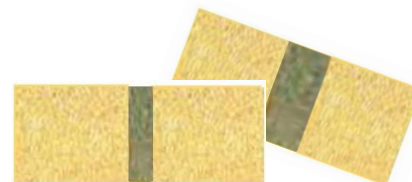




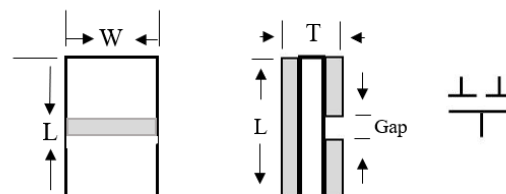
Product Features

A single full electrode is provided on one side of the capacitor and split electrodes on the other side. This is a three-terminal capacitor which can be used as a two capacitor with a common electrode or as serially connected capacitors so that connections may be made on one side of the chip only (surface mount). This design is often used in microstrip coupling to eliminate lead inductance and raise the self resonant frequency.



Product Characteristics

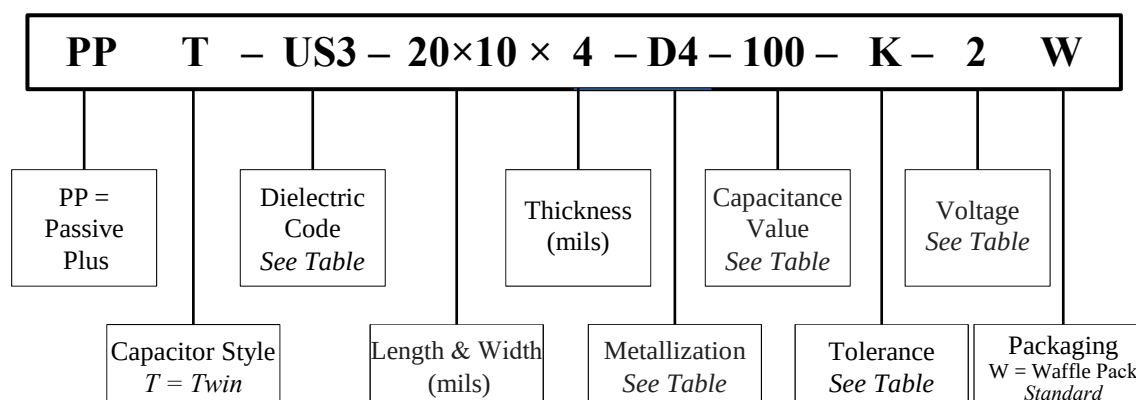
Capacitance: 0.06 picofarads and up
Chip shape: Twin pads with gap
Gap widths: 5, 10, 15, 20 mil or custom



Standard dimensional tolerance for length and width is $\pm 15\%$ up to 20 mils. For dimensions greater than 20 mils, standard tolerance is $\pm 10\%$. In cases where dimension cannot be exceeded, insert "M" to signify a maximum dimension. The thickness tolerance is ± 1.5 mils.



Part Numbering



Thicknesses (mils)

Length & Width	L or W Tolerance	Margin Nominal	Thickness
≤ 10	± 2	1	± 1.5
11 - 29	± 2	2	
≥ 30	± 3	2	



Capacitance Codes

Value	Code
$< 10\text{pF}$	1R0 = 1.0pF
$> 10\text{pF}$	101 = 100pF



Metallization Codes

Code	Description
D4	Ti/Pt/Au - Titanium/Platinum/Gold (70 μin Gold)
S7	Ti/Pt/Ag - Titanium/Platinum/Silver (20 μin Silver)
K2	Ta/Pd/Au - Tantalum/Palladium/Gold (75 μin Gold)
L3	Ta/Pd/Au - Tantalum/Palladium/Gold (100 μin Gold)

Contact PPI for available metallizations.

**Substrates**

Substrates can be supplied as follows:

- **Bare**
- **Metallized:**
 - Gold over Platinum, Palladium, or Nickel
 - Silver over Platinum
 - Custom schemes and patterns to Customer specifications

Thickness Range	3 mils +
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**Standard Electrode Metallizations**

Gold (D4) This metallization consists of a minimum of 70 micro-inches of Gold over Platinum or Nickel which is ideal for all wirebonding methodologies.

