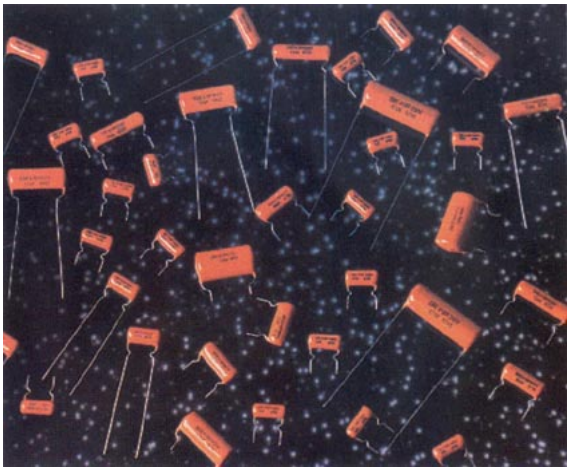
Type 418P Orange Drop® Round Profile Polyester Film/Foil Capacitors



Features

- Radial-lead. Round profile.
- Non-inductively wound, extended foil construction.
- Ratings up to 1000 Volts DC.

Specifications

Capacitance Range:
.001 to 1.0 µF

Capacitance Tolerance:
±5%, ±10%, ±20%

Voltage Ratings:
100 to 1000 Volts DC

Operating Temperature Range:
-55°C to +85°C (at full voltage)

Voltage Derating:
At +105°C, 70% of +85°C rating.
At +125°C, 50% of +85°C rating.

Lead Wire:
Tinned copper-clad steel,
.032 (0.8) diameter, #20 AWG

Insulation Resistance:

At +25°C:	100,000 MΩ for C ≤ .25 µF
	25,000 MΩ-µF for C > .25 µF
At +85°C:	10,000 MΩ for C ≤ .15 µF
	1,500 MΩ-µF for C > .15 µF
At +105°C:	1,500 MΩ for C ≤ .17 µF
	250 MΩ-µF for C > .17 µF
At +125°C:	200 MΩ for C ≤ .13 µF
	25 MΩ-µF for C > .13 µF

Dissipation Factor:
0.75% Maximum @ 1 KHz, +25°C

Encapsulation:
Conformal coating of orange, flame retardant epoxy. Meets UL94V-0 specifications.

Dielectric/Construction:
Polyester film, single section design. Non-inductively wound with extended aluminum foil.

General Specifications

The Type 418P Orange Drop® is designed and manufactured for operation in a wide range of demanding environments and applications. Type 418P capacitors are wound from the most reliable polyester film and aluminum foil available and are protected by a rugged conformal coating of orange epoxy. They may be operated up to +125°C with proper derating.

The 418P series finds use in many commercial and industrial applications, from power supplies and audio amplifiers to welding equipment and ultrasonics.

Operating Temperature Range:

The standard operating temperature range for polyester film is -55°C to +85°C. The 418P may be operated at full voltage within this temperature range.

The 418P may be operated up to +105°C provided the DC working voltage is reduced to 70% of the +85°C rating (full rating), and up to +125°C with a 50% reduction from the +85°C rating (full rating).

For more specific details regarding operation above +85°C please contact our design engineering department.

The maximum operating temperature for the 418P polyester film capacitor is +125°C.

Dielectric Withstanding Voltage:

Units rated below 1000 VDC shall withstand a DC potential of 250% of rated voltage applied between terminals for not more than 5 seconds. Units rated at 1000 VDC shall withstand a DC potential of 200% of rated voltage applied between terminals for not more than 5 seconds.

Lead Bend Test:

After 3 consecutive 180° bends. No damage.

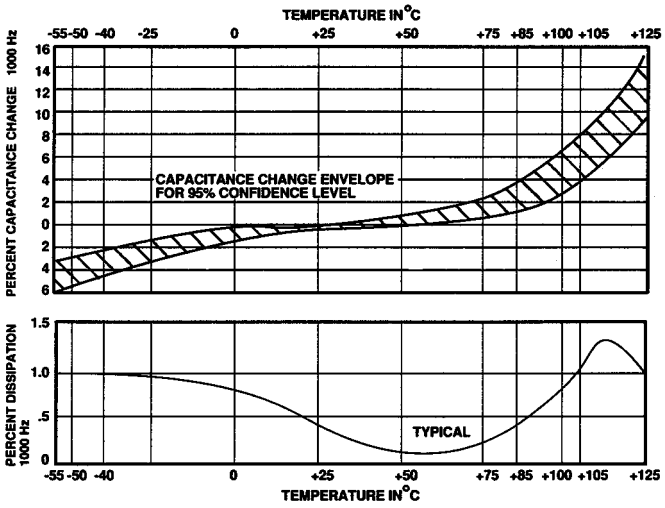
Humidity Testing:

Units subjected to 95% relative humidity for 72 hours with no voltage applied at +75°C. After 4 hours of drying minimum product of insulation resistance and capacitance shall be 5,000 MΩ-µF

DC Voltage Life Test:

500 hours at +85°C at 150% of rated voltage. After test; capacitance shall not have changed by more than ±5% of initial value, insulation resistance shall not have decreased by more than 50% of initial value and dissipation factor shall not have increased to more than 1.0%. In addition, there should be no open or short circuits, and no sign of visible damage.

Typical Temperature Characteristics:



Ordering/Part Number Information

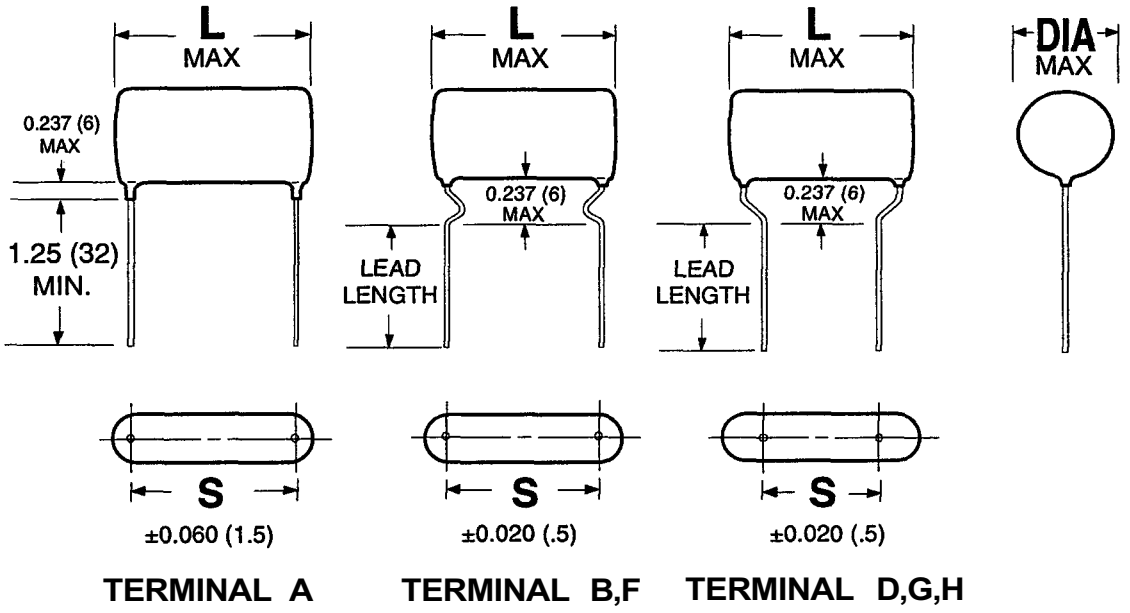
418P 104 9 6 L D 3 (XXXX)

- **(XXXX)** — A suffix may be added by the factory to denote special construction.
- **3 — Lead Length** 1 = 0.187 (4.7) ±0.030 (0.8); 2 = 0.250 (6.4) ±0.030 (0.8); 3 = 1.250 (32) Minimum. Custom lead lengths available upon request.
- **D — Terminal** A = Straight Lead; B,F = Hairpin Crimp; D,G,H = Hockey Stick Crimp
- **L — Case Code** See Standard Sizes/Ratings Table
- **6 — D-C Voltage Rating** Expressed in Hundreds of Volts
- **9 — Capacitance Tolerance 0 = ±20%; 9 = ±10%; 5 = ±5%**
- **104 — Capacitance** Expressed in Picofarads. The first two digits are the significant figures, the third is the number of zeros following. (i.e. 104 = 100000 pF = .1 µF)
- **418P — CDE Type Number** Identifies the basic capacitor design.

