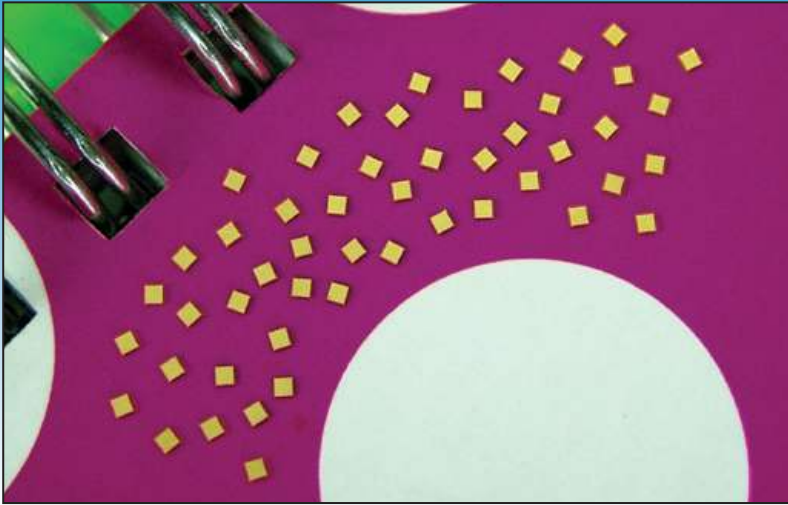


# Border Cap<sup>®</sup>

## Single Layer Capacitor



### Description

SLC with recessed metallization, available with borders on one or both sides.

Recessed metallization have been designed to minimize the potential of shorting during attachment (epoxy or solder).

- Available from 0.03pF to 2400pF
- Operating frequency up to 100GHz
- Wire Bondable:
  - 100μ" Au with a Ni Barrier Layer
- 25, 50 and 100 Volt options
- Customized designs are available, please contact sales office

### Applications

- DC Blocking
- RF Bypassing
- Filtering
- Tuning
- Coupling

### Benefits

- Eliminates rollback and burrs
- Improved vision recognition
- Tighter control on dimensions
- Facilitates pick and place – thus reducing handling damage

### Test Level Codes

Commercial Level	
Y	1% AQL 2-Side Visual
X	100% 4-Side Visual 1% AQL Electrical (CAP/DF/IR & DWV)

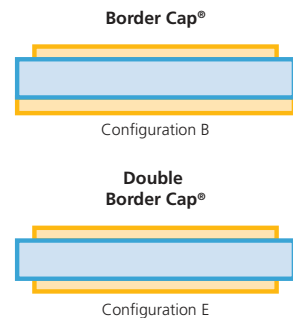
High Reliability	
<b>A</b>	<b>MIL-PRF-49464 Group A</b> <ul style="list-style-type: none"> <li>● 100% Thermal Shock</li> <li>● 100% Voltage Conditioning</li> <li>● 100% Electrical (CAP/DF/IR &amp; DWV)</li> <li>● 100% 6-Side Visual</li> <li>● Bond Strength</li> <li>● Die Shear</li> <li>● Temperature Coefficient</li> </ul>
<b>B</b>	<b>MIL-PRF-49464 Group B</b> <ul style="list-style-type: none"> <li>● MIL-PRF-49464 Group A</li> <li>● Immersion</li> <li>● Low Voltage Humidity</li> <li>● Life</li> </ul>
<b>D</b>	● Customer Defined
<b>E</b>	● 6-Side Visual

Tolerance	
Code	Description
P	± 0.01pF
A	± 0.05pF
B	± 0.1pF
C	± 0.25pF
D	± 0.50pF
K	± 10%
L	± 15%
M	± 20%
X	GMV (Guarantee Minimum Value)
Z	+80%, -20%

Voltage	
Code	Voltage
2	25 Volts
5	50 Volts
1	100 Volts

Configuration	
Code	Description
B	Single-Sided
E	Double-Sided

Border Caps need to have a tolerance that is effectively 10%.



