RoHS Compliant

SPECIFICATION FOR APPROVAL

File No.: Q/FRK 0.GS.C.D35T-C1

Product Name	Metallized polypropylene film capacitor (Box-type)
Product Type	MKP25 Series
Product Code	D35(T)
Customer	
Customer Code	
Issue Date	2021-07

Xiamen Faratronic Co. Ltd.			Approved by Customer
Drafted	Checked	Approved	

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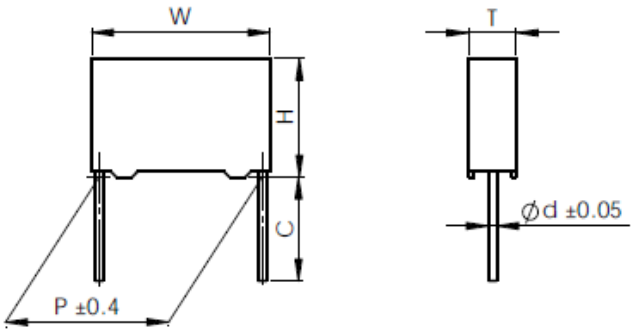
Version history

Current version	Date	Author	Change description

Metallized polypropylene film capacitor (Box-type)

■ Outline Drawing



W±0.4, H±0.4, T±0.4

■ Features

- AEC-Q200 qualified
- Metallized polypropylene structure.
- Excellent electric property.
- Plastic case (UL94 V-0), Epoxy resin sealing.
- Max operating temperature: 125℃

■ Typical Applications

- As intermediate circuit capacitors for SMPS、Electronic Ballast、inverter(i.e. DC-link, DC-filter and P.F.C)

■ Specifications

Reference Standard	GB/T 10190(IEC 60384-16)				
Climatic Category	40/105/56				
Rated Temperature	85℃				
Operating Temperature Range	-40℃~125℃ (+85℃ to +125℃: decreasing factor 0.7% per ℃ for U_R)				
Rated Voltage	630Vdc, 700Vdc, 800Vdc				
Capacitance Range	0.039μF~8.2μF				
Capacitance Tolerance	±5% (J), ±10% (K),				
Voltage Proof	1.6U_R (5s)				
Dissipation Factor	≤15×10^{-4}(20℃, 1kHz)				
Insulation Resistance	R ≥ 100 000MΩ, C_N≤0.33μF RC_N ≥ 30 000s, C_N>0.33μF (20℃,100V,1min)				
Maximum Pulse Rise Time(dV/dt) If the working voltage(U) is lower than the rated voltage(UR),the capacitor can be worked at a higher dV/dt. In this case, the maximum allowed dV/dt is obtain by multiplying the right value with UR/U.	U_R(V)	Max dV/dt(V/us)			
		P=10.0	P=15.0	P=22.5	P=27.5
	630/700	300	200	100	80
	800	350	220	150	100

■ Part number system

The 15 digits part number is formed as follow:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
D	3	5								T				

Digit 1 to 3 Series code

D35=MKP25 automotive parts

Digit 4 to 5 D.C. rated voltage:

2J=630V 1V=700V 2K=800V

Digit 6 to 8 Rated capacitance value

For example: 103=10×10^3pf=0.01uF

Digit 9 Capacitance tolerance

J=±5%, K=±10%

Digit 10 Pitch

4=10.0mm 6=15.0mm

9=22.5mm B=27.5mm

Digit 11 Internal use

Digit 12 to 15 Lead form and packaging code

Table1 Lead form and packaging code

Digit 12		Digit 13		Digit 14		Digit 15	
code	explanation	code	explanation	code	explanation	code	explanation
A	ammo-pack	4 6	F=10.0mm F=15.0mm	0	straight	5	P3=25.4mm;H=18.5mm (For pitch=10/15mm)
C	straight lead "C" in the figure above	code	explanation			0	Length tolerance ±0.5mm Or standard length
		00	standard lead length (18mm~26mm)				
		45	lead length 4.5mm				
Note: Recommend short lead due to long lead could deform easily.							

