 220 Vac*			
Capacitance	B	H	L	P	B	H	L	P
0.01 μF					4	9	13	10
0.015					5	11	13	10
0.022	4	9	13	10	6	12	13	10
0.033	5	11	13	10	5	11	18	15
0.047	5	11	18	15	6	12	18	15
0.068	6	12	18	15	7.5	13.5	18	15
0.1	7.5	13.5	18	15	8.5	14.5	18	15
0.15	8.5	14.5	18	15	7	16	27	22.5
0.22	6	15	27	22.5	10	18.5	27	22.5
0.33	8.5	17	27	22.5	11	20	32	27.5
0.47	10	18.5	27	22.5	13	22	32	27.5
0.68	11	20	32	27.5	18	33	32	27.5
1	13	22	32	27.5	18	33	32	27.5
1.5	18	33	32	27.5	22	37	32	27.5
2.2	18	33	32	27.5				

All dimensions are in mm

*Not suitable for across-the-line applications

Type YB - MYB

Polypropylene capacitors



GENERAL TECHNICAL DATA

Dielectric	polypropylene film
Plates	tin foil for type YB ; vacuum evaporated aluminium deposit for type MYB
Winding	non-inductive type
Leads	tinned copper wire
Construction	radial leads, box type
Protection	plastic case, made of solvent resistant material, sealed with epoxy resin
Marking	type, capacitance, tolerance, D.C. rated voltage
Climatic category	55/85/56 IEC 60068-1
Standard references	For YB IEC 60384-13; for MYB IEC 60384-16

Type YB - MYB

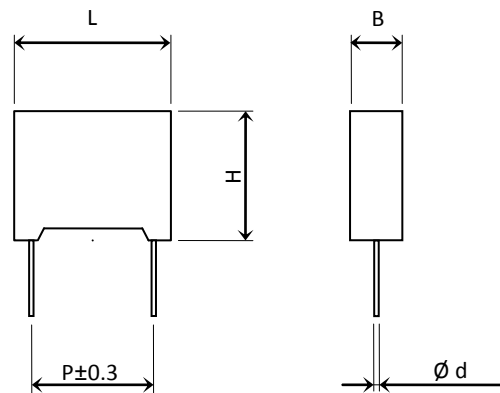
Polypropylene capacitors

ELECTRICAL CHARACTERISTICS			
Rated voltage (Vr)	63 Vdc	Dissipation factor (tgδ) At +25°C ±5°C	≤6 x 10 ⁻⁴ at 1 kHz (YB) ≤20 x 10 ⁻⁴ at 10kHz (MYB)
Category voltage (Vc)	up to 85 °C Vc = Vr	Insulation resistance Test conditions	≥ 50 x 10 ⁴ MΩ Temperature: +25°C ±5°C Voltage charge time: 1 min Voltage charge: 50Vdc
Capacitance values	normal values in compliance with IEC standard series E12 - E24 - E48 - E96, E192(IEC 60063 Norm) Other values available upon request	Test voltage between terminals	2.5 x Vr applied for 2 s at 25 °C ±5 °C for type YB 1.6 x Vr applied for 2 s at 25 °C ±5 °C. for type MYB
Capacitance tolerances	±0.625% (A); ±1% (F); ±1.25% (E); ±2% (G); ±2.5% (H) with a min.; ±1 pF (Z) measured at 1 kHz Other tolerances available upon request	Maximum pulse rise time (V/μs)	C (pF) dV/dt (V/μs) <9000 <21000 <120000 >120000 50 40 10 5
Total self-inductance (L)	max 1 nH per 1 mm lead and capacitor length	Reliability	ZR For YB Z=30 FIT R=10 ⁵ hour For MYB Z=80 FIT R=10 ⁵ hour 1 FIT = 1x10 ⁻⁹ failures/comp. x h
Temperature coefficient	-(100 ±70) ppm/°C for C < 4000 pF -(160 ±80) ppm/°C for C ≥ 4000 pF		

QUALITY TEST			
Damp heat test	at temperature +40 °C ±2°C, RH 93% ±2% , test duration 56 days capacitance change ΔC/C ≤ 0.5% + 1 pF insulation resistance ≥ 5 x10 ⁴ MΩ for C ≤ 120 nF ≥ 6000 s for C > 120 nF	Soldering	test IEC 60068-2-20 TB method 1A, solder bath at 260 °C ±5 °C for 5 s ±1 s (with heat screen) capacitance change ΔC/C ≤ 0.5% + 1 pF
Thermal shock	at temperature -40 °C...+85°C , 5 cycles capacitance change ΔC/C ≤ 0.5% + 1 pF	Life test	at temperature +85 °C± 2°C, voltage applied 1.5 x Vr , test duration 2000 h capacitance change ΔC/C ≤ 0.5%+ 1 pF dissipation factor change Δ tgδ ≤ 10 x 10 ⁻⁴ at 10 kHz The typical capacitance variation after 8000 hours is ± 0.6%
Long term stability	at standard environmental conditions after 2 years capacitance change ΔC/C ≤ 0.5% + 1 pF		

Type YB/5 – MYB/5

Polypropylene capacitors



MECHANICAL CHARACTERISTICS

Type YB/5 22 ÷ 8000 pF

Type MYB/5 5000 ÷ 47000 pF

L = 6,3 P = 5,08

H = 11 d = 0,5

B = 5

All dimensions are in mm

GENERAL TECHNICAL DATA

Dielectric	polypropylene film
Plates	tin foil for type YB/5 ; vacuum evaporated aluminium deposit for type MYB/5
Winding	non-inductive type
Leads	tinned copper wire
Construction	radial leads, box type
Protection	plastic case, made of solvent resistant material, sealed with epoxy resin
Marking	type, capacitance, tolerance, D.C. rated voltage
Climatic category	55/85/56 IEC 60068-1
Standard references	For YB/5 IEC 60384-13; for MYB/5 IEC 60384-16