\*For custom designs contact applications engineering



DLI•JohansonMFG•Novacap•Syfer•Voltronics

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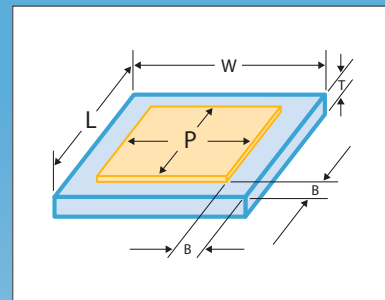
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### Part Number Identification

D	10	BN	100	K	1	E	X	
<b>Product</b> D = Border Cap*	<b>Case Size</b> 10 12 15 20 25 30 35 40 50	<b>Material</b> See material tables.	<b>Capacitance (pF)</b> R02 = 0.02pF OR5 = 0.5pF 1R0 = 1.0pF 5R1 = 5.1pF 100 = 100pF 101 = 100pF 152 = 1500pF  Refer to Capacitance range tables for available values. Consult an inside sales rep. for custom solutions.	<b>Tolerance</b> A = ± 0.05pF B = ± 0.10pF C = ± 0.25pF D = ± 0.5pF F = ± 1% G = ± 2% J = ± 5% K = ± 10% L = ± 15% M = ± 20% Z = +80% -20%	<b>Voltage</b> 2 = 25V* 1 = 100V  *For capacitors with UX material only	<b>Termination</b> P = Ni / Au B = Single  Border E = Double Border M = Au  *For capacitors with UX material only	<b>Test Level</b> Y, X, A, B, D and E.  See test level definitions.	<b>Packaging</b> B = Black Dotted E = Repopulated T = Tape and Reel  Leave blank for generic waffle pack.

## Dimensions

Style	Length / Width	Pad Size	Border	Thickness
D10	0.010" ±0.001" (0.254mm ±0.025)	0.008" (0.203mm)	0.001" (0.025mm)	0.006" ±0.0025" (0.152mm ± 0.064mm)
D12	0.012" ±0.001" (0.305mm ±0.025)	0.010" (0.254mm)	0.001" (0.025mm)	0.006" ±0.0025" (0.152mm ± 0.064mm)
D15	0.015" ±0.001" (0.381mm ±0.025)	0.011" (0.279mm)	0.002" (0.051mm)	0.006" ±0.0025" (0.152mm ± 0.064mm)
D20	0.020" ±0.001" (0.508mm ±0.025)	0.016" (0.406mm)	0.002" (0.051mm)	0.006" ±0.0025" (0.152mm ± 0.064mm)
D25	0.025" ±0.001" (0.635mm ±0.025)	0.021" (0.533mm)	0.002" (0.051mm)	0.006" ±0.0025" (0.152mm ± 0.064mm)
D30	0.030" ±0.001" (0.762mm ±0.025)	0.026" (0.660mm)	0.002" (0.051mm)	0.006" ±0.0025" (0.152mm ± 0.064mm)
D35	0.035" ±0.001" (0.889mm ±0.025)	0.031" (0.787mm)	0.002" (0.051mm)	0.006" ±0.0025" (0.152mm ± 0.064mm)
D40	0.040" ±0.001" (1.016mm ±0.025)	0.036" (0.914mm)	0.002" (0.051mm)	0.006" ±0.0025" (0.152mm ± 0.064mm)
D50	0.012" ±0.001" (1.27mm ±0.025)	0.046" (1.168mm)	0.002" (0.051mm)	0.006" ±0.0025" (0.152mm ± 0.064mm)



\*UX material available in 25V (0.006" Thick) and 50V (0.010" Thick)