Standard Marking Format

Sample Marking on unit	Description	Tolerance codes per EIA Standards
CDE418P600V 104K 9810	CDE - CDE Electronics identification 418P - Type number 600V - D-C Voltage rating, Volts 104K - Capacitance and tolerance code 9810 - Weekly date code (i.e. 10th week of 1998)	J ±5% K ±10% M ±20%

Standard Lead Styles



Standard Lead Spacings

CASE CODE	S					
	Term. A	Term. B	Term. D	Term. F	Term. G	Term. H
J	0.500 (12.7)	0.500 (12.7)	0.375 (9.5)	0.394 (10)	0.295 (7.5)	0.197 (5)
K	0.688 (17.5)	0.688 (17.5)	0.375 (9.5)	0.590 (15)	0.394 (10)	0.295 (7.5)
L	0.969 (24.6)	0.969 (24.6)	0.719 (18.3)	0.886 (22.5)	0.590 (15)	---
M	1.344 (34.1)	1.344 (34.1)	1.094 (27.8)	---	1.083 (27.5)	---

Type 418P Standard Sizes/Ratings[2]

Value, µF	Part Number[1]	L MAX	DIA MAX
100 VDC			
.027	418P27391J	.70 (17.8)	.35 (8.9)
.033	418P33391J	.70 (17.8)	.35 (8.9)
.039	418P39391J	.70 (17.8)	.35 (8.9)
.047	418P47391J	.70 (17.8)	.35 (8.9)
.056	418P56391J	.70 (17.8)	.35 (8.9)
.068	418P68391J	.70 (17.8)	.35 (8.9)
.082	418P82391K	.90 (22.9)	.40 (10.2)
.1	418P10491K	.90 (22.9)	.40 (10.2)
.12	418P12491K	.90 (22.9)	.45 (11.4)
.15	418P15491K	.90 (22.9)	.45 (11.4)
.18	418P18491L	1.20 (30.5)	.45 (11.4)
.22	418P22491L	1.20 (30.5)	.45 (11.4)
.27	418P27491L	1.20 (30.5)	.50 (12.7)
.33	418P33491L	1.20 (30.5)	.50 (12.7)
.39	418P39491M	1.60 (40.6)	.50 (12.7)
.47	418P47491M	1.60 (40.6)	.50 (12.7)
.56	418P56491M	1.60 (40.6)	.60 (15.2)
.68	418P68491M	1.60 (40.6)	.60 (15.2)
.82	418P82491M	1.60 (40.6)	.65 (16.5)
1.0	418P10591M	1.60 (40.6)	.70 (17.8)
200 VDC			
.0056	418P56292J	.70 (17.8)	.33 (8.4)
.0068	418P68292J	.70 (17.8)	.33 (8.4)
.0082	418P82292J	.70 (17.8)	.33 (8.4)
.01	418P10392J	.70 (17.8)	.33 (8.4)
.012	418P12392J	.70 (17.8)	.33 (8.4)
.015	418P15392J	.70 (17.8)	.33 (8.4)
.018	418P18392J	.70 (17.8)	.33 (8.4)
.022	418P22392J	.70 (17.8)	.33 (8.4)
.027	418P27392J	.70 (17.8)	.35 (8.9)
.033	418P33392K	.90 (22.9)	.38 (9.7)
.039	418P39392K	.90 (22.9)	.38 (9.7)
.047	418P47392K	.90 (22.9)	.38 (9.7)
.056	418P56392L	1.20 (30.5)	.38 (9.7)
.068	418P68392L	1.20 (30.5)	.38 (9.7)
.082	418P82392L	1.20 (30.5)	.40 (10.2)
.1	418P10492L	1.20 (30.5)	.40 (10.2)
.12	418P12492L	1.20 (30.5)	.45 (11.4)
.15	418P15492L	1.20 (30.5)	.45 (11.4)
.18	418P18492L	1.20 (30.5)	.50 (12.7)
.22	418P22492L	1.20 (30.5)	.50 (12.7)
.27	418P27492M	1.60 (40.6)	.47 (11.9)
.33	418P33492M	1.60 (40.6)	.47 (11.9)
.39	418P39492M	1.60 (40.6)	.50 (12.7)
.47	418P47492M	1.60 (40.6)	.55 (14.0)