Type YB/5 – MYB/5

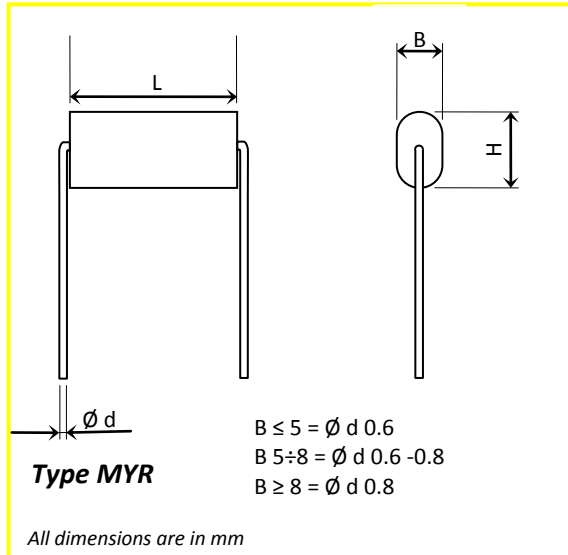
Polypropylene capacitors

ELECTRICAL CHARACTERISTICS			
Rated voltage (Vr)	63 Vdc	Dissipation factor (tgδ) At +25°C ±5°C	≤3 x 10 ⁻⁴ at 1 kHz (YB/5) ≤30x 10 ⁻⁴ at 100 kHz (MYB/5)
Category voltage (Vc)	up to 85 °C Vc = Vr	Insulation resistance Test conditions	≥ 20 x 10 ⁴ MΩ Temperature: +25°C ±5°C Voltage charge time: 1 min Voltage charge: 10Vdc
Capacitance values	normal values in compliance with IEC standard series E12 - E24 - E48 - E96, E192(IEC 60063 Norm) Other values available upon request	Test voltage between terminals	2.5 x Vr applied for 2 s at 25 °C ±5 °C for type YB 1.6 x Vr applied for 2 s at 25 °C ±5 °C. for type MYB
Capacitance tolerances	±0.625% (A); ±1% (F); ±1.25% (E); ±2% (G); ±2.5% (H) with a min.; ±1 pF (Z) measured at 1 kHz Other tolerances available upon request	Maximum pulse rise time (V/μs)	C (pF) dV/dt (V/μs) ≤9000 50 ≤21000 40 ≤47000 10
Total self-inductance (L)	max 1 nH per 1 mm lead and capacitor length	Reliability	ZR For YB Z=30 FIT R=10 ⁵ hour For MYB Z=80 FIT R=10 ⁵ hour 1 FIT = 1x10 ⁻⁹ failures/comp x h
Temperature coefficient	-(150 ±70) ppm/°C for YB/5 -(200 ±80) ppm/°C for MYB/5		

QUALITY TEST			
Damp heat test	at temperature +40 °C ±2°C, RH 93% ±2% , test duration 56 days capacitance change ΔC/C ≤ 0.5% + 1 pF insulation resistance ≥ 5 x10 ⁴ MΩ	Soldering	test IEC 60068-2-20 TB method 1A, solder bath at 260 °C ±5 °C for 10 s ±1 s (with heat screen) capacitance change ΔC/C ≤ 0.5% + 1 pF
Thermal shock	at temperature -40 °C...+85°C , 5 cycles capacitance change ΔC/C ≤ 0.5% + 1 pF	Life test	capacitance change ΔC/C ≤ 0.5%+ 1 pF at temperature +85 °C± 2°C, voltage applied 1.5 x Vr, test duration 2000 h The typical capacitance variation after 8000 hours is ± 0.6%
Long term stability	at standard environmental condition after 2 years capacitance change ΔC/C ≤ 0.5% + 1 pF		

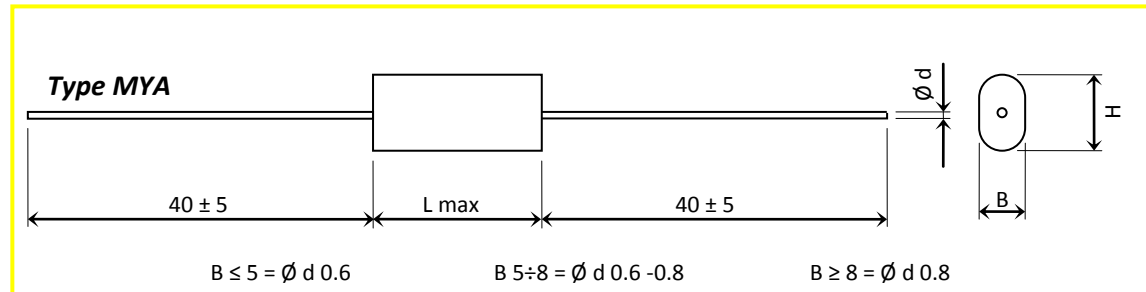
Type MYA - MYR

Polypropylene capacitors



GENERAL TECHNICAL DATA

Dielectric	polypropylene film
Plates	aluminium layer deposited by evaporation under vacuum
Winding	non-inductive type
Leads	tinned copper wire
Construction	axial leads, flat type for MYA ; radial leads, flat type for MYR
Protection	polyester wrapping sealed with epoxy resin
Marking	manufacturer's name or logo, type, capacitance, tolerance, D.C. rated voltage and manufacturing date code
Climatic category	55/100/56 IEC 60068-1
Standard references	IEC 60384-16