## Capacitance values - Single-Sided

Style	D10			D12			D15			D20			D25			D30			D35			D40			D50					
	CAPACITANCE (pF)																													
MATERIAL	MIN.	MAX.	TOL.	MIN.	MAX.	TOL.	MIN.	MAX.	TOL.	MIN.	MAX.	TOL.	MIN.	MAX.	TOL.	MIN.	MAX.	TOL.	MIN.	MAX.	TOL.	MIN.	MAX.	TOL.	MIN.	MAX.	TOL.	MIN.	MAX.	TOL.
PI	0.03	0.05	P,K	0.05	0.07	P,K	0.06	0.09	P,K	0.15	0.15	A,K	0.2	0.3	A,K	0.3	0.45	A,K	0.35	0.6	A,B,K	0.5	0.7	A,B,K	0.8	1.1	B,K			
PG	0.04	0.06	P,K	0.06	0.09	P,K	0.08	0.1	P,K	0.15	0.2	A,K	0.25	0.4	A,K	0.35	0.55	A,K	0.5	0.8	A,B,K	0.65	0.95	B,K	1	1.5	B,K			
AH	0.06	0.1	P,K	0.09	0.1	P,K	0.15	0.2	A,K	0.25	0.35	A,K	0.4	0.6	A,K	0.55	0.9	B,K	0.75	1.2	B,K	1	1.4	B,K	1.5	2.2	K			
CF	0.07	0.1	P,K	0.1	0.15	P,K	0.15	0.2	A,K	0.25	0.45	A,K	0.45	0.7	B,K	0.65	1	B,K	0.8	1.3	B,K	1.1	1.6	K	1.7	2.4	K			
NA	0.07	0.1	P,K	0.15	0.15	A,K	0.15	0.2	A,K	0.25	0.45	A,K	0.45	0.7	B,K	0.65	1	B,K	0.85	1.5	B,K	1.2	1.7	K	1.8	2.7	K			
CD	0.15	0.15	A,K	0.2	0.25	A,K	0.25	0.35	A,K	0.45	0.7	B,K	0.7	1.1	B,K	0.95	1.6	C,K	1.4	2.2	C,K	1.8	2.7	K	2.7	4.3	K			
CG	0.25	0.35	A,K	0.3	0.5	A,K	0.45	0.7	B,K	0.8	1.3	C,K	1.3	2	C,K	1.8	3	D,K	2.7	4.3	D,K	3.3	5.1	K	5.1	8.2	K			
DB	0.25	0.35	A,K	0.35	0.5	A,K	0.45	0.7	B,K	0.8	1.3	C,K	1.3	2.2	C,K	1.9	3	D,K	2.7	4.3	D,K	3.6	5.1	K	5.6	8.2	K			
NP	0.25	0.4	A,K	0.4	0.6	B,K	0.55	0.85	B,K	0.95	1.6	C,K	1.5	2.4	C,K	2.2	3.6	D,K	3	5.1	D,K	4.3	6.2	K	6.2	10	K			
NR	0.5	0.8	B,K	0.7	1.1	B,K	1	1.6	C,K	1.8	3	D,K	3	4.7	D,K	4.3	6.8	K	6.2	10	K	7.5	11	K	12	18	K			
NS	0.9	1.5	C,K	1.3	2.2	C,K	1.9	3	D,K	3.6	5.6	D,K	5.6	9.1	K	8.2	13	K	11	18	K	15	22	K	22	33	K			
NU	1.8	3	D,K	2.7	4.3	D,K	3.9	5.6	K	6.8	11	K	11	18	K	16	27	K	22	36	K	30	43	K	47	68	K			
NV	2.7	4.3	D,K	3.9	6.2	K	5.6	8.2	K	10	16	K	16	27	K	24	39	K	33	56	K	43	62	K	68	100	K			
BD	2.2	3.3	K	3	5.1	K	4.3	6.8	K	8.2	13	K	13	20	K	18	30	K	27	43	K	33	51	K	51	82	K			
BC	3.9	6.2	K	5.6	9.1	K	8.2	13	K	15	24	K	24	39	K	36	56	K	47	75	K	62	91	K	100	150	K			
BE	3.6	6.2	K	5.6	9.1	K	8.2	12	K	15	22	K	24	36	K	33	56	K	47	75	K	62	91	K	91	130	K			
BL	6.2	10	K,M	9.1	13	K,M	13	20	K,M	24	36	K,M	36	56	K,M	56	91	K,M	75	120	K,M	100	130	K,M	150	220	K,M			
BJ	10	16	K	15	24	K	20	33	K	39	62	K	62	100	K	91	150	K	120	200	K	160	240	K	270	390	K			
BN	13	22	K,M	20	33	K,M	30	43	K,M	51	82	K,M	82	130	K,M	120	200	K,M	160	270	K,M	220	330	K,M	330	510	K,M			
BU	27	43	M	36	62	M	56	82	M	100	160	M	150	240	M	220	360	M	300	510	M	430	620	M	620	1000	M			
BV	39	68	M	62	100	M	82	130	M	150	240	M	240	390	M	360	560	M	510	820	M	680	1000	M	1000	1500	M			
UX	82	100	M	120	140	M	100	200	M	200	370	M	300	590	M	450	860	M	600	1200	M	800	1600	M	1200	2400	M			