Value, µF	Part Number[1]	L MAX	DIA MAX
400 VDC			
.001	418P10294J	.70 (17.8)	.30 (7.6)
.0012	418P12294J	.70 (17.8)	.30 (7.6)
.0015	418P15294J	.70 (17.8)	.30 (7.6)
.0018	418P18294J	.70 (17.8)	.30 (7.6)
.0022	418P22294J	.70 (17.8)	.30 (7.6)
.0027	418P27294J	.70 (17.8)	.30 (7.6)
.0033	418P33294J	.70 (17.8)	.30 (7.6)
.0039	418P39294J	.70 (17.8)	.30 (7.6)
.0047	418P47294J	.70 (17.8)	.30 (7.6)
.0056	418P56294J	.70 (17.8)	.33 (8.4)
.0068	418P68294J	.70 (17.8)	.33 (8.4)
.0082	418P82294J	.70 (17.8)	.35 (8.9)
.01	418P10394J	.70 (17.8)	.35 (8.9)
.012	418P12394J	.70 (17.8)	.35 (8.9)
.015	418P15394J	.70 (17.8)	.38 (9.7)
.018	418P18394K	.90 (22.9)	.38 (9.7)
.022	418P22394K	.90 (22.9)	.38 (9.7)
.027	418P27394K	.90 (22.9)	.40 (10.2)
.033	418P33394K	.90 (22.9)	.40 (10.2)
.039	418P39394L	1.20 (30.5)	.40 (10.2)
.047	418P47394L	1.20 (30.5)	.40 (10.2)
.056	418P56394L	1.20 (30.5)	.45 (11.4)
.068	418P68394L	1.20 (30.5)	.45 (11.4)
.082	418P82394L	1.20 (30.5)	.52 (13.2)
.1	418P10494L	1.20 (30.5)	.52 (13.2)
.12	418P12494L	1.20 (30.5)	.55 (14.0)
.15	418P15494L	1.20 (30.5)	.57 (14.5)
.18	418P18494M	1.60 (40.6)	.60 (15.2)
.22	418P22494M	1.60 (40.6)	.60 (15.2)
.27	418P27494M	1.60 (40.6)	.65 (16.5)
.33	418P33494M	1.60 (40.6)	.65 (16.5)
.39	418P39494M	1.60 (40.6)	.72 (18.3)
.47	418P47494M	1.60 (40.6)	.80 (20.3)

1. To complete part number for specific tolerance, terminal style and lead length please refer to Ordering/Part Number Information [2] page. The 418P series is available through the CDE Distribution Network on special order.

Dimensions in inches, metric (mm) in parenthesis.

Type 418P Standard Sizes/Ratings [2]