ELECTRICAL CHARACTERISTICS

Rated voltage (Vr)	160 Vdc - 250 Vdc - 400 Vdc - 630 Vdc
Category voltage (Vc)	up to 85 °C Vc = Vr
<i>For temperature between +85 °C and +100 °C a decreasing factor of 2% per degree °C on the rated voltage (dc and ac) has to be applied</i>	
Capacitance values	normal values in compliance with IEC standard series E6, E12, E24, E48, E96 (IEC 60063 Norm) <i>Other values available upon request</i>
Capacitance tolerances	±1% (F) ; ±1.25% (E) ; ±2% (G) ; ±2.5% (H) ; ±5% (J) ; ±10% (K) ; ±20% (M) <i>measured at 1 kHz</i>
Total self-inductance (L)	max 1 nF per 1 mm lead and capacitor length
Dissipation factor (tgδ)	≤ 6 x 10 ⁻⁴ at 1 kHz At +25°C ±5°C ≤ 20 x 10 ⁻⁴ at 10 kHz for C ≤ 1 µF
Insulation resistance	≥ 1 x 10 ⁵ MΩ for C ≤ 0.33 µF ≥ 30000 s for C > 0.33 µF
Test conditions	Temperature: +25°C ±5°C Voltage charge time: 1 min Voltage charge: 100Vdc

Test voltage between terminals	1.6 x Vr applied for 2 s at 25 °C ±5 °C
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		L max (mm)					
Maximum pulse rise time (V/µs)	Vr	11	16.5	20.5	28	33	
	160	5	5	3	2	1	
	250	11	10	7	4	2.5	
	400		13.5	10	6.5	4	
	630		20	15	10	6	

If the working voltage (V) is lower than the rated voltage (Vr), the capacitor can work at higher dv/dt. In this case the maximum value allowed is obtained multiplying the above value with the ratio Vr/V

Type MYA - MYR

Polypropylene capacitors

QUALITY TEST			
Damp heat test	at temperature +40 °C ±2°C, RH 93% ±2% , test duration 56 days capacitance change $ \Delta C/C \leq 2\%$ dissipation factor change $\Delta \text{tg}\delta \leq 10 \times 10^{-4}$ at 1 kHz insulation resistance $\geq 50\%$ of initial limit	Soldering	test IEC 60068-2-20 TB method 1A, solder bath at 260 °C ±5 °C for 10 s ±1 s (with heat screen) capacitance change $ \Delta C/C \leq 1\%$ dissipation factor change $\Delta \text{tg}\delta \leq 10 \times 10^{-4}$ for $C > 1 \mu\text{F}$ at 1 kHz $\leq 10 \times 10^{-4}$ for $C \leq 1 \mu\text{F}$ at 10 kHz insulation resistance $\geq$ initial limit
Long term stability	at standard environmental conditions after 2 years capacitance change $ \Delta C/C \leq 0.5\%$	Life test	at temperature +85 °C ±2°C, voltage applied $1.25 \times V_r(\text{d.c.})$, test duration 2000 h capacitance change $ \Delta C/C \leq 3\%$ dissipation factor change $\Delta \text{tg}\delta \leq 10 \times 10^{-4}$ for $C > 1 \mu\text{F}$ at 1 kHz $\leq 10 \times 10^{-4}$ for $C \leq 1 \mu\text{F}$ at 10 kHz insulation resistance $\geq 50\%$ initial limit

Rated	160 Vdc - 90 Vac			250 Vdc - 200 Vac			400 Vdc - 220 Vac*			630 Vdc - 250 Vac*		
Capacitance	B	H	L	B	H	L	B	H	L	B	H	L
0.01 μF	4	8.5	13	4	8.5	13	4	8.5	13	4	8.5	13
0.015	4	8.5	13	4	8.5	13	4	8.5	13	4	8.5	13
0.022	4	8.5	13	4	8.5	13	4	8.5	13	5	9	13
0.033	4	8.5	13	4	8.5	13	4	8.5	13	6	10	19
0.047	4	8.5	13	4	8.5	13	4	8.5	13	6.5	10	19
0.068	4	8.5	13	4	8.5	13	5	8	19	6.5	10.5	19
0.1	4	8.5	13	4	8.5	13	5	9	19	7.5	12	19
0.15	4	8.5	13	5	9	19	6.5	10.5	19	7	11	27
0.22	4	8.5	13	5.5	9.5	19	7.5	12.5	19	8	13	27
0.33	5.5	9.5	19	7	12	19	7.5	12.5	27	8	15	32
0.47	5.5	9.5	19	9	14	19	9	14	27	10	18	32
0.68	6.5	11	19	7	13	27	9	15	32	12	20	32
1	6.5	11	27	9.0	15.5	27	11	19	32	11.5	19	44
1.5	7.5	12.5	27	10.5	17	32	10.5	18.5	44	13.5	23.5	44
2.2	8	14	32	12.5	20.5	32	13	22	44			
3.3	10	16.5	32	12	20	44						
4.7	12	20	32	14	23.5	44						
6.8	11.5	19.5	44									
10	13.5	23	44									

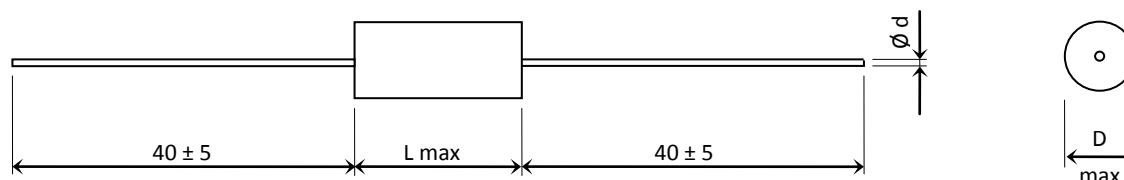
All dimension are in mm

*Not suitable for across-the-line applications

DIMENSION TOLERANCE			
L	L±	H±	B±
13.0	1.5	1.0	1.0
19.0	1.5	1.5	1.0
27.0	2.0	2.0	1.5
32.0	2.0	2.0	2.0
44.0	2.5	2.5	2.5

Type MYC

Polypropylene capacitors



$D_{\max} \leq 7.5 = \varnothing d 0.6$

$D_{\max} > 7.5 = \varnothing d 0.8$

All dimensions are in mm

GENERAL TECHNICAL DATA

Dielectric	polypropylene film
Plates	aluminium layer deposited by evaporation under vacuum
Winding	non-inductive type
Leads	tinned copper wire
Construction	axial leads, cylindrical type
Protection	polyester wrapping sealed with epoxy resin
Marking	manufacturer's name or logo, type, capacitance, tolerance, D.C. rated voltage and manufacturing date code
Climatic category	55/100/56 IEC 60068-1
Standard references	IEC 60384-16