Silver (S7) This metallization consists of 20 micro-inches of Silver over Platinum which is ideal for all solder applications whenever the use of Gold is unacceptable.

**Capacitance Tolerance & Dimensional Tolerances Codes**

Class I Dielectrics: AS1 - KS2			
Tolerance	Code	Tolerance	Code
± .50pF	D	± 20%	M
± .25pF	C	± 15%	L
± .10pF	B	± 10%	K
± .05pF	A	± 5%	J
± .01pF	P	± 3%	H
		± 2%	G

Class II Dielectrics: MS1 - ZS4			
Tolerance	Code	Tolerance	Code
-10% thru +40%	Y	± 20%	M
-20% thru +80%	Z	± 15%	L
0% thru +100%	V	± 10%	K
Guaranteed Min. Value	GMV	± 5%	J

Material	L or W Dimension	Tolerance
AS1 - ZS1	< 20 mils	±15%
	≥ 20 mils	±10%

Material	L or W Dimension	Tolerance
ZS4 - ZS6	≤ 15 mils	± 2 mils
	> 15 mils; ≤ 30 mils	± 3 mils
	> 30 mils	± 5 mils

**Rated Voltage Codes**

Code	Voltage	Dielectric Thickness
2	50V	4 mils
3	100V	6 mils

**Packaging**

PPI SLCs are available in Waffle Packs (Standard). Other packaging options may be available. Please contact PPI.

Twin Caps are available in a wide range of size configurations, dielectric and termination materials to fit your application. Please contact PPI for designs not listed in this catalog.



Dielectric Materials – Class I

Dielectrics below consist of material exhibiting very low losses, extremely low or closely controlled temperature coefficients, negligible voltage and frequency coefficients, negligible aging effects and high insulation and dielectric breakdown.

Type	IR Min. @ 25°C Ω	Temperature Coefficient PPM°C -55 to +125°C	Dissipation Factor (@ 10GHz)	Dielectric Constant (K)	Material
AS1	10 ¹²	Negligible	0.0001	3.8	Quartz
AS6	10 ¹²	P120 ± 25	0.0001	8.7	AlN
AS7	10 ¹²	P180 ± 50	0.0006	9.6	Alumina 96
AS8	10 ¹²	P180 ± 50	0.0006	9.8	Alumina 99.6
BS2	10 ¹²	NP0 0 ± 30	0.0001	12.6	Titanate
CS1	10 ¹²	0 ± 30	0.0010	20	Titanate
ES1	10 ¹²	0 ± 30	0.0020	40	Titanate
FS1	10 ¹²	0 ± 30	0.0050	50	Titanate
IS2	10 ⁴	N750 ± 200	0.0050	85	Alumina
JS2	10 ⁶	0 ± 30	0.0050	93	Titanate
KS3	10 ⁶	N1500 ± 500	0.0025	160	Titanate



Dielectric Materials – Class II

Dielectrics below are characterized by high dielectric constants, increased losses and higher temperature coefficients. These properties are inherent with this class of material but the high dielectric constants permit the use of smaller size to achieve low series inductance and meet dimensional requirements. Capacitors made with these materials are often used for coupling of microstrip line circuits where a small chip is necessary. Used as a bypass capacitor, the small size provides low series inductance and dielectric losses are typically of little concern.

Type	IR Min. @ 25°C Ω	Temperature Coefficient % -55 to +125°C	Dissipation Factor (@ 1MHz)	Aging (%) HR/Decade	Dielectric Constant (K)
MS1	10 ¹¹	-10 to 5	0.010	2.0	300
PS1	10 ⁴	-10 to 10	0.025	3.0	700
RS2	10 ⁴	-10 to 10	0.025	3.0	1250
SS3	10 ¹¹	-10 to 3	0.015	3.5	2200
US1	10 ⁵	-35 to 0	0.020	3.0	4000
US3	10 ¹¹	-15 to 15	0.030	3.0	4500
ZS1	10 ¹¹	-80 to 0	0.025	3.0	11000
ZS4	*	-15 to 15	0.035	3.0	25000
ZS6	*	-15 to 15	0.035	3.0	35000

Other dielectric materials available depending on application requirements



Single Layer Capacitors

Twin Cap

⚡ Capacitance, Case Size & Dielectric Availability

This component functions as two capacitors operating in series, each of which is twice the desired equivalent capacitance. Allow us to custom design for your application.