## Capacitance values - Double-Sided

Style	D10			D12			D15			D20			D25			D30			D35			D40			D50					
	CAPACITANCE (pF)																													
MATERIAL	MIN.	MAX.	TOL.	MIN.	MAX.	TOL.	MIN.	MAX.	TOL.	MIN.	MAX.	TOL.	MIN.	MAX.	TOL.	MIN.	MAX.	TOL.	MIN.	MAX.	TOL.	MIN.	MAX.	TOL.	MIN.	MAX.	TOL.	MIN.	MAX.	TOL.
PI	0.03	0.04	P,K	0.04	0.06	P,K	0.06	0.08	P,K	0.1	0.15	A,K	0.2	0.25	A,K	0.25	0.4	A,K	0.35	0.55	A,B,K	0.45	0.65	A,B,K	0.7	1.1	B,K			
PG	0.04	0.06	P,K	0.06	0.08	P,K	0.07	0.1	P,K	0.15	0.2	A,K	0.25	0.35	A,K	0.35	0.5	A,K	0.45	0.7	A,B,K	0.6	0.9	B,K	0.95	1.4	B,K			
AH	0.06	0.09	P,K	0.09	0.1	P,K	0.15	0.15	A,K	0.2	0.3	A,K	0.35	0.5	A,K	0.5	0.8	A,B,K	0.7	1.1	B,K	0.9	1.3	B,K	1.4	2.2	K			
CF	0.07	0.1	P,K	0.1	0.15	A,K	0.15	0.15	A,K	0.25	0.35	A,K	0.4	0.65	B,K	0.6	0.95	B,K	0.8	1.3	B,K	1.1	1.6	K	1.7	2.4	K			
NA	0.07	0.1	P,K	0.09	0.15	A,K	0.15	0.15	A,K	0.25	0.35	A,K	0.4	0.6	B,K	0.55	0.9	B,K	0.75	1.2	B,K	1	1.5	K	1.6	2.4	K			
CD	0.15	0.15	A,K	0.15	0.25	A,K	0.2	0.3	A,K	0.4	0.6	B,K	0.6	1	B,K	0.9	1.5	C,K	1.3	2	C,K	1.7	2.4	K	2.7	3.9	K			
CG	0.2	0.3	A,K	0.3	0.45	A,K	0.4	0.55	A,K	0.7	1.1	B,K	1.2	1.9	C,K	1.7	2.7	C,K	2.4	3.9	D,K	3.3	4.7	K	5.1	7.5	K			
DB	0.25	0.35	A,K	0.35	0.5	A,K	0.5	0.7	B,K	0.9	1.3	C,K	1.4	2.1	C,K	2	3.1	D,K	2.8	4.3	D,K	3.6	5.6	K	5.6	9.1	K			
NP	0.25	0.4	A,K	0.4	0.6	B,K	0.55	0.8	B,K	1	1.5	C,K	1.7	2.5	C,K	2.4	3.7	D,K	3.3	5.1	D,K	4.3	6.8	K	6.8	10	K			
NR	0.45	0.7	B,K	0.65	1.1	B,K	0.85	1.3	C,K	1.6	2.4	C,K	2.7	4.3	D,K	3.9	6.2	D,K	5.6	9.1	K	7.5	11	K	12	16	K			
NS	0.85	1.3	C,K	1.3	2	C,K	1.6	2.4	D,K	3	4.7	D,K	5.1	8.2	K	7.5	12	K	10	16	K	15	20	K	22	33	K			
NU	1.7	2.7	D,K	2.7	3.9	D,K	3.3	4.7	K	6.2	9.1	K	10	16	K	15	24	K	20	33	K	27	39	K	43	62	K			
NV	2.7	3.9	D,K	3.9	6.2	K	5.1	6.8	K	9.1	13	K	15	24	K	22	36	K	30	51	K	43	62	K	68	100	K			
BD	2	3	K	3	4.7	K	3.9	5.6	K	7.5	11	K	12	18	K	18	27	K	24	39	K	33	47	K	51	75	K			
BC	3.6	5.6	K	5.6	8.2	K	6.8	10	K	13	20	K	22	33	K	33	51	K	43	68	K	62	82	K	91	130	K			
BE	3.6	5.6	K	5.1	8.2	K	6.8	10	K	13	20	K	22	33	K	30	51	K	43	68	K	56	82	K	91	130	K			
BL	5.6	9.1	K,M	8.2	13	K,M	11	16	K,M	20	30	K,M	33	51	K,M	51	82	K,M	68	110	K,M	91	130	K,M	150	220	K,M			
BJ	9.1	15	K	15	22	K	18	27	K	33	51	K	56	82	K	82	130	K	110	180	K	150	220	K	240	360	K			
BN	13	20	K,M	20	30	K,M	24	36	K,M	47	68	K,M	75	120	K,M	110	180	K,M	150	240	K,M	200	300	K,M	330	470	K,M			
BU	24	39	M	36	56	M	47	68	M	91	130	M	150	220	M	220	330	M	300	470	M	390	560	M	620	910	M			
BV	39	62	M	56	91	M	75	110	M	150	220	M	220	360	M	330	510	M	470	750	M	620	910	M	1000	1500	M			
UX	75	91	M	110	130	M	91	170	M	170	320	M	280	540	M	410	800	M	560	1100	M	750	1500	M	1200	2400	M			

UX material is offered in two voltage's 25V (0.006") & 50V (0.010"), contact factory for values per voltage rating.