ELECTRICAL CHARACTERISTICS

Rated voltage (Vr) 160 Vdc - 250 Vdc - 400 Vdc - 630 Vdc

Category voltage (Vc) up to 85 °C Vc = Vr

For temperature between +85 °C and +100 °C a decreasing factor of 1.25% per degree °C on the rated voltage (dc and ac) has to be applied

Capacitance values normal values in compliance with IEC standard series E6, E12, E24, E48, E96 (IEC 60063 Norm)
Other values available upon request

Capacitance tolerances $\pm 1\%$ (F); $\pm 1.25\%$ (E); $\pm 2\%$ (G); $\pm 2.5\%$ (H); $\pm 5\%$ (J); $\pm 10\%$ (K); $\pm 20\%$ (M) measured at 1 kHz

Total self-inductance (L) max 1 nH per 1 mm lead and capacitor length

Dissipation factor (tgδ) $\leq 6 \times 10^{-4}$ at 1 kHz
At +25°C ±5°C $\leq 20 \times 10^{-4}$ at 10 kHz for C ≤ 1 μF

Insulation resistance $\geq 1 \times 10^5 M\Omega$ for C ≤ 0.33 μF
 $\geq 30000 s$ for C > 0.33 μF

Test conditions Temperature: +25°C ±5°C
Voltage charge time: 1 min
Voltage charge: 100Vdc

Test voltage between terminals 1.6 x Vr applied for 2 s at 25 °C ±5 °C

		L max (mm)					
Maximum pulse rise time (V/μs)	Vr	11	16.5	20.5	28	33	
	160	5	5	3	2	1	
	250	11	10	7	4	2.5	
	400		13.5	10	6.5	4	
	630		20	15	10	6	

If the working voltage (V) is lower than the rated voltage (Vr), the capacitor can work at higher dv/dt. In this case the maximum value allowed is obtained multiplying the above value with the ratio Vr/V

Type MYC

Polypropylene capacitors

QUALITY TEST			
Damp heat test	at temperature +40 °C ±2°C, RH 93% ±2% , test duration 56 days capacitance change $ \Delta C/C \leq 2\%$ dissipation factor change $\Delta \text{tg}\delta \leq 10 \times 10^{-4}$ at 1 kHz insulation resistance $\geq 50\%$ of initial limit	Soldering	test IEC 60068-2-20 TB method 1A, solder bath at 260 °C ±5 °C for 10 s ±1 s (with heat screen) capacitance change $ \Delta C/C \leq 1\%$ dissipation factor change $\Delta \text{tg}\delta \leq 10 \times 10^{-4}$ for $C > 1 \mu\text{F}$ at 1 kHz $\leq 10 \times 10^{-4}$ for $C \leq 1 \mu\text{F}$ at 10 kHz insulation resistance $\geq$ initial limit
Long term stability	at standard environmental conditions after 2 years capacitance change $ \Delta C/C \leq 0.5\%$	Life test	at temperature +85 °C ±2°C, voltage applied 1.25 x Vr (d.c.), test duration 2000 h capacitance change $ \Delta C/C \leq 3\%$ dissipation factor change $\Delta \text{tg}\delta \leq 10 \times 10^{-4}$ for $C > 1 \mu\text{F}$ at 1 kHz $\leq 10 \times 10^{-4}$ for $C \leq 1 \mu\text{F}$ at 10 kHz

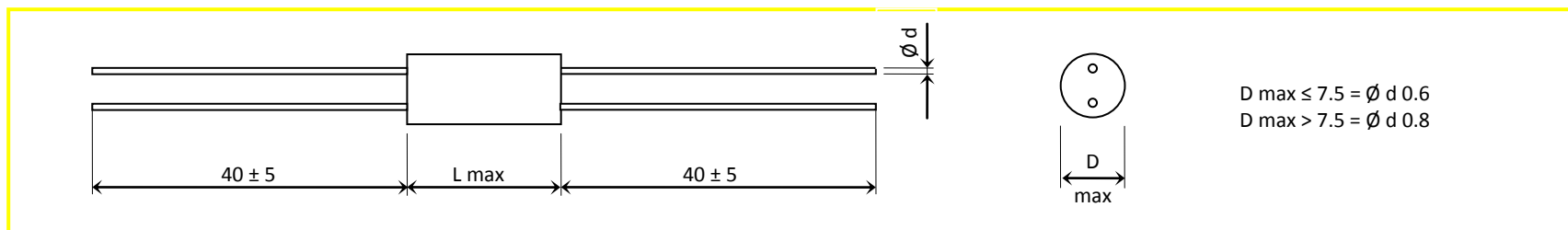
Rated	160 Vdc - 90 Vac		250 Vdc - 200 Vac		400 Vdc - 220 Vac*		630 Vdc - 250 Vac*	
Capacitance	D max	L max	D max	L max	D max	L max	D max	L max
1000 pF							5	11
1500							5	11
2200							5	11
3300							5	11
4700							5	11
6800					5	11	5.5	16.5
0.010 µF			5	11	5.5	16.5	6.5	16.5
0.015			5	11	6	16.5	7.5	16.5
0.022	5	11	6	16.5	6.5	16.5	8.5	16.5
0.033	5	11	6	16.5	7	16.5	8.5	20.5
0.047	5	11	6.5	16.5	8	16.5	9.5	20.5
0.068	6	16.5	7.5	16.5	8	20.5	9	28
0.10	6	16.5	8.5	16.5	9	20.5	10	28
0.15	7	16.5	8.5	20.5	8.5	28	12	28
0.22	8	16.5	9.5	20.5	10	28	13	33
0.33	8	20.5	8	28	11.5	28	15.5	33
0.47	9.5	20.5	10.5	28	13	28	18	33
0.68	9	28	12	28	14.5	33	21	33
1	10.5	28	13	33	17	33		
1.5	12.5	28	15.5	33	20	33		
2.2	13.5	33	18	33				
3.3	16	33	21.5	33				
4.7	18	33						