Capacitance (pF)	Case Size							
	Mils (mm)							
	20x10		40x20		60x30		80x40	
	(.508 x .254)		(1.016 x .508)		(1.524 x .762)		(2.032 x 1.016)	
	Dielectric	Thickness	Dielectric	Thickness	Dielectric	Thickness	Dielectric	Thickness
	Class I Dielectrics							
0.06	ES1	6	AS7	6	AS1	6	AS1	8
0.08	ES1	4	AS7	4	AS1	4	AS1	7
0.1	IS1	7	ES1	15	AS7	8	AS1	5
0.2	KS3	6	ES1	7	AS7	4	AS7	7
0.3	MS1	8	ES1	5	ES1	10	AS7	4
0.4	MS1	6	IS1	7	ES1	8	ES1	15
0.5	MS1	5	IS1	6	ES1	7	ES1	10
0.6	MS1	4	IS1	5	ES1	6	ES1	9
0.8	PS1	11	KS3	6	IS1	4	ES1	7
1	PS1	9	KS3	5	IS1	7	ES1	6
1.2	PS1	7	KS3	4	IS1	6	ES1	5
1.5	PS1	6	MS1	7	IS1	5	IS1	8
1.8	PS1	5	MS1	6	IS1	4	IS1	6
2	PS1	4	MS1	5	IS1	4	IS1	6
2.2	PS1	4	MS1	5	KS3	6	IS1	5
2.7	SS3	7	MS1	4	KS3	5	IS1	4
3.3	SS3	6	PS1	11	KS3	4	KS3	6
3.9	SS3	5	PS1	9	MS1	7	KS3	5
4.7	SS3	4	PS1	8	MS1	5	KS3	4
5.6	US1	6	PS1	6	MS1	5	MS1	7
6.8	US1	5	PS1	5	MS1	4	MS1	6
8.2	US3	5	PS1	4	PS1	11	MS1	5
10	US3	4	SS3	7	PS1	9	MS1	4
12	ZS1	8	SS3	6	PS1	7	PS1	11

Other dielectric materials available depending on application requirements

Shaded cells indicate Class II Dielectrics



Single Layer Capacitors

Twin Cap

⚡ Capacitance, Case Size & Dielectric Availability - continued

15	ZS1	6	SS3	5	PS1	6	PS1	9
18	ZS1	5	SS3	4	PS1	5	PS1	8
20	ZS1	5	US1	7	PS1	4	PS1	7
22	ZS1	4	US1	6	PS1	4	PS1	6
27	ZS4	8	US1	5	SS3	7	PS1	5
33	ZS4	6	US3	5	SS3	6	SS3	9
39	ZS4	5	US3	4	SS3	5	SS3	8
47	US3	6	ZS1	8	SS3	4	SS3	6
56	US3	5	ZS1	7	US1	6	SS3	5
68	US3	4	ZS1	5	US1	5	US1	8
82			ZS1	4	US3	5	US3	8
100			ZS4	8	US3	4	US3	7
120			ZS4	7	ZS1	8	US3	6
150			ZS4	5	ZS1	6	US3	5
180			ZS4	5	ZS1	5	ZS1	8
200			ZS6	6	ZS1	5	ZS1	7
220			ZS6	5	ZS4	9	ZS1	7
270			ZS6	4	ZS4	8	ZS1	6
330					ZS4	6	ZS1	5
390					ZS4	5	ZS4	9
470					ZS6	6	ZS4	7
560					ZS6	5	ZS4	6
680					ZS6	4	ZS4	5
820							ZS6	6
1000							ZS6	5
1200							ZS6	4
Class II Dielectrics								

Other dielectric materials available depending on application requirements

⚡ Typical Temperature Characteristics