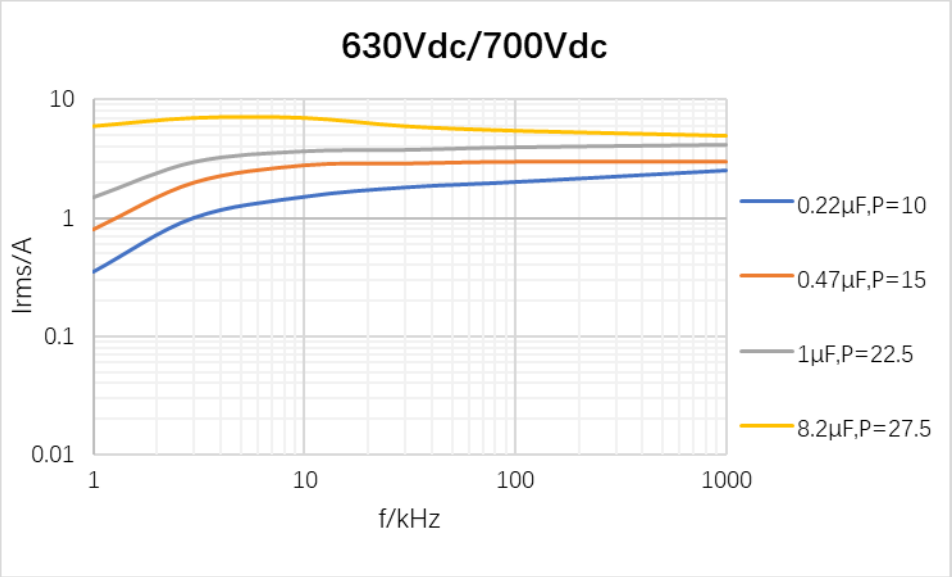
■ Dimensions (mm)