All dimensions are in mm

* Not suitable for across-the-line applications

Type MYC

Polypropylene capacitors



GENERAL TECHNICAL DATA

Dielectric	polypropylene film
Plates	aluminium layer deposited by evaporation under vacuum
Winding	non-inductive type
Leads	tinned copper wire
Construction	axial leads, cylindrical type
Protection	polyester wrapping sealed with epoxy resin
Marking	manufacturer's name or logo, type, capacitance, tolerance, D.C. rated voltage and manufacturing date code
Climatic category	55/100/56 IEC 60068-1
Standard references	IEC 60384-16

ELECTRICAL CHARACTERISTICS

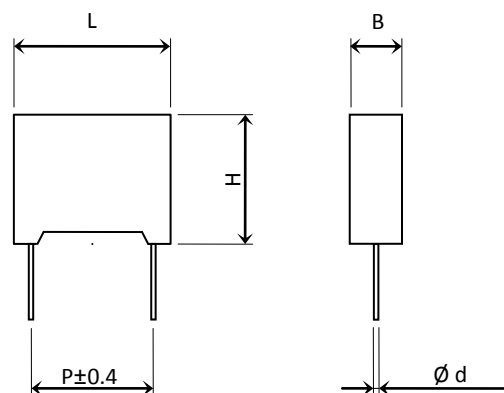
Rated voltage (Vr)	160 Vdc - 250 Vdc - 400 Vdc - 630 Vdc
Category voltage (Vc)	up to 85 °C Vc = Vr
<i>For temperature between +85 °C and +100 °C a decreasing factor of 1.25% per degree °C on the rated voltage (dc and ac) has to be applied</i>	
Capacitance values	normal values in compliance with IEC standard series E6, E12, E24, E48, E96 (IEC 60063 Norm) <i>Other values available upon request</i>
Capacitance tolerances	±1% (F); ±1.25% (E); ±2% (G); ±2.5% (H); ±5% (J); ±10% (K); ±20% (M) <i>measured at 1 kHz</i>
Total self-inductance (L)	max 1 nH per 1 mm lead and capacitor length
Dissipation factor (tgδ)	≤ 6 x 10 ⁻⁴ at 1 kHz At +25°C ±5°C
Insulation resistance	≥ 1 x 10 ⁵ MΩ for C ≤ 0.33 μF ≥ 30000 s for C > 0.33 μF
Test conditions	Temperature: +25°C ±5°C Voltage charge time: 1 min Voltage charge: 100Vdc

Test voltage between terminals		1.6 x Vr applied for 2 s at 25 °C ±5 °C				
		L max (mm)				
Maximum pulse rise time (V/μs)	Vr	11	16.5	20.5	28	33
	160	5	5	3	2	1
	250	11	10	7	4	2.5
	400		13.5	10	6.5	4
	630		20	15	10	6

If the working voltage (V) is lower than the rated voltage (Vr), the capacitor can work at higher dv/dt. In this case the maximum value allowed is obtained multiplying the above value with the ratio Vr/V

Type YS -HYS

Polypropylene capacitors



Pitch ≤ 10 = Ø d 0.6
Pitch > 10 = Ø d 0.8

All dimensions are in mm

GENERAL TECHNICAL DATA

Dielectric	polypropylene film
Plates	metal-foil for type A (YS) metal-foil + metallized film for type B (HYS)
Winding	non-inductive type
Leads	tinned copper wire
Construction	radial leads, box type
Protection	plastic case, made of solvent resistant material, sealed with epoxy resin
Marking	manufacturer's name or logo, type, capacitance, tolerance, D.C. rated voltage and manufacturing date code
Climatic category	55/100/56 IEC 60068-1
Standard references	IEC 60384-13

ELECTRICAL CHARACTERISTICS

Rated voltage (Vr) 100 Vdc - 160 Vdc - 250 Vdc - 400 Vdc - 630 Vdc for type A
630 Vdc - 1000 Vdc - 1500 Vdc - 2000 Vdc for type B

Category voltage (Vc) up to 85 °C Vc = Vr

For temperature between +85 °C and +100 °C a decreasing factor of 1.25% per degree °C on the rated voltage (dc and ac) has to be applied

Capacitance values normal values in compliance with IEC standard series
E6 (IEC 60063 Norm)

Other values available upon request

Capacitance tolerances ±5% (J); ±10% (K); ±20% (M) measured at 1 kHz
On request: ±1% (F); ±2% (G)

Total self-inductance (L)	Pitch (mm)	7.5	10	15	22.5	27.5
	L (nH) ≈	8	9	10	18	18

Dissipation factor (tgδ) ≤6 x 10⁻⁴ at 1 kHz
at +25°C ±5°C ≤20 x 10⁻⁴ at 10 kHz for C ≤ 1µF

Insulation resistance ≥ 1 x 10⁵ MΩ

Test conditions
Temperature: +25°C ±5°C
Voltage charge time: 1 min
Voltage charge: 100Vdc