Value, µF	Part Number[1]	L MAX	DIA MAX	Value, µF	Part Number[1]	L MAX	DIA MAX
600 VDC				1000 VDC			
.001	418P10296J	.70 (17.8)	.30 (7.6)	.001	418P102910J	.70 (17.8)	.33 (8.4)
.0012	418P12296J	.70 (17.8)	.33 (8.4)	.0012	418P122910J	.70 (17.8)	.33 (8.4)
.0015	418P15296J	.70 (17.8)	.33 (8.4)	.0015	418P152910J	.70 (17.8)	.33 (8.4)
.0018	418P18296J	.70 (17.8)	.33 (8.4)	.0018	418P182910J	.70 (17.8)	.35 (8.9)
.0022	418P22296J	.70 (17.8)	.33 (8.4)	.0022	418P222910J	.70 (17.8)	.35 (8.9)
.0027	418P27296J	.70 (17.8)	.35 (8.9)	.0027	418P272910K	.90 (22.9)	.35 (8.9)
.0033	418P33296J	.70 (17.8)	.35 (8.9)	.0033	418P332910K	.90 (22.9)	.35 (8.9)
.0039	418P39296J	.70 (17.8)	.38 (9.7)	.0039	418P392910K	.90 (22.9)	.38 (9.7)
.0047	418P47296J	.70 (17.8)	.38 (9.7)	.0047	418P472910K	.90 (22.9)	.40 (10.2)
.0056	418P56296J	.70 (17.8)	.40 (10.2)	.0056	418P562910K	.90 (22.9)	.43 (10.9)
.0068	418P68296J	.70 (17.8)	.40 (10.2)	.0068	418P682910K	.90 (22.9)	.43 (10.9)
.0082	418P82296K	.90 (22.9)	.40 (10.2)	.0082	418P822910K	.90 (22.9)	.48 (12.2)
.01	418P10396K	.90 (22.9)	.40 (10.2)	.01	418P103910K	.90 (22.9)	.48 (12.2)
.012	418P12396K	.90 (22.9)	.40 (10.2)	.012	418P123910L	1.20 (30.5)	.48 (12.2)
.015	418P15396K	.90 (22.9)	.40 (10.2)	.015	418P153910L	1.20 (30.5)	.48 (12.2)
.018	418P18396K	.90 (22.9)	.45 (11.4)	.018	418P183910L	1.20 (30.5)	.58 (14.7)
.022	418P22396K	.90 (22.9)	.45 (11.4)	.022	418P223910L	1.20 (30.5)	.58 (14.7)
.027	418P27396L	1.20 (30.5)	.45 (11.4)	.027	418P273910L	1.20 (30.5)	.65 (16.5)
.033	418P33396L	1.20 (30.5)	.45 (11.4)	.033	418P333910L	1.20 (30.5)	.65 (16.5)
.039	418P39396L	1.20 (30.5)	.55 (14.0)	.039	418P393910M	1.60 (40.6)	.65 (16.5)
.047	418P47396L	1.20 (30.5)	.55 (14.0)	.047	418P473910M	1.60 (40.6)	.65 (16.5)
.056	418P56396L	1.20 (30.5)	.60 (15.2)	.056	418P563910M	1.60 (40.6)	.75 (19.1)
.068	418P68396L	1.20 (30.5)	.60 (15.2)	.068	418P683910M	1.60 (40.6)	.75 (19.1)
.082	418P82396L	1.20 (30.5)	.65 (16.5)	.082	418P823910M	1.60 (40.6)	.85 (21.6)
.1	418P10496L	1.20 (30.5)	.65 (16.5)	.1	418P104910M	1.60 (40.6)	.85 (21.6)
.12	418P12496M	1.60 (40.6)	.70 (17.8)				
.15	418P15496M	1.60 (40.6)	.70 (17.8)				
.18	418P18496M	1.60 (40.6)	.80 (20.3)				
.22	418P22496M	1.60 (40.6)	.80 (20.3)				
.25	418P25496M	1.60 (40.6)	.80 (20.3)				

[1] To complete part number for specific tolerance, terminal style and lead length please refer to Ordering/Part Number Information page.

[2] The 418P series is available through the CDE Distribution Network on special order.

Dimensions in inches, metric (mm) in parenthesis.

dV/dt Specifications

Maximum Pulse Rise Time (dV/dt) in Volts/µsec

Cap Value (µF)	100V	200V	400V	600V	1000V
.001				22100	22700
.0012				20200	20800
.0015				18100	18600
.0018				16500	17000
.0022				14900	15300
.0027				13500	13800
.0033			11000	12200	12500
.0039			10100	11200	11500
.0047			9200	10200	10500
.0056		5900	8400	9300	9000
.0068		5400	7600	8500	8200
.0082		4900	6900	7200	7400
.01		4500	6300	6600	6700
.012		4100	5700	6000	5700
.015		3600	5100	5400	5100
.018		3300	4400	4900	4700
.022		3000	4000	4400	4200
.027	2000	2700	3600	3700	3800
.033	1800	2400	3200	3300	3400
.039	1700	2100	2800	3100	2900
.047	1500	1900	2500	2800	2700
.056	1400	1800	2300	2600	2400
.068	1300	1500	2100	2300	2200
.082	1100	1400	1900	2100	2000
.1	1000	1200	1700	1900	1800
.12	900	1100	1600	1600	
15	800	1000	1400	1500	
.18	700	900	1200	1300	
.22	600	800	1100	1200	
.25	600	800	1000	1100	
.27	600	700	1000	1100	
.33	500	600	900		
.39	400	600	800		
47	400	500	700		
.56	400				
.68	300				
.82	300				
1.0	300				

Note: dV/dt ratings based on measurements made at the junction of the wire leads and capacitor body

Dimensions in inches, metric (mm) in parenthesis.

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