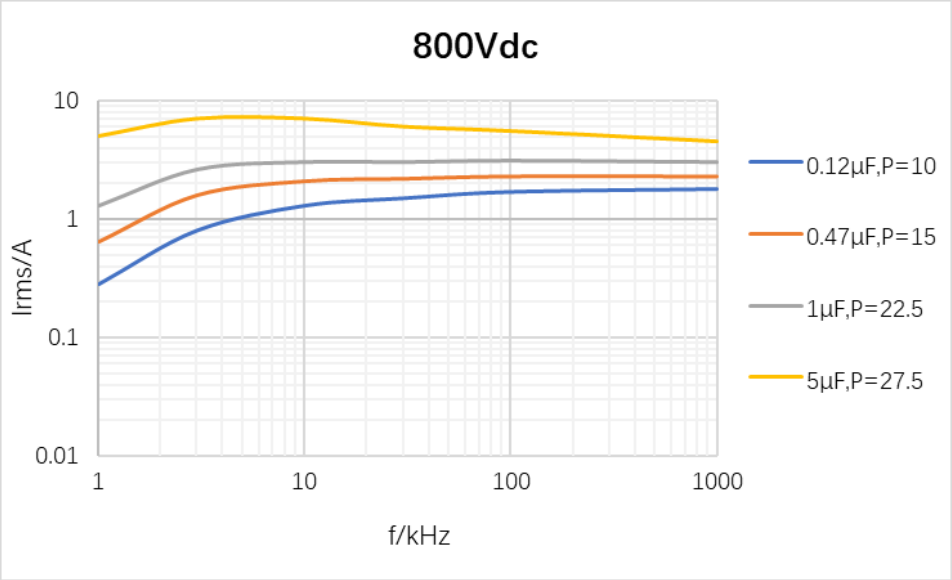
630Vdc/700Vdc#							800Vdc						
C_N (μF)	W ±0.4	H ±0.4	T ±0.4	P ±0.4	d	Part number	C_N (μF)	W ±0.4	H ±0.4	T ±0.4	P ±0.4	d	Part number
0.039	13.0	9.0	4.0	10.0	0.6	D352J393-4T****	0.039	13.0	11.0	5.0	10.0	0.6	D352K393-4T****
0.047	13.0	9.0	4.0	10.0	0.6	D352J473-4T****	0.047	13.0	11.0	5.0	10.0	0.6	D352K473-4T****
0.056	13.0	11.0	5.0	10.0	0.6	D352J563-4T****	0.056	13.0	11.0	5.0	10.0	0.6	D352K563-4T****
0.068	13.0	11.0	5.0	10.0	0.6	D352J683-4T****	0.068	13.0	12.0	6.0	10.0	0.6	D352K683-4T****
0.082	13.0	12.0	6.0	10.0	0.6	D352J823-4T****	0.082	13.0	12.0	6.0	10.0	0.6	D352K823-4T****
0.10	13.0	12.0	6.0	10.0	0.6	D352J104-4T****	0.10	13.0	13.0	7.0	10.0	0.6	D352K104-4T****
0.12	13.0	13.0	7.0	10.0	0.6	D352J124-4T****	0.12	13.0	13.0	7.0	10.0	0.6	D352K124-4T****
0.15	13.0	13.0	7.0	10.0	0.6	D352J154-4T****	0.15	13.0	14.0	8.0	10.0	0.6	D352K154-4T****
0.18	13.0	14.0	8.0	10.0	0.6	D352J184-4T****	0.10	17.5	12.0	6.0	15.0	0.6	D352K104-6T****
0.22	13.0	14.0	8.0	10.0	0.6	D352J224-4T****	0.12	17.5	12.0	6.0	15.0	0.6	D352K124-6T****
0.15	17.5	11.0	5.0	15.0	0.6	D352J154-6T****	0.15	17.5	12.0	7.0	15.0	0.6	D352K154-6T****
0.18	17.5	12.0	6.0	15.0	0.6	D352J184-6T****	0.18	17.5	13.5	7.5	15.0	0.6	D352K184-6T****
0.22	17.5	12.0	7.0	15.0	0.6	D352J224-6T****	0.22	17.5	14.0	8.0	15.0	0.6	D352K224-6T****
0.27	17.5	13.5	7.5	15.0	0.6	D352J274-6T****	0.27	17.5	14.5	8.5	15.0	0.8	D352K274-6T****
0.33	17.5	14.0	8.0	15.0	0.6	D352J334-6T****	0.33	17.5	16.0	10.0	15.0	0.8	D352K334-6T****
0.39	17.5	14.5	8.5	15.0	0.8	D352J394-6T****	0.39	17.5	19.0	11.0	15.0	0.8	D352K394-6T****
0.47	17.5	16.0	10.0	15.0	0.8	D352J474-6T****	0.47	17.5	19.0	11.0	15.0	0.8	D352K474-6T****
0.56	17.5	16.0	10.0	15.0	0.8	D352J564-6T****	0.27	26.5	15.0	6.0	22.5	0.8	D352K274-9T****
0.68	17.5	19.0	11.0	15.0	0.8	D352J684-6T****	0.33	26.5	16.0	7.0	22.5	0.8	D352K334-9T****