Test voltage between terminals 2.5x Vr applied for 2 s at 25 °C ±5 °C for type A and

2 x Vr for type B

		Pitch (mm)				
	Vr	7.5	10	15	22.5	27.5
Maximum pulse rise time (V/µs)	100	3400	1600	800		
	160	4600	2100	1000		
	250	7000	3300	1600		
	400	8800	4000	2000		
	630	11000	5500	4300	2600	1800
	1000			14000	5000	3700
	1500			17000	6000	4500
	2000			27000	9800	7000

If the working voltage (V) is lower than the rated voltage (Vr), the capacitor can work at higher dv/dt. In this case the maximum value allowed is obtained multiplying the above value with the ratio Vr/V

Type YS -HYS

Polypropylene capacitors

QUALITY TEST

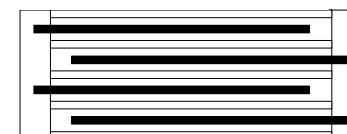
Damp heat test	at temperature +40 °C ±2°C, RH 93% ±2% , test duration 56 days capacitance change $ \Delta C/C \leq 2\%$ dissipation factor change $\Delta \text{tg}\delta \leq 5 \times 10^{-4}$ at 1 kHz insulation resistance $\geq 50\%$ of initial limit	Soldering	test IEC 60068-2-20 TB method 1A, solder bath at 260 °C ±5 °C for 10 s ±1 s (with heat screen) capacitance change $ \Delta C/C \leq 1\%$ dissipation factor change $\Delta \text{tg}\delta \leq 5 \times 10^{-4}$ at 1 kHz insulation resistance $\geq$ initial limit
Long term stability	at standard environmental conditions after 2 years capacitance change $ \Delta C/C \leq 0.5\%$	Life test	at temperature +85 °C ±2°C, voltage applied 1.5 x Vr (d.c.), test duration 1000 h capacitance change $ \Delta C/C \leq 3\%$ dissipation factor change $\Delta \text{tg}\delta \leq 5 \times 10^{-4}$ at 1 kHz insulation resistance $\geq 50\%$ initial limit

Rated	100 Vdc - 63 Vac				160 Vdc - 90 Vac				250 Vdc - 125Vac*				400 Vdc - 160 Vac				630 Vdc - 200 Vac			
Capacitance	B	H	L	P	B	H	L	P	B	H	L	P	B	H	L	P	B	H	L	P
100 pF																	4	9	13	10
150																	4	9	13	10
220																	4	9	13	10
330																	4	9	13	10
470																	4	9	13	10
680																	4	9	13	10
1000 pF																	4	9	13	10
1500																	4	9	13	10
2200													4	9	13	10	5	11	13	10
3300									4	9	13	10	5	11	13	10	6	12	13	10
4700									4	9	13	10	5	11	13	10	6	12	13	10
6800					4	9	13	10	5	11	13	10	5	12	13	10				
0.010 µF					4	9	13	10	6	12	13	10	5	11	18	15				
0.015	4	9	13	10	5	11	13	10	5	11	18	15	6	12	18	15				
0.022	5	11	13	10	6	12	13	10	6	12	18	15	7.5	13.5	18	15				
0.033	6	12	13	10	5	11	18	15	7.5	13.5	18	15								
0.047	5	11	18	15	6	12	18	15												
0.068	6	12	18	15	7.5	13.5	18	15												
0.1	7.5	13.5	18	15																
100-680 pF																	4	9	10.5	7.5
1000													4	9	10.5	7.5	5	11	10.5	7.5
1500													4	9	10.5	7.5	6	12	10.5	7.5
2200									4	9	10.5	7.5	5	11	10.5	7.5	6	12	10.5	7.5
3300					4	9	10.5	7.5	5	11	10.5	7.5	6	12	10.5	7.5				
4700					4	9	10.5	7.5	6	12	10.5	7.5								
6800	4	9	10.5	7.5	5	11	10.5	7.5												
0.010 µF	5	11	10.5	7.5	6	12	10.5	7.5												
0.015	6	12	10.5	7.5																

All dimensions are in mm

* Not suitable for across-the-line applications

Type A



 Metal layer
 Polypropylene film

Type YS -HYS

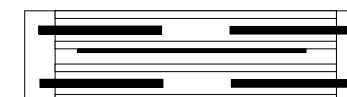
Polypropylene capacitors

Rated	630 Vdc - 300 Vac*				1000 Vdc - 400 Vac				1500 Vdc - 450 Vac				2000 Vdc - 500 Vac			
Capacitance	B	H	L	P	B	H	L	P	B	H	L	P	B	H	L	P
1000									5	11	18	15	6	12	18	15
1500									5	11	18	15	7.5	13.5	18	15
2200					5	11	18	15	6	12	18	15	8.5	14.5	18	15
3300	5	11	18	15	6	12	18	15	7.5	13.5	18	15	6	15	27	22.5
4700	5	11	18	15	7.5	13.5	18	15	8.5	14.5	18	15	7	16	27	22.5
6800	5	11	18	15	8.5	14.5	18	15	6	15	27	22.5	8.5	17	27	22.5
0.010 μ F	5	11	18	15	6	15	27	22.5	7	16	27	22.5	10	18.5	27	22.5
0.015	6	12	18	15	7	16	27	22.5	8.5	17	27	22.5	11	20	32	27.5
0.022	7.5	13.5	18	15	8.5	17	27	22.5	10	18.5	27	22.5	13	22	32	27.5
0.033	8.5	14.5	18	15	10	18.5	27	22.5	11	20	32	27.5				
0.047	7	16	27	22.5	11	20	32	27.5	13	22	32	27.5				
0.068	8.5	17	27	22.5	13	22	32	27.5								
0.10	10	18.5	27	22.5												
0.15	11	20	32	27.5												
0.22	13	22	32	27.5												

All dimensions are in mm

*Not suitable for across-the-line-applications

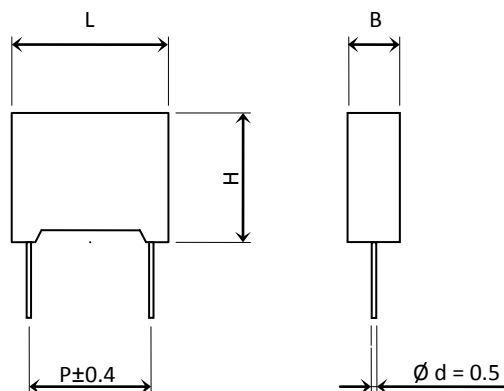
Type B



-  Metal layer
-  Polypropylene film
-  Metallized polypropylene

Type YS/5

Polypropylene capacitors



All dimensions are in mm

ELECTRICAL CHARACTERISTICS

Rated voltage (Vr)	63 Vdc - 100 Vdc - 250 Vdc
Category voltage (Vc)	up to 85 °C Vc = Vr
<i>For temperature between +85 °C and +100 °C a decreasing factor of 1.25% per degree °C on the rated voltage (dc and ac) has to be applied</i>	
Capacitance values	normal values in compliance with IEC standard series E6 (IEC 60063 Norm) <i>Other values available upon request</i>
Capacitance tolerances	±1% (F); ±1.25% (E); ±2% (G); ±2.5% (H); ±5% (J); ±10% (K); ±20% (M) <i>measured at 1kHz</i>
Total self-inductance (L)	~ 7 nH lead length 2mm
Dissipation factor (tgδ) <i>At +25°C ±5°C</i>	≤10 x 10 ⁻⁴ at 10 kHz for C ≤ 1000pF ≤20 x 10 ⁻⁴ at 10 kHz for C > 1000 pF
Insulation resistance	≥ 1 x 10 ⁵ MΩ
<i>Test conditions</i>	<i>Temperature: +25°C ±5°C Voltage charge time: 1 min Voltage charge : 50V for Vr<100Vdc and 100V for Vr≥100Vdc</i>
Test voltage between terminals	1.6 x Vr applied for 2 s at 25 °C ±5 °C
Maximum pulse rise time	1000 V/μs

GENERAL TECHNICAL DATA

Dielectric	polypropylene film
Plates	tin foil
Winding	non-inductive type
Leads	tinned copper wire
Construction	radial leads, box type
Protection	plastic case, made of solvent resistant material, sealed with epoxy resin
Marking	capacitance, tolerance, D.C .rated voltage
Climatic category	55/100/56 IEC 60068-1
Standard references	IEC 60384-13

Type YS/5

Polypropylene capacitors

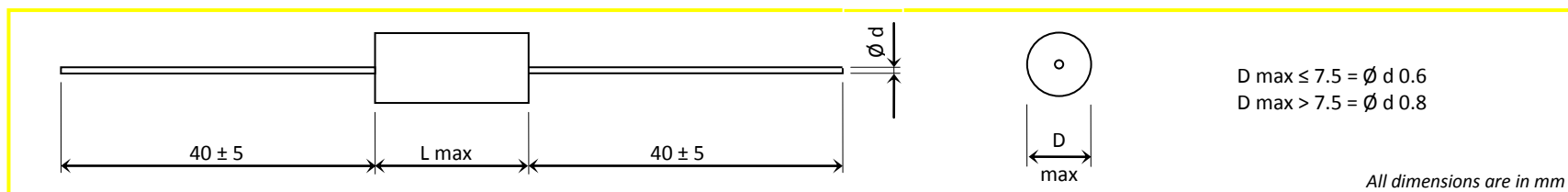
QUALITY TEST			
Damp heat test	at temperature +40 °C ±2°C, RH 93% ±2% , test duration 56 days capacitance change $ \Delta C/C \leq 2\%$ dissipation factor change $\Delta \text{tg}\delta \leq 5 \times 10^{-4}$ at 1 kHz insulation resistance $\geq 50\%$ of initial limit	Soldering	test IEC 60068-2-20 TB method 1A, solder bath at 260 °C ±5 °C for 10 s ±1 s (with heat screen) capacitance change $ \Delta C/C \leq 1\%$ dissipation factor change $\Delta \text{tg}\delta \leq 5 \times 10^{-4}$ at 1 kHz insulation resistance $\geq$ initial limit
Long term stability	at standard environmental conditions after 2 years capacitance change $ \Delta C/C \leq 0.5\%$	Life test	at temperature +85 °C ±2°C, voltage applied $1.5 \times V_r$ (d.c.), test duration 2000 h capacitance change $ \Delta C/C \leq 3\%$ dissipation factor change $\Delta \text{tg}\delta \leq 5 \times 10^{-4}$ at 1 kHz insulation resistance $\geq 50\%$ initial limit

Rated	63 Vdc - 40 Vac				100 Vdc - 63 Vac				250 Vdc - 160 Vac			
Capacitance	B	H	L	P	B	H	L	P	B	H	L	P
100-2200 pF					3.5	7.5	7.2	5	3.5	7.5	7.2	5
3300	3.5	7.5	7.2	5	3.5	7.5	7.2	5	4.5	8.5	7.2	5
4700	3.5	7.5	7.2	5	4.5	8.5	7.2	5	4.5	9.5	7.2	5
6800	4.5	8.5	7.2	5	4.5	9.5	7.2	5	4.5	9.5	7.2	5
0.010 µF	5	10	7.5	5	6	11	7.2	5	6	11	7.2	5
0.015	6	11	7.2	5	6	11	7.2	5	6	11	7.5	5
0.022	6	11	7.2	5								