0.39	26.5	15.0	6.0	22.5	0.8	D352J394-9T****	0.39	26.5	16.0	7.0	22.5	0.8	D352K394-9T****
0.47	26.5	16.0	7.0	22.5	0.8	D352J474-9T****	0.47	26.5	17.0	8.5	22.5	0.8	D352K474-9T****
0.56	26.5	16.0	7.0	22.5	0.8	D352J564-9T****	0.56	26.5	17.0	8.5	22.5	0.8	D352K564-9T****
0.68	26.5	17.0	8.5	22.5	0.8	D352J684-9T****	0.68	26.5	18.5	10.0	22.5	0.8	D352K684-9T****
0.82	26.5	18.5	10.0	22.5	0.8	D352J824-9T****	0.82	26.5	20.0	11.0	22.5	0.8	D352K824-9T****
1.0	26.5	18.5	10.0	22.5	0.8	D352J105-9T****	1.0	26.5	22.0	12.0	22.5	0.8	D352K105-9T****
1.2	26.5	20.0	11.0	22.5	0.8	D352J125-9T****	1.2	26.5	22.0	12.0	22.5	0.8	D352K125-9T****
1.5	26.5	22.0	12.0	22.5	0.8	D352J155-9T****	1.5	26.5	24.5	15.5	22.5	0.8	D352K155-9T****
2.2	26.5	24.5	15.5	22.5	0.8	D352J225-9T****	0.82	32.0	18.0	9.0	27.5	0.8	D352K824-BT****
2.7	26.5	24.5	15.5	22.5	0.8	D352J275-9T****	1.0	32.0	20.0	11.0	27.5	0.8	D352K105-BT****
1.0	32.0	18.0	9.0	27.5	0.8	D352J105-BT****	1.2	32.0	20.0	11.0	27.5	0.8	D352K125-BT****
1.2	32.0	20.0	11.0	27.5	0.8	D352J125-BT****	1.5	32.0	22.0	13.0	27.5	0.8	D352K155-BT****
1.5	32.0	20.0	11.0	27.5	0.8	D352J155-BT****	1.8	32.0	24.5	15.0	27.5	0.8	D352K185-BT****
1.8	32.0	22.0	13.0	27.5	0.8	D352J185-BT****	2.2	32.0	24.5	15.0	27.5	0.8	D352K225-BT****
2.2	32.0	22.0	13.0	27.5	0.8	D352J225-BT****	2.7	32.0	28.0	17.0	27.5	0.8	D352K275-BT****
2.7	32.0	24.5	15.0	27.5	0.8	D352J275-BT****	3.3	32.0	29.0	19.0	27.5	0.8	D352K335-BT****
3.3	32.0	28.0	17.0	27.5	0.8	D352J335-BT****	3.9	32.0	33.0	18.0	27.5	0.8	D352K395-BT****
3.9	32.0	29.0	19.0	27.5	0.8	D352J395-BT****	4.7	32.0	37.0	22.0	27.5	0.8	D352K475-BT****
4.7	32.0	29.0	19.0	27.5	0.8	D352J475-BT****	5.0	32.0	37.0	22.0	27.5	0.8	D352K505-BT****
6.8	32.0	37.0	22.0	27.5	0.8	D352J685-BT****							
8.2	32.0	37.0	22.0	27.5	0.8	D352J825-BT****							

Note:

1. "-"=capacitance tolerance code, ,K=±10%, J=±5%.
2. "****"=lead form and packaging code (refer to table 1).
3. "#" when the rated voltage is 700Vac， the digit 4~5 is 1V.

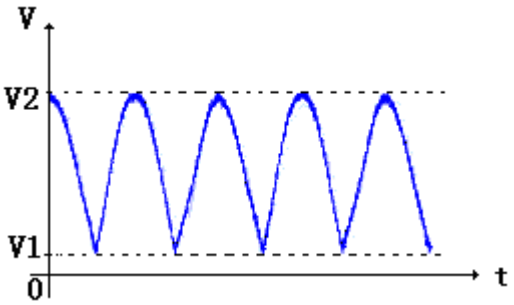
■ **Max. Current (Ir.m.s.) versus Frequency**





NOTE: 1. sinusoidal wave-form, environment temperature≤85℃,internal temperature rise △T=10℃, p (pitch) in mm.

2. The series product is only recommended to use in DC-filter or DC-blocking circuits. It means the voltage applied to the capacitors must be unidirectional ripple voltage. The typical voltage curve is as follows reference. If you have any questions for this note, please feel free to contact with our technical engineer.



Here: $V_1 \geq 0$, $V_2 \leq U_R$, $Irms = 2\pi fC(V_2 - V_1)/\sqrt{2}$

U_R is the rated voltage of the capacitor

■ Test Method And Performance

No.	Item		Performance	Test method(IEC 60384-16)
1	Solderability		Good quality of tinning	Solder temperature: 245˚C ±5˚C Immersion time: 2.0s±0.5s
2	Initial measurement		Capacitance Tgδ: 1kHz，C>1.0μF 10kHz，C≤1.0μF	
	Terminal strength (straight lead)		There shall be no visible damage	Tension: 10N(0.6≤φd≤0.8) 20N(φd=1.0) Bend: 5N(0.6≤φd≤0.8) 10N(φd=1.0) The terminals shall be bent 2 times in each direction.
	Resistance to solder heat		There shall be no visible damage	Solder temperature:260˚C±5˚C Immersion time: 10s±1s
	Final measurement		ΔC/C ≤±3%(relative to the initial value) Increase of tgδ: ≤0.004 (10kHz,C≤1.0μF) ≤0.004 (1kHz, C>1.0μF)	
3	Initial measurement		Capacitance Tgδ: 1kHz，C>1.0μF 10kHz，C≤1.0μF	
	Rapid change of temperature		There shall be no evidence of deterioration.	θ_A=-40˚C, θ_B =+105˚C 5 cycles Duration: t=30min
	Vibration (straight lead)		There shall be no evidence of deterioration.	Amplitude 0.75mm or acceleration 98m/s^2 (whichever is the smaller severity), f: 10Hz to 500Hz.Three directions, 2h for each direction, total 6h.
	Bump (straight lead)		There shall be no evidence of deterioration.	4 000 times, Acceleration: 390m/s^2,Pulse duration, 6ms
	Final measurement		ΔC/C ≤±3%(relative to the initial value) Increase of tgδ: ≤0.004 (10kHz,C≤1.0μF) ≤0.004 (1kHz, C>1.0μF) IR: ≥ 50% of the rated value	
4	Climate sequence	Initial measurement	Capacitance Tgδ: 1kHz，C>1.0μF 10kHz，C≤1.0μF	
		Dry heat		+105℃, 16h
		Damp heat, Cyclic		Test Db, Severity: b, the first cycle
		Cold		-40℃, 2h
		Low air pressure	There shall be no permanent breakdown, flashover or other harmful deformation when applying U_R at the last 1 minute.	15℃~35℃, 8.5kPa, 1h
		Damp heat, Cyclic other	Applying U_R for 1 minute after 15 minutes the test finished.	Test Db, Severity b, the other cycles,
		Final measurement	There shall be no visible damage, legible marking ΔC/C ≤±5%(relative to the initial value) Increase of tgδ: ≤0.005 (C≤1.0μF,10kHz) ≤0.005(C>1.0μF,1kHz) I.R.: ≥ 50% of the rated value	

No.	Item	Performance	Test method(IEC 60384-16)
5	Damp heat steady state	There shall be no visible damage, legible marking ΔC/C ≤±5%(relative to the initial value) Increase of tgδ:≤0.002 (1kHz) I.R.: ≥ 50% of the rated value	Temperature:40˚C ±2˚C Humidity: 93^{+2}_{-3} %RH Duration: 56 days
6	Endurance	There shall be no visible damage, legible marking ΔC/C ≤±5%(relative to the initial value) Increase of tgδ: ≤0.004 (10kHz,C≤1.0μF) ≤0.004 (1kHz, C>1.0μF) I.R.: ≥ 50% of the rated value	Temperature: +125℃ Voltage: 1.25×U_{OP} Duration: 1 000h U_{OP} =0.72U_R
7	Charging and discharging	ΔC/C ≤±5%(relative to the initial value) ncrease of tgδ: ≤0.005 (C≤1.0μF,10kHz) ≤0.005(C>1.0μF,1kHz) I.R.: ≥ 50% of the rated value	Times: 10 000 Duration of charging: 0.5s Duration of discharging: 0.5s Charging voltage: rated voltage U_R Charging resistance: 220/C_N(Ω) Discharging resistance: U_R÷C_N÷dv/dt(Ω) C_N: rated capacitance (μF) dv/dt value: see P2

■ **Marking（example）**

MKP25
105K630
DCD0168

Sign	explain	Sign	explain
◁▷	Brand	MKP25	Type
105K	Rated capacitance and tolerance	DCD0168	Lot NO.
630	Rated voltage		

■ Taping specification for box-type capacitors

▲ Outline Drawing

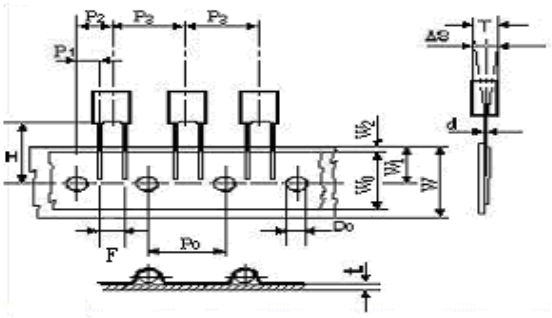


Fig.1 P=5.0、7.5mm

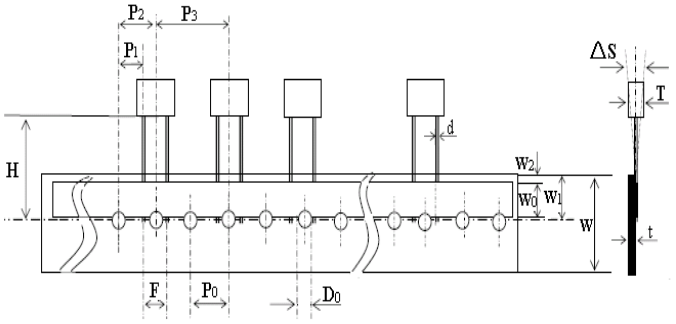


Fig.2 P=10.0、15.0mm

▲ Taping Dimensions(mm)

Technology index title	Code	Dimensions				
		P=5.0	P=7.5	P=10.0	P=15.0	Tolerance
Taping type	—	Fig 1	Fig 1	Fig2	Fig 2	——
Part number Digit12-15	Ammo-pack	A201	A301	A405	A605	
Taping pitch	P_3	12.7	12.7	25.4	25.4	±1.0
Feed hole pitch	P_0	12.7	12.7	12.7	12.7	±0.3
Center of wire	P_1	3.85	2.6	7.7	5.2	±0.7
Center of body	P_2	6.35	6.35	12.7	12.7	±1.3
Pitch of taping wire	F**	5.0	7.5	10.0	15.0	+0.6 -0.1
Component alignment	△S	0	0	0	0	±2.0
Height of component from tape center	H***	18.5	18.5	18.5	18.5	±0.5
Carrier tape width	W	18.0	18.0	18.0	18.0	+1.0 -0.5
Hold down tape width	W_0	6min	10min	10min	10min	——
Hole position	W_1	9.0	9.0	9.0	9.0	±0.5
Hold down tape sition	W_2	3max	3max	3max	3max	——
Feed hole dia.	D_0	4.0	4.0	4.0	4.0	±0.2
Tape thickness	t	0.7	0.7	0.7	0.7	±0.2

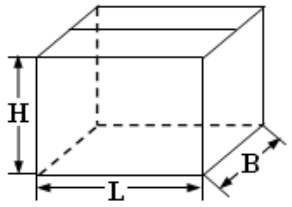
Note: * P_0=15mm is also available;

**F can be other lead spacing;

***H=16.5mm is available;

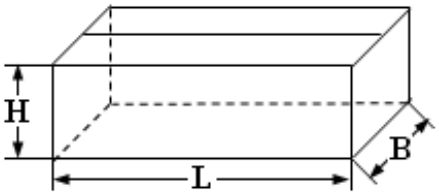
■ Packing box sizes(mm)(example)

1. Out packing box for bulk



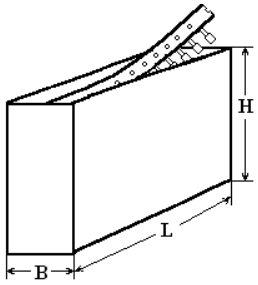
L:375±5
B:375±5
H:265±5

2. Inner packing box for bulk



L:355±3
B:175±3
H:118±3

3. Box sizes for Ammo-pack



L:350±3
B:50±3
H:260±3