All dimensions are in mm

Type YC - HYC

Polypropylene capacitors



GENERAL TECHNICAL DATA

Dielectric	polypropylene film
Plates	metal-foil for type A (YC) metal-foil + metallized film for type B (HYC)
Winding	non-inductive type
Leads	tinned copper wire
Construction	axial leads, cylindrical type
Protection	Polyester wrapping sealed with epoxy resin
Marking	manufacturer's name or logo, type, capacitance, tolerance, D.C. rated voltage and manufacturing date code
Climatic category	55/100/56 IEC 60068-1
Standard references	IEC 60384-13

ELECTRICAL CHARACTERISTICS

Rated voltage (Vr)	100 Vdc - 250 Vdc - 400 Vdc - 630 Vdc (on request until 0.1 µF) for type A 630 Vdc - 1000 Vdc - 1500 Vdc - 2000 Vdc for type B
Category voltage (Vc)	up to 85 °C Vc = Vr <i>For temperature between +85 °C and +100 °C a decreasing factor of 1.25% per degree °C on the rated voltage (dc and ac) has to be applied</i>
Capacitance values	normal values in compliance with IEC standard series E6 (IEC 60063 Norm) <i>Other values available upon request</i>
Capacitance tolerances	±5% (J); ±10% (K); ±20% (M) <i>measured at 1 kHz</i> On request: ±1% (F); ±2% (G)
Total self-inductance (L)	max 1 nH per 1 mm lead and capacitor length
Dissipation factor (tgδ) <i>At +25°C ±5°C</i>	≤6 x 10 ⁻⁴ at 1 kHz ≤20 x 10 ⁻⁴ at 10 kHz for C ≤ 1 µF
Insulation resistance <i>Test conditions</i>	≥ 1 x 10 ⁵ MΩ <i>Temperature: +25°C ±5°C Voltage charge time: 1 min Voltage charge: 100Vdc</i>
Test voltage between terminals	2.5 x Vr applied for 2 s at 25 °C ±5 °C

		L max (mm)				
Maximum pulse rise time (V/μs)	Vr	11	16.5	20.5	28	33
	100	3000				
	250	5000	4500	2700	1500	10
	400	13000	6500	3600	2000	1300
	630			4300	2600	1800
	1000			14000	5000	3700
	1500			17000	6000	4500
	2000			27000	9800	7000

If the working voltage (V) is lower than the rated voltage (Vr), the capacitor can work at higher dv/dt. In this case the maximum value allowed is obtained multiplying the above value with the ratio Vr/V

Type YC - HYC

Polypropylene capacitors

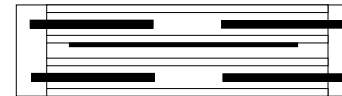
QUALITY TEST

Damp heat test	at temperature +40 °C ±2°C, RH 93% ±2% , test duration 56 days capacitance change $ \Delta C/C \leq 2\%$ dissipation factor change $\Delta \text{tg}\delta \leq 5 \times 10^{-4}$ at 1 kHz insulation resistance $\geq 50\%$ of initial limit	Soldering	test IEC 60068-2-20 TB method 1A, solder bath at 260 °C ±5 °C for 10 s ±1 s (with heat screen) capacitance change $ \Delta C/C \leq 1\%$ dissipation factor change $\Delta \text{tg}\delta \leq 5 \times 10^{-4}$ at 1 kHz insulation resistance $\geq$ initial limit
Long term stability	at standard environmental conditions after 2 years capacitance change $ \Delta C/C \leq 0.5\%$	Life test	at temperature +85 °C ±2°C, voltage applied 1.5 x Vr (d.c.), test duration 2000 h capacitance change $ \Delta C/C \leq 3\%$ dissipation factor change $\Delta \text{tg}\delta \leq 5 \times 10^{-4}$ for C at 1 kHz insulation resistance $\geq 50\%$ initial limit

Type A



 Metal layer
 Polypropylene film



Rated	100 Vdc - 63 Vac		250 Vdc - 125 Vac*		400 Vdc - 160 Vac		630 Vdc - 200 Vac
Capacitance	D	L	D	L	D	L	
47 - 1500 pF					5	11	IN PROGRESS
2200			5	11	6.5	16.5	
3300			5	11	6.5	16.5	
4700	5	11	7	16.5	7	16.5	
6800	5	11	7	16.5	8	16.5	
0.01 µF	5	11	7.5	16.5	9	16.5	
0.015			8.5	16.5	9.5	20.5	
0.022			9	20.5	11	20.5	
0.033			11	20.5	11	28	
0.047			10	28	12	28	
0.068			11.5	28	12.5	33	
0.1			13.5	28	15	33	
0.15			14.5	33	17.5	33	
0.22			16.5	33	21	33	
0.33			19.5	33			
0.47			22.5	33			

All dimensions are in mm

* Not suitable for across-the-line applications

Rated	630 Vdc -300 Vac*		1000 Vdc - 400 Vac		1500 Vdc - 450 Vac		2000 Vdc - 500 Vac	
Capacitance	D	L	D	L	D	L	D	L
1000 pF							8.5	20.5
1500							9.5	20.5
2200					8	20.5	11	20.5
3300			8.5	20.5	9.5	20.5	9	28
4700			9.5	20.5	8.5	28	9.5	28
6800			8	28	8.5	28	11	28
0.01 µF			8.5	28	9.5	28	13	28
0.015	8.5	20.5	10	28	11	28	15	28
0.022	9.5	20.5	11	28	12.5	28	16	33
0.033	9	28	13	28	13.5	33	20	33
0.047	10	28	14	33	16	33	22.5	33
0.068	11.5	28	16	33	18	33		
0.1	13.5	28	19	33				
0.15	14	33						
0.22	16.5	33						
0.33	19.5	33						

All dimensions are in mm

* Not suitable for across-the-